Nevada Beneficiary Mitigation Plan for the Volkswagen Environmental Mitigation Trust

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Table of Contents

List of Tables

List of Figures

Acronyms and Abbreviations

CMAQ	Congestion Mitigation and Air Quality Improvement
CNG	Compressed Natural Gas
CY	Calendar Year
DEQ	Diesel Emission Quantifier
DERA	Diesel Emission Reduction Act
DMV	Nevada Department of Motor Vehicles
EPA	United States Environmental Protection Agency
FY	Fiscal Year
g/bhp-hr	grams per brake horsepower-hour
GOE	Nevada Governor's Office of Energy
GSE	Airport ground support equipment
GVWR	Gross Vehicle Weight Rating
I/M Committee	Nevada Advisory Committee on the Control of Emissions from Motor Vehicles
I/M Subcommittee	Subcommittee formed by the Nevada Advisory Committee on the Control of Emissions from Motor Vehicles to develop a recommended Beneficiary Mitigation Plan
LNG	Liquid Natural Gas
LPG	Liquid Propane Gas
NAAQS	National Ambient Air Quality Standards
NAC	Nevada Administrative Code
NDOT	Nevada Department of Transportation
NDEP	Nevada Division of Environmental Protection
NEI	National Emissions Inventory
NOx	Oxides of nitrogen
O_3	Ozone
OGV	Ocean going vessels
$PM_{2.5}$	Particulate matter 2.5 micrometers and smaller in diameter
State Trust	Environmental Mitigation Trust Agreement for State Beneficiaries
VW	Volkswagen Corporation and its subsidiaries

Background

On October 25, 2016, the first of three partial settlements was finalized between the Volkswagen Corporation and its subsidiaries (collectively "VW"), the United States, and the state of California regarding the installation and use of defeat devices in diesel-powered vehicles for model years 2009 through 2016.[1] These defeat devices, in the form of computer software designed to cheat on federal emissions tests, violated the Clean Air Act. One of the actions that VW is required to take due to the October 25 partial settlement is to establish and pay $2.7 billion into an Environmental Mitigation Trust to fund projects intended to mitigate the excess emissions caused by the subject vehicles. The Trust will fund a defined set of Eligible Mitigation Actions that reduce oxides of nitrogen (NOx) from heavy-duty diesel sources near population centers in the transportation sector.

The 2.0 liter partial settlement (the approved October 25 partial settlement) identified roughly 500,000 2.0 liter diesel-powered VW vehicles. A second partial settlement identifying an additional 90,000 3.0 liter diesel-powered VW vehicles (with model years 2009 through 2016) was finalized between VW, the United States, and the state of California on May 11, 2017 and requires VW to pay an additional $225 million into the Environmental Mitigation Trust.[2] Of the 590,000 vehicles, Nevada had 5,739 affected vehicles registered in the state in calendar year (CY) 2015 (4,678 2.0 liter and 1,061 3.0 liter vehicles); and of the $2.925 billion in Environmental Mitigation Trust funds, Nevada expects to receive $24,874,024[3].

On October 2, 2017 the United States Department of Justice executed trust documents, thereby initiating the Trust Effective Date and all future deadlines. Of the executed trust documents were two new Trust Agreements, the Environmental Mitigation Trust Agreement for State Beneficiaries (State Trust) and the Environmental Mitigation Trust Agreement for Indian Tribe Beneficiaries.[4] Nevada is subject to the State Trust. These new Trust Agreements combined details from the 2.0 liter partial settlement, the revisions made by the 3.0 liter partial settlement, and some smaller, additional changes that do not alter the Eligible Mitigation Actions available to beneficiaries or the original intent of the 2.0 and 3.0 liter partial settlements. One of the requirements of the State Trust is the submission of this Beneficiary Mitigation Plan. The five requirements for this Plan are:[5]

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[1] The approved 2.0 liter partial settlement can be found on the United States District Court, Northern District of California's website at http://www.cand.uscourts.gov/filelibrary/2836/DOJ-Motion-Ex.-1.pdf.

[2] The approved 3.0 liter partial settlement can be found on the United States District Court, Northern District of California's website at http://www.cand.uscourts.gov/filelibrary/3074/3228-Order-Granting-the-United-States-Motion-f.pdf.

[3] This number was determined by combining Nevada's initial allocations from the 2.0 and 3.0 liter partial settlements. That is, $22,255,715.66 from the 2.0 liter partial settlement and $2,618,308.82 from the 3.0 liter partial settlement.

[4] Both Trust Agreements can be found on the Volkswagen Diesel Emissions Environmental Mitigation Trust website at http://www.vwenvironmentalmitigationtrust.com/.

[5] Section 4.1 of the Environmental Mitigation Trust Agreement for State Beneficiaries details Beneficiary Mitigation Plan requirements.

1. The Beneficiary's overall goal for the use of the funds;
2. 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;
3. 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;
4. A general description of the expected ranges of emissions benefits the Beneficiary estimates would be realized by implementation of the Eligible Mitigation Actions identified in the Beneficiary Mitigation Plan; and
5. An explanation of the process by which the Beneficiary shall seek and consider public input on its Beneficiary Mitigation Plan.

The Nevada Division of Environmental Protection (NDEP) is only providing the level of detail that is reasonably ascertainable at the time of submission of this Beneficiary Mitigation Plan. Nothing in this Plan is binding, nor does it create any rights in any person to claim an entitlement of any kind. The NDEP may adjust its goals and specific spending plans based, for instance, on future changes in air quality conditions across the affected areas, and availability and costs of new technologies. The NDEP shall provide the Trustee with and make available on the NDEP's Volkswagen Settlement webpage[6] any updates to the Plan.

Public Input Process

When the NDEP was designated as the lead agency by Governor Sandoval, it was also determined that the Nevada *Advisory Committee on the Control of Emissions from Motor Vehicles*[7] (Inspection and Maintenance Committee or, I/M Committee) would serve in an advisory capacity in establishing program goals and objectives that meet air quality needs, consider public input, and are acceptable to the court-appointed trustee for the fund. Created in Nevada statute, the primary mission of the I/M Committee is to develop goals and objectives for the program for control of emissions from motor vehicles (the state's motor vehicle smog check program), to identify areas where funding should be made available, and to make recommendations concerning applicable smog check program regulations. This made the I/M Committee a natural choice for advising NDEP on the development of Nevada's Beneficiary Mitigation Plan.

The I/M Committee consists of 11 members with representatives from the Department of Motor Vehicles (DMV), the NDEP, the Department of Transportation (NDOT), the Department of Agriculture, air

[6] The NDEP's Volkswagen Settlement webpage can be found at https://ndep.nv.gov/air/vw-settlement.
[7] More information on the Nevada *Advisory Committee on the Control of Emissions from Motor Vehicles*, such as minutes from past meetings, can be found on the Committee's webpage at http://www.dmvnv.com/publicmeetings.htm#committee.

pollution control officials from Clark and Washoe counties, and a nonvoting representative from the United States Environmental Protection Agency (EPA), Region IX. The I/M Committee, which meets on a quarterly basis, formed a Subcommittee (I/M Subcommittee) to develop recommendations for the Beneficiary Mitigation Plan and periodically report to the I/M Committee on its progress. All I/M Committee and Subcommittee meetings were publicly noticed and members of the public regularly participated in the meetings. Additionally, the I/M Subcommittee accepted written comments regarding the Beneficiary Mitigation Plan throughout its development.

The NDEP reached out to fleet owners, government officials, transportation organizations, and other potential beneficiaries for information and ideas about how settlement funds should be spent from among the ten categories of Eligible Mitigation Actions. The NDEP coordinated outreach efforts in Clark and Washoe counties, the two Nevada counties that bear a disproportionate share of the air pollution burden in the state.

Nevada's Overall Goal

Nevada's goal for the Environmental Mitigation Trust funds are:

1. To efficiently and cost-effectively reduce NOx emissions from areas of the state that bear a disproportionate share of NOx pollution and potentially, other pollutants;
2. To efficiently and cost-effectively reduce NOx emissions from areas of the state where the vehicles subject to the settlement were, are, or will be operated; and
3. To support long-term investments toward a zero emission transportation sector within the state.

In achieving these goals, Nevada will consider the following in the selection and implementation of Eligible Mitigation Actions:

- The selection of Eligible Mitigation Actions that will on whole strive to maximize the use of Environmental Mitigation Trust funds in reducing NOx emissions;
- The potential beneficial impact of Eligible Mitigation Actions on air quality shall be considered in areas that the NDEP believes have a critical need for NOx reductions and bear a disproportionate share of the air pollution burden within the state and/or where the vehicles subject to the settlement were, are, or will be operated;
- Given that NOx is a precursor in the formation of ground-level ozone; and ozone (O_3) is a significant concern with respect to public health; and that O_3 concentrations in several areas in Nevada have been measured at elevated levels approaching those that would violate federal ambient air quality standards; the reduction of ambient O_3 concentrations will be considered as a desirable co-benefit; and
- Where possible and in consideration of the above, the NDEP will strive to balance the environmental and societal benefits of Environmental Mitigation Trust funds among Nevada's cities, counties, and statewide interests, Nevada's business and industrial community, and

communities where environmental justice concerns are evident, to the benefit of all of Nevada's citizens.

- With respect to light duty zero emission vehicle supply equipment (Eligible Mitigation Action category 9), funding requests that are in alignment with the goals of the Nevada Electric Highway initiative, and other strategic plans for electric vehicle charging infrastructure put forth by the Nevada Governor's Office of Energy (GOE) shall receive funding priority.

Eligible Mitigation Actions

The NDEP will ensure that funded projects support the state's Beneficiary Mitigation Plan goals. The State Trust provides Beneficiaries ten categories of Eligible Mitigation Actions from which to choose. The ten categories of Eligible Mitigation Actions[8] are:

1. Class 8 Local Freight Trucks and Port Drayage Trucks
2. Class 4-8 School Bus, Shuttle Bus, or Transit Bus
3. Freight Switchers (Locomotives)
4. Ferries/Tugs
5. Ocean Going Vessels (OGV) Shorepower
6. Class 4-7 Local Freight Trucks (Medium Trucks)
7. Airport Ground Support Equipment
8. Forklifts and Port Cargo Handling Equipment
9. Light Duty Zero Emission Vehicle Supply Equipment
10. Diesel Emission Reduction Act (DERA) Option

The categories of Eligible Mitigation Actions that will be appropriate to achieving the Nevada's goals are largely dependent on the availability of the category. Based on an initial assessment of the ten categories of Eligible Mitigation Actions, four of them are not available or not well represented in Nevada. To be clear, this initial assessment of the ten categories does not preclude the NDEP from funding a project in the future. The NDEP may adjust its goals and specific spending plans based, for example, on future changes in air quality conditions across Nevada, and the availability and costs of new technologies. The NDEP then analyzed the remaining six Eligible Mitigation Actions in order to determine the percentages of funds to be used. Table 1 lists the ten Eligible Mitigation Actions and the anticipated percentages that will be appropriate to achieve the stated plan goals. The rest of this section details the categories of Eligible Mitigation Actions that the NDEP intends to fund to fulfill its Plan goals and the Mitigation Action Expenditures available to qualifying project applicants.

