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Final Massachusetts Volkswagen Settlement Beneficiary Mitigation Plan

December 7, 2018

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TABLE OF CONTENTS

- I. INTRODUCTION
- II. BACKGROUND
 - A. The Volkswagen Settlement
 - B. Massachusetts's VW Funding Allocation
 - C. Health and Environmental Effects of NO_x
 - D. Massachusetts Emissions Inventories
- III. REQUIREMENTS FOR THE BENEFICIARY MITIGATION PLAN (BMP)
- IV. CATEGORIES OF ELIGIBLE MITIGATION ACTIONS (EMAs)
 - A. Overview
 - B. EMA Funding and Cost-Share Requirements
 - C. Appendix D-2 EMAs
 - 1. Class 8 Local Freight Trucks & Port Drayage Trucks (Large Trucks)
 - 2. School, Shuttle or Transit Buses
 - 3. Freight Switchers
 - 4. Ferries and Tugs
 - 5. Shore Power for Ocean Going Vessels (OGV)
 - 6. Class 4 through 7 Local Freight Trucks (Medium Trucks)
 - 7. Airport Ground Support Equipment (GSE)
 - 8. Forklifts and Port Cargo Handling Equipment (CHE)
 - 9. Light Duty Zero Emission Vehicle Supply Equipment (EVSE)
 - 10. Diesel Emissions Reduction Act (DERA) Option
- V. MASSACHUSETTS'S PRIORITIES AND YEAR ONE SPENDING PLAN
 - A. Massachusetts BMP Goals
 - B. Consideration of Air Pollution Burden
 - C. Emission Reductions
 - D. Year One EMA Categories and Percentages
 - E. Public Input Process

APPENDICES

Appendix A: EMA Administrative Expenditures

Appendix B: Definitions

I. INTRODUCTION

The Massachusetts Department of Environmental Protection (MassDEP) is issuing this Final Massachusetts Volkswagen Settlement Beneficiary Mitigation Plan (BMP). The BMP is the Commonwealth's plan for using its funding allocation from the environmental mitigation trust created by a federal settlement¹ resolving certain of the United States' environmental claims against Volkswagen and its affiliates (collectively Volkswagen or VW) for VW's violations of the federal Clean Air Act (VW Settlement).²

The United States and other governments initiated investigations and enforcement actions against VW after it came to light that VW illegally installed so-called defeat devices in millions of diesel vehicles, including more than a half-million vehicles sold in the United States, causing the vehicles to emit higher-than-allowed amounts of nitrogen oxides (NO_x). The resulting settlement of certain of those enforcement actions led to the creation of the *Volkswagen Diesel Emissions Environmental Mitigation Trust for State Beneficiaries, Puerto Rico and the District of Columbia* to mitigate excess emissions, from which the Commonwealth has been allocated approximately \$75 million. This Final BMP discusses the health and environmental impacts of the pollutants emitted from the vehicles, the State's air emissions inventories, the inventory of diesel vehicles and equipment, and the Eligible Mitigation Actions (EMAs) under the VW Settlement that Massachusetts can implement to mitigate the excess emissions. Lastly, this Final BMP outlines the plan to spend a portion of the allocation in Year One of the 15-year allowable VW expenditure timeline.

This Final BMP represents the culmination of a substantial public comment process, including soliciting feedback through stakeholder meetings, a Request for Information, and a Draft BMP. MassDEP has considered all EMAs allowed under the VW Settlement, giving particular attention to projects that promote electrification of the State's transportation network, focus on areas serving environmental justice populations, and provide equitable geographic distribution.

As Section V. discusses in more detail, the Commonwealth's Beneficiary Mitigation Plan supports the following goals:

- Help the Commonwealth in achieving GHG emission reduction targets and reduce air pollution in the transportation network;

¹ The settlement is documented in partial Consent Decrees entered by a California federal court on October 25, 2016, and May 17, 2017, In RE: Volkswagen "Clean Diesel," Marketing, Sales Practices, and Products Liability Litigation (United States v. Volkswagen AG, et al., No. 16 – cv – 295 (N.D. Cal.)). The Attorney General separately resolved the Commonwealth's related claims against VW in state court settlements filed in August 2016 and June 2017.

² Volkswagen AG, Audi AG, Porsche Cars of North America, Inc., Volkswagen Group of America, Inc., Volkswagen Group of America Chattanooga Operations, LLC Dr. Ing. h.c. F. Porsche AG, and Porsche Cars North America, Inc.

- Promote electrification of the State’s transportation network;
- Drive technological and policy progress in air pollution mitigation and GHG emissions reduction in the transportation network;
- Serve environmental justice populations; and
- Promote equitable geographic distribution across the state.

These goals will guide the planning, solicitation, and project selection processes. While all proposed projects allowed by the VW Settlement will be considered, particular attention will be given to those that would best achieve the plan’s goals.

Massachusetts plans to spend up to \$23.5 million in Year One on the following projects:

- \$11 million to support the purchase of electric transit buses by the Pioneer Valley and Martha’s Vineyard Transit Authorities;
- \$5 million on the purchase and installation of light-duty electric vehicle supply equipment (EVSE) to supplement the network of existing EVSE; and
- \$7.5 million made available through an open solicitation for proposals to implement projects eligible under any of the EMAs (except the EVSE EMA) allowed under the VW Settlement.

As stated in Appendix D-2 of the VW Settlement, Trust Funds can be used for the actual administrative expenditures associated with implementing an eligible mitigation project, but not to exceed 15% of the total cost of such eligible mitigation project. The Commonwealth will review each mitigation project to determine the appropriate level of administrative expenditure and does not expect to use the entire 15% for this purpose. The Commonwealth will follow all state policies and procedures for administrative costs associated with an eligible mitigation project. See Appendix A for details on allowable Administrative costs.

The Commonwealth, as allowed by the VW Settlement, may adjust its objectives and spending plan when necessary to achieve the BMP’s goals. To reflect such changes, MassDEP will update the BMP as needed and publish an amended BMP on MassDEP’s public webpage at <https://www.mass.gov/guides/volkswagen-diesel-settlements-environmental-mitigation>.

This Final BMP is not a solicitation for projects. MassDEP intends to solicit applications for projects in the future after the Final BMP has been submitted to the court appointed trustee.

This Final BMP has been sent to MassDEP’s VW mailing list, and has been posted on the MassDEP website at <https://www.mass.gov/guides/volkswagen-diesel-settlements-environmental-mitigation>.

II. BACKGROUND

A. The Volkswagen Settlement

In 2014, an investigation by the California Air Resources Board (CARB) and the U.S. Environmental Protection Agency (EPA) revealed that Volkswagen had manufactured light-duty passenger diesel vehicles for sale in the United States with computer software programmed to defeat vehicle emission tests. Using a special algorithm, VW calibrated the vehicles' emission control equipment to operate only during required emissions tests and to shut down at other times of regular operating use. The use of this "defeat device" software on approximately 590,000 2009 to 2016 model year VW vehicles, including approximately 14,000 vehicles in Massachusetts, resulted in tailpipe emissions of nitrogen oxides (NO_x) that were as much as 40 times greater than the NO_x emission standards established by CARB and EPA.

