Revised May 2020
RG-537

Volkswagen Environmental Mitigation Trust

Beneficiary Mitigation Plan For Texas

Air Quality Division

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

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Prepared by
Air Quality Division

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Jon Niermann, *Chairman*
Emily Lindley, *Commissioner*
Bobby Janecka, *Commissioner*

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Preamble

The Texas Commission on Environmental Quality (TCEQ) is pleased to present this *Beneficiary Mitigation Plan for Texas*. This plan is prepared in accordance with the Environmental Mitigation Trust Agreement for State Beneficiaries (Trust Agreement) that resulted from litigation between Volkswagen (VW) and its related entities and the United States Environmental Protection Agency (EPA) and State of California. Background on the purpose of the agreement and the allocation of funds under the agreement are explained in the plan.

A draft mitigation plan was made available on the TCEQ's Texas Volkswagen Environmental Mitigation Program (TxVEMP) website, <www.TexasVWFund.org>. The TCEQ held a public comment period to accept comments and recommendations on the draft plan from August 8, 2018, through October 8, 2018. Notice of the comment period was published in the *Texas Register* and in major newspapers serving the Dallas-Fort Worth (DFW), Houston-Galveston-Brazoria (HGB), Beaumont-Port Arthur (BPA), El Paso, San Antonio, and Austin areas. Information was also released to the media, several articles were published in major newspapers, and several television stations aired news reports regarding the plan. An email notice was sent to over 900 subscribers to the TxVEMP listserv, and notice was provided on the TxVEMP website. Six public meetings were also held to accept comments in Houston, Beaumont, Arlington, El Paso, San Antonio, and Austin. In addition, interest groups and organizations advised their members of the comment period and the public meetings.

The TCEQ received comments from 797 commenters, including state legislators, public agencies and officials, individuals, organizations, and businesses. Those comments have been considered in developing this final plan.

Numerous commenters expressed concern or provided recommendations regarding the allocation of funds to the Priority Areas. Most of the comments regarding this part of the plan did not agree with the approach used to determine the Priority Areas and the allocation of funds to those areas. In the draft plan, the Priority Areas were chosen because of nonattainment status for the National Ambient Air Quality Standards (NAAQS) for ozone. Specifically, the DFW, HGB, and San Antonio (Bexar County) Areas are currently designated nonattainment for the 2015 ozone NAAQS. El Paso and BPW are two other areas that were identified as areas of focus from an ozone NAAQS perspective under the draft plan. Given this information, coupled with a desire to focus resources in a limited number of geographic areas to maximize the impact of the mitigations actions, the following areas were proposed as Priority Areas under the draft plan: DFW, HGB, San Antonio, El Paso, and BPA.

One issue of significant interest was the proposal that Bexar County and surrounding counties be allocated a disproportionate share of the funds. The reasoning for allocating the largest share of the funds to the San Antonio Area was that Bexar County was newly designated nonattainment and only exceeded the ozone NAAQS by a small amount. Accordingly, this funding presented a unique opportunity to help Bexar County achieve attainment within the time period required before the area risks being designated under a higher nonattainment classification, from Marginal to Moderate.

Numerous commenters also recommended that the determination of the Priority Areas to receive funding account for the number of VW vehicles registered in the different areas and/or consider the recently monitored levels of ozone in the different areas. Commenters pointed out that the DFW and HGB Areas had higher numbers of the affected VW vehicles than the San Antonio Area. The commenters also referred to the high number of the vehicles registered in Austin and the surrounding counties, although Austin was not included as a Priority Area. In addition, the commenters pointed out that the monitored ozone levels for the Austin Area were as high or higher than those monitored in the BPA Area.

In response to these concerns, the TCEQ revised the plan to include Austin and surrounding counties, as well as Bell County, as Priority Areas. Both the Austin Area and Bell County are monitoring near the 2015 ozone NAAQS level of 70 parts per billion (ppb).

In addition, although the TCEQ determined that the number of VW vehicles in each area should not be the only factor used in the allocation of funds, the TCEQ agrees that the relative percentage of affected VW vehicles in each of those areas should be one of the factors used to determine the funding allocation.

In response to comments, the allocation was revised. The total allocations to each area now include three components. The first component, which represents 33% of the total funds, are allocated to the Priority Areas based on the relative percentage of affected VW vehicles registered in those areas. To ensure a base level of funding to the three current ozone nonattainment areas, a second component allocates 15% of the total funds equally among the DFW Area, HGB Area, and San Antonio Area. Finally, under the third component, 33% of the total funds are allocated among the Priority Areas based on a strategic assessment of where the funding might best help achieve the mitigation plan goals. Once the plan is implemented, the allocation percentages and amounts may be adjusted as needed, based on further assessment of where the funding may best be used.

Another area of the plan receiving a significant number of comments was the percentage of cost limits for the different types of eligible actions. The draft plan

proposed a percentage of cost limit of 60% for electric and governmental actions while the Trust Agreement allows reimbursement of up to 100% of eligible costs. Comments from school districts and public agencies stated that it would be difficult for those entities to include the purchases in their budgets without a higher reimbursement limit. Conversely, comments from entities interested in the use of natural gas and propane for transportation asked the TCEQ to provide a level playing field between vehicles powered by those fuels and electric vehicles.

In consideration of these comments, the percentage of cost limits for governmental projects, including all fuel types, were increased from 60% to 80% of eligible costs. Because the percentage of cost limits for governmental projects would be the same for all fuel types, this increase does not put greater emphasis on use of electric engines over other fuels.

The percentage of cost limits for non-governmental projects involving the replacement or repower of vehicles and equipment with electric models was reduced from 60% to 50%. The TCEQ determined that this level of funding could still provide funding at or near the incremental cost difference between an electric model and a diesel or alternative fuel model, while helping to address the concern expressed by some commenters that the plan not create an unlevel playing field between electric vehicles and diesel or alternative fuel vehicles.

The percentage of cost limits are upper limits. To achieve the mitigation plan goals, some funding will be offered at lower cost-sharing percentages. In addition, once the plan is implemented, the percentage of cost limits may be adjusted to achieve the plan goals.

Other comments focused on the process of implementing the plan, including recommendations for administration of the funds by regional councils of governments (COG). Regional administration of the funds would create a more complicated administrative process that would increase the administrative costs and implementation time frames. That approach would also limit the ability of the TCEQ to quickly adjust program priorities and funding criteria to ensure quick and efficient distribution of the funds. Accordingly, under the plan, the TCEQ will be responsible for administering the funds.

There was substantial support expressed for using the full 15% of the funds authorized under the Trust Agreement for funding Light-Duty Zero Emission Vehicle (ZEV) Supply Equipment. Commenters also provided various recommendations for how to implement that part of the program, including how to further allocate funds for

certain types of infrastructure projects and/or for determining the best locations for installing the equipment. Comments included recommendations for allocating some of the funds for installation of electric charging equipment in disadvantaged and low-income areas.

The TCEQ appreciates the support expressed for use of the funds to address the goal of preparing for increased and sustained use of ZEVs. More detailed plans for use of those funds were not included in the mitigation plan. However, the TCEQ will consider the input provided when implementing the funding for ZEV infrastructure, including consideration of the need for electric charging options in disadvantaged and low-income areas.

Various other comments were received from interest groups, agencies, and interested individuals and organizations. Although not all of those recommendations have been addressed in the plan, the TCEQ will continue to consider all comments and recommendations as the grant programs established under the plan are implemented.

Background

Governor Greg Abbott selected the Texas Commission on Environmental Quality (TCEQ) as the Lead Agency responsible for the administration of funds received from the Volkswagen State Environmental Mitigation Trust (Trust). The Trust has allocated a minimum of $209 million to Texas for projects that reduce nitrogen oxides (NO_X) in the environment.

The Trust is part of an Environmental Mitigation Trust Agreement for State Beneficiaries (Trust Agreement) resulting from litigation between the United States Environmental Protection Agency (EPA), the State of California, and Volkswagen (VW) and its related entities. The EPA and the State of California filed suit in the U.S. District Court for the Northern District of California against VW alleging that VW violated provisions of the Federal Clean Air Act. The suit alleged that approximately 590,000 light-duty 2.0-liter and 3.0-liter diesel vehicles manufactured by VW and its related entities contain emission defeat devices. These devices cause the emissions control system of those vehicles to perform differently during emissions testing compared to performance during normal vehicle operation and use. The subject vehicles emit NO_X at a level above required standards during normal vehicle operation and use.

The EPA, California, and VW have resolved this case through three partial settlements (Amended 2.0 Liter Partial Consent Decree, 3.0 Liter Second Partial Consent Decree, and Third Partial Consent Decree). As part of the settlement agreements, VW must pay approximately $2.9 billion into the Trust referenced above. The 50 states, the District of Columbia, and Puerto Rico had the option to elect to become a beneficiary to receive an allocation from the Trust. A separate trust was established for allocation of funds to Indian Tribe beneficiaries.

Separately, VW was required to pay $2 billion to fund a nationwide Zero Emission Vehicle (ZEV) Investment Plan. Electrify America, LLC, was formed to develop and implement the ZEV Investment Plan. Over a 10-year period ending in 2027, Electrify America will invest in ZEV infrastructure and education programs in the United States. Of the $2 billion available for this effort, $1.2 billion will be invested nationwide (in states other than California), while $800 million will be invested in California. As noted later in this document, the TCEQ will also have funds available under the Trust Agreement to fund ZEV infrastructure, and the TCEQ funding will be used to complement and not compete with the efforts of Electrify America.

The funds in the Trust are allocated based on the number of affected vehicles registered within the boundaries of each beneficiary state. Beneficiaries have between three and 10 years to spend their allocated funds on specific types of projects as outlined in the Trust documents. These projects are intended to mitigate the excess NO_X emissions from the affected vehicles.