[8] The complete listing of all Eligible Mitigation Actions can be found in Appendix D-2 of the State Trust (http://www.vwenvironmentalmitigationtrust.com/pdfs/Final%20Filed%20Dkt%2051-1%20%20State%20Beneficiary%20Trust%20Agreement.pdf).

Table 1: Appendix D Eligible Mitigation Actions and Nevada's anticipated percentages of funding.

Funding Percentage	Eligible Mitigation Action	Category
0	Freight Switchers (Locomotives)	3
0	Ferries/Tugs	4
0	Ocean Going Vessels (OGV) Shorepower	5
0	Forklifts and Port Cargo Handling Equipment	8
5	Diesel Emission Reduction Act (DERA) Option	10
15	Light Duty Zero Emission Vehicle Supply Equipment	9
80	Class 8 Local Freight Trucks and Port Drayage Trucks	1
	Class 4-8 School Bus, Shuttle Bus, or Transit Bus	2
	Class 4-7 Local Freight Trucks (Medium Trucks)	6
	Airport Ground Support Equipment	7

Category 10 – The Diesel Emission Reduction Act (DERA) Option

The Nevada State Clean Diesel Program[9] was established by the NDEP to reduce emissions from Nevada's fleet of diesel-powered equipment. With the Nevada State Clean Diesel Program, the NDEP has provided pass-through DERA funding to public sector fleets in Nevada in order to effectively and permanently reduce NOx and $PM_{2.5}$ (particulate matter 2.5 micrometers and smaller in diameter). Historically, this Program has worked with school district fleets across the state and municipal service fleets in Nevada's most populated counties to perform diesel retrofit projects and support the early retirement of fleet vehicles.

The NDEP is planning to initially use funds from the Volkswagen Environmental Mitigation Fund to meet the DERA State Clean Diesel Grant Program's non-federal voluntary match.[10] In meeting the base allocation awarded by the EPA with an equal voluntary match, the EPA provides a matching incentive equal to 50 percent of the base allocation. Based on the 2012 to 2016 average of DERA State Clean Diesel Grant Awards, it is expected that Nevada will use $1.2 million of the Settlement funds over 10 years to meet the DERA Program's voluntary match, receiving, over the same period, a bonus matching incentive of approximately $600,000 to be invested in the Nevada State Clean Diesel Program. The NDEP intends to use this combined pool of money (the base awarded EPA allocation, the non-federal voluntary match, and the EPA match incentive) to continue to meet the Nevada State Clean Diesel Program's goals and objectives.

For Fiscal Year (FY) 2017 the EPA is awarding Nevada with a base allocation of $232,001. By providing the $232,001 voluntary match with Environmental Mitigation Trust funds, Nevada will receive a 50

[9] More information about the Nevada State Clean Diesel Program, including the program's goals and objectives and past program successes, can be found at https://ndep.nv.gov/air/air-pollutants/clean-diesel-program.
[10] More information about the National Clean Diesel Campaign and the DERA State Clean Diesel Grant Program can be found at https://www.epa.gov/cleandiesel.

percent bonus of $116,001 to spend on qualifying DERA projects that it otherwise would not receive. From Appendix D-2:

> 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 nonfederal mandatory cost share requirements, as defined in applicable DERA program guidance, of any DERA grant.

In addition to the non-federal voluntary match, the DERA option provides the opportunity to fund mitigation actions that are different from the other nine categories listed in the Volkswagen Environmental Mitigation Trust Fund. In an effort to fully mitigate the excess emissions associated with the 2.0 and 3.0 liter diesel-powered subject vehicles, the NDEP intends to make the DERA option available to all qualifying project partners. Any requests for Environmental Mitigation Trust funds through Category 10 - the DERA option that are outside of the Nevada State Clean Diesel Program's goals and objectives will need to go through the same application process as the other categories of Eligible Mitigation Actions. Eligible diesel emission reduction solutions through the DERA State Clean Diesel Grant Program include:

- Verified emission control technologies such as exhaust controls, cleaner fuels, and engine upgrades;
- Verified idle reduction technologies;
- Verified aerodynamic technologies and low rolling resistance tires; and
- Certified engine replacements and/or certified vehicle or equipment replacement. Eligible diesel vehicles, engines and equipment may include buses, Class 5 through 8 heavy-duty highway vehicles (vehicles with a gross vehicle weight rating of 16,001 pounds and over), marine engines, locomotives and nonroad engines, equipment or vehicles used in construction, handling of cargo (including at a port or airport), agriculture, mining or energy production (including stationary generators and pumps).

Category 9 – Light Duty Zero Emission Vehicle Supply Equipment

The NDEP is planning to pursue Eligible Mitigation Actions that are in alignment with the goals of Nevada's Strategic Planning Framework and the "Nevada Electric Highway" initiative put forth by the Nevada Governor's Office of Energy (GOE). The mission of the GOE is to ensure the wise development of Nevada's energy resources in harmony with local economic needs and to position Nevada to lead the nation in renewable energy production, energy conservation, and the exportation of energy.

The State of Nevada has established a goal to become the nation's leading producer and consumer of clean and renewable energy. The state has already made great progress toward this goal through programs administered by the GOE to attract renewable energy development to the state and forward-thinking policies which have led to a robust portfolio of renewable resources. However, while Nevada has a wealth of domestic renewable resources such as geothermal and solar, nearly 90 percent of the energy consumed in the state comes from imported fossil fuels. The transportation sector accounts for nearly one-third of this energy consumption.[11]

The objectives to meet the state goal of leading the nation as a producer and consumer of clean and renewable energy are defined in Nevada's Strategic Planning Framework[12] developed by Governor Brian Sandoval and his Cabinet, including a significant reduction in the percentage of imported fossil fuels over the next 10 years and completion of an "electric highway" system serving the entire state by 2020.

In order to realize these objectives, the State of Nevada has taken great strides to facilitate a market transformation in the transportation sector by advancing emerging and innovative zero emission vehicle technologies throughout the state and surrounding region. Tesla has already deployed its Supercharger stations along key highway corridors across Nevada including I-80, I-15, and US 95; in addition, the State of Nevada has launched its own Nevada Electric Highway initiative which will accommodate an even greater number of brand-agnostic electric vehicles.

The Nevada Electric Highway initiative started as a partnership between the State of Nevada and electric utilities NV Energy and Valley Electric Association to expand the state's electric vehicle charging infrastructure. This would be accomplished by placing charging stations at cost-effective and strategic locations along US 95, connecting the state's largest urban centers of Las Vegas and Reno and eliminating range anxiety for electric vehicle owners while also bringing business to local communities. In 2016, two of the five charging stations planned along the highway went operational in the communities of Beatty and Fallon (the third planned charging station in Hawthorne went operational in 2017). Each charging station is compatible with the ChargePoint Network and consists of two Level 2 chargers and one Direct Current fast charger, in order to accommodate all different types of electric vehicles currently on the road. Host sites that participated in Phase I of the Nevada Electric Highway were required to offer electricity free for the first 5 years the charging stations are operational. Additional electric vehicle charging stations will be completed in 2018 in the communities of Tonopah and Indian Springs, completing Phase I of the Nevada Electric Highway.

To facilitate statewide expansion of the Nevada Electric Highway, the state nominated five strategic corridors connecting neighboring states California, Arizona, and Utah for national designation as Alternative Fuel Corridors. In November 2016, the Federal Highway Administration (FHWA) approved I-80, I-15, US 95, and US 50 across Nevada for designation as signage-pending Alternative Fuel Corridors.

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[11] U.S. Energy Information Administration, State Energy Data System, http://www.eia.gov/state/analysis.cfm?sid=NV, (Accessed January 6, 2017).

[12] Nevada Governor's Office. (2016). *Nevada's Strategic Planning Framework: "Generations to Come"*. 2016-2020 First Edition, April 11, 2016. Carson City, NV: Governor's Office.

The designation of these routes further illustrates the need for electric vehicle infrastructure investment in Nevada as the Gateway East from California, an important electric vehicle hub in the west, to the rest of the nation. By supporting the development of electric vehicle charging infrastructure, funds will be used to reduce emissions now while also fostering an environment supportive of a rapid transition to a statewide fleet of zero emission vehicles.

The Nevada Electric Highway is connecting Nevada in an entirely new way that will support next generation vehicles and make it easier for Nevadans and our guests alike to appreciate all the state has to offer. From the operational and in-development Phase I stations along US 95 to Phase II's proposed charging stations throughout the rest of the state, Figure 1 shows the entirety of the planned Nevada Electric Highway and identifies 38 sites for the installation of EV charging stations along Nevada's six major traffic corridors; I-15, I-80, US 50, US 93, US 95, and SR 318.

A primary challenge to promote the use of electric vehicles in Nevada is the rural, remote, and often desolate nature of Nevada's landscape. The NDOT Planning Division's publication, "State Maintained Highways of Nevada, Descriptions and Maps, January 2016" indicates that 87% of Nevada roads are rural. Travel between the four primary metropolitan areas (Reno and Carson City in the north, Las Vegas in the south, Elko in the northeast, and Ely in the east) requires traveling long distances which currently lack adequate electric vehicle charging stations. By investing in the charging infrastructure identified in the Nevada Electric Highway, Environmental Mitigation Trust Funds will help to increase the availability of charging stations for electric vehicles and thus increase electric vehicle usage in Nevada's metropolitan areas, as well as significantly contribute to an increase in the number of electric vehicles driven across not only Nevada, but the entire western region.

While the other categories of Eligible Mitigation Actions are largely vehicle replacements and engine retrofits where emissions benefits can be immediately realized, investing in zero emission vehicle infrastructure and supporting the rapid adoption of zero emission vehicles will reduce emissions from thousands of vehicles and for years to come. It is expected that the full 15 percent (the maximum percentage allowed) of Nevada's allocation will go to support the development of Eligible Mitigation Actions that are in alignment with the goals of the Nevada Electric Highway initiative and other qualifying strategic plans for electric vehicle charging infrastructure put forth by the GOE.