As a result of the probe and subsequent legal action, the U.S. Department of Justice reached settlements with VW in 2016 and 2017 to address the affected vehicles and the excess NO_x emissions. Among other measures, the VW Settlement required the creation of a \$2.925 billion Environmental Mitigation Trust (Trust) funded by VW to reduce the air quality impacts of the excess NO_x emissions. Each state and other U.S. entities³ ("Beneficiaries") receive an allocation of the total Trust amount based on the number of registered VW vehicles in the state that were equipped with defeat devices. Following the finalization of the agreement establishing the Trust for State Beneficiaries, which became effective on October 2, 2017, Massachusetts filed the required designation form to become a Beneficiary of the Trust on November 21, 2017.

Under the Trust agreement, each Beneficiary must develop a Beneficiary Mitigation Plan (BMP) to describe how it will spend its Trust allocation. The BMP must discuss how the state will implement the ten EMAs listed in the VW Settlement's Appendix D-2. Eight of these EMAs pertain to certain diesel engine groups such as heavy-duty freight trucks, locomotive switchers, and port cargo handling equipment (CHE), and offer specific strategies for reducing their NO_x emissions, such as replacing a diesel engine with an all-electric engine. The other two EMAs are the purchase and installation of electric vehicle supply equipment (EVSE) for light-duty zero emission vehicles (ZEVs), and projects available for funding under the federal Diesel Emissions Reduction Act (DERA). All ten EMA categories are described in more detail in Section IV.C.

B. Massachusetts's VW Funding Allocation

Based on the estimated 14,000 vehicles equipped with defeat devices in Massachusetts, the Commonwealth has been allocated \$75,064,424.40 in funding from the VW Settlement. Massachusetts has up to 10 years to spend 80% of its allocation and an additional five years to spend the remaining 20%. The VW Settlement also allows each state to expend up to one-third of its funding in the first year, or up to two-thirds in the first two years.

³ The District of Columbia, Puerto Rico and federally recognized Indian tribes.

MassDEP is the designated Lead Agency for Massachusetts under the VW Settlement and is responsible for developing the BMP for Massachusetts.

C. Health and Environmental Effects of NO_x

The Trust funds represent an opportunity for Massachusetts to mitigate the potential health and environmental harm caused by the excess NO_x emitted from the illegal VW vehicles. NO_x contributes to the formation of ground-level ozone and fine particulate matter, both of which are linked to short and long-term respiratory and cardiovascular health effects. One of the primary components of NO_x—nitrogen dioxide (NO₂)—also aggravates respiratory diseases, particularly asthma, and may contribute to childhood asthma development. Environmentally, NO_x emissions contribute to global warming, acid rain formation, and detrimental nutrient overloading in waterways.

D. Massachusetts Emissions Inventories

MassDEP produces a variety of inventories that estimate the relative contribution of emissions by sector in Massachusetts. MassDEP's NO_x, fine diesel particulate matter that is 2.5 microns or less in diameter (PM_{2.5}), and greenhouse gas (GHG) emissions inventories all show that mobile sources are the largest sector contributing to total Massachusetts emissions.

Massachusetts's most recent NO_x emissions data, for calendar year 2014, can be obtained from EPA's National Emission Inventories website at <https://www.epa.gov/air-emissions-inventories/2014-national-emissions-inventory-nei-data>, and is shown in Figures 1 and 2 below. Note that the category "Other" in Figure 1 accounts for the small amounts of emissions from Petroleum & Related Industries, Solvent Utilization, Metals Processing, Chemical & Allied, Product Manufacturing and Storage & Transport.

Figure 1. Massachusetts 2014 NOx emissions by sector (short tons and % of total)

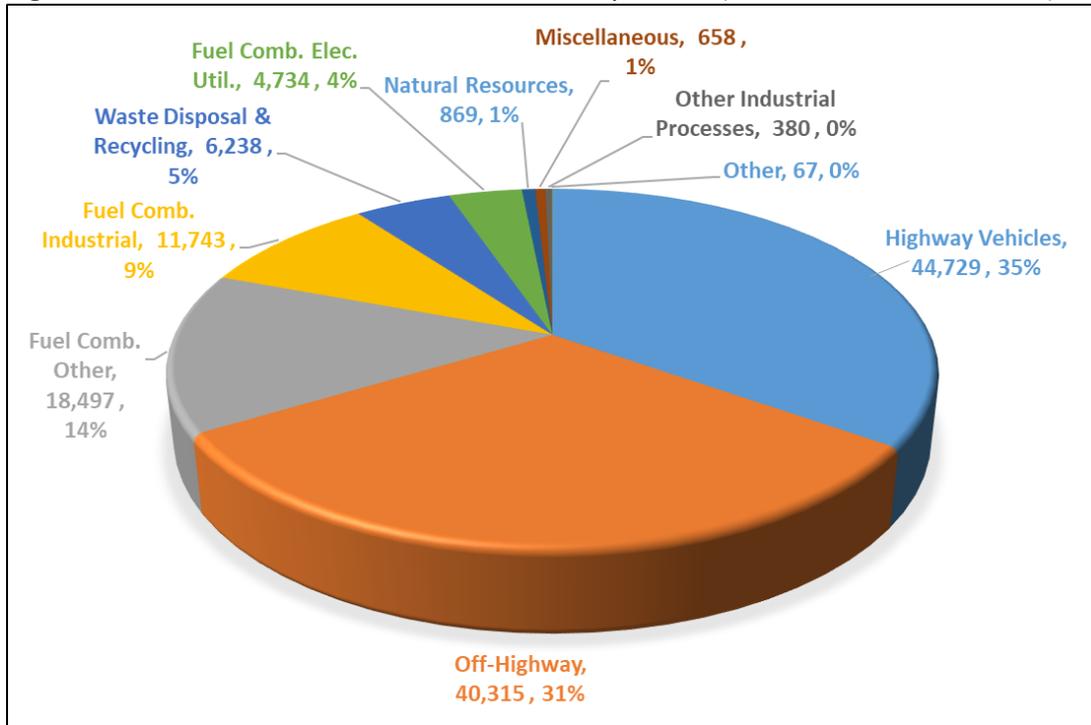
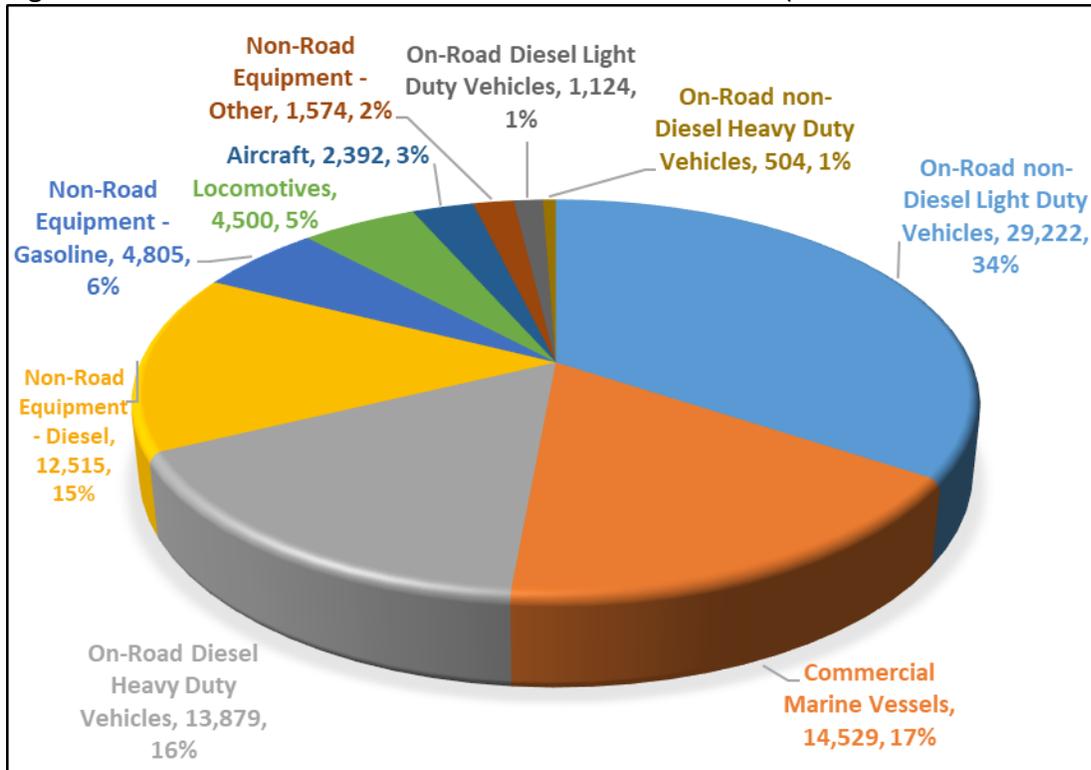