On June 29, 2017, the Court appointed Wilmington Trust, N.A. to serve as the trustee for the Trust. The final Trust Agreement was filed and became effective on October 2, 2017. Governor Abbott submitted the necessary certification documents for Texas to be designated a beneficiary state under the plan, and the trustee filed the beneficiary notifications with the Court on January 29, 2018. At that time, Texas became a designated beneficiary with the TCEQ as the designated Lead Agency for administering the funds allocated to Texas.

Upon being named the Lead Agency for Texas, the TCEQ established a website to serve as the central information source for the Texas Volkswagen Environmental Mitigation Program (TxVEMP), <www.TexasVWFund.org> and invited public comment on the development of this mitigation plan. The TCEQ issued the draft plan on August 8, 2018. The TCEQ held a public comment period, including six public meetings, to accept comments and recommendations on the draft plan from August 8, 2018, through October 8, 2018.

The TCEQ received comments from 797 commenters, including state legislators, public agencies and officials, individuals, organizations, and businesses. All comments received within the public comment period, including transcripts of the public meetings, are available on the TxVEMP website. Those comments have been considered in developing this final plan.

Updates to the plan will be provided on the website. Plan updates will also be provided to the trustee. For any major changes to the plan, the TCEQ may provide a draft of the revised plan for public comment before preparing the final updates.

Beneficiary Mitigation Plan Elements

Pursuant to the Trust Agreement, the plan must summarize how the state proposes to use the mitigation funds allocated to it under the Trust Agreement. According to the Trust Agreement, the plan must address the following four required elements:

- the state's overall goals for use of the funds;
- the categories of eligible mitigation actions the state anticipates will be appropriate to achieve the goals and a preliminary assessment of the percentages of funds anticipated to be used for each type of eligible mitigation action;
- a description of how the state 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

- a general description of the expected ranges of emissions benefits the state anticipates will be realized by implementation of the eligible mitigation actions identified in the plan.

The plan must also explain the process by which the TCEQ has sought and considered public input on the plan. The TCEQ may adjust the goals and specific spending plans at its discretion.

Goals

The TCEQ establishes the following goals for use of the mitigation funds to alleviate the air quality impacts from the affected vehicles.

1. Reduce NO_x Emissions

   The primary goal for use of the funds will be to reduce NO_x emissions in those areas most impacted by NO_x emissions and in particular areas of the state designated nonattainment for National Ambient Air Quality Standards (NAAQS) for ground-level ozone and in other areas monitoring ground-level ozone levels near the NAAQS for ozone. These "Priority Areas" are impacted by a disproportionate share of the air pollution burden within the regional and local jurisdictions. The Priority Areas are listed in Table A.1, *Priority Areas*, and shown on Figure A.1, *Priority Areas*, in Appendix A, *Priority Areas*.

   Because the affected vehicles contain emissions defeat devices, those vehicles had NO_x emissions in excess of the federal emission standards and the emissions VW represented to the government and consumers. In Texas, those excess NO_x emissions would not have been accounted for in developing strategies for addressing NO_x emissions.

   In addressing this goal, the TCEQ will consider, among other factors, where, proportionately, the affected vehicles were, are, or will be operated as well as where the available funding could make a near-term difference in achieving or maintaining attainment. In addition, the TCEQ will seek to appropriately leverage the funding, as well as place a high priority on program administration efficiency to maximize the amount of funding used for NO_x emissions reduction.

2. Reduce the Potential for Exposure of the Public to Pollutants

   A second goal of the program will be to reduce the potential for exposure of the public to pollutants that are often emitted along with NO_x from older vehicles and equipment.

The program will address this goal through funding to replace or repower vehicles and equipment that operate within communities and at facilities where emission sources may be concentrated, including refuse vehicles, school buses, and cargo handling equipment.

3. Prepare for Increased and Sustained Use of Zero Emission Vehicles (ZEV)

   The Trust Agreement allows for allocation of up to 15% of the funds for equipment to supply light-duty ZEV with electricity or hydrogen for hydrogen fuel cells.

   While the other mitigation actions will result in immediate reductions in NO_X emissions and other pollutants, funding ZEV infrastructure will help prepare the state for the increased use of ZEV in Texas and will help sustain the use of those vehicles.

   Helping to sustain the use of light-duty ZEV will contribute to achieving the plan's two primary goals of reducing NO_X emissions and reducing the potential for exposure of the public to pollutants emitted from older gasoline and diesel vehicles.

   This goal will include electric charging infrastructure in public areas, workplaces, and multi-unit residences, with consideration given to the availability of existing charging infrastructure at or near the project location. In addition, the TCEQ will consider funding for charging infrastructure along major transportation corridors of the state. Consideration will also be given to fueling infrastructure for hydrogen fuel cells, where there will be a sustainable market for use of the hydrogen fuel.

4. Complement Other Incentive Funding Programs

   Texas has one of the most aggressive and extensive programs in the country providing voluntary incentives for replacement, repower, and upgrade of heavy-duty on-road vehicles and non-road equipment. Since 2001, the Texas Emissions Reduction Plan (TERP) program administered by the TCEQ has provided over $1 billion in incentive funding for projects very similar to the eligible mitigation actions included under the Trust Agreement.

   The TERP grants are also aimed at reducing NO_X emissions in the areas of concern relative to the ozone NAAQS, as well as reducing the potential for exposure of the public to other pollutants emitted from mobile sources.

   The TERP provides grants to reduce NO_X emissions that would otherwise occur in the future if the grant-funded project were not implemented. Conversely, the VW funding is intended to help mitigate the impact of NO_X emissions that should not have previously occurred and were not considered in air quality inventories and

planning to ensure compliance with the NAAQS. To use the funds as efficiently as possible, it is important that the VW funding be used to complement the efforts of the TERP program.

Therefore, the TCEQ will focus on mitigation actions that are not well-suited for or are otherwise under-represented in the TERP program.

In making funding decisions, the TCEQ will also consider, to the extent possible, Electrify America's implementation of the National ZEV Investment Plan in Texas, to ensure that the two programs will be complementary.

Eligible Mitigation Actions

The Trust Agreement includes 10 categories of eligible mitigation actions, as outlined below. Not all of these actions are eligible under the proposed plan.

Categories of Eligible Mitigation Actions under the Trust Agreement

1. *Class 8 Local* Freight *Trucks and Port Drayage Trucks* (repower or replacement)
2. *Class 4-8 School Bus, Shuttle Bus, or Transit Bus* (repower or replacement)
3. *Freight Switchers* (repower or replacement)
4. *Ferries/Tugs* (repower only)
5. *Ocean-Going Vessels Shore Power*
6. *Class 4-7 Local Freight Trucks* (repower or replacement)
7. *Airport Ground Support Equipment* (repower or replacement with all-electric)
8. *Forklifts and Port Cargo Handling Equipment* (repower or replacement with all-electric)
9. *Light-Duty Zero Emission Vehicle Supply Equipment* (electric charging for electric vehicles and hydrogen for hydrogen fuel cell vehicles)
10. *Diesel Emission Reduction Act (DERA) Option.* If a state receives DERA funds from the EPA, the VW funds may be used for the non-federal voluntary match. The combined funds may be used for eligible DERA projects, which include additional project categories and requirements.

Mitigation Actions Potentially Eligible Under the Plan

Not all actions eligible for funding under the Trust Agreement are included in this plan. The categories and sub-categories of mitigation actions that may be considered eligible for funding are outlined below, not necessarily in priority order.

Statewide Light-Duty ZEV Supply Equipment Funding

Mitigation actions to install light-duty ZEV supply equipment will be eligible for funding statewide.

This category includes electric charging infrastructure for light-duty plug-in electric vehicles and hydrogen for fueling a vehicle powered by a hydrogen fuel cell. This funding category will help achieve the goal of preparing for increased and sustained use of ZEV.

As provided for in the Trust Agreement, the TCEQ will consider installation of electric charging infrastructure at public areas, workplaces, and multi-unit residences, as well as considering installation along key transportation corridors.

Consideration will also be given to funding for hydrogen fueling facilities for light-duty hydrogen fuel-cell vehicles, if and where the fueling infrastructure will have a sustained market for the fuel.

The TCEQ may prioritize funding for applicants that own the land and the facility at which the equipment will be installed and will have a vested interest in the use of the equipment, in order to maximize the long-term sustainability of the equipment. The TCEQ may also prioritize project selection based on the proposed location in relation to existing services, as well as other factors that may affect the potential for sustainable use of the infrastructure.

Priority Areas - Eligible Mitigation Actions

The TCEQ proposes to open the following mitigation action categories for funding in the Priority Areas identified in Appendix A.

1. Class 4 - 7 Local Freight Trucks

   This category includes replacement or repower of model year 1992 – 2009 Class 4-7 medium-duty local freight trucks.

   These types of vehicles may operate locally or travel regionally between the Priority Areas. These actions would help reduce NO_x emissions on a local and regional level and may also help to reduce the potential exposure of the public in the local communities to pollutants emitted by older engines.

2. Class 8 Local Freight Trucks and Port Drayage Trucks

   This category includes replacement or repower of model year 1992 – 2009 Class 8 local freight trucks and port drayage trucks.

   Many of these types of vehicles may travel regionally, but operations of these vehicles may also be concentrated at local facilities where cargo and freight are transferred and/or loaded onto the vehicles. These actions would help reduce NO_X emissions on a local and regional level and may also help reduce the potential for exposure of the public in the local communities to pollutants emitted by older engines.

   For some grant application periods, the TCEQ may prioritize port drayage trucks separately and fund those types of trucks as its own subcategory. In those cases, the TCEQ may place restrictions on the location of use to include seaports, intermodal rail yards, and/or inland ports to focus on reducing emissions at those types of facilities.

3. Class 7 - 8 Refuse Vehicles

   The TCEQ proposes to include refuse vehicles under a separate category from the local freight truck categories. This category includes replacement or repower of model year 1992 - 2009 refuse vehicles. The TCEQ will limit this category to Class 7 and 8 vehicles that are configured as a refuse vehicle.