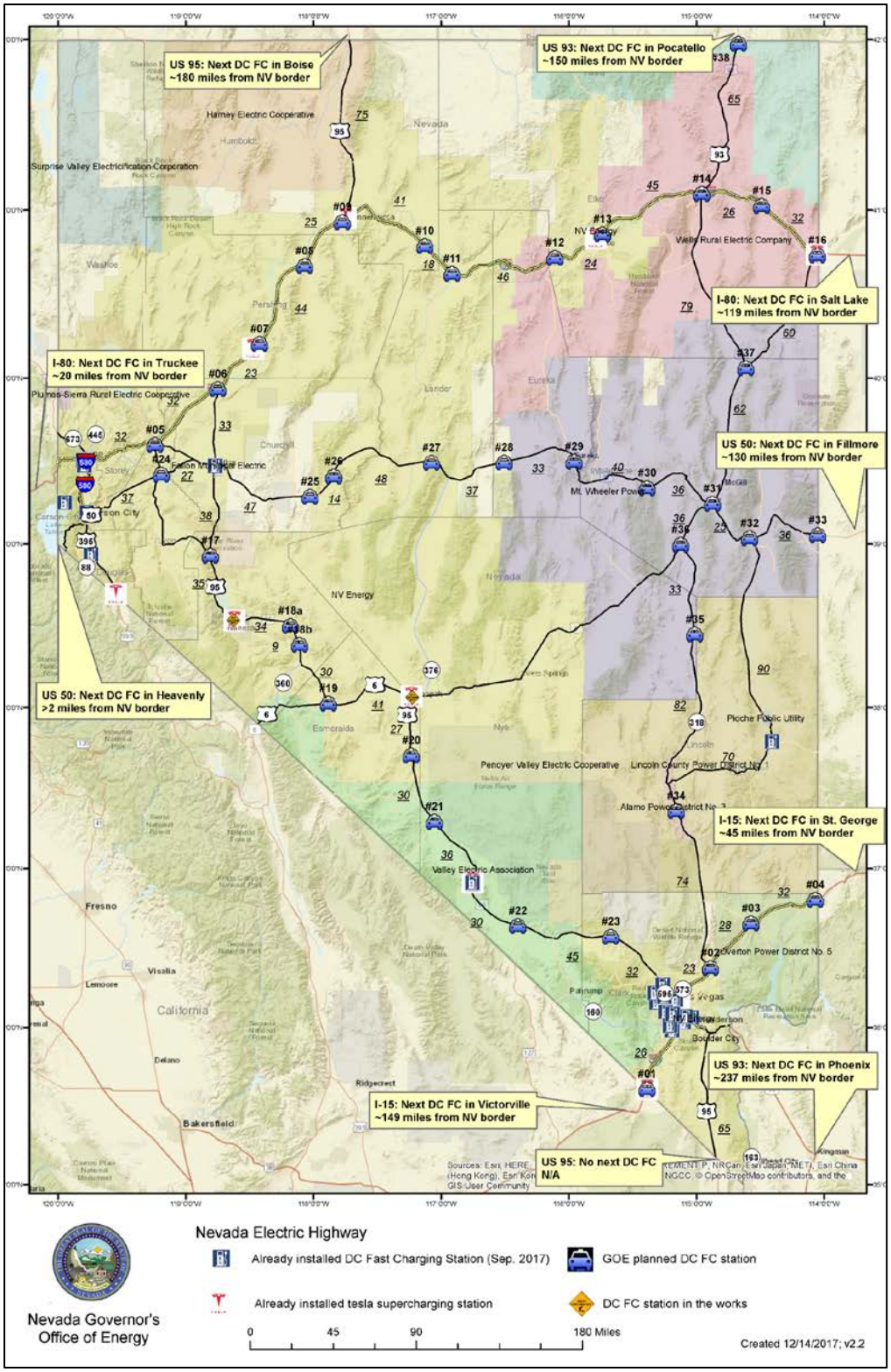

Figure 1: The Nevada Electric Highway Initiative. Phase I of the Initiative includes stations on US 95 in Fallon, Hawthorne, Tonopah, Beatty, and Indian Springs and connects Clark and Washoe counties. Phase II, starting in Panaca, will connect the rest of the state, as well as install more stations along US 95.

From Appendix D-2:

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.

Categories 1, 2, 6, and 7 – Class 4-8 Local Freight Trucks, School Buses, Shuttle Buses, Transit Buses, and Airport Ground Support Equipment

Due to the relative uncertainty of the qualifying projects that would be presented to the NDEP and the goal to fully mitigate the total lifetime excess NOx emissions from the vehicles subject to the settlement, a preliminary assessment of the percentages of funds anticipated to be used for the remaining four categories of Eligible Mitigation Actions was not possible at the time of submission of this Beneficiary Mitigation Plan. Instead, the NDEP with the I/M Subcommittee performed assessments using

reasonably ascertainable data of vehicles in each of the four remaining categories across the state and in counties that bear a disproportionate share of the air pollution burden.

Class 4-8 Medium and Large Local Freight Trucks

Combining Eligible Mitigation Action categories 1 and 6, Class 4-8 eligible medium and large local freight trucks that meet all qualifications, would be eligible for Environmental Mitigation Trust funds.[13] In order for any of these vehicles to qualify for Environmental Mitigation Trust funds, a vehicle must meet the Appendix D-2 requirements of the State Trust (Appendix D-2 requirements for categories 1 and 6 have been combined and included at the end of this subsection)[14]. They must also meet an additional requirement first proposed by members of industry and supported by the I/M Subcommittee. In order to be sure that the investment in these vehicle replacements and their subsequent reduction in emissions stays in state, the additional requirement is that the vehicle must either be registered with an intrastate license or registered with an interstate license and has reported that at least half of the vehicle's miles occurred in-state.

The I/M Subcommittee performed a survey to determine the total number of vehicles that would meet these minimum qualifications and to later estimate the expected ranges of emissions benefits that could be realized. Table 2 details vehicle model years 1992 through 2007 diesel-powered Class 4-8 vehicles registered in Nevada that spend more than half their time in state and Figure 2 presents the diesel-powered Class 4-8 vehicles.[15, 16] In total, there are more than 8,000 Class 4-8 vehicles registered in Nevada that spend more than half their time in-state and meet Appendix D-2 requirements.

Table 2: 1992-2007 Diesel-powered Class 4-8 vehicles registered in Nevada that spend more than half their time in-state, sorted by vehicle model year.

Year	Class 4-7	Class 8	Total Vehicles
1992	21	119	140
1993	30	177	207
1994	38	202	240
1995	69	274	343
1996	56	277	333
1997	80	306	386
1998	106	325	431
1999	147	382	529

[13] Class 4 through Class 8 weight classes are defined as: Class 4 (14,001 – 16,000 lbs GVWR); Class 5 (16,001 – 19,500 lbs GVWR); Class 6 (19,501 – 26,000 lbs GVWR); Class 7 (26,001 – 33,000 lbs GVWR); Class 8a (33,001 – 60,000 lbs GVWR); and Class 8b (60,001 lbs GVWR and over).

[14] Vehicle scrappage requirements also apply to these and other eligible projects. From Appendix D-2, "'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."

[15] Engine model years were not reasonably ascertainable at the time the survey was performed.

[16] The I/M Subcommittee chose to consider 1992 through 2007 vehicle model years instead of 1992 through 2009 because the rollout of a more stringent heavy-duty diesel vehicle emission standards began in 2007. Targeting the oldest qualifying vehicles is essential to maximizing emission reductions. This should not be taken to mean that Class 4-8 diesel-powered vehicles with 2008-09 engine model years would be ineligible for funding in Nevada.

Year	Class 4-7	Class 8	Total Vehicles
2000	168	428	596
2001	140	305	445
2002	109	274	383
2003	137	279	416
2004	185	397	582
2005	289	693	982
2006	291	669	960
2007	385	803	1,188

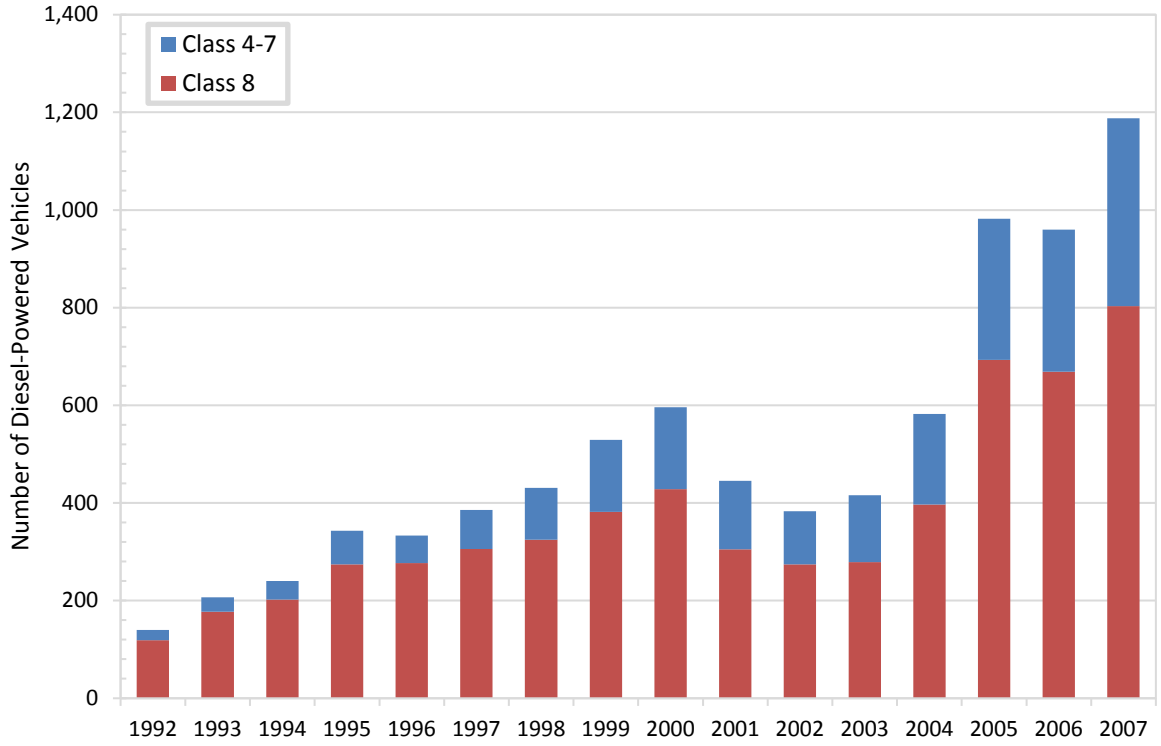

Figure 2: 1992-2007 Diesel-powered Class 4-8 vehicles registered in Nevada that spend more than half their time in-state, sorted by vehicle model year.

From Appendix D-2, Class 4-8 eligible medium and large local freight trucks and port drayage truck requirements:

a. Eligible Medium and Large Trucks include 1992-2009 engine model year Class 4-8 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 4-8 Local Freight or Drayage.
b. Eligible Medium and Large Trucks must be Scrapped.
c. Eligible Medium and 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 Medium and Large Trucks Mitigation Action occurs or one engine model year prior.

d. For Non-Government Owned Eligible Class 4-8 Medium and Large 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 4-8 Medium and 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.