Figure 2. Massachusetts 2014 NOx mobile source emissions (short tons and % of total)



Massachusetts has recently updated its inventory of the diesel vehicles and engines in the state and the estimated fine particulate matter (PM_{2.5}) emissions due to the combustion of diesel

fuel. The following Figures 1-1 and 2-4 and Tables 1-1 and 3-2 are excerpted from the *Massachusetts 2016 Diesel Particulate Matter Inventory* (available at <https://www.mass.gov/lists/massdep-emissions-inventories#diesel-particulate-matter-inventories>).

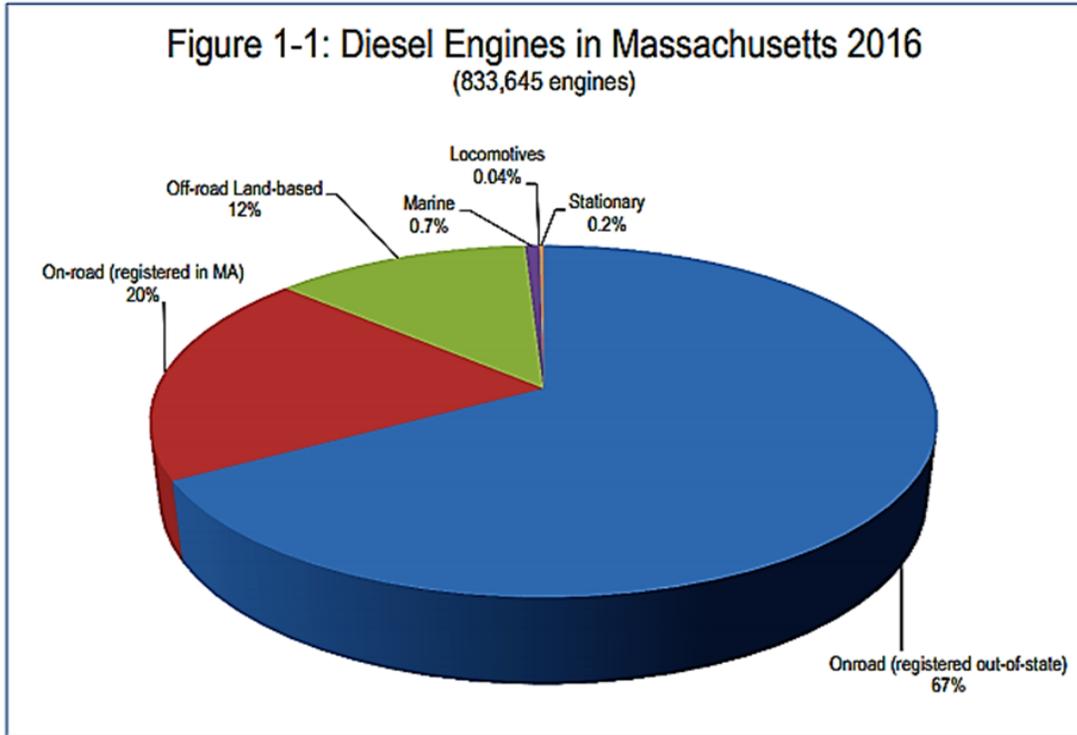


Figure 1-1 Diesel Engine Population by Sector in Massachusetts in 2016

Table 1-1 Diesel Engines and PM_{2.5} Emissions in Massachusetts 2002 and 2016

	Engines			PM _{2.5} Emissions (tons)*			PM _{2.5} Emissions Per Engine (tons)*		
	2002	2016	% Change	2002	2016	% Change	2002	2016	% Change
On-Road (registered out-of-state)	481,000	556,639	16%						
On-Road (registered in MA)	121,476	164,640	36%						
On-Road ALL	602,476	721,279	20%	1860	497	-73%	0.015	0.003	-80%
Off-Road Land-based	71,964	104,855	46%	1726	718	-58%	0.024	0.007	-71%
Marine	6,787	5,797	-15%	187	75	-60%	0.028	0.013	-53%
Locomotives	259	299	15%	142	66	-54%	0.548	0.221	-60%
Stationary	1,081	1,415	31%	32	19	-41%	0.030	0.013	-55%
Total	682,567	833,645	22%	3947	1375	-65%	0.020	0.005	-75%
Total (excluding registered out-of-state)	201,567	277,006	37%						

* In this inventory, a "ton" is a short ton (i.e., 2,000 pounds).

Table 3-2 On-Road Diesel Vehicles Registered in Massachusetts in 2016

MOVES Source Use Types	Examples of Vehicles in Class	Population
Passenger Car	Cars and smaller SUVs	14,981
Passenger and Light Commercial Trucks	Pickups with GVWR* ≤ 10,000 lbs.	4,206
Buses	Intercity travel, transit, and school buses	11,413
Single Unit Trucks	Refuse trucks, local delivery trucks, motorhomes	93,490
Combination Unit Trucks	Tractor-trailer trucks often used for interstate travel	40,550
Total		164,640

* GVWR is gross vehicle weight rating and means the value specified by the manufacturer as the loaded weight of a single vehicle. (49 CFR 579.3).