   The emissions from refuse vehicle fleets that operate on regular daily routes result in more concentrated NO_X emissions that have the potential to add to the formation of ground-level ozone in the local and regional area. In addition, these vehicles operate on routes within the community, resulting in increased potential for exposure of the public to pollutants emitted by older engines.

4. School Buses

   This category includes replacement or repower of model year 2009 and earlier Class 4 - 8 school buses.

   These actions will reduce NO_X emissions, while also reducing the potential for exposure of school children and the public in general to other pollutants from older diesel and gasoline engines. These vehicles operate on regular routes within the community, resulting in the potential for exposure of children riding on the school bus and the public in general along these routes to pollutants emitted by older engines.

5. Transit and Shuttle Buses

   This category includes the replacement or repower of model year 2009 and earlier Class 4 - 8 transit and shuttle buses.

   The operation of transit and shuttle bus fleets results in NO_x emissions that can impact the formation of ground-level ozone in the local and regional area. In addition, these vehicles operate on regular daily routes within the community, resulting in increased potential for exposure of the public to pollutants emitted by older engines.

   Replacing older diesel transit and shuttle fleets with newer, lower-emitting models, including those powered by alternative fuels, advanced diesel technologies, or electricity will directly address the program goals.

6. Electric Forklifts and Port Cargo Handling Equipment

   This category includes replacement or repower of older model diesel or spark-ignition forklifts and cargo handling equipment with new electric models.

   While this category refers to port equipment, these types of equipment are used at many types of facilities to move material, cargo, containers, and trailers around and near the facility. The Trust Agreement does not specify what constitutes a port or establish any sort of location restriction for use of this equipment. Therefore, the TCEQ will consider the eligibility criteria to refer to the type of equipment, rather than the location of use. The TCEQ generally intends to take a broad approach in determining where this equipment may operate. However, in some cases, priorities may be set for funding equipment used at a more limited number of facilities, such as seaports, intermodal rail yards, and/or inland ports.

   Yard trucks are considered cargo handling equipment, and this category may include replacement of an older Class 8 on-road vehicle being used as a yard truck with a purpose-built electric on-road or non-road yard truck.

   The costs for the electric charging infrastructure to support the equipment may be funded as part of the project, subject to cost-effectiveness and percentage of cost limits established by the TCEQ for each grant solicitation and application period.

   Many of the facilities where this type of equipment is operated are in areas identified as Priority Areas. And many of these facilities are surrounded by communities where there is the potential for the public to be exposed to a higher concentration of pollutants emitted from older diesel engines operating at the facility. These actions will reduce pollutant emissions levels in these areas and will directly address the program goals.

These actions will also encourage further use of electric technology where the equipment and facility are well-suited to electrification.

7. Electric Airport Ground Support Equipment

   This category includes replacement or repower of older diesel or spark-ignition ground support equipment with new electric models.

   The costs for the electric charging infrastructure to support the equipment may also be funded as part of the project, subject to cost-effectiveness and percentage of cost limits.

   Several large airports are in designated nonattainment areas for ground-level ozone and areas where monitored ozone is close to the NAAQS levels. Also, in many cases, these facilities are surrounded by communities where there is the potential for the public to be exposed to a higher concentration of pollutants emitted from older engines operating at the facility. Funding for this category will reduce the emission of pollutants in these areas and will directly address the program goals.

   These actions will also encourage further use of electric technology where the equipment and facility are well-suited to electrification.

8. Ocean-Going Vessel Shore Power

   Providing shore power to ocean-going vessels and encouraging its use can result in major reductions in NO_X emissions and emissions of other pollutants.

   Major seaports along the Texas Coast are in the Priority Areas identified in Appendix A. Reductions in NO_X emissions from ocean-going vessels when docked at these seaports can assist in meeting air quality goals in those areas. Also, some of the seaports are surrounded by communities where there is the potential for the public to be exposed to a higher concentration of pollutants emitted from older diesel engines operated by oceangoing vessels. This initiative will reduce the emission of pollutants in these areas and will directly address the program goals.

Criteria for Eligible Mitigation Actions

Key criteria for the eligible mitigation actions are outlined in Appendix C, *Eligible Mitigation Actions*. Complete criteria and requirements will be included in the grant solicitation, contract, and application documents. The Trust Agreement limits matching rates based on project type and makes distinctions between government-owned projects and those that are not government-owned, as well as among different project categories. There are four primary categories of eligible mitigation actions: (1) replacements (i.e., new vehicle); (2) repowers (i.e., new motor); (3) shore power; and (4)

light-duty ZEV supply equipment (ZEV Supply). There are subcategories based on the type of fuel and equipment (e.g., with the Trust Agreement favoring electric motors over internal combustion engines). Table 1., *Maximum Percentage of Cost Limits*, below lists the **maximum** percentage of costs established in this plan that may be reimbursed for each project type. The TCEQ may fund projects at a lower percentage and may set different percentage of cost limits on a grant-round basis.

Table 1. Maximum Percentage of Cost Limits

Government-Owned	
Replacements, Repowers, and Shore Power	80%
Non-Government-Owned	
Replacement – Electric	50%
Replacement, Drayage Trucks – Diesel or Alternative Fuel	50%
Replacement, Non-Drayage – Diesel or Alternative Fuel	25%
Repower – Electric	50%
Repower – Diesel or Alternative Fuel	40%
Shore Power	25%
ZEV Supply	
Electric Chargers – Available to the Public	70%
Electric Chargers – Available at a Workplace or Multi-Unit Dwelling	60%
Hydrogen Supply (250 kg/day)	33%
Hydrogen Supply (100 kg/day)	25%

The TCEQ may consider other factors, including the cost per ton of NO_X reduced and other prioritization factors in determining the eligible grant amounts.

This plan excludes funding for projects involving freight switchers and tugs and tow vessels, which are potentially eligible under the Trust Agreement and for which there is adequate funding under the TERP.

The TCEQ also does not propose to apply for and use the DERA funds. Because the allocation of DERA funds available to the TCEQ is small, the funding would only result in a small increase in the amount of money available under the program. Use of the DERA funds would also require separate contract, tracking, payment, and reporting requirements, making program administration for both the grantee and the TCEQ more resource intensive. An advantage of using the DERA funds would be to open the funding to additional project categories authorized under the DERA program. However, the TERP program can fund many, if not all, of the categories available under the DERA program. Also, the TCEQ could apply for DERA funds in the future if it appears that the current eligible categories for the VW funds are not sufficient and the DERA program would offer additional project categories that would help meet the goals of the program.

Eligible Areas and Allocation of Funds

The plan must provide a preliminary assessment of the percentages of funds anticipated to be used for each type of action. The plan must also describe how the state 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.

As discussed below, the plan allocates up to 81% of the funds for projects within the state's Priority Areas, up to 15% for Light-Duty ZEV Supply Equipment, and up to 4% for administrative costs. The TCEQ may adjust the allocation percentages and amounts outlined in this plan based on demand for the funds and evaluation how to best achieve the goals of the program.

Priority Areas Funding (up to 81%)

The plan identifies seven Priority Areas that bear a disproportionate share of air pollution and particularly ozone within Texas:

- Dallas-Fort Worth Area – (DFW)
- Houston-Galveston-Brazoria Area – (HGB)
- San Antonio Area – (SAT)
- Austin Area – (AUS)
- El Paso County – (ELP)
- Bell County – (BEL)
- Beaumont-Port Arthur Area – (BPA)

These include the three areas of the state identified as nonattainment for the ground-level ozone NAAQS and four other areas of the state that have monitored ground-level ozone concentrations close to the 2015 ground-level ozone NAAQS limit of 70 ppb. The Priority Areas are further described in Appendix A.

The Priority Areas contain many of the major metropolitan centers of the state as well as approximately 71% of the state population. Because of formation of ground-level ozone in these areas, the TCEQ has determined that 81% of the funding (approximately $169.5 million) will be allocated exclusively to these areas to provide beneficial impacts on air quality.

The mitigation actions will include replacement or repower of heavy-duty on-road vehicles that operate in and among these areas; equipment operating at airports, seaports, rail yards, and inland ports in these areas; as well as refuse vehicles, school buses, and shuttle and transit buses that operate within communities located in these areas. These initiatives will help address the goals of the program, including reduction

in NO_x emissions in the Priority Areas and reducing the potential exposure of workers at these local facilities and residents in surrounding communities to pollutants emitted from older vehicles and equipment. To be considered operating in an area, a majority (51% or more) of the annual mileage or hours of operation of the grant-funded vehicle or equipment must occur in the designated counties.

The TCEQ will initially allocate funding among the seven Priority Areas as set forth on Table 2., *Funding Allocation by Area*. The amounts assigned to the Priority Areas are the sum of the three components.

Table 2. Funding Allocation by Area

Area	Component 1: Pro-Rata Allocation (% of VW vehicles)	Component 2: Base Funding for Nonattainment Areas	Component 3: Strategic Allocation	Total
DFW	$22,919,202	$10,465,958	—	$33,385,160
HGB	$21,360,321	$10,465,958	—	$31,826,279
SAT	$8,619,558	$10,465,958	$42,500,000	$61,585,516
AUS	$11,547,602	—	$4,750,000	$16,297,602
ELP	$2,064,031	—	$14,750,000	$16,814,031
BEL	$1,757,741	—	$325,324	$2,083,065
BPA	$806,869	—	$6,750,000	$7,556,869
	$69,075,324	$31,397,874	$69,075,324	$169,548,522

The first component, comprising 33% of the funds ($69,075,324), is allocated according to the relative percentage of affected VW vehicles that were registered in the counties included in each area. The percentages used to determine the allocation amounts are shown in Table 3, *Allocation by Percentage of VW Vehicles*.