Class 4-8 School Buses, Shuttle Buses, Transit Buses

Eligible Mitigation Action category 2 includes the repower and replacement of Class 4-8 school buses, shuttle buses, and transit buses. Using data obtained from the Alternative Fuels in Fleets Program[17] the

[17] Through Nevada Administrative Code (NAC) Chapter 486A, the Alternative Fueled Vehicles in Fleets Program applies to state and local government fleets in Clark and Washoe counties with more than 50 vehicles. For example, the program includes school districts, transit fleets, city and county general services, and university fleets. More information about the NAC 486A program can be found by visiting the NDEP webpage for the program (https://ndep.nv.gov/air/air-pollutants/alternative-fuels-in-fleets-program).

I/M Subcommittee surveyed school district and transit fleets in Clark and Washoe counties for the quantities and relative ages of qualifying buses and to later estimate the expected ranges of emissions benefits that could be realized. Using data from the end of state FY 2016, Table 3 details the numbers of school buses and transit buses that would likely qualify for Trust funds that were reported by fleets that participate in the Alternative Fuels in Fleets Program, sorted by vehicle model year. Figure 3 shows the likely qualifying vehicles by vehicle model year. While this survey does not include all school buses, shuttle buses, or transit buses in Nevada that would likely qualify for Trust funds, it does provide information about the vast majority of these vehicles as Clark and Washoe are Nevada's most populated counties. Appendix D-2 requirements for Class 4-8 school buses, shuttle buses, and transit buses are included at the end of this subsection.

Table 3: School buses and transit buses in Clark and Washoe counties that were reported to the NAC 486A Program, sorted by vehicle model year.

Year	Clark County		Washoe County		Total School Buses	Total Transit Buses
	School Buses	Transit Buses	School Buses	Transit Buses		
1992	0	0	0	0	0	0
1993	0	0	0	0	0	0
1994	0	0	0	0	0	0
1995	0	0	7	0	7	0
1996	0	0	8	0	8	0
1997	0	0	10	0	10	0
1998	0	0	1	0	1	0
1999	0	0	0	2	0	2
2000	0	0	12	6	12	6
2001	9	0	8	4	17	4
2002	0	1	1	0	1	1
2003	96	9	6	2	102	11
2004	122	27	0	8	122	35
2005	167	49	65	3	232	52
2006	119	46	6	8	125	54
2007	153	112	25	16	178	128
2008	148	35	38	12	186	47
2009	70	40	18	0	88	40

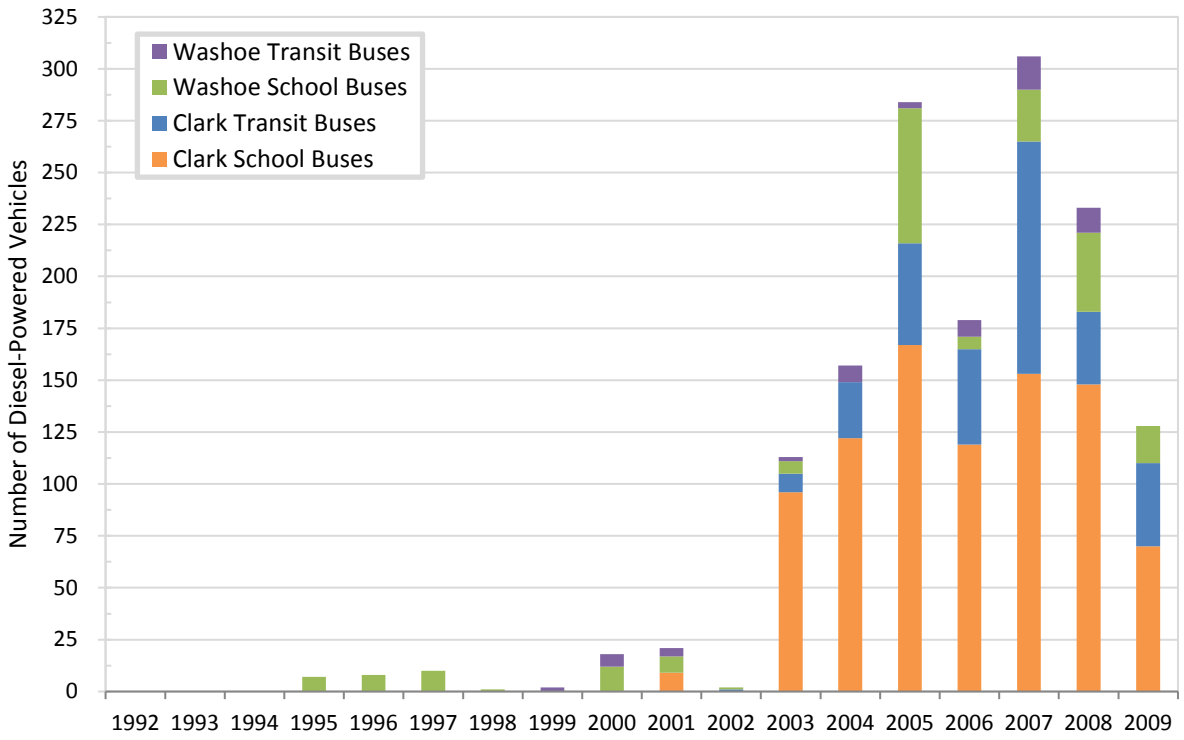

Figure 3: School buses and transit buses in Clark and Washoe counties that were reported to the NAC 486A Program, sorted by vehicle model year.

From Appendix D-2, Class 4-8 school bus, shuttle bus, and transit bus requirements:

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.

Airport Ground Support Equipment

The I/M Subcommittee received interest from several entities across the state, both public and private, expressing a desire that airport ground support equipment (GSE) be included in this Beneficiary Mitigation Plan. Some of the types of GSE that they expressed interest in replacing included belt loaders, baggage tugs, and airport forklifts, just to name a few. While it was not possible to determine the total number of qualifying GSE throughout the state, the NDEP intends to consider any funding request that demonstrates a measureable reduction in emissions.

From Appendix D-2, airport ground support equipment repower and replacement requirements:

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.

Consideration of Potential Beneficial Impacts

The NDEP, through its project selection process, will strive to balance the environmental and societal benefits among Nevada's cities, counties, and statewide interests, Nevada's business and industrial community, and communities where environmental justice concerns are evident, to the benefit of all of Nevada's citizens. The two areas of the state that have historically borne the majority of the state's air pollution burden are Clark and Washoe counties, Nevada's two most populated counties.

The NDEP is using data from the National Emissions Inventory (NEI) to identify the state's NOx emissions, specifically NOx emissions from diesel-powered vehicles. Reviewing NEI data will assist the NDEP in assessing how Environmental Mitigation Trust funds directed to Clark and Washoe counties will help to achieve Plan goals. The current year for NEI estimates is 2014. More about the NEI from the NEI website:

> "The [NEI] is a comprehensive and detailed estimate of air emissions of criteria pollutants, criteria precursors, and hazardous air pollutants from air emissions sources. The NEI is released every three years based primarily upon data provided by State, Local, and Tribal air agencies for sources in their jurisdictions and supplemented by data developed by the US EPA. The NEI is built using the Emissions Inventory System (EIS) first to collect the data from State, Local, and Tribal air agencies and then to blend that data with other data sources."[18]

Across Nevada, for 2014, the NEI estimates that more than 96,000 tons of NOx were emitted. Figure 4 shows, by county, those NOx estimates while Figure 5 illustrates the percentages of NOx emissions by sector for Nevada. NOx emissions from mobile sources made up 69 percent of total emissions (or nearly 66,000 short tons NOx) and emissions from diesel-powered vehicles and equipment were estimated to be nearly 28,000 short tons of NOx. Figure 6 illustrates the percentages of mobile source NOx emissions for Clark County, Washoe County, and the rest of Nevada. Out of the 66,000 short tons of NOx attributed to mobile sources, the NEI estimates that 36,819 short tons originated in Clark County, 11,192 short tons originated in Washoe County, and 17,943 short tons originating throughout the rest of Nevada.

[18] EPA, https://www.epa.gov/air-emissions-inventories/national-emissions-inventory-nei (accessed May 10, 2017).

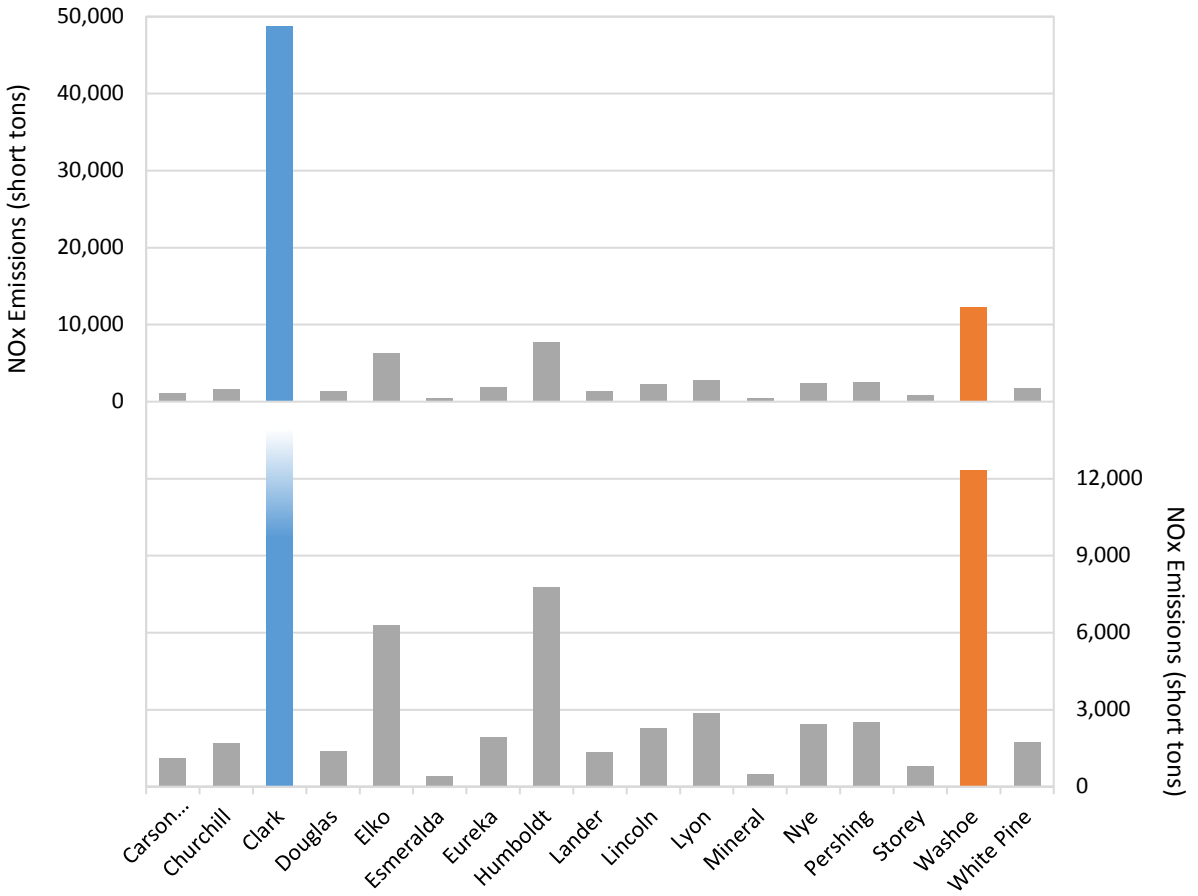

Figure 4: 2014 NEI total NOx emissions estimates for Nevada, sorted by county. The top half of the figure illustrates NOx estimates for all counties while the bottom half shows in more detail NOx estimates for the lesser emitting counties.