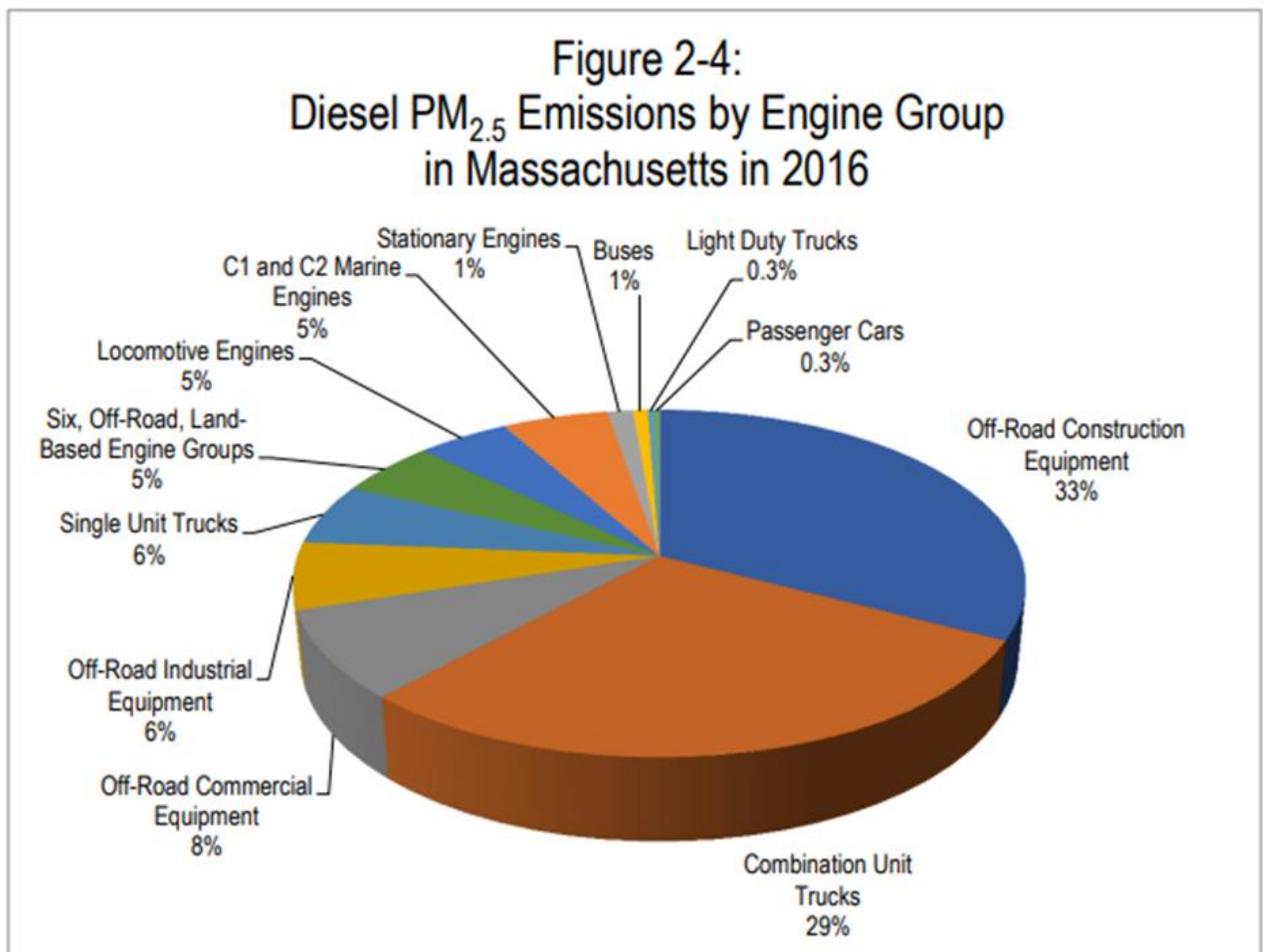


Figure 2-4 Diesel PM_{2.5} Emissions by Engine Group in Massachusetts in 2016

Massachusetts's most recent GHG inventory is for 2015 (available at <https://www.mass.gov/lists/massdep-emissions-inventories#greenhouse-gas-baseline-inventory-projection>), and indicates (as shown in Figures 3 and 4 below) that the mobile sector is the largest contributor to GHG emissions, the same as with the NOx and diesel PM_{2.5} inventories.

Figure 3. Massachusetts 2015 Fuel Combustion GHG emissions (million metric tons of carbon dioxide equivalent)

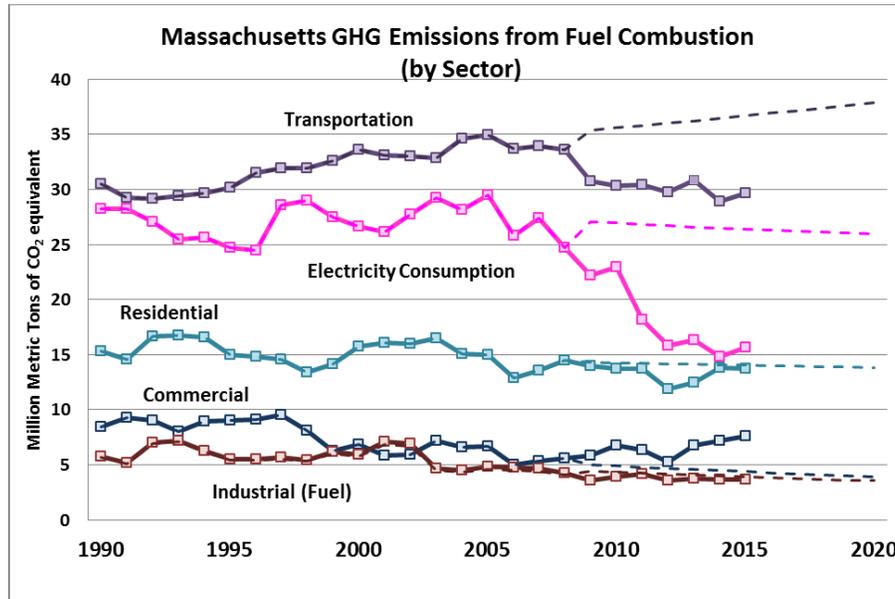
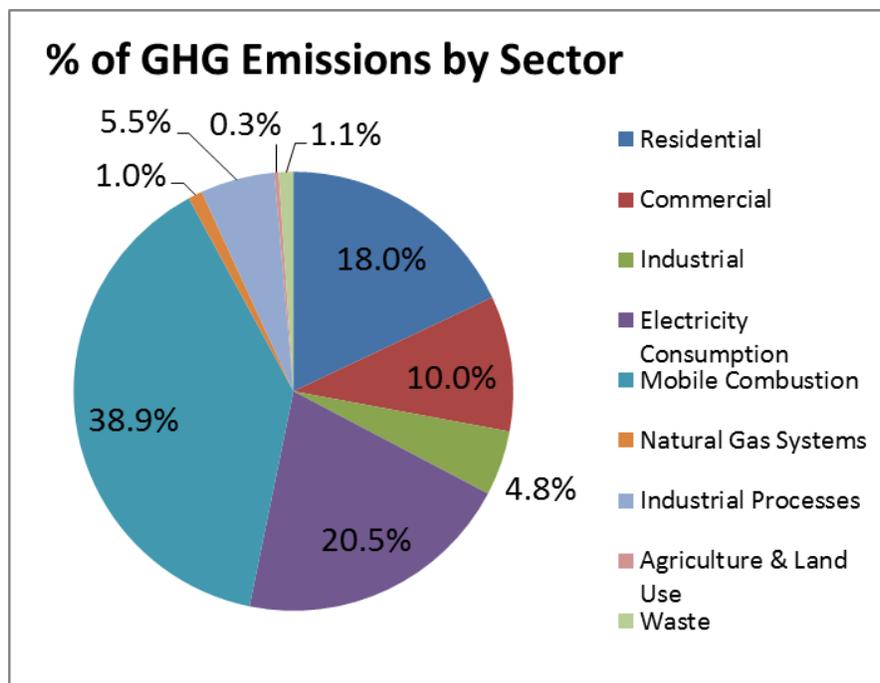


Figure 4. Massachusetts 2015 GHG emissions by sector (% of 74.6 million Metric Tons of Carbon Dioxide Equivalent)



For further emissions inventory information, see MassDEP's website:
<https://www.mass.gov/lists/massdep-emissions-inventories>.