Table 3. Allocation by Percentage of VW Vehicles

Area	Allocation Amount	Relative % of VW Vehicles*
DFW	$22,919,202	33.2%
HGB	$21,360,321	30.9%
SAT	$8,619,558	12.5%
AUS	$11,547,602	16.7%
ELP	$2,064,031	3.0%
BEL	$1,757,741	2.5%
BPA	$806,869	1.2%
Total	$69,075,324	100%

*The number of affected VW vehicles used to determine the percentages were derived from information provided by several sources.

The second component ensures that a base level of funding is available to the areas designated nonattainment for the ozone NAAQS. Up to 15% of the total funds ($31,397,874) is divided equally among the DFW, HGB, and SAT Areas.

The third component is an allocation of the remaining 33% of the total funds to the Priority Areas based on a strategic assessment of how to best use the funds to address the goals of the program.

While all three components address the goal of reducing NO_X emissions and do so in areas that bear a disproportionate share of the air pollution, each represents different values. These include proportionality (first component) and ensuring an adequate base of funding for the nonattainment areas (second component). The strategic allocation (third component) considers what might be achievable given the scale and timing of the mitigation funding. Specifically, these funds are directed to certain areas and at a scale where they are more likely to make a difference in achieving or maintaining attainment in the near term.

Statewide Funding for Light-Duty ZEV Supply Equipment (up to 15%)

The TCEQ proposes to provide up to 15% of allocated funds (approximately $31.4 million) statewide to increase available infrastructure for providing electricity to light-duty electric vehicles and, where warranted, hydrogen for hydrogen fuel cell vehicles. The Light-Duty ZEV Supply Equipment categories are proposed for implementation statewide. Providing statewide funding will help establish additional availability of charging or refueling infrastructure so that vehicles may travel longer distances and in a greater number of areas within the state. This category of funding will help support the expected continued increase in use of ZEV and will include funding for electric charging stations along major transportation corridors in the state.

The TCEQ will consider the efforts of Electrify America, LLC to implement the national ZEV Investment Plan when considering projects for funding under this category.

Estimated Administrative Funding (up to 4%)

The TCEQ's initial estimates are that it will need less than 4% of the allocated funds (approximately $8 million) to administer the program. These estimates are still preliminary, and the final administrative needs will depend on the number of years the program is implemented and the final resource needs of the TCEQ to administer the program. However, the TCEQ anticipates needing much less than the 15% of the funding that the Trust Agreement authorizes for administration.

Grant Process

The grants under this program will be solicited through a Request for Grant Applications process. Grant applications and instructions will be provided on the TxVEMP website, <www.TexasVWFund.org>. The TCEQ may also conduct workshops and webinars for potential applicants.

Applications will be considered under either a first-come, first-served process or a competitive-selection process. In most cases, an application may include multiple eligible mitigation actions on one application form. Each action will be considered an individual activity as part of an overall project.

First-Come, First-Served

Where appropriate, grants will be awarded on a first-come, first-served basis. The TCEQ may establish tables with pre-determined maximum funding amounts based on the maximum percentage of costs allowed and/or any caps that may be established on the maximum cost-effectiveness of the projects.

The review and approval of an application may take approximately one to two weeks, depending upon complexity of the project and the number of applications that must be reviewed. Development and issuance of a contract to the applicant will take another one to two weeks, with final execution of the contract dependent upon how long it takes for the applicant to sign and return the contract. These are estimated timeframes, and the process may take longer depending upon the size of the project and the number of grant applications being processed.

Competitive

The TCEQ may also use a competitive process for certain categories. Under a competitive process, the TCEQ will review all applications submitted within a deadline established by the agency. Project selections will be made based on criteria

established by the TCEQ. For vehicle and equipment projects, the selection criteria may include consideration of the cost-effectiveness of the project in reducing NO_X emissions. Calculators will be available for use by applicants to calculate the NO_X emissions reductions and cost-effectiveness of their project. However, the TCEQ will make the final calculations for purposes of evaluating the project for funding.

The review and approval of applications under a competitive grant round may take one to three months after the grant round is closed, depending upon the number of applications received. The contracting process will then be dependent upon how long it takes for the applicant to sign and return the contract.

Grants will be awarded through execution of a grant contract between the TCEQ and the grant recipient. However, the final obligation of the TCEQ to reimburse the grant expenses will depend upon the TCEQ issuing a Notice to Proceed (NTP) letter upon securing funds from the trustee. Any expenses incurred by the grantee before receipt of the NTP will be at the grantee's risk. The mechanism for obtaining funds from the trustee reimbursing grantees for the costs incurred for approved projects is still being determined.

For those projects requiring scrappage of the vehicle, equipment, and/or engine, the applicant will be required to complete the disposition process before requesting reimbursement from the TCEQ. If a grantee does not complete the scrappage and submit required documentation, the grant contract may be canceled.

As required under the Trust Agreement, the TCEQ will submit semi-annual reports to the trustee describing the process of implementing each eligible mitigation action included in the funding requests. These reports will include the status of each project and updates on payments to grantees and agency administrative costs.

Summary information on grant applications, grant awards and contracts, grant reimbursements, and project reports will be made available on the TxVEMP website, <www.TexasVWFund.org>. Copies of the complete applications, contracts, and reimbursement documents are available through the TCEQ's Open Records Request system. Access to the system will also be explained on the website.

Emissions Benefits

As required under the Trust Agreement, this plan is to include a general description of the expected ranges of emissions benefits the state anticipates will be realized by implementation of the eligible mitigation actions identified in the plan.

The primary focus of the plan is reducing NO_X emissions from heavy-duty on-road vehicles and certain non-road equipment. Because of the substantial amount of

funding allocated to Texas and the range of mitigation actions that will be considered, a detailed determination of the NO_X emissions reductions that will be achieved by each project in advance is not possible. The results will ultimately be determined by the type and number of projects funded.

The methodology that will be used by the TCEQ to determine NO_X emissions reductions is explained in Appendix D, *Emissions Calculations*, including Table D.1, *Calculating Reductions in NO_X Emissions Based on Annual Mileage*, to show calculations for on-road vehicles and Table D.2, *Calculating Reductions in NO_X Emissions Based on Annual Hours of Operation*, to show the calculations for non-road equipment.

The TCEQ has performed calculations for several examples of the types of vehicles and equipment that may be replaced under the eligible mitigation actions. Those results are provided in Appendix D, Table D.3, *Example NO_X Emissions Reduction and Cost Effectiveness*. The cost-effectiveness examples consider the total annual NO_X emissions reductions estimated for the project. For some types of projects, the TCEQ may use the NO_X emissions reductions that occur only in the eligible areas.

The TCEQ did not attempt to estimate NO_X emissions reductions for the ocean-going vessel shore power category. Calculation of emissions reductions for that type of project will depend upon the type of vessels and engines expected to operate at the seaport, the number of visits expected per year, and the number of hours each vessel will remain in port. If an application is submitted under this category, those factors will need to be assessed on a per-project basis.

The plan also does not include estimates of NO_X emissions reductions from installation of electric charging or hydrogen fueling infrastructure. The goal of the Light-Duty ZEV Supply Equipment category is to prepare the state for increased and sustained use of ZEV, rather than direct reductions in NO_X emissions. Any emissions reductions would occur as a result of decisions made by vehicle owners to purchase an electric or hydrogen fuel cell vehicle in lieu of a conventionally-fueled vehicle. Any attempt to predict those decisions based on the additional availability of charging or hydrogen fueling infrastructure would be speculative.

Estimates of the NO_X emissions reductions from several example categories and cost-effectiveness of the plan in achieving those reductions are provided in Table 5., *Example Funding Allocation and NO_X Emissions Reductions*.

Table 5. Example Funding Allocation and NO_X Emissions Reductions (based on a 5-year activity life)

Category *(Replacement Only)*	Example Funding Allocation	Tons of NO_X Reduced	Cost Per Ton of NO_X Reduced	Number of Vehicles & Equipment
Electric Forklifts and Port Cargo Handling Equipment and Airport Ground Support Equipment	$28,258,088	1,189	$23,776	502
Class 8a Refuse Vehicles	$28,258,087	238	$118,731	105
School Buses	$28,258,087	133	$212,467	217
Transit and Shuttle Buses	$28,258,087	235	$120,248	81
Class 6 Local Freight Truck	$28,258,087	486	$58,144	544
Class 8b Local Freight Trucks	$28,258,087	2,699	$10,470	733
Totals	**$169,548,523**	**4,980**	**$34,046**	**2,099**

The funding allocations among the categories in this table are based on the funding available to the Priority Areas. The equal funding amounts are examples only and do not represent the intended allocation of the funds. The TCEQ may consider specific allocations for the different categories or may open the funding to all eligible projects without setting limits on funding for each category. Also, this table does not include funding for shore power projects, which would result in different calculations.

These examples assume an activity life of five years, the period over which the TCEQ intends to assume that the grant-funded vehicles or equipment being replaced would have otherwise operated, absent the award of the grant. For projects involving electric forklifts, port cargo handling equipment, and airport ground support equipment, it was assumed that those projects would involve non-governmental entities and the maximum funding of up to 50% of the costs for non-governmental electric replacement projects as established in this plan was used for the example calculations. It was assumed that refuse vehicles, school buses, and transit and shuttle buses would be replaced by governmental entities at maximum funding of up to 80% of the costs. The examples for replacement of Class 8b Local Freight Trucks and Class 6 local freight trucks are based on applications by non-government applicants and funding up to 25% of the costs for diesel and alternative fuel vehicles.

These calculations are only examples. The actual funding amounts, NO_X emissions reductions, and cost-effectiveness achieved by the program will depend on many factors. These include whether the applicant is a governmental or non-governmental

entity, the types and model year of vehicles and equipment replaced or repowered, and the vehicles, equipment, and engines purchased. Also, the TCEQ may establish maximum cost-effectiveness limits for some or all of the categories, which would result in a greater number of tons of NO_x reduced and more vehicles and equipment replaced.