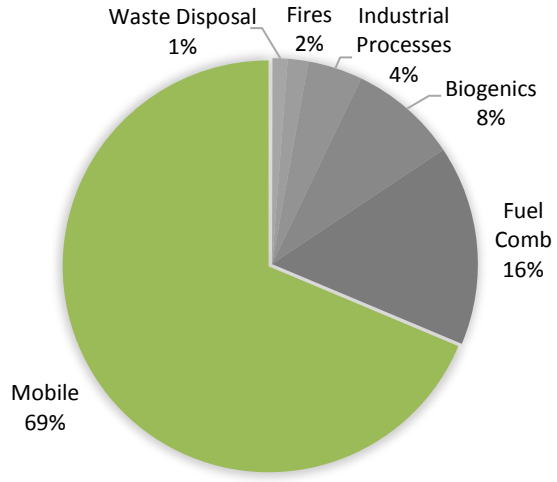

Figure 5: 2014 NEI total NOx emissions estimates for Nevada, sorted by sector.

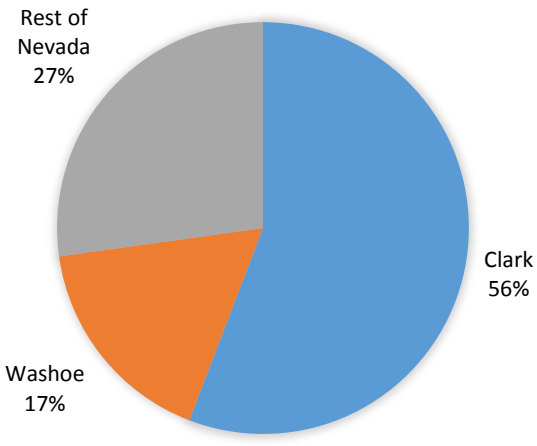

Figure 6: Percentages of mobile source NOx emissions for Clark County, Washoe County, and the rest of Nevada.

In Clark and Washoe counties, mobile diesel emissions made up 33 percent (16,286 short tons) and 40 percent (4,993 short tons) of total county NOx emissions, respectively. Figure 7 illustrates total NOx emissions in Clark County (while highlighting mobile diesel emissions) and Figure 8 illustrates total NOx emissions in Washoe County (while highlighting mobile diesel emissions).[19] As demonstrated in these figures, there is an opportunity to utilize Environmental Mitigation Trust funds to reduce mobile diesel emissions in these counties and throughout the rest of Nevada.

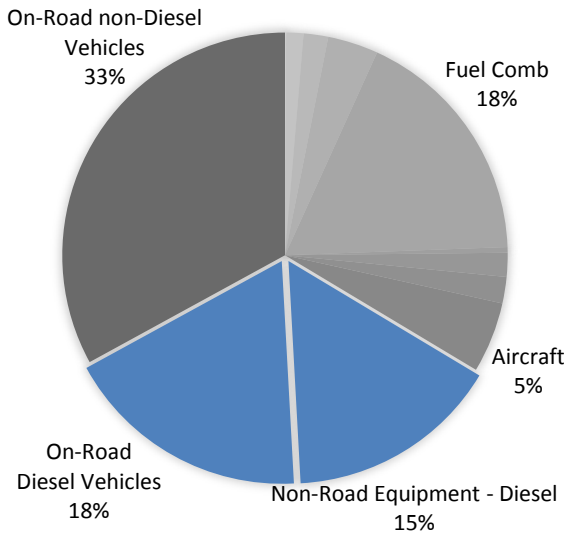

Figure 7: Percentages of total NOx emissions in Clark County with the mobile source sector separated into its individual components. Mobile diesel emissions are indicated in blue.

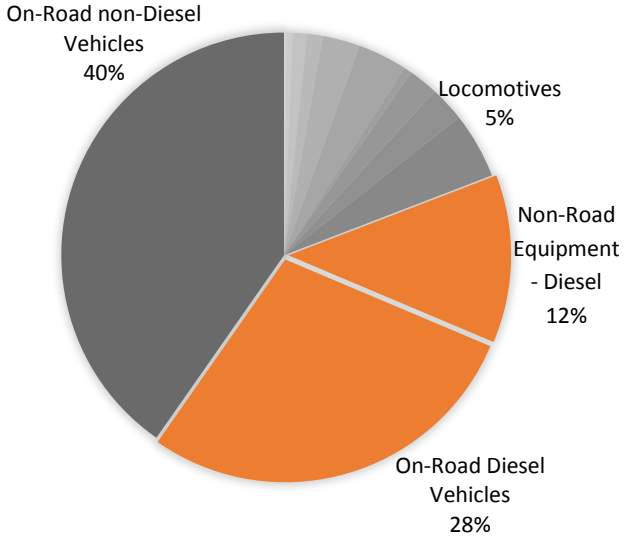

Figure 8: Percentages of total NOx emissions in Washoe County with the mobile source sector separated into its individual components. Mobile diesel emissions are indicated in orange.

Due to the large size of both Clark and Washoe counties,[20] the I/M Subcommittee sought to specifically target the counties' urban cores. These are the areas of the counties where emissions reductions would have the greatest impact. While also encompassing the counties' urban cores, these boundaries were also determined by the geographic extent of the airsheds that are of concern for the National Ambient Air Quality Standards (NAAQS). Figure 9 shows the area of Clark County that will be of primary focus for Environmental Mitigation Trust funds. The highlighted regions represent hydrographic areas[21] that encompass Clark County's urbanized area, traffic and commuting patterns, and most industrial and commercial activities. Figure 10 indicates the areas of Washoe County that will be of primary focus for Environmental Mitigation Trust funds; that is, the part of the County south of Township 22 North

[19] Note that, for ease of reading in both Figure 7 and Figure 8, labels for sectors contributing less than 5 percent to total county NOx emissions estimates are not included.
[20] Clark County is 8,061 square miles and Washoe County is 6,542 square miles.
[21] In Nevada, hydrographic areas are used to delineate airsheds. The Nevada Division of Water Resources maintains a list of Nevada's hydrographic areas at http://water.nv.gov/hydrographicregions.aspx and an area boundary map can be found at http://water.nv.gov/mapping/maps/designated_basinmap.pdf.

(including the greyed area of Washoe County that borders Lake Tahoe). This region would encompass the entirety of Washoe County's urbanized area.

One of the I/M Subcommittee's concerns when targeting Clark and Washoe counties for Environmental Mitigation Trust funds was ensuring that the co-benefits of NOx reductions were recognized in the application process. Given that NOx is a precursor in the formation of ground-level ozone, and both Clark and Washoe counties have measured O_3 levels approaching those that would violate federal ambient air quality standards, the reduction of ambient O_3 concentrations will be considered a desirable co-benefit.

While the targeted portions of these counties will be the primary focus of Environmental Mitigation Trust fund projects, they will not be the sole focus. The NDEP is planning to review and accept funding applications from across Nevada. In addition to NOx reductions (and similar to Clark and Washoe counties), the benefits associated with reductions of other air pollutants would likely be considered in the project selection process. For example, if an applicant is requesting funds in an area of the state that is known to have elevated levels of $PM_{2.5}$ then the estimated $PM_{2.5}$ reductions of that project would likely be considered during the project selection process. Again, these considerations would be in addition to the estimated NOx reductions of the project.

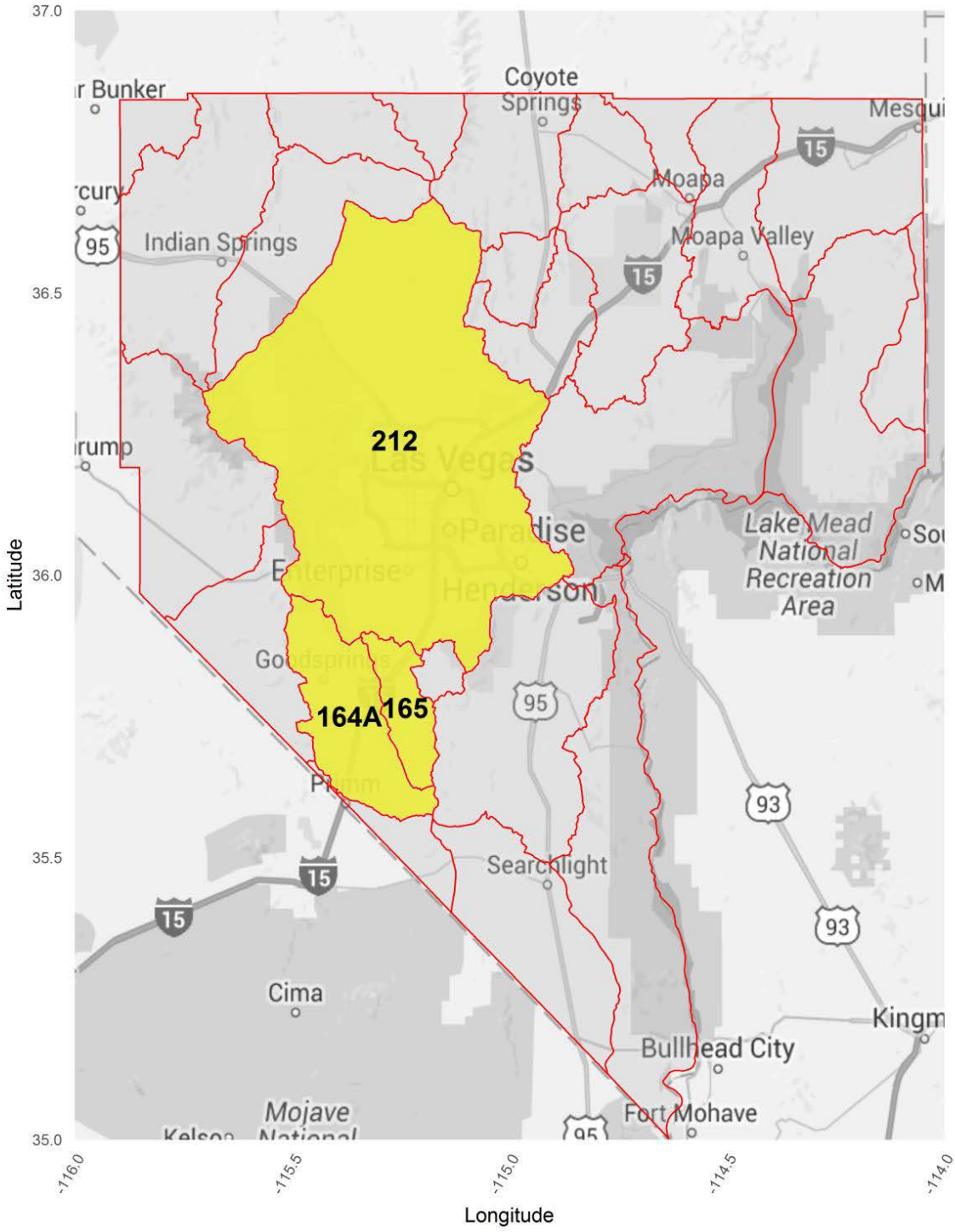

Figure 9: The areas of Clark County that will be of primary focus for Environmental Mitigation Trust funds.[22]

[22] Clark County Department of Air Quality, "Area Designation Recommendations for the 2015 Ozone NAAQS for Clark County, Nevada" September 2016.