III. REQUIREMENTS FOR THE BENEFICIARY MITIGATION PLAN (BMP)

This final Massachusetts BMP will be submitted to the Trustee in accordance with paragraph 4.1 *Beneficiary Mitigation Plan* in the Trust agreement for state Beneficiaries. Paragraph 4.1 states that Massachusetts must:

submit and make publicly available a "Beneficiary Mitigation Plan" that summarizes how the Beneficiary plans to use the mitigation funds allocated to it under this Trust, addressing:

(i) the Beneficiary's overall goal for the use of the funds;

(ii) the categories of Eligible Mitigation Actions the Beneficiary anticipates will be appropriate to achieve the stated goals and the preliminary assessment of the percentages of funds anticipated to be used for each type of Eligible Mitigation Action;

(iii) a description of how the Beneficiary will consider the potential beneficial impact of the selected Eligible Mitigation Actions on air quality in areas that bear a disproportionate share of the air pollution burden within its jurisdiction; and

(iv) a general description of the expected ranges of emission benefits the Beneficiary estimates would be realized by implementation of the Eligible Mitigation Actions identified in the Beneficiary Mitigation Plan.

The Trust agreement requires a Beneficiary to submit and make publicly available its BMP not later than 30 days before submitting its first funding request. Beneficiaries may adjust their goals and specific spending plans at their discretion and, if they do so, they are to provide the Trustee with updates to their BMP.⁴ Also under paragraph 4.1 of the Trust Agreement, the BMP must explain the process by which MassDEP shall seek and consider public input on its BMP.

IV. CATEGORIES OF ELIGIBLE MITIGATION ACTIONS (EMAs)

A. Overview

The primary emission reduction strategies for the engine group-based EMAs include:

- Repowering a diesel engine with a new diesel, alternate fuel (AF), or all-electric engine; and/or
- Replacing an entire vehicle or piece of diesel equipment with a new diesel, AF, or all-electric vehicle or piece of equipment.

AF options include compressed natural gas, propane, and other fuels used alone or in addition to gasoline or diesel fuel such as a diesel electric hybrid vehicle. All electric engines include electric engines and hydrogen fuel cells. The technologies, fuels, and electric options are

⁴ MassDEP will make any changes so submitted available on its VW website:
<https://www.mass.gov/guides/volkswagen-diesel-settlements-environmental-mitigation>.

further detailed in Section IV.C. of this BMP. Appendix D-2 of the applicable VW Settlement consent decree provides specific definitions of some of the terms used in the EMAs; these definitions are included in the attached Appendix B.

Some EMAs, such as #6: Class 4 through 7 Local Freight Trucks (Medium Trucks) and #2: Class 4 through 8 School, Shuttle, or Transit Buses (Eligible Buses), allow for both of the above technology approaches and a variety of fuel and non-fuel (i.e., all-electric engines and fuel cells) options. Others, such as airport ground-support equipment (GSE), restrict engine repowers and vehicle and equipment replacement to all-electric engines and electric vehicles and equipment, respectively. Freight switchers have an additional option in which the locomotive engine may be repowered or the switcher replaced with one or more diesel, AF or electric generator sets. The tug and ferry group allows for the additional option of an engine upgrade with a Certified Remanufacture System or a Verified Engine Upgrade.

B. EMA Funding and Cost-Share Requirements

The VW Settlement specifies the maximum allowable percentage funding of an EMA's total cost. The percentage is dependent on the EMA category and whether the recipient is a governmental or non-governmental entity. The Commonwealth may choose to fund less than the maximum allowable percentage. According to Appendix D-2, Massachusetts may fund up to 100% of any technology implemented on a government-owned (GOV) vehicle, vessel or equipment. For technologies on a vehicle, vessel, or equipment owned by a non-governmental (NON-GOV) entity, Massachusetts may, depending on whether the EMA allows for the technology, fund:

- Up to 40% of the cost to repower a diesel engine with a new diesel or AF engine;
- Up to 25% of the cost to purchase a new diesel or AF vehicle (except in the case of port drayage trucks, which is up to 50%);
- Up to 75% of the cost to repower a diesel engine with an all-electric engine; or
- Up to 75% of the cost to purchase a new all electric vehicle.

A government entity, according to Appendix D-2, includes 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.

C. Appendix D-2 EMAs

The ten EMAs in Appendix D-2 are listed below. The table following each EMA description shows the group's specific emission reduction technologies, the costs that could be covered, and the maximum percentage amount Massachusetts could fund for a technology, depending upon whether the applicant is a governmental or non-governmental entity.

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

Eligible trucks must have 1992-2009 model year engines and a Gross Vehicle Weight Rating (GVWR)⁵ of 33,001 pounds (lbs.) or more; are used for port drayage, freight, and/or cargo delivery (including waste haulers, dump trucks, and concrete mixers); and operate within Massachusetts. As defined by Appendix D-2, drayage trucks are trucks that haul cargo to and from ports and intermodal rail yards.

Technologies for Class 8 Local Freight Trucks	Costs Covered	Maximum Allowable Funding %	
		GOV	NON-GOV
Repower w/new diesel or AF engine	Engine purchase & installation	100%	40%
Replace w/new diesel or AF vehicle	Vehicle purchase	100%	25% (50% for port drayage)
Repower w/new all-electric engine	Engine purchase & installation & purchase & installation of electric charging & fuel cell infrastructure	100%	75%
Replace w/new all-electric vehicle	Vehicle purchase & purchase & installation of electric charging & fuel cell infrastructure	100%	75%

2. Class 4 through 8 School, Shuttle, or Transit Buses

Eligible buses must have model year 2009 or older engines and a GVWR of 14,001 lbs. or more and be used for transporting people. Appendix D-2 defines school buses as Class 4-8 buses sold or introduced into interstate commerce for purposes that include carrying students to and from school or related events, and that may be Type A through D buses. Note that for this EMA group, privately-owned buses under contract with a public school district are eligible for funding up to 100%.