Consideration of Public Input

Upon being named the Lead Agency for Texas, the TCEQ established a website to serve as the central information source for the TxVEMP website, <www.TexasVWFund.org>. The agency invited the public to provide comments and recommendations regarding development of this mitigation plan, and the TCEQ provided an email address for ease of submitting comments, vwsettle@tceq.texas.gov.

The draft plan was made available on the TxVEMP website. The TCEQ held a public comment period to accept comments and recommendations on the draft plan from August 8, 2018, through October 8, 2018. Notice of the comment period was published in the *Texas Register* and in major newspapers serving the Dallas-Fort Worth, Houston-Galveston-Brazoria, Beaumont-Port Arthur, El Paso, San Antonio, and Austin Areas. Information was also released to the media and several articles were published in major newspapers and several television stations aired news reports regarding the plan. Email notice was sent to over 900 subscribers to the TCEQ's VW listserv and included on the TxVEMP website. Five public meetings were also held to accept comments in Houston, Beaumont, Arlington, El Paso, San Antonio, and Austin. In addition, interest groups and organizations advised their members of the comment period and the public meetings.

The TCEQ received comments from 797 commenters, including state legislators, public agencies and officials, individuals, organizations, and businesses. All comments received within the public comment period, including transcripts of the public meetings, are available on the TxVEMP website. Those comments have been considered in developing this final plan. The final plan will be submitted to the trustee.

Updates to the plan will be provided on the website. Plan updates will also be provided to the trustee. For any major changes to the plan, the TCEQ may provide a draft of the revised plan for public comment before preparing the final updates.

Appendix A – Priority Areas

Issues of Importance to Texas

The Texas Commission on Environmental Quality (TCEQ) monitors areas of the state for compliance with the National Ambient Air Quality Standards (NAAQS) established by the United States Environmental Protection Agency (EPA). For areas designated nonattainment with those standards, the TCEQ is responsible for developing a State Implementation Plan (SIP) revision to outline strategies that will be implemented to bring those areas into attainment of the NAAQS.

In terms of compliance with the NAAQS, the pollutant that has been most challenging to show attainment in Texas is ground-level ozone, considering the ozone NAAQS has become increasingly more stringent.

Ozone is a gas formed in the atmosphere when three atoms of oxygen combine. Stratospheric ozone is found naturally in the Earth's upper atmosphere and forms a protective layer that shields us from the sun's ultraviolet rays. However, ground-level ozone can cause acute respiratory health effects when people breathe high concentrations of it over several hours. These effects include decreased lung function and pain with deep breaths, and aggravated asthma symptoms.

Ozone is not emitted directly into the air but is created by chemical reactions between nitrogen oxides (NO_X) and volatile organic compounds (VOC) in the presence of sunlight. Ozone forms in the highest concentrations on warm, sunny days with light wind speeds, which allows more of the pollutant to form and accumulate. Emissions from motor vehicle and off-road equipment exhaust, industrial facilities and electric utilities, gasoline vapors, and chemical solvents are some of the major sources of NO_X and VOC. Over large areas of eastern Texas, the bulk of VOC is naturally emitted from vegetation such as trees and crops. Compared to these biogenic VOC emissions in rural areas, the anthropogenic VOC contribution is usually low, but generally increases in more urban and industrial environments.

In areas where VOC precursor emissions are greater the area is typically considered "NO_X limited" where NO_X reductions are more effective than VOC reductions for inhibiting ozone formation. Therefore, reductions in NO_X are important in reducing or limiting ozone formation in the nonattainment areas and other urban areas.

The TCEQ has authority to limit through regulation emissions of NO_X and VOC from industrial and utility sources, but typically ozone emissions from mobile engines are regulated at the federal level by the EPA. In Texas ozone nonattainment areas, NO_X emissions are primarily emitted from mobile sources. Given the limited number of viable strategies available to states to limit mobile source emissions, Texas instituted and invested in a financial incentive program, the Texas Emissions Reduction Plan (TERP) program, to replace older heavy-duty engines in order to reduce future NO_X emissions. The funds from the Trust Agreement will help mitigate the historical excess NO_X emissions from the VW vehicles identified with defeat devices and to reduce NO_X emissions in areas where formation of ground-level ozone is of greatest concern.

Priority Areas

The Priority Areas are listed in Table A.1, *Priority Areas*, and illustrated in Figure A.1, *Priority Areas*. The counties in the Priority Areas represent approximately 71% of the Texas population.

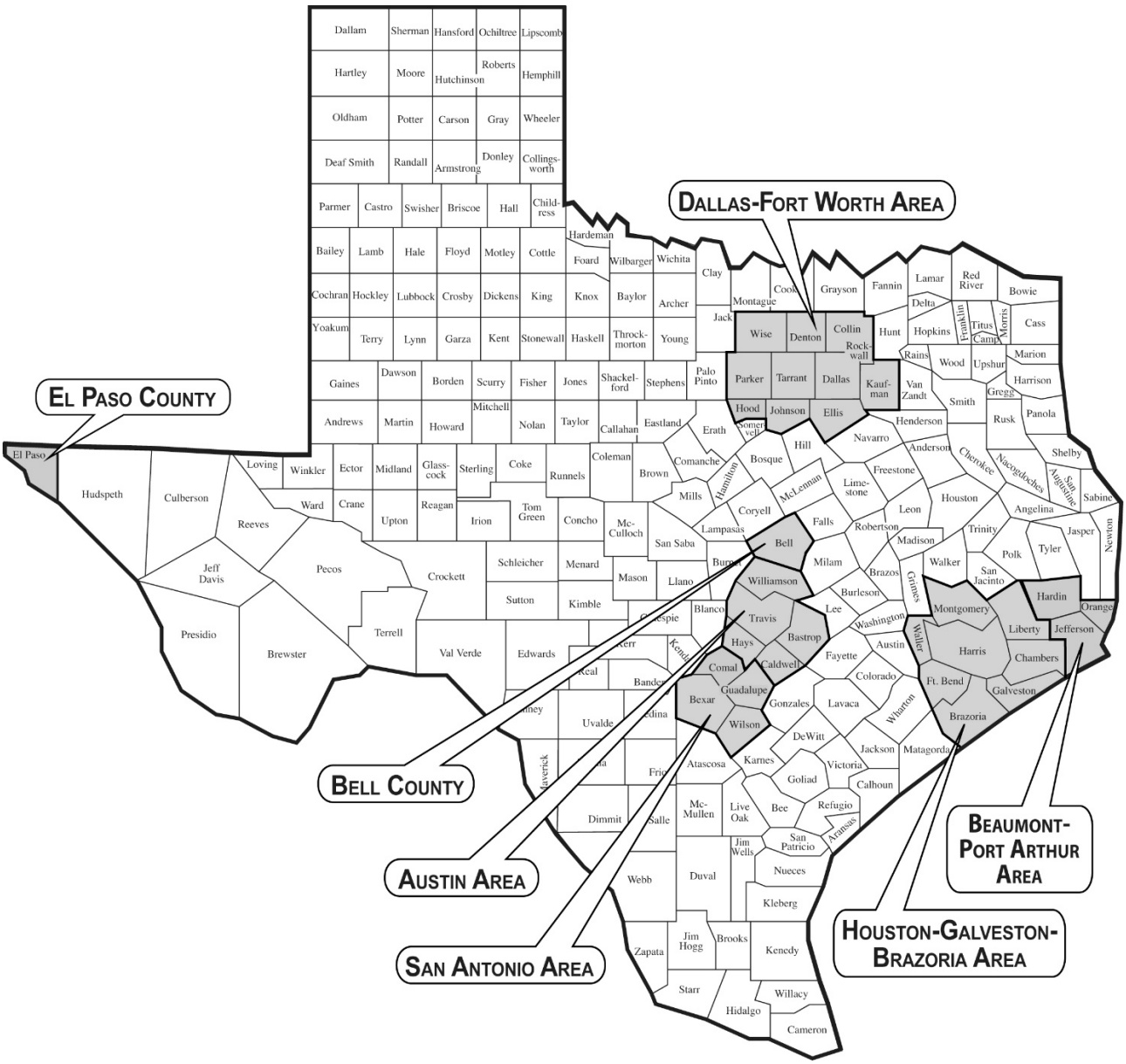
Table A.1 Priority Areas

Area	Counties
Dallas-Fort Worth Area	Collin, Dallas, Denton, Ellis, Hood, Johnson, Kaufman, Parker, Rockwall, Tarrant, Wise
Houston-Galveston-Brazoria Area	Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, Waller
San Antonio Area	Bexar, Comal, Guadalupe, Wilson
Austin Area	Bastrop, Caldwell, Hays, Travis, Williamson
El Paso County	El Paso
Bell County	Bell
Beaumont-Port Arthur Area	Hardin, Jefferson, Orange

In Texas, there are two nonattainment areas that do not meet the NAAQS for ground-level ozone based on the EPA's currently implemented 2008 eight-hour ground-level ozone standard of 0.075 parts per million (ppm), Dallas-Fort Worth and Houston-Galveston-Brazoria. On October 1, 2015, the EPA revised the primary NAAQS for ozone from the eight-hour standard of 0.075 ppm to an eight-hour standard of 0.070 ppm. As a result, Bexar County was also designated nonattainment, in addition to the other two nonattainment areas. Additional counties are included in the San Antonio Area based on proximity to Bexar County. Hood County is included in the DFW Area.

The other areas of interest from an ozone NAAQS perspective are the Austin Area, El Paso County, Bell County, and the Beaumont-Port Arthur Area. The four areas all have monitored ground-level ozone concentrations close to the 2015 ozone NAAQS limit of 70 ppb. In addition, the BPA Area is under a federally enforceable ozone maintenance plan and was designated nonattainment for the revoked 1997 eight-hour ozone NAAQS.

Figure A.1 Priority Areas



This map was generated for informational purposes by the Air Quality Division of the Texas Commission on Environmental Quality. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries. For more information concerning this map, contact the Air Quality Division at 512-239-4900.

Appendix B - Definitions/Glossary of Terms

The following definitions shall apply to the eligible mitigation actions. Additional definitions and further explanation of these definitions may be included in grant solicitation, application, and contract documents.