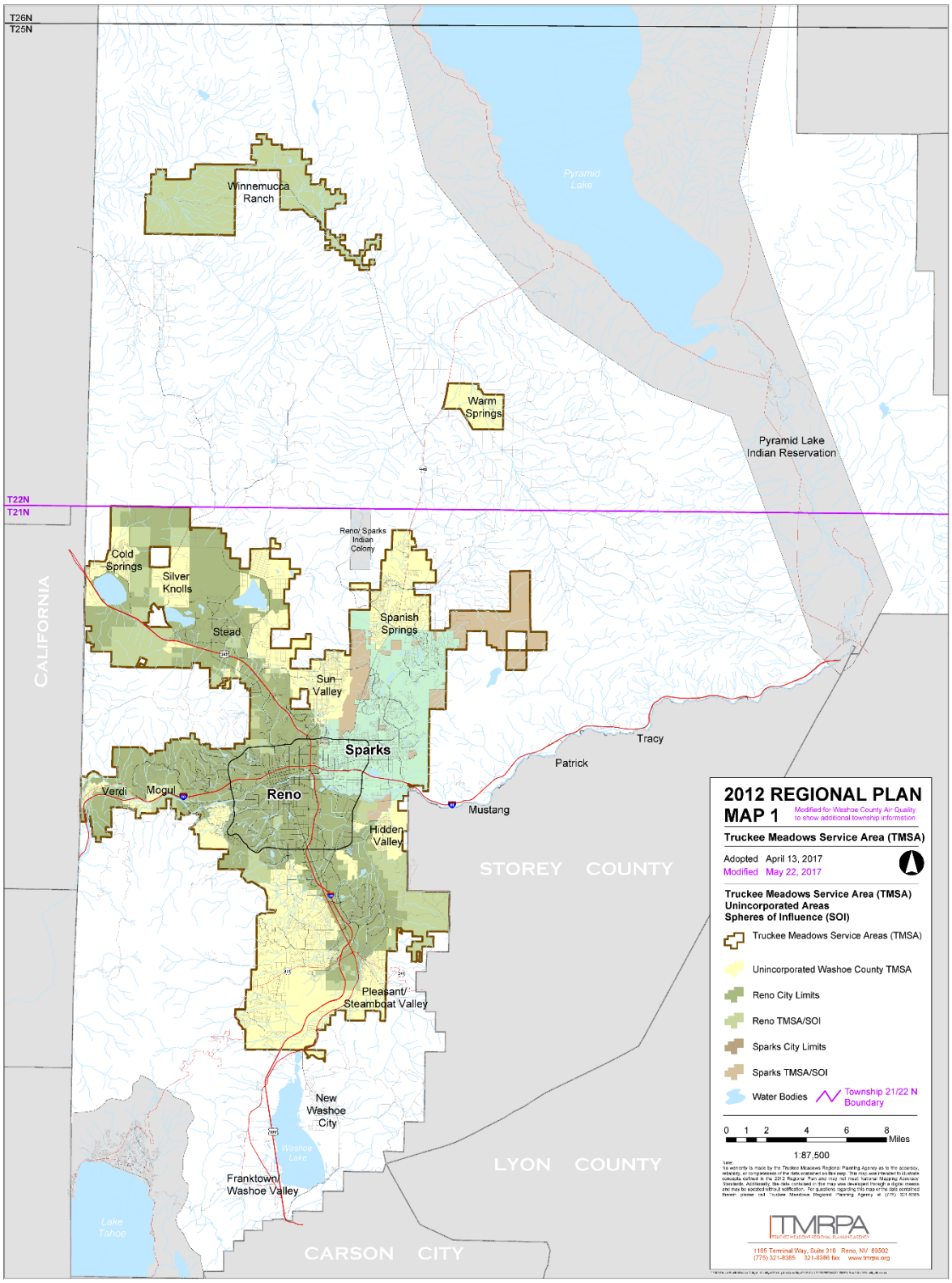

Figure 10: The area of Washoe County south of Township 22 North (pink line) will be of primary focus for Environmental Mitigation Trust funds.

Expected Ranges of Emissions Benefits

Calculation of Total Excess Emissions in Nevada

In CY 2015, there were 5,739 2.0 and 3.0 liter subject vehicles registered in the state of Nevada (4,678 2.0 liter and 1,061 3.0 liter vehicles). These vehicles are located all throughout the state, but the majority of them are found in Clark and Washoe counties. Through the I/M Subcommittee, the Nevada Department of Motor Vehicles (DMV) provided basic information on the 2.0 and 3.0 liter subject vehicles. Appendix A lists, by county, the numbers of 2.0 and 3.0 liter subject vehicles registered in Nevada in CY 2015.

Excess emissions were calculated separately for the 2.0 and 3.0 liter subject vehicles in Nevada. This was necessary because the two engine types are under separate partial settlements and subject to different deadlines related to the national recall program. By June 30, 2019, at least 85 percent of all 2.0 liter subject vehicles must be either recalled or repaired; if VW does not achieve this target, they are required to contribute to the Environmental Mitigation Trust $85 million for each 1 percent that they fall short of the 85 percent target. For the 3.0 liter subject vehicles there are two recall dates, one for the Generation 1 3.0 liter subject vehicles and one for the Generation 2 3.0 liter subject vehicles. For the Generation 1 subject vehicles, VW must recall or repair at least 85 percent of the subject vehicles by November 30, 2019. For each 1 percent that VW falls short of the Generation 1 target, they are required to contribute to the Environmental Mitigation Trust an additional $5.5 million. For the Generation 2 subject vehicles, VW must recall or repair at least 85 percent of the subject vehicles by May 31, 2020. For each 1 percent that VW falls short of the Generation 2 target, they are required to contribute to the Environmental Mitigation Trust an additional $21 million. The makes and models of all 2.0 and 3.0 liter vehicles identified as subject vehicles in the 2.0 and 3.0 liter partial settlements have been included as Appendix B.

Using estimates of excess emissions published in late 2015, the NDEP assumed that for every mile driven subject vehicles would, on average, emit 1.4661 grams of excess NOx.[23, 24] The NDEP used average annual vehicle mileage estimates published by the Federal Highway Administration to determine total miles driven per year by all subject vehicles.[25] With these vehicle emission/usage estimates and assumptions relating to the rate of recall and the terms of the 2.0 and 3.0 liter partial settlements, the NDEP estimates that the 2.0 and 3.0 liter subject vehicles will emit more than 727 short tons of excess

[23] Barrett, Speth, Eastham, Dedoussi, Ashok, Malina, and Keith, *Impact of the Volkswagen Emissions Control Defeat Device on US Public Health*, 10 Envtl. Res. Letter 11 (October 29, 2015), *at* http://iopscience.iop.org/article/10.1088/1748-9326/10/11/114005.

[24] Barrett et al. estimated the typical NOx emissions factor based on FTP-75 drive cycle to be 0.019 grams per kilometer and then estimated the average NOx emissions factor for affected vehicles to be 0.93 grams per kilometer. Taking the difference between the two and converting to grams per mile results in 1.4661 grams per mile.

[25] Federal Highway Administration, https://www.fhwa.dot.gov/policyinformation/statistics/2015/vm1.cfm, (accessed June 21, 2017).

NOx throughout Nevada. There will be approximately 457 short tons of excess NOx emitted in Clark County, 137 short tons of excess NOx emitted in Washoe County, and nearly 132 short tons of excess NOx emitted throughout the rest of the state. Appendix A also includes estimates of the total excess emissions from subject vehicles for all of Nevada's counties. The selection of Eligible Mitigation Actions will on whole strive to maximize the use of Environmental Mitigation Trust funds in reducing NOx emissions throughout the state and these estimates of excess emissions will help in determining the locations of selected projects. Figure 11 illustrates Nevada's estimated subject vehicle excess NOx emissions in Clark County, Washoe County, and the rest of the state.

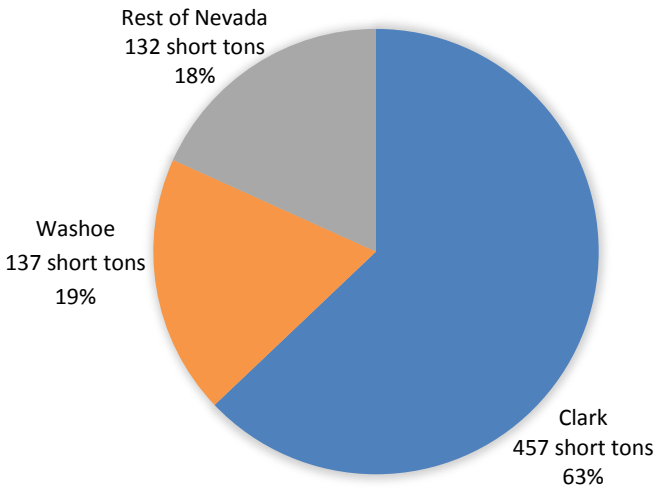

Figure 11: Total estimated subject vehicle excess NOx emissions in Nevada.

Benefits Associated with Eligible Mitigation Actions

Wide ranges of benefits are expected to be achieved in the selection and implementation of Eligible Mitigation Actions. The expected ranges of emissions benefits that would be realized by these actions is largely dependent on the type of action, its location, and its cost. Based on the Eligible Mitigation Actions that the NDEP intends to fund to fulfill its Plan goals, a range of emission reductions is being presented.