Technologies for Class 4-8 School, Shuttle or Transit Buses	Costs Covered	Maximum Allowable Funding %	
		GOV	NON-GOV
Repower w/new diesel or AF engine	Engine purchase & installation	100%	40%
Replace w/new diesel or AF vehicle	Vehicle purchase	100%	25%
Repower w/new all-electric engine	Engine purchase & installation & purchase & installation of electric charging & fuel cell infrastructure	100%	75%
Replace w/new all-electric vehicle	Vehicle purchase & purchase & installation of electric charging & fuel cell infrastructure	100%	75%

⁵ Appendix D-2 defines GVWR as the maximum weight of the vehicle, as specified by the manufacturer. It includes the total vehicle weight plus fluids, passengers and cargo. The total vehicle weight includes the engine, chassis, body, and fuel.

3. Freight Switchers

As defined by Appendix D-2, eligible freight switchers are locomotives that move rail cars around a rail yard (as compared to a line-haul engine that moves freight long-distances); have pre-Tier 4 engines; and operate 1,000 hours or more per year. Pre-Tier 4 switcher engines are model year 2014 and older models. Appendix D-2 defines a generator set (genset) as 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.

Technologies for Freight Switchers	Costs Covered	Maximum Allowable Funding %	
		GOV	NON-GOV
Repower w/new diesel or AF engine and/or genset	Engine purchase & installation	100%	40%
Replace w/new diesel or AF switcher and/or genset	Switcher and/or genset purchase	100%	25%
Repower w/new all-electric engine and/or genset	Engine and/or genset purchase & installation & purchase & installation of electric charging & fuel cell infrastructure	100%	75%
Replace w/new all-electric switcher and/or genset	Switcher and/or genset purchase & purchase & installation of electric charging & fuel cell infrastructure	100%	75%

4. Ferries and Tugs

Eligible ferries and tugs have unregulated, Tier 1 or Tier 2 marine engines as classified by EPA. As defined by Appendix D-2, tugs are dedicated vessels that push or pull other vessels in ports, harbors and inland waterways (e.g., tugboats and towboats). As noted in the Appendix D-2 definition of a repower, repowers for ferries and tugs include diesel engine upgrades with an EPA or CARB Certified Remanufacture System and/or an EPA or CARB Verified Engine Upgrade.

Technologies for Ferries/Tugs	Costs Covered	Maximum Allowable Funding %	
		GOV	NON-GOV
Repower w/new Tier 3 or 4 diesel or AF engine	Engine purchase & installation	100%	40%
Diesel engine upgrade w/Certified Remanufacture System and/or Verified Engine Upgrade	Engine purchase & installation	100%	40%
Repower w/new all-electric engine	Engine purchase & installation & purchase & installation of electric charging & fuel cell infrastructure	100%	75%

5. Shore-power for Ocean-Going Vessels (OGV)

Eligible OGV shore-power are systems that enable a compatible vessel's main and auxiliary engines to remain off while the vessel is at berth. Components eligible for funding are listed in the table. Marine shore power systems must comply with international shore power design standards (ISO/IEC/IEEE 80005-1-2012 High Voltage Shore Connection Systems or IEC/PAS 80005-3:2014 Low Voltage Shore Connection Systems) and should be supplied with power sources from the local utility grid.

Technology for OGV Shore-power	Costs Covered	Maximum Allowable Funding %	
		GOV	NON-GOV
Shore-side system	Cables, cable management systems, shore power coupler systems, distribution control systems, and power distribution	100%	25%

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

Freight trucks in this category have 1992 through 2009 model year engines, a GVWR between 14,001 and 33,000 lbs., and operate within Massachusetts. As defined by Appendix D-2, local freight trucks are trucks, including commercial trucks, that are used to deliver cargo and freight (e.g., courier services, delivery trucks, box trucks moving freight, waste haulers, dump trucks, concrete mixers).

Technologies for Class 4-7 Local Freight Trucks	Costs Covered	Maximum Allowable Funding %	
		GOV	NON-GOV
Repower w/new diesel or AF engine	Engine purchase & installation	100%	40%
Replace w/new diesel or AF vehicle	Vehicle purchase	100%	25%
Repower w/new all-electric engine	Engine purchase & installation & purchase & installation of electric charging & fuel cell infrastructure	100%	75%
Replace w/new all-electric vehicle	Vehicle purchase & purchase & installation of electric charging & fuel cell infrastructure	100%	75%

7. Airport Ground Support Equipment (GSE)

Eligible airport GSE includes Tier 0, Tier 1, or Tier 2 diesel powered equipment; and uncertified, or certified to 3 grams per brake horsepower-hour or higher emissions, spark ignition-powered equipment. Appendix D-2 defines airport GSE as vehicles and equipment used at an airport to service aircraft between flights.

Technologies for Airport GSE	Costs Covered	Maximum Allowable Funding %	
		GOV	NON-GOV
Repower w/new all-electric engine	Engine purchase & installation & purchase & installation of electric charging & fuel cell infrastructure	100%	75%
Replace w/new all-electric equipment	Equipment purchase & purchase & installation of electric charging & fuel cell infrastructure	100%	75%

8. Forklifts and Port Cargo Handling Equipment (CHE)

As defined by Appendix D-2, eligible forklifts with over 8,000 lbs. lift capacity are nonroad equipment used to lift and move materials short distances and generally have tines to lift objects. Examples include reach stackers, side loaders and top loaders. Eligible port CHE are rubber-tired gantry cranes, straddle carriers, shuttle carriers, and terminal tractors, including yard hostlers and yard tractors that operate within ports. No model years or emission standard tiers are specified in this group’s eligibility requirements.

Technologies for Forklifts and Port CHE	Costs Covered	Maximum Allowable Funding %	
		GOV	NON-GOV
Repower w/new all-electric engine	Engine purchase & installation & purchase & installation of electric charging & fuel cell infrastructure	100%	75%
Replace w/new all-electric equipment	Equipment purchase & purchase & installation of electric charging & fuel cell infrastructure	100%	75%

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

Up to 15% of the Trust funding can be used to support the acquisition, installation and maintenance of equipment for both the electric and hydrogen fuel cell options, including:

- 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 not at a private residential dwelling that is not a multi-unit dwelling; and
- Light duty hydrogen fuel cell equipment capable of dispensing hydrogen at a pressure of 70 megapascals (MPa) (or analogous successor technologies) that is located in a public place.

Funding cannot be 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).

Funding Categories for Light Duty Zero Emission EVSE	Maximum Allowable Funding %
Open to public at government-owned property	100%
Open to public at non-government owned property	80%
At workplace not open to general public	60%
At multi-unit dwelling not open to general public	60%

Funding Categories for Light Duty Hydrogen Fuel Cell EVSE	Maximum Allowable Funding %
Open to public and able to dispense at least 250 kg/day	33%
Open to public and able to dispense at least 100 kg/day	25%

10. Diesel Emissions Reduction Act (DERA) Option

For future funding of projects beyond “Year One,” and consistent with the goals of this BMP, Massachusetts will consider, where appropriate, the use of VW Settlement Trust funds to match funding it receives under the federal DERA Clean Diesel State Grant, which EPA distributes to states annually for diesel emissions reduction projects. [If the Commonwealth chooses the DERA option beyond “Year One,” any selected project would be required to meet both the DERA federal grant requirements and the VW Settlement requirements.