“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.

“Alternative Fuel” shall mean 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 the United States Environmental Protection Agency (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 lbs.

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

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

“CNG” shall mean Compressed Natural Gas.

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

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

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

"Inland Port" shall mean a site located away from traditional land and coastal borders containing a set of transportation multi-model assets and with the ability to allow international trade to be processed and altered by value-added services at the site as goods move through the supply chain.

“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.

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

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

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

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

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

“Port Cargo Handling Equipment” shall mean rubber-tired gantry cranes, straddle carriers, shuttle carriers, and terminal tractors, including on-road and non-road yard hostlers and yard tractors (i.e., yard trucks) that generally operate within ports, but may also be used at cargo and materials distribution facilities and similar locations.

"Port" shall mean a seaport, multi-model rail yard, or inland port.

"Repower" shall mean the replacement of an existing engine with a newer, cleaner engine or power source that is certified by EPA and, if applicable, CARB, to meet a more stringent set of engine emission standards. Repower includes, but is not limited to, diesel engine replacement with an engine certified for use with diesel or a clean alternate fuel, diesel engine replacement with an electric power source (e.g., grid, battery), diesel engine replacement with a fuel cell, diesel engine replacement with an electric generator(s) (genset), diesel engine upgrades in Ferries/Tugs with an EPA Certified Remanufacture System, and/or diesel engine upgrades in Ferries/Tugs with an EPA Verified Engine Upgrade. All-Electric and fuel cell Repowers do not require EPA or California Air Resources Board 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. The bus 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 vehicle or equipment 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 or equipment structural components completely in half.

"Tier 0, 1, 2, 3, 4" shall refer to corresponding EPA engine emission classifications for non-road engines.

"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).

Appendix C – Eligible Mitigation Actions

The eligible mitigation actions and major eligibility criteria under this plan are outlined below. The criteria established for each action include criteria from the Trust Agreement, along with changes made by the Texas Commission on Environmental Quality (TCEQ) to further clarify the requirements and, in some cases, establish more restrictive requirements based on the priorities of the TCEQ.

Some of the eligible actions are listed differently from the Trust Agreement. School buses are listed separately from transit and shuttle buses, and refuse vehicles are listed separately from the other local freight truck categories. This approach will allow the TCEQ to potentially award grants to these categories under different solicitations, with different priorities.

Not all criteria and requirements are included below. The grant solicitation, application, and contract documents will contain the complete criteria and requirements for eligible mitigation action. Also, the TCEQ may amend or establish more limiting criteria than those listed below, subject to the requirements of the Trust Agreement.

Eligible Actions

1. Light-Duty Zero Emission Vehicle (ZEV) Supply Equipment

   The commission may establish additional or more restrictive criteria, including lower maximum percentage of costs limits or maximum limits on the grant amount available for each charging or fueling facility or location, for a grant application period.

   a. Funds may be used for the acquisition and installation of new light-duty ZEV supply equipment. Ongoing operation and maintenance costs will be the responsibility of the applicant.
   b. The equipment must be installed at a site without existing light-duty ZEV supply services, or to expand the number of vehicles that may be serviced at an existing site. Funding is not available to just replace existing equipment with newer equipment.
   c. The TCEQ may prioritize funding for applicants that own the land and the facility at which the equipment will be installed and will have a vested interest in the use of the equipment, in order to maximize the long-term sustainability of the equipment. The TCEQ may also prioritize project selection based on the proposed location in relation to existing services, as well as other factors that may affect the potential for sustainable use of the infrastructure.

d. Light-duty electric vehicle supply equipment includes Level 1, Level 2, or fast-charging equipment (or analogous successor technologies) that is 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).

e. For light-duty electric vehicle supply equipment available to the public, up to 70% of the cost to purchase and install the light-duty electric vehicle supply equipment may be reimbursed under a grant.

f. For light-duty electric vehicle supply equipment available at a workplace or multi-unit dwelling, up to 60% of the cost to purchase and install the light-duty electric vehicle supply equipment may be reimbursed under a grant.

g. Light-duty hydrogen fuel cell vehicle supply equipment includes hydrogen dispensing equipment capable of dispensing hydrogen at a pressure of 70 megapascals (or analogous successor technologies) that is in a public place.

h. Up to 33% of the eligible costs may be reimbursed for hydrogen fuel cell vehicle supply equipment capable of dispensing at least 250 kilograms (kg) per day. Up to 25% of the eligible costs may be reimbursed for equipment capable of dispensing at least 100 kg per day.

2. Class 4 - 7 Local Freight Trucks

Subject to the priorities established by the commission, the commission may establish additional or more restrictive criteria, including lower maximum percentage of costs limits or maximum funding amounts, for a grant application period.

a. Eligible medium-duty trucks include 1992-2009 engine model year diesel powered class 4 - 7 local freight trucks.

b. A privately-owned or government-owned truck may be replaced or repowered with a new all-electric, diesel, or alternative fuel (e.g., CNG, propane, hybrid) vehicle or engine, including charging infrastructure associated with a new all-electric engine.

c. For a privately-owned truck, up to 25% of the cost of a replacement with a diesel or alternative fuel vehicle, up to 40% of the cost of a repower with a diesel or alternative fuel engine, or up to 50% of the cost of a replacement or repower with an electric vehicle or engine, including the cost of charging infrastructure, may be reimbursed under a grant.

d. For a government-owned truck, up to 80% of the cost of a replacement or repower, including the cost of charging infrastructure, may be reimbursed under a grant.

e. For the repower or replacement of a truck, the engine model year of the replacement engine or engine on the replacement truck must be of an engine model year in which the mitigation action occurs or one engine model year prior.

f. The applicant must own the vehicle at the time of application and must have continuously owned the vehicle and have been listed as the owner on the title for the two years immediately preceding the application date. The TCEQ may waive the ownership requirements in certain cases that will be explained in the grant solicitation documents.

g. Unless the vocational type of the vehicle is exempt from inspection and registration requirements, the vehicle must currently be registered for operation in Texas and must have been continuously inspected and registered in Texas for the two years immediately preceding the application date. The TCEQ may waive the registration and inspection requirements in certain cases that will be explained in the grant solicitation documents.

h. Vehicles with apportioned registration to allow for operation in multiple states must have been operated in Texas at least 75% of annual mileage for at least the two years preceding the application date.

i. The vehicle must have been used in its primary function in the routine operations of the applicant in Texas for the two years immediately preceding the application date.

j. The vehicle must currently be used in its primary function in the routine operations of the applicant and be considered capable of performing its primary function for the next five years.

k. For the repower of a truck, the engine being replaced must be scrapped prior to the grant recipient requesting reimbursement of costs.

l. For the replacement of a truck, the engine and truck being replaced must be scrapped prior to the grant recipient requesting reimbursement of costs.

m. For the replacement of a truck, the replacement vehicle must be of the same type, weight category, and body and axle configuration as the vehicle being replaced. The replacement vehicle must be configured and intended for use in the same application or vocation (for example, regional delivery), as the vehicle being replaced. The TCEQ may accept, in particular cases, a vehicle of a different type, weight category, or body and axle configuration to account for the latest technology or vehicle type used in a specific vocation.

3. Class 8 Local Freight Trucks and Port Drayage Trucks

   Subject to the priorities established by the commission, the commission may establish additional or more restrictive criteria, including lower maximum percentage of costs limits or maximum funding amounts, for a grant application period.

   a. Eligible large trucks include 1992 - 2009 engine model year diesel powered class 8 local freight or port drayage trucks.
   b. A privately-owned or government-owned truck may be replaced or repowered with a new all-electric, diesel, or alternative fuel (e.g., CNG, propane, hybrid) vehicle or engine, including charging infrastructure associated with a new all-electric engine.
   c. For a privately-owned truck, up to 25% (or 50% for a port drayage truck) of the cost of a replacement with a diesel or alternative fuel vehicle, up to 40% of the cost of a repower with a diesel or alternative fuel engine, or up to 50% of the cost of a replacement or repower with an electric vehicle or engine, including the cost of charging infrastructure, may be reimbursed under a grant.
   d. For a government-owned truck, up to 80% of the cost of a replacement or repower, including the cost of charging infrastructure, may be reimbursed under a grant.
   e. For the repower or replacement of a truck, the engine model year of the replacement engine or engine on the replacement truck must be of an engine model year in which the mitigation action occurs or one engine model year prior.
   f. The applicant must own the vehicle at the time of application and must have continuously owned the vehicle and have been listed as the owner on the title for the two years immediately preceding the application date. The TCEQ may waive the ownership requirements in certain cases that will be explained in the grant solicitation documents.
   g. Unless the vocational type of the vehicle is exempt from inspection and registration requirements, the vehicle must currently be registered for operation in Texas and must have been continuously inspected the registered in Texas for the two years immediately preceding the application date. The TCEQ may waive the registration and inspection requirements in certain cases that will be explained in the grant solicitation documents.
   h. Vehicles with apportioned registration to allow for operation in multiple states must have been operated in Texas at least 75% of annual mileage for at least the two years preceding the application date.

i. The vehicle must have been used in its primary function in the routine operations of the applicant in Texas for the two years immediately preceding the application date.

j. The vehicle must currently be used in its primary function in the routine operations of the applicant and be considered capable of performing its primary function for the next five years.

k. For the repower of a truck, the engine being replaced must be scrapped prior to the grant recipient requesting reimbursement of costs.

l. For the replacement of a truck, the engine and truck being replaced must be scrapped prior to the grant recipient requesting reimbursement of costs.

m. For the replacement of a truck, the replacement vehicle must be of the same type, weight category, and body and axle configuration as the vehicle being replaced. The replacement vehicle must be configured and intended for use in the same application or vocation (for example, regional delivery), as the vehicle being replaced. The TCEQ may accept, in particular cases, a vehicle of a different type, weight category, or body and axle configuration to account for the latest technology or vehicle type used in a specific vocation.

n. If Class 8 port drayage trucks are prioritized as an individual category for funding, location restrictions may be used, including a requirement that the drayage truck operate for much of the annual operation moving cargo to and from seaports, intermodal rail yards, and/or inland ports in the eligible areas.