The benefits of installing light duty zero emission supply equipment and charging infrastructure are difficult to quantify. These investments may not result in an immediate reduction in NOx or other air pollutants. The Federal Highway Administration's Congestion Mitigation and Air Quality Improvement (CMAQ) Program reports a median cost-effectiveness estimate for NOx emission reductions at electric charging stations of $1.5 million per short ton of NOx reduced.[26] This very large value results largely

[26] Federal Highway Administration Congestion Mitigation and Air Quality Improvement Program, https://www.fhwa.dot.gov/environment/air_quality/cmaq/reference/cost_effectiveness_tables/#Toc445205111, (accessed June 22, 2017).

from the small number of vehicles that are expected to utilize the charging equipment, at least initially. The report goes on to state that, "this should change if electric vehicle use increases in future years." This is certainly the expectation for Nevada. Investing in the Nevada Electric Highway will increase the availability of charging stations for electric vehicles and thereby increase electric vehicle usage in Nevada's metropolitan areas, as well as significantly contribute to an increase in the number of electric vehicles. This will result in future emission reductions as Nevadans, visitors to the state, and travelers in transit through the state utilize these stations.

Emission reductions associated with Class 4-8 local freight trucks, school buses, shuttle buses, and transit buses will be largely dependent on the age of the vehicle/engine being replaced and the fuel of the replacement. The age of the vehicle/engine being replaced is important because it determines the emissions standard that the vehicle/engine was originally designed to meet, and is an important factor in the vehicle's remaining useful life. Looking at Figure 12, there are 1,300 Class 4-8 local freight trucks registered in Nevada that spend more than half of their time in-state designed to meet the 1994 through 1997 exhaust emission standard. The heavy-duty highway compression-ignition engine and urban bus exhaust emission standard for 1994-1997 certified engines is 5.0 grams per brake horsepower-hour (g/bhp-hr). The 2017 engine exhaust emission standard is 0.2 g/bhp-hr. For reference, the EPA heavy-duty highway compression-ignition engines and urban buses exhaust emission standards have been included as Appendix C.

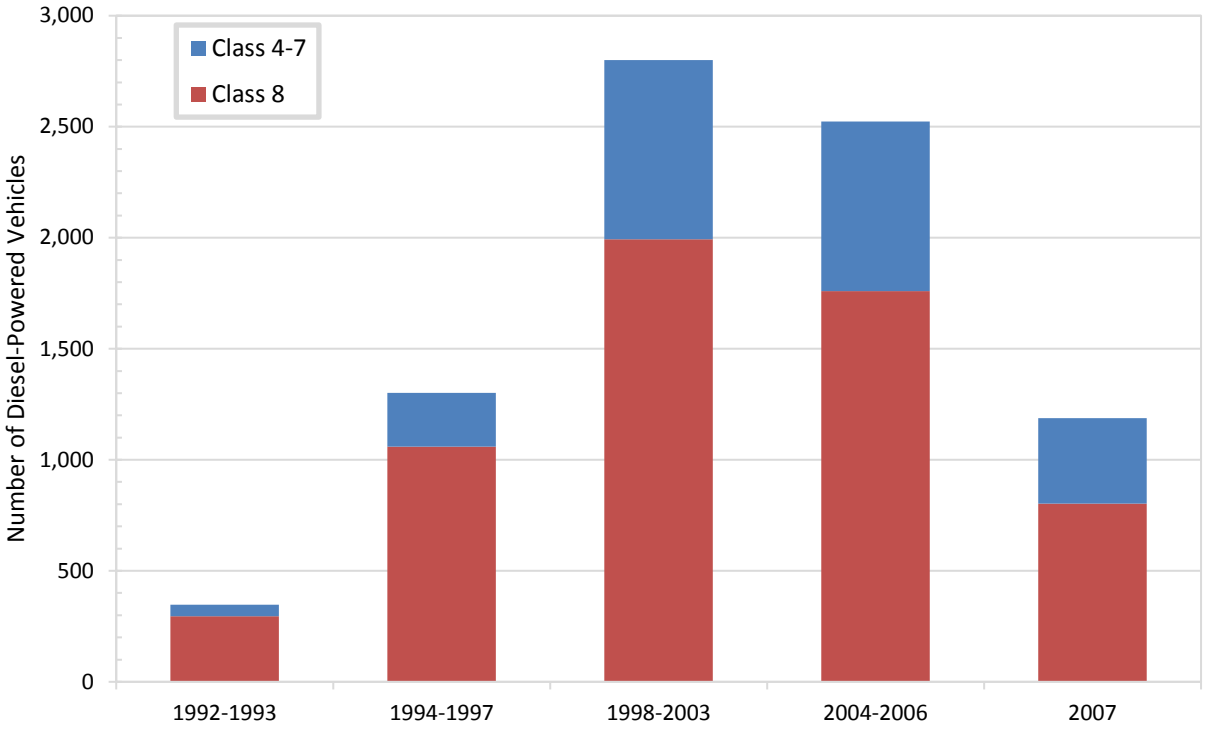

Figure 12: 1992-2007 Diesel-powered Class 4-8 vehicles registered in Nevada that spend more than half their time in-state, sorted by exhaust emission standards.

In addition to vehicle age, when calculating emission reductions the fuel type of the replacement vehicle is also important. In recognition of the additional costs and environmental impacts, the NDEP will consider emission reductions associated with diesel-for-diesel replacements/repowers and diesel-for-alternative fuel[27]/all-electric replacements/repowers differently. When considering a diesel-for-diesel replacement, the NDEP will consider the remaining useful life (i.e. mileage) of the vehicle being replaced in the calculation of emission reductions; that is, the emission reductions accounted for between when the replacement/repower would occur versus when the replacement/repower would otherwise occur without Environmental Mitigation Trust funds. The NDEP will consider the entire useful life of the replacement vehicle for diesel-for-alternative fuel/all-electric replacement/repower projects. The quantification of emission reductions will consider not only the emission reductions that would occur with the replacement vehicle compared to the remaining useful life (i.e. mileage) of the existing vehicle, but also the emission reductions associated with the remaining life (i.e. mileage) of the replacement compared to a diesel-powered vehicle of the same model year. Figure 13 provides an illustrative example of a diesel-for diesel replacement compared to a diesel-for-all-electric replacement and explains the differences in how emission reductions will be quantified for the two types of projects.

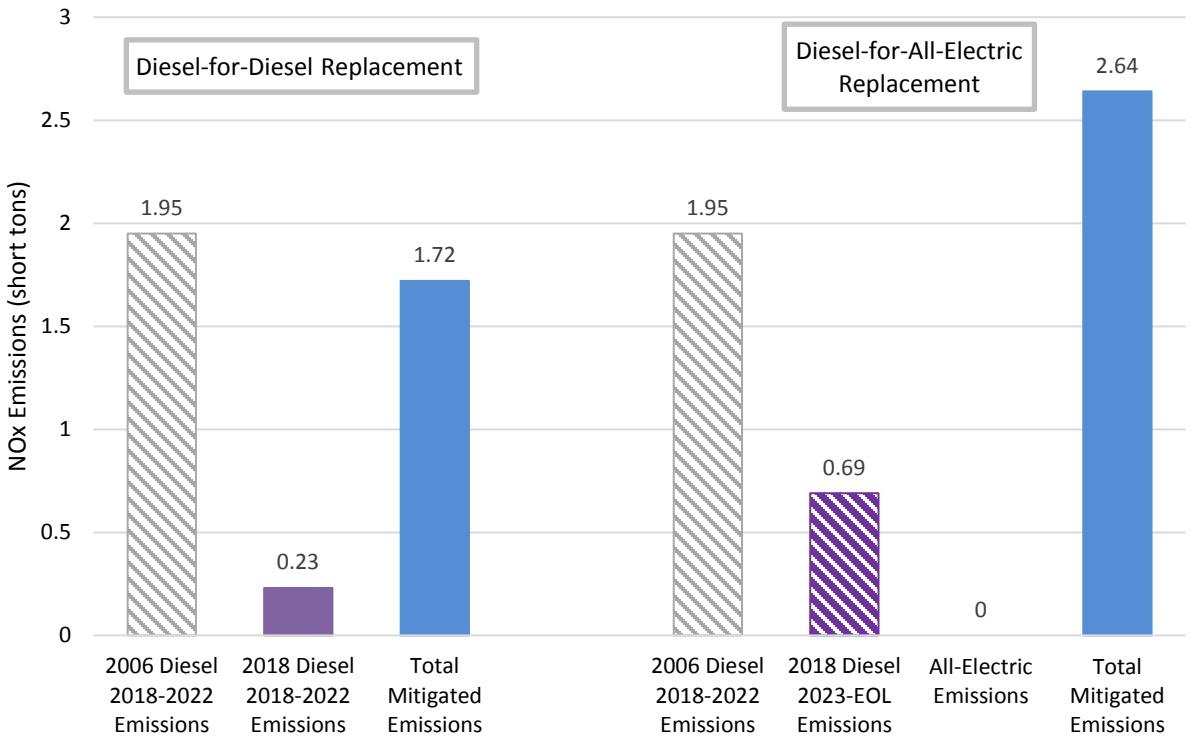

Figure 13: Examples of how emission reductions will be considered for diesel-for-diesel replacements and diesel-for-alternative fuel/all-electric replacements. In the example, a 2006 diesel-powered vehicle in a fleet with a 16 year replacement cycle is replaced in 2018, 4 years early, using Environmental Mitigation Trust Funds.

[27] Appendix D-2 of the State Trust includes compressed natural gas (CNG), propane, and hybrids as examples of alternative fuels. Other examples of alternative fuels include liquid natural gas (LNG) and liquid propane gas (LPG).

Diesel-for-Diesel Replacement: The vehicle is replaced with a 2018 diesel-powered equivalent vehicle. The emissions from the 2018 replacement (solid purple) are subtracted from the emissions that would have otherwise occurred with the 2006 vehicle (dashed grey) through 2022 to obtain the total mitigated emissions of the project (solid blue).

Diesel-for-All-Electric Replacement: The vehicle is replaced with a 2018 all-electric equivalent vehicle. Because the all-electric replacement has no emissions, nothing is subtracted from the emissions that would have otherwise occurred with the 2006 vehicle (dashed grey) through 2022 and the emissions that would have otherwise occurred from 2023 through 2034 (dashed purple) if the fleet had instead replaced the vehicle with a diesel-powered equivalent (the fleet has a 16 year replacement cycle). Combined, these avoided emissions represent the total mitigated emissions for the project (solid blue).

Many alternative fuel engines are certified to meet the California Air Resources Board's optional low-NOx standards of 0.1 g/bhp-hr, 0.05 g/bhp-hr, or 0.02 g/bhp-hr and replacing a diesel-powered engine with an alternative fuel or all-electric replacement would result in a much more significant reduction in emissions than simply replacing a diesel-powered vehicle for another diesel-powered vehicle. In our assessment, replacing and permanently removing from Nevada's roadways older diesel-powered vehicles, whether they be local freight trucks, school buses, shuttle buses, or transit buses, are some of the most impactful mitigation actions that could be funded with Environmental Trust funds. Focusing on these categories of Eligible Mitigation Actions will help achieve the objective of fully realizing the emission reduction potential of Environmental Mitigation Trust funds.