The maximum funding levels for DERA projects differ from those established for the other EMAs (DERA is most often lower, but sometimes higher). Therefore, the maximum funding level available for a particular project would depend on whether it is funded through DERA vs. another EMA. Information on the DERA Option, including a comparison of the EMAs and the DERA Option eligible actions can be found at <https://www.epa.gov/cleandiesel/vw-settlement-dera-option-supporting-documents>.

V. MASSACHUSETTS’S PRIORITIES AND YEAR ONE SPENDING PLAN

A. Massachusetts BMP Goals

To solicit input on ways to utilize the funding from the VW settlement, MassDEP held a series of regional stakeholder meetings from January to March, 2018. In addition, MassDEP issued a Request for Information (RFI) to obtain data and feedback on how the state should expend those funds, encouraging people who are knowledgeable about vehicles and engines powered by diesel, alternate fuels, and electricity (including fuel cells), as well as about emissions

reductions to respond. The agency also encouraged submissions from public and private entities that may be interested in applying for funding to respond and provide data on their fleets. MassDEP also received comments on the Draft BMP from 24 entities representing 53 organizations and individuals; see Section V.E. below for a summary of comments received.

Based on the data gathered by MassDEP, including extensive public input, MassDEP will submit this Final Beneficiary Mitigation Plan to support the following goals:

- Help the Commonwealth in achieving GHG emission reduction targets and reduce air pollution in the transportation network;
- Promote electrification of the State’s transportation network;
- Drive technological and policy progress in air pollution mitigation and GHG emission reduction in the transportation network;
- Serve environmental justice populations; and
- Promote equitable geographic distribution across the state.

These goals will guide the planning, solicitation, and project selection processes. While all proposed projects allowed by the VW settlement will be considered, particular attention will be given to those that would best achieve the plan’s goals. Please note that these are goals, not eligibility criteria.

B. Consideration of Air Pollution Burden

As noted in the introduction and identified in Section V.A. as one of the five main goals of this BMP, Massachusetts will pay particular attention to EMAs proposed in environmental justice areas that will serve environmental justice populations in the Commonwealth. Projects that provide environmental benefits and reduce environmental burdens in these areas support this BMP goal.

Executive Order 552 encourages “sustained and continued efforts now and in the future to ensure that environmental justice remains a priority for the Executive branch.” It requires agencies to continue working to implement the Commonwealth’s Environmental Justice Policy to consider environmental justice in the development of state programs, including those implementing grants of financial resources or economic assistance. The Commonwealth’s Executive Office of Energy and Environmental Affairs (EOEEA) updated its Environmental Justice Policy in 2017 reiterating the purpose of ensuring that environmental justice is an integral consideration in implementing all EOEEA programs, including grants of financial resources, and implementation and enforcement of laws.

C. Emission Reductions

The repower, replacement, or retrofit of eligible vehicles and equipment provides a wide range of emission benefits based on many variables, including the type of vehicle or engine replaced, the initial age of the engine, the engine’s duty cycle and power rating and how much the vehicle or engine operates. Based on current EPA exhaust emission standards for NO_x:

- Electric engines/equipment that repower or replace eligible engines/equipment, such as the \$11 million for the purchase of electric transit buses, will reduce 100% of tailpipe emissions that would otherwise have been emitted by the transit buses so replaced,
- EVSE installations, such as the \$5 million for the installation of electric vehicle supply equipment, will facilitate and promote the adoption of electric vehicles that have significantly less (in the case of plug-in hybrids) or no tailpipe emissions, compared to internal combustion engines,
- Heavy duty highway vehicles may provide up to 96% reduction in NO_x emissions per vehicle, based on replacing a model year 1992 engine with a model year 2007 engine,
- Non-road equipment replacements, depending on the type of equipment and engine power rating, may provide between 20% and 95% reduction in NO_x emissions for each engine,
- Locomotives may provide up to 89% NO_x reduction per engine, based on replacing the oldest (Tier 0) engine with the newest (Tier 4) engine,
- Replacement or repower of a ferry or tug engine may provide up to 80% NO_x reduction for each vessel, and
- Shore-power projects may reduce all NO_x exhaust emissions from many ocean-going vessels.

These anticipated ranges of emission benefits were used to inform the Plan's funding priorities, categories of eligible mitigation projects, and funding allocation considerations for each category of eligible mitigation projects. It is important to note that the range of emission benefits mentioned above are for individual engines and actual NO_x emissions reductions will vary based on the type of projects MassDEP receives for funding consideration, and the eligible mitigation projects ultimately funded.

D. Year One EMA Categories and Percentages

Year One funding is projected at \$23.5 million (31.3% of \$75,064,424.40), within the maximum \$25.021 million (one third of \$75,064,424.40) allowed in Year One funding. The Year One project categories and estimated funding amounts that MassDEP anticipates will be appropriate to achieve the BMP's goals are:

- \$11 million (14.7% of \$75,064,424.40) for the purchase of electric transit buses and ancillary electric amenities for the transit buses for two Regional Transit Authorities (RTAs) under EMA #2. Buses will be purchased for the Pioneer Valley Transit Authority (PVTA) and the Martha's Vineyard Transit Authority (MVTA). Both of the RTAs have already added electric transit buses to their fleets and the VW Settlement funds will support eight additional electric buses for the PVTA and five additional buses for the MVTA. These two RTAs were selected for Year One funding based on their ability to order electric transit buses in state fiscal year 2019.
- \$5 million (6.7% of \$75,064,424.40) for the installation of electric vehicle supply equipment (EVSE) under EMA #9; and,

- \$7.5 million (10.0% of \$75,064,424.40) for projects proposed through an open solicitation to implement any of the EMAs (except the EVSE EMA #9) allowed under the VW Settlement.

MassDEP received significant comment and support from stakeholders on the importance of funding electric transit buses serving EJ neighborhoods and communities and the need to reduce vehicle pollution in these areas. Based on input from MassDOT, two RTAs (PVTA and MVTA) would be able to order buses in fiscal year 2019 and are proposed for \$11 million in Year One funding. Both of these RTAs operate in EJ communities.⁶ MassDEP will coordinate with MassDOT and the RTAs to ensure data collection to measure the performance and use of the electric buses to inform future planning for and investment in transit bus electrification.

The \$5 million in funding for EVSE will support and focus on three areas including workplace charging, charging at multi-unit dwellings, and Level 2 public charging. MassDEP will solicit projects through an open enrollment process and select EVSE projects for funding based on established criteria such as location (in EJ areas and geographic distribution), size of employer, and ability to quickly deploy charging stations. MassDEP anticipates beginning this solicitation in the Fall of 2018.

In response to a comment on the draft BMP that stated MassDEP should develop a vision and strategy for EVSE, Massachusetts notes that its EVSE funding plan is consistent with the strategic vision developed by the multi-state ZEV Task Force (a collaboration of California, Connecticut, Maryland, Massachusetts, New Jersey, New York and Oregon, Rhode Island, and Vermont) and discussed in the report, *Multi-State ZEV Action Plan: Accelerating the Adoption of Zero Emission Vehicles for 2018-2021* (available at <https://www.nescaum.org/documents/multi-state-zev-action-plan.pdf/>). That report advocates, among other goals, for the installation of EVSE at workplaces, multi-unit dwellings and along corridors. In keeping with this vision, since 2014 Massachusetts has funded the installation of 1,050 Level 2 charging ports, 870 of which are located at workplaces. The \$5 million dedicated for Year One EVSE spending will build on these earlier efforts.