4. Class 7 - 8 Refuse Vehicles

Subject to the priorities established by the commission, the commission may establish additional or more restrictive criteria, including lower maximum percentage of costs limits or maximum funding amounts, for a grant application period.

a. Eligible refuse vehicles include 1992 - 2009 engine model year class 7 - 8 refuse vehicles.

b. A privately-owned or government-owned truck may be replaced or repowered with a new all-electric, diesel, or alternative fuel (e.g., CNG, propane, hybrid) vehicle or engine, including charging infrastructure associated with a new all-electric engine.

c. For a privately-owned truck, up to 25% of the cost of a replacement with a diesel or alternative fuel vehicle, up to 40% of the cost of a repower with a diesel or alternative fuel engine, or up to 50% of the cost of a replacement or repower with an electric vehicle or engine, including the cost of charging infrastructure, may be reimbursed under a grant.

d. For a government-owned truck, up to 80% of the cost of a replacement or repower, including the cost of charging infrastructure, may be reimbursed under a grant.

e. For the repower or replacement of a truck, the engine model year of the replacement engine or engine on the replacement truck must be of an engine model year in which the mitigation action occurs or one engine model year prior.

f. The applicant must own the vehicle at the time of application and must have continuously owned the vehicle and have been listed as the owner on the title for the two years immediately preceding the application date. The TCEQ may waive the ownership requirements in certain cases that will be explained in the grant solicitation documents.

g. Unless the vehicle is exempt from inspection and registration requirements, the vehicle must currently be registered for operation in Texas and must have been continuously inspected and registered in Texas for the two years immediately preceding the application date. The TCEQ may waive the registration and inspection requirements in certain cases that will be explained in the grant solicitation documents.

h. The vehicle must have been used in its primary function as a refuse vehicle in the routine operations of the applicant in Texas for the two years immediately preceding the application date.

i. The vehicle must currently be used in its primary function in the routine operations of the applicant and be considered capable of performing its primary function for the next five years.

j. For the repower of a truck, the engine being replaced must scrapped be prior to the grant recipient requesting reimbursement of costs.

k. For the replacement of a truck, the engine and truck being replaced must be scrapped prior to the grant recipient requesting reimbursement of costs.

l. For the replacement of a truck, the replacement vehicle must be of the same type, weight category, and body and axle configuration as the vehicle being replaced. The replacement vehicle must be configured and intended for use in the same application, that is as compaction truck or a roll-off truck. The TCEQ may accept, in particular cases, a vehicle of a different type, weight category, or body and axle configuration to account for the latest technology or vehicle type.

5. School Buses

Subject to the priorities established by the commission, the commission may establish additional or more restrictive criteria, including lower maximum

percentage of costs limits or maximum funding amounts, for a grant application period.

a. Eligible buses include 2009 or earlier engine model year class 4 - 8 school buses.
b. A privately-owned or government-owned school bus may be replaced or repowered with a new all-electric, diesel, or alternative fuel (e.g., CNG, propane, hybrid) school bus or engine, including charging infrastructure associated with a new all-electric engine.
c. For a privately-owned school bus, up to 25% of the cost of a replacement with a diesel or alternative fuel vehicle, up to 40% of the cost of a repower with a diesel or alternative fuel engine, or up to 50% of the cost of a replacement or repower with an electric bus or engine, including the cost of charging infrastructure, may be reimbursed under a grant.
d. For a government-owned school bus or a privately-owned school bus operated under contract with a public school district, up to 80% of the cost of a replacement or repower, including the cost of charging infrastructure, may be reimbursed under a grant.
e. For the repower or replacement of a school bus, the engine model year of the replacement engine or engine on the replacement school bus must be of an engine model year in which the mitigation action occurs or one engine model year prior.
f. The applicant must own the school bus at the time of application and must have continuously owned the bus and have been listed as the owner on the title for the two years immediately preceding the application date. The TCEQ may waive the ownership requirements in certain cases that will be explained in the grant solicitation documents.
g. The school bus being repowered or replaced must have been used to transport students on a regular daily route to and from the school for at least the two years preceding the submission of a grant application.
h. The school bus being repowered or replaced must be in good operating condition and be considered capable of performing its regular function for the next five years.
i. For the repower of a school bus, the engine being replaced must be scrapped before the grantee requests reimbursement of costs.
j. For the replacement of a school bus, the engine and school bus being replaced must be scrapped before the grant recipient requests reimbursement of costs.

6. Transit and Shuttle Buses

   Subject to the priorities established by the commission, the commission may establish additional or more restrictive criteria, including lower maximum percentage of costs limits or maximum funding amounts, for a grant application period.

   a. Eligible buses include 2009 or earlier engine model year class 4 - 8 buses.
   b. A privately-owned or government-owned bus may be replaced or repowered with a new all-electric, diesel, or alternative fuel (e.g., CNG, propane, hybrid) bus or engine, including charging infrastructure associated with a new all-electric engine.
   c. For a privately-owned bus, up to 25% of the cost of a replacement with a diesel or alternative fuel vehicle, up to 40% of the cost of a repower with a diesel or alternative fuel engine, or up to 50%of the cost of a replacement or repower with an electric bus or engine, including the cost of charging infrastructure, may be reimbursed under a grant.
   d. For a government-owned truck, up to 80% of the cost of a replacement or repower, including the cost of charging infrastructure, may be reimbursed under a grant.
   e. For the repower or replacement of a bus, the engine model year of the replacement engine or engine on the bus must be of an engine model year in which the mitigation action occurs or one engine model year prior.
   f. The applicant must own the bus at the time of application and must have continuously owned the bus and have been listed as the owner on the title for the two years immediately preceding the application date. The TCEQ may waive the ownership requirements in certain cases that will be explained in the grant solicitation documents.
   g. The bus being repowered or replaced must be in good operating condition and be considered capable of performing its regular function for the next five years.
   h. For the repower of a bus, the engine being replaced must be scrapped before the grantee requests reimbursement of costs.
   i. For the replacement of a bus, the engine and bus being replaced must be scrapped before the grant recipient requests reimbursement of costs.

7. Electric Forklifts and Port Cargo Handling Equipment

   Subject to the priorities established by the commission, the commission may establish additional or more restrictive criteria, including lower maximum

percentage of costs limits or maximum funding amounts, for a grant application period.

a. Eligible forklifts include forklifts with greater than 8,000 pounds lift capacity.
b. In addition to forklifts and other cargo handling equipment, this initiative may include replacement of an older Class 8 on-road vehicle being used as a yard truck with a purpose-built electric on-road or non-road yard truck.
c. Eligible non-electric forklifts and port cargo handling equipment may be repowered with an all-electric electric engine, including the costs of installation of such engine, and charging infrastructure associated with such new all-electric engine
d. Eligible non-electric forklifts and port cargo handling equipment may be replaced with the same equipment in all-electric form, including the charging infrastructure associated with the new all-electric engine.
e. The TCEQ may limit eligible forklifts and port cargo handling equipment to those with Tier 0, 1, or 2 diesel engines, or spark-ignition engines that are uncertified or certified to 3.0 g/bhp-hr of nitrogen oxides (NO_x) or greater.
f. A Class 8 on-road vehicle with a 1992 - 2009 engine being used as a port yard truck may also be replaced with a purpose-built all-electric on-road or non-road yard truck, including the charging infrastructure associated with the new all-electric engine.
g. For privately-owned equipment up to 50% of the cost of a replacement or repower, including the cost of charging infrastructure, may be reimbursed under a grant.
h. For government-owned equipment, up to 80% of the cost of a replacement or repower, including the cost of charging infrastructure, may be reimbursed under a grant.
i. The applicant must own the equipment at the time of application and must have continuously owned the equipment for a minimum of two years immediately preceding the grant application date.
j. The equipment must have been used in its primary function in the routine operations of the applicant in Texas for the two years immediately preceding the grant application date.
k. The equipment must currently be used in its primary function in the routine operations of the applicant and be considered capable of performing is primary function for the next five years.
l. For the repower of the equipment, the engine being replaced must be scrapped prior to the grant recipient requesting reimbursement of costs.

m. For the replacement of the equipment, the engine and equipment being replaced must be scrapped prior to the grant recipient requesting reimbursement of costs.

8. Electric Airport Ground Support Equipment

Subject to the priorities established by the commission, the commission may establish additional or more restrictive criteria, including lower maximum percentage of costs limits or maximum funding amounts, for a grant application period.

a. Eligible non-electric airport ground support equipment may be repowered with an all-electric electric engine, including the costs of installation of such engine, and charging infrastructure associated with such new all-electric engine

b. Eligible non-electric airport ground support equipment may be replaced with the same equipment in all-electric form, including the charging infrastructure associated with the new all-electric engine.

c. Eligible equipment is limited to those with Tier 0, 1, or 2 diesel engines, or spark-ignition engines that are uncertified or certified to 3.0 g/bhp-hr of NO_x or greater.

d. For privately-owned equipment up to 50% of the cost of a replacement or repower, including the cost of charging infrastructure, may be reimbursed under a grant.

e. For government-owned equipment, up to 80% of the cost of a replacement or repower, including the cost of charging infrastructure, may be reimbursed under a grant.

f. The applicant must own the equipment at the time of application and must have continuously owned the equipment for a minimum of two years immediately preceding the grant application date.

g. The equipment must have been used in its primary function in the routine operations of the applicant in Texas for the two years immediately preceding the grant application date.

h. The equipment must currently be used in its primary function in the routine operations of the applicant and be considered capable of performing its primary function for the next five years.

i. For the repower of the equipment, the engine being replaced must be scrapped prior to the grant recipient receiving reimbursement of costs.

j. For the replacement of the equipment, the engine and equipment being replaced must be scrapped prior to the grant recipient receiving reimbursement of costs.