Using the EPA's Diesel Emission Quantifier (DEQ)[28], the NDEP is providing estimates of emission reductions for various vehicle replacements. When applicable, the DEQ will be used to calculate emission reductions when quantifying the benefits of Eligible Mitigation Actions.

Table 4 lists the annual NOx emission reduction estimates for various diesel-for-diesel vehicle replacements using the DEQ. The DEQ's default values for annual fuel volume, annual miles traveled, and annual idling hours are used for these estimates (assumed an upgrade year of 2018 for all projects). It is difficult to estimate the total emission reductions associated with Nevada's allocation of Environmental Mitigation Trust funds. However, the NDEP, with the variety of Eligible Mitigation Actions and comments relating to specific project ideas that the I/M Subcommittee received, expects to be able to fully mitigate the more than 700 short tons of excess NOx emissions from the 2.0 and 3.0 liter subject vehicles.

[28] The EPA's Diesel Emission Quantifier webpage can be found at https://www.epa.gov/cleandiesel/diesel-emissions-quantifier-deq.

Table 4: Annual NOx (short tons) emission reduction estimates for various diesel-for-diesel vehicle replacement projects.

Engine Model Year of Emission Standard	Class 4-5	Class 6-7	Class 8	Transit Bus	School Bus
1991-1993	0.213	0.453	0.471	1.336	0.241
1994-1997	0.213	0.453	0.471	1.336	0.241
1998-2003	0.112	0.229	0.329	0.878	0.126
2004-2006	0.098	0.159	0.161	0.486	0.097

Generally, the NDEP is likely to consider the following factors when selecting a project that is listed as an Eligible Mitigation Action to receive funding:

- The total lifetime NOx reductions and cost-effectiveness of the project. For every Trust fund dollar that is spent, the cost per ton of emission reductions associated with the project will be considered.
- Likelihood that the project will incentivize future indirect NOx emission reductions, like in the case of installation of alternative fuel fueling infrastructure.
- The location of the project. Is the project within the priority areas of Clark and Washoe counties, another urbanized area of the state, or somewhere else in the state?
- The environmental co-benefits of the project. What other emissions will be reduced by a project and by how much? For instance, what is the impact of the proposed project on other air pollutant concentrations, such as ozone? Is there a seasonality of the emission reductions of the project that can be accounted for?
- The societal co-benefits of the project. Are there any "sensitive" populations such as asthmatics, children, or the elderly that are likely to be directly benefited by the project?

Final project selection criteria have not been determined at this time, but they will reflect the program goals and objectives outlined in this Beneficiary Mitigation Plan, as well as uphold the terms of the State Trust.

Appendix A: 2.0 and 3.0 Liter Subject Vehicles Registered in Nevada in CY 2015 and their Associated Excess Emissions

Table A-1: Subject vehicles registered in Nevada sorted by county and model year.

CY2015 Vehicle Model Year Data	County																
	Carson City	Churchill	Clark	Douglas	Elko	Esmerelda	Eureka	Humboldt	Lander	Lincoln	Lyon	Mineral	Nye	Pershing	Storey	Washoe	White Pine
Total Vehicles	111	58	3,606	190	189	5	5	55	25	28	124	10	176	18	16	1,093	30
Percent of Subject Vehicles	1.93%	1.01%	62.83%	3.31%	3.29%	0.09%	0.09%	0.96%	0.44%	0.49%	2.16%	0.17%	3.07%	0.31%	0.28%	19.05%	0.52%
2009	8	5	213	10	2	1	0	3	2	0	14	0	9	4	2	67	0
2010	9	4	343	27	17	0	0	2	1	3	10	1	34	2	1	93	6
2011	15	3	338	14	19	2	0	5	6	6	9	0	17	3	2	87	2
2012	8	5	505	28	38	2	0	8	1	6	14	3	27	3	0	137	5
2013	21	15	781	32	36	0	4	11	3	3	27	3	37	2	7	222	4
2014	31	13	737	40	54	0	0	12	8	7	32	3	29	2	4	257	7
2015	19	13	660	33	23	0	1	13	4	3	16	0	23	2	0	209	5
2016	0	0	29	6	0	0	0	1	0	0	2	0	0	0	0	21	1

Table A-2: Estimated excess emissions associated with subject vehicles; 2.0 and 3.0 liter subject vehicles sorted by county and engine type.

CY2015 Vehicle Data	County																	Nevada
	Carson City	Churchill	Clark	Douglas	Elko	Esmerelda	Eureka	Humboldt	Lander	Lincoln	Lyon	Mineral	Nye	Pershing	Storey	Washoe	White Pine	
Total Excess Emissions (short tons NOx)	14.06	7.11	457.42	24.31	23.44	0.76	0.58	6.60	3.16	3.59	15.82	1.25	23.24	2.60	2.11	137.16	3.80	727.01
Percent of Total Emissions	1.93%	0.98%	62.92%	3.34%	3.22%	0.10%	0.08%	0.91%	0.43%	0.49%	2.18%	0.17%	3.20%	0.36%	0.29%	18.87%	0.52%	100.00%
2.0L Vehicles	92	53	2,941	143	179	5	4	50	23	28	113	10	169	15	15	814	24	4,678
3.0L Gen 1 Vehicles	1	0	150	8	5	0	0	2	0	0	3	0	3	3	1	45	2	223
3.0L Gen 2 Vehicles	18	5	515	39	5	0	1	3	2	0	8	0	4	0	0	234	4	838
Total # of Vehicles	111	58	3,606	190	189	5	5	55	25	28	124	10	176	18	16	1,093	30	5,739

Table A-3: Subject vehicle and excess emission totals.

CY2015 Vehicle Data	Clark	Washoe	Rest of Nevada
2.0L Vehicles	2,941	814	923
3.0L Gen 1 Vehicles	150	45	28
3.0L Gen 2 Vehicles	515	234	89
Total # of Vehicles	3,606	1,093	1,040
Total Excess Emissions (short tons NOx)	457	137	132

Appendix B: 2.0 and 3.0 Liter Vehicles Identified as Subject Vehicles

Table B-1: 2.0 liter subject vehicles.

Model Year	EPA Test Group	Vehicle Make and Model(s)
2009	9VWXV02.035N	VW Jetta, VW Jetta Sportwagen
2009	9VWXV02.0U5N	VW Jetta, VW Jetta Sportwagen
2010	AVWXV02.0U5N	VW Golf, VW Jetta, VW Jetta Sportwagen, Audi A3
2011	BVWXV02.0U5N	VW Golf, VW Jetta, VW Jetta Sportwagen, Audi A3
2012	CVWXV02.0U5N	VW Golf, VW Jetta, VW Jetta Sportwagen, Audi A3
2012	CVWXV02.0U4S	VW Passat
2013	DVWXV02.0U5N	VW Beetle, VW Beetle Convertible, VW Golf, VW Jetta, VW Jetta Sportwagen, Audi A3
2013	DVWXV02.0U4S	VW Passat
2014	EVWXV02.0U5N	VW Beetle, VW Beetle Convertible, VW Golf, VW Jetta, VW Jetta Sportwagen
2014	EVWXV02.0U4S	VW Passat
2015	FVGAV02.0VAL	VW Beetle, VW Beetle Convertible, VW Golf, VW Golf Sportwagen, VW Jetta, VW Passat, Audi A3

Table B-2: 3.0 liter Generation 1 subject vehicles.

Model Year	EPA Test Group(s)	Vehicle Make and Model(s)	Generation
2009	9ADXT03.03LD	VW Touareg, Audi Q7	1.1
2010	AADXT03.03LD	VW Touareg, Audi Q7	1.1
2011	BADXT03.02UG BADXT03.03UG	VW Touareg Audi Q7	1.2
2012	CADXT03.02UG CADXT03.03UG	VW Touareg Audi Q7	1.2

Table B-3: 3.0 liter Generation 2 subject vehicles.

Model Year	EPA Test Group(s)	Vehicle Make and Model(s)	Generation
2013	DADXT03.02UG DADXT03.03UG DPRXT03.0CDD	VW Touareg Audi Q7 Porsche Cayenne Diesel	2.1 SUV
2014	EADXT03.02UG EADXT03.03UG EPRXT03.0CDD	VW Touareg Audi Q7 Porsche Cayenne Diesel	2.1 SUV
2014	EADXJ03.04UG	Audi: A6 quattro, A7 quattro, A8, A8L, Q5	2 PC
2015	FVGAT03.0NU3	Audi Q7	2.1 SUV
2015	FVGAT03.0NU2 FPRXT03.0CDD	VW Touareg Porsche Cayenne Diesel	2.2 SUV
2015	FVGAJ03.0NU4	Audi: A6 quattro, A7 quattro, A8, A8L, Q5	2 PC
2016	GVGAT03.0NU2 GPRXT03.0CDD	VW Touareg Porsche Cayenne Diesel	2.2 SUV
2016	GVGAJ03.0NU4	Audi: A6 quattro, A7 quattro, A8, A8L, Q5	2 PC

Appendix C: EPA Heavy-Duty Highway Compression-Ignition Engines and Urban Buses: Exhaust Emission Standards

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

	Year	HC (g/bhp-hr)	NMH C (g/bhp-hr)	NMHC + NOx g/bhp-hr)	NOx (g/bhp-hr)	PM (g/bhp-hr)	CO (gbhp-hr)	Idle CO (percent exhaust gas flow)	Smoke [a] (Percentage)	Useful Life (hours/years/miles)	Warranty Period (years/miles)
Federal [b]	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 [d]	-	-	10.7	0.6	15.5	0.5 [c]	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 [q]
	1990	1.3 [d]	-	-	6.0	0.6	15.5	0.5 [c]	20 / 15 / 50		
	1991-93	1.3	-	-	5.0 [ABT]	0.25 [ABT] 0.10 [e]	15.5	0.5 [c]	20 / 15 / 50		
	1994-97	1.3	-	-	5.0 [ABT]	0.1 [ABT] 0.07[f], 0.05 [g]	15.5	0.5 [c]	20 / 15 / 50		
	1998-2003	1.3	-	-	4.0 [ABT]	0.1 [ABT] 0.05 [g]	15.5	0.5 [c]	20 / 15 / 50		
	2004-2006 [h]	-	-	2.4 (or 2.5 with a limit of 0.5 on NMHC) [o] [ABT [i, j]]	-	0.1 0.05 [g]	15.5	0.5	20 / 15 / 50	For all pollutants: [p] LHDDE: - / 10 / 110,000 MHDDE: - / 10 / 185,000 HHDDE: 22,000 / 10 / 435,000	LHDDE: 5 / 50,000 All other HDDE: 5 / 100,000 [q]
	2007+ [h, k, l, m, n]	-	0.14 [o]	2.4 (or 2.5 with a limit of 0.5 on NMHC) [ABT]	0.2 [o]	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 an 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 [NOx], NMHC, and particulate matter [PM]) and a NTE test (1.5 x FTP standard [or FEL] for NOx, 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 NOx 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.