The \$7.5 million for all EMAs with the exception of EMA #9 (and see further details on EMA #10 in section IV.C.10. above) will be awarded through a project solicitation and competitive grant process with an application deadline. MassDEP anticipates that it will receive grant applications that exceed the amount of funding available; therefore, criteria will be established to select projects. Such criteria may include but not be limited to: the level of emissions reductions anticipated; the level to which or whether the project promotes electrification of the transportation system; the level to which the project drives technological and policy progress in air pollution mitigation and GHG emissions reduction in the transportation network; project

⁶ As determined by 2010 data from the U.S. Census, over half of the 24 communities served by the PVTA have EJ blocks. Similarly, three of the six communities the MVTA services have EJ blocks. See the Massachusetts Executive Office of Energy and Environmental Affairs Environmental Justice Policy web site at <http://www.mass.gov/environmental-justice>.

location (in EJ areas and geographic distribution); the project's cost-effectiveness and timetable for deployment; and, the amount of project funding cost-share offered by the project proponent. MassDEP anticipates beginning this solicitation in the Fall of 2018.

E. Public Input Process

To solicit input from the public on how Massachusetts should spend its \$75 million VW allocation, MassDEP took several actions. In 2017, MassDEP established a webpage and survey for the public to sign up for email correspondence with the agency and to indicate their preferences for spending the VW allocation. From January to March, 2018, MassDEP held 10 stakeholder meetings across Massachusetts to solicit input on how VW Settlement funds should be spent. The presentation from those meetings is posted on the agency's website at: <https://www.mass.gov/guides/volkswagen-diesel-settlements-environmental-mitigation>.

In April, 2018 MassDEP issued a Request for Information (RFI), which was open for public comment for four weeks, to seek input as well as information on technology development, project proponent interest, cost, emission reductions, and the feasibility of implementing the EMAs. Thirty-three entities submitted responses to MassDEP regarding the RFI. The RFI and associated Spreadsheet for Responding to the RFI were posted on MassDEP's website at <https://www.mass.gov/guides/volkswagen-diesel-settlements-environmental-mitigation#news-updates> and on COMMBUYS, the Commonwealth's procurement website, at <https://www.commbuys.com/bs0/external/bidDetail.sdo?docId=BD-18-1045-BAW00-BAW01-26266&external=true&parentUrl=bid>.

After considering the comments on the RFI, MassDEP released a Draft BMP on July 19, 2018 that discussed the Commonwealth's goals and plans to spend its allocation of the VW Settlement funds. The agency allowed for a 32-day period for the public to submit comments on the Draft BMP.

Fifty-three entities offered comments on the Draft BMP by the August 20, 2018 deadline. Many commenters supported the goals and projects in the draft BMP, particularly those regarding electrification. Commenters also offered several recommendations for MassDEP to consider:

- **Electrification.** Suggestions included establishing a vision and strategy for EVSE, coordinating deployment of VW's EVSE with utility programs and Electrify America, installing more charging stations and incorporating DC fast charging, using the maximum 15% allowed for EVSE, considering hydrogen fuel cell EVs, and distributing EVSE between residential, commercial and destination locations. MassDEP has added details on electrification planning to Section V.D.
- **Fuel and Technology Approaches.** Suggestions included considering natural gas, propane and other alternative fuels, as well as new diesel engines, and a technology neutral approach. MassDEP notes that the VW Open Solicitation will provide the opportunity for proponents of all types of projects to apply.
- **Current and Future Funding.** Suggestions included developing a plan for expenditures beyond year one; using all of the \$7.5 million in the open solicitation to buy more electric transit buses; prioritizing airport ground support equipment

(GSE), medium-duty trucks, school buses, and terminal tractors for funding; for EVSE, the cost share requirements should be the maximum amount allowed; and aiming for funding parity across fuels. MassDEP notes it is required to update its BMP as its funding plan evolves; in addition, the VW Open Solicitation will provide the opportunity for proponents of all types of projects to apply.

- DERA. Some commenters recommended that MassDEP utilize the EMA #10 DERA Option to fund projects that lead to electric vehicle adoption; MassDEP has added DERA detail to Sections IV.C.10. and V.D of this final BMP.
- Public input. Commenters requested a process for monitoring, reporting and seeking public input. MassDEP will be posting information on projects on its website, consistent with the public transparency requirements in the VW Settlement.
- Scrappage. One comment requested more options for which vehicles can be scrapped; however, MassDEP must follow the VW Settlement requirements.
- Selection criteria. A commenter asked for more information on project selection criteria; such information will be included in the VW Open Solicitation application.

Consideration of these comments led MassDEP to clarify some information in this Final BMP, while supporting the goals and funding priorities presented in the Draft BMP. MassDEP will now submit a final BMP to the Trustee overseeing the VW Settlement funds.

Once the Commonwealth begins to implement the projects outlined in the BMP, MassDEP will maintain and make publicly available all documentation submitted in support of funding requests and all records supporting all expenditures of eligible mitigation project funds, and use its website to keep the public informed of funded projects.

APPENDIX A: ELIGIBLE MITIGATION ACTION ADMINISTRATIVE EXPENDITURES

Consistent with Appendix D-2 of the VW Settlement, the following details the types of administrative costs that can be funded in implementing the EMAs:

For any eligible mitigation project, Trust Funds can be used for the actual administrative expenditures associated with implementing such eligible mitigation project, but not to exceed 15% of the total cost of such eligible mitigation project. The 15% cap includes the aggregated amount of eligible administrative expenditures incurred by the Beneficiary and any third-party contractors. The Commonwealth will seek to maximize the use of settlement funding on activities that directly advance the goals of the settlement and this plan. These eligible administrative expenditures include the following:

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, Federal Insurance Contributions Act, retirement, life insurance, and payroll taxes.
3. Travel including costs of mitigation project-related travel by program staff, not including consultant travel. Any use of funds to support travel must adhere to Commonwealth policies and procedures governing travel by state employees.
4. Supplies including tangible property purchased in support of the mitigation project that will be expensed on the "Statement of Activities", such as educational publications, office supplies, etc.
5. Contractual cost 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 must be 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.

APPENDIX B: DEFINITIONS

Appendix D-2 of the VW Settlement provides specific definitions of some of the terms used in the EMAs:

- *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, 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 California Air Resources Board (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 pounds (lbs).
- *Class 4-8 School Bus, Shuttle Bus, or Transit Bus (Buses)* shall mean vehicles with a GVWR greater than 14,001 lbs. used for transporting people. See definition of School Bus below.
- *Class 8 Local Freight and Port Drayage Trucks (Eligible Large Trucks)* shall mean trucks with a 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; and 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* shall mean 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 include the following 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.
- *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.

- *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.
- *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 mean the 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).