9. Ocean-Going Vessel Shore Power

   Up to 25% of eligible costs for non-government owned shore power and up to 80% of the eligible costs for government-owned shore power projects may be funded under this initiative. Subject to the priorities established by the commission, the commission may establish additional or more restrictive criteria, including lower maximum percentage of costs limits or maximum funding amounts, for a grant application period.

   a. Applications are limited to providing shore power to ocean-going vessels.
   b. Eligible marine shore power includes systems that enable a compatible ocean-going vessel's main and auxiliary engines to remain off while the vessel is at berth.
   c. Components of such systems eligible for reimbursement are limited to cables, cable management systems, shore power coupler systems, distribution control systems, and power distribution.
   d. Marine shore power systems must comply with international shore power design standards (ISO/IEC/IEEE 80005-1-2012 High Voltage Shore Connection Systems or the IEC/PAS 80005-3:2014 Low Voltage Shore Connection Systems) and should be supplied with power sourced from the local utility grid.

Appendix D – Emissions Calculations

Calculating Reductions in NO_X Emissions

The Texas Commission on Environmental Quality (TCEQ) proposes to use the same methodology for calculating nitrogen oxides (NO_X) emissions reductions as used for the Texas Emissions Reduction Plan (TERP) grant programs.

The TCEQ intends for most, if not all, of the grants to be selected using a first-come, first-served process. The TCEQ may provide pre-determined maximum funding tables based on a maximum cost-effectiveness limit established for that grant application period. Alternatively, the TCEQ may establish pre-determined maximum funding tables based on other criteria, such as the estimated average costs and the maximum percentage of costs allowed. Under this approach, the NO_X emissions reductions would be determined by the TCEQ and the applicant would not need to calculate the emissions reductions to apply for a grant.

If the TCEQ solicits some project categories on a competitive basis, the TCEQ may provide pre-determined (default) annual usage amounts and an example calculator for use by potential applicants to estimate the NO_X emissions reductions and cost-effectiveness for their proposed project. The TCEQ will then also calculate the NO_X emissions reductions and will make the final determination of the reductions and cost-effectiveness of the projects.

The general methodology that the TCEQ will use in calculating emissions reductions is outlined in this section.

In general, the emissions-reduction benefit represents the difference in the emissions of a baseline engine and a reduced-emissions engine. In situations where the model year of the equipment and the model year of the current engine are different, the model year of the engine must be used to determine the baseline emissions for benefit calculations.

The emissions level is calculated by multiplying an emissions factor, an activity level, and a conversion factor, if necessary. Emissions factors are generally expressed in terms of grams per brake horsepower-hour (g/bhp-hr), grams per mile (g/mi), or grams per gallon (g/gal). Conversion factors are generally expressed in units of brake horsepower-hour per mile (bhp-hr/mi) or horsepower-hour per gallon (hp-hr/gal). For most applications, the activity level will be established by the annual mileage or hours of operation.

Calculation of NO_X Emissions Reductions Based on Annual Mileage

The calculation of emissions and emissions reductions using annual mileage as the usage factor is determined by the steps in Table D.1. For activities where the emissions of the new or replacement engine are certified at a specific emissions level (g/bhp-hr), a conversion factor is needed to determine an appropriate emissions factor in grams per mile. Appropriate conversion factors to convert g/bhp-hr to g/mi will be included in the grant solicitation materials.

Table D.1
Calculating Reductions in NO_X Emissions Based on Annual Mileage
Applying the TxLED Correction Factor

The counties affected by the TxLED requirements currently include all the eligible counties, except for El Paso County. For actions eligible statewide, the TCEQ will determine if a TxLED correction factor is needed.	
TxLED correction factor for on-road: ***1 – 0.057***	**0.943**

Step 1. Determine the NO_x Emissions Factor

Determine baseline NO_x emissions factor	
Baseline NO_x emissions standard (g/bhp-hr)	
× TxLED correction factor (*diesel engines only*)	
= correction g/bhp-hr	
× conversion factor (bhp-hr/mi)	
= baseline NO_x emissions factor (g/mi)	
Determine reduced NO_x emissions factor (g/mi)	
Option A. Reduced-emissions technology verified to achieve a percentage reduction from the baseline	
Baseline NO_x emissions factor (g/mi)	
× verified percentage reduction from baseline	
= reduced NO_x emissions factor (g/mi)	

Option B. Reduced-emissions engine certified to a specific emissions standard (g/bhp-hr)	
Certified NO_x emissions (g/bhp-hr)	
× TxLED correction factor (*diesel engines only*)	
= corrected g/bhp-hr	
× conversion factor (bhp-hr/mi)	
= reduced NO_x emissions factor (g/mi)	

Step 2. Calculate the NO_x Emissions Reductions

Baseline g/mi – reduced emissions g/mi	
× annual miles of operation	
= g/yr	
Convert to Tons	÷ 907,200 grams per ton
= estimated annual NO_x-emissions reduction (tons/yr)	
× activity life (years)	
= estimated activity-life NO_x-emissions reduction (tons)	

Calculation of NO_X Emissions Reductions Based on Annual Hours of Operation

The calculation of emissions and emissions reductions using annual hours of operation as the usage factor is determined by the steps in Table D.2.

Appropriate baseline NO_X emissions factors and default load factors will be included in the grant solicitation materials. Potential grant applicants should consult with the TCEQ to ensure they use the appropriate factors.

Unless otherwise specified by the TCEQ, the TCEQ will use a horsepower for the replacement equipment/engine that is 110% of the baseline equipment/engine horsepower, regardless of the actual rated horsepower of replacement equipment/engine. Applicants should still list the actual maximum-rated brake horsepower for both the old and the new engines in the application, but the TCEQ will calculate the emissions reductions under this approach.

For activities where the emissions of the new or replacement engine are certified at a specific emissions level (g/bhp-hr), use that emissions level as the emissions factor. For this program, non-road equipment eligible under the program must be powered by an all-electric engine, and the emissions factor for the new engines will be considered **0 g/bhp-hr**.

Table D.2
Calculating Reductions in NO_X Emissions Based on Annual Hours of Operation
Applying the TxLED Correction Factor

The counties affected by the TxLED requirements currently include all the eligible counties, except for El Paso County. For actions eligible statewide, the TCEQ will determine if a TxLED correction factor is needed.	
TxLED correction factor for non-road: *1 – 0.07*	0.93

Step 1. Determine the Reduced NO_x Emissions Factor

Option A. Reduced-emissions technology verified to achieve a percentage reduction from the baseline	
Baseline NO_x emissions factor (g/bhp-hr)	
× verified percentage reduction from baseline	
= reduced NO_x emissions factor (g/bhp-hr)	
Option B. Reduced-emissions engine certified to a specific emissions standard (g/bhp-hr)	
Certified NO_x emissions (g/bhp-hr)	

Step 2. Calculate the NO_x Emissions Reduction

Calculate the Baseline NO_X Emissions	
NO_x emissions factor (g/bhp-hr)	
× TxLED correction factor (*diesel engines only*)	
= corrected NO_x emissions factor (g/bhp-hr)	
× load factor	
× horsepower	
= g/hr	
Calculate the Reduced NO_X Emissions	
NO_x emissions factor (g/bhp-hr)	
× TxLED correction factor (*diesel engines only*)	
= corrected NO_x emission factor (g/bhp-hr)	
× load factor	
× horsepower	
= g/hr	
Calculate the NO_X Emissions Reductions	
Baseline g/hr – reduced emissions g/hr =	
× annual hours of operation	
= g/year	
Convert to Tons	÷ 907,200 grams per ton
= estimated annual NO_x emissions reduction (tons/yr)	
× activity life (years)	
= estimated activity-life NO_x emissions reduction (tons)	

Example NO_X Emissions Reductions

Examples of the potential NO_x emissions reductions for several of the eligible mitigation actions are show in Table D.3 below. For these examples, electric and government-only projects grant amounts are set at 60% of costs. Non-government diesel and alternative fuel projects are set at 25% of costs. These are examples only, and all project categories may include both government and non-government applicants.

Table D.3 Example NO_x Emissions Reduction and Cost Effectiveness (replacement of model year 2000)

Vehicle/Equipment	New Fuel[1]	Total 5-yr NO_x Reduction (tons)	Estimated Cost	Example Grant Amount	Cost Per Ton of NO_x Reduced
School Bus *(government owned)*	Diesel	0.5905	$90,000	$72,000	$121,927
	Alt. Fuel	0.6183	$109,333	$87,466	$141,462
	Electric	0.6216	$290,000	$232,000	$373,231
Class 8a Refuse Truck *(government owned)*	Diesel	2.1804	$210,000	$168,000	$77,051
	Alt. Fuel	2.2830	$240,000	$192,000	$84,101
	Electric	2.2951	$560,000	$448,000	$195,196
Transit Bus *(government owned)*	Diesel	2.7857	$300,000	$240,000	$86,154
	Alt. Fuel	2.9168	$355,000	$284,000	$97,368
	Electric	2.9323	$650,000	$520,000	$177,334
Class 8b Local Freight Truck *(non-govt.)*	Diesel	3.5905	$140,000	$35,000	$9,748
	Alt. Fuel	3.7594	$168,333	$42,083	$11,194
	Electric	3.7795	$600,000	$300,000	$79,376
Class 6 Local Freight Truck *(non-govt.)*	Diesel	0.7663	$75,000	$18,750	$24,468
	Alt. Fuel	0.8023	$103,000	$25,750	$32,095
	Electric	0.8066	$190,000	$95,000	$117,775
Cargo Handling Equipment	Electric	3.7560	$150,000	$75,000	$19,968
Airport Ground Support Equipment (aircraft tug)	Electric	2.2910	$90,000	$45,000	$19,642

[1]Alt. Fuel means Alternative Fuel, which may include natural gas or propane.