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Texas Emissions Reduction Plan Biennial Report (2017 – 2018)

Report to the 86th Texas Legislature

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Air Quality Division

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Texas Emissions Reduction Plan
Biennial Report (2017 – 2018)
A Report to the 86th Texas Legislature
December 2018

Prepared by:

Air Quality Division
Texas Commission on Environmental Quality

SFR-079/18

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Summary

Texas Emissions Reduction Plan

This eighth Texas Emissions Reduction Plan (TERP) biennial report is produced by the Texas Commission on Environmental Quality (TCEQ) in fulfillment of the requirements of Texas Health and Safety Code (THSC), sections 386.057 and 386.116(d).

The TERP was established under THSC Chapter 386 by the 77th Texas Legislature, 2001, through the enactment of Senate Bill (SB) 5. Under THSC 386.052(b), the statutory objectives of the TERP include:

1. achieving maximum reductions in nitrogen oxides (NO_X) to demonstrate compliance with the Texas State Implementation Plan (SIP);
2. preventing areas of the state from being in violation of National Ambient Air Quality Standards (NAAQS) established by the United States Environmental Protection Agency (EPA) under authority of the Federal Clean Air Act (FCAA);
3. achieving cost-saving and multiple benefits by reducing emissions of other pollutants;
4. achieving reductions of emissions of diesel exhaust from school buses; and
5. advancing technologies that reduce NO_X and other emissions from facilities and other stationary sources.

Lowering NO_X emissions from TERP-eligible sources remains an important strategy for the SIP, which details how the state will meet the FCAA requirements.

Since 2011, the TERP has also included programs to support increased use of alternative fuels for transportation in Texas.

Revenue and Funding

The TERP is funded from fees and surcharges on obtaining a certificate of vehicle title for all vehicles, purchase or lease of heavy-duty vehicles and equipment, and registration and inspection of commercial vehicles. Revenue into the TERP Fund Fiscal Year (FY) 2018–2019 biennium is projected to be $502,000,000. Biennial appropriations and statutorily-required transfers and deductions from the TERP Fund are expected to be $161,696,938, including $154,739,737 appropriated to the TCEQ to fund TERP grant programs and administer those programs.

The unexpended balance in the TERP Fund at the end of the FY 2016–2017 biennium was $1,269,848,303. The balance at the end of the FY 2018–2019 biennium is projected to reach $1,610,151,366. All TERP Fund revenue deposits are currently set to expire August 31, 2019.

Program Highlights

The TERP includes incentive funding for a variety of programs. The primary TERP grant program continues to provide grants to reduce NO_x emissions from mobile sources in the state's nonattainment areas and areas of concern. Other programs include funding for natural gas vehicles and other alternative fuel vehicles, and infrastructure to provide fuel for those vehicles. The TERP also includes funding to reduce emissions from school buses and funding to encourage greater use of light-duty vehicles powered by electricity or an alternative fuel.

Through the TERP, the TCEQ also provides funding for new technologies to reduce emissions from certain stationary facilities and funding for air monitoring in the North Texas region. In addition, energy efficiency programs established under the TERP continue to help the state reduce energy use and the associated energy-related emissions in a growing and robust economy.

Some of the key program highlights from the implementation of each program through August 2018 are provided below.

- Since 2001, the **Diesel Emissions Reduction Incentive Program** has provided over $1.1 billion to replace or upgrade more than 19,000 vehicles and pieces of equipment, resulting in a reduction of 179,879 tons of NO_x in the nonattainment areas and other areas of concern. This program is implemented through several grant programs: the Emissions Reduction Incentive Grants Program; Rebate Grants Program; Small Business Grants Program; and Third-Party Grant Program. More than $53 million in grants remain available to be awarded under the program in FY 2019.
- The **Texas Clean Fleet Program**, implemented in 2009, and **Texas Natural Gas Vehicle Grant Program**, implemented in 2011, have together provided more than $98 million to replace or upgrade existing vehicles with 974 medium and heavy-duty vehicles powered by compressed natural gas (CNG), 345 vehicles powered by liquefied petroleum gas (LPG), 115 vehicles powered by Liquified Natural Gas (LNG), and 131 diesel hybrid vehicles. These projects are projected to result in a reduction of more than 2,128 tons of NO_x in the areas designated for operation of the vehicles under these programs. More than $19.1 million in grants remain available to be awarded under the programs in FY 2019.

- The **Drayage Truck Incentive Program** was implemented in 2014 and has awarded over $6.2 million to replace 77 drayage trucks and container handling equipment operating at seaports and rail yards located in nonattainment areas, including 64 drayage trucks in the Houston-Galveston-Brazoria area and 11 in the Dallas-Fort Worth area. Now called the **Seaport and Rail Yard Areas Emissions Reduction (SPRY) Program,** $9.2 million is available to be awarded under the program in FY 2019.
- To ensure the availability of fuel for alternative fuel vehicles, the **Alternative Fueling Facilities Program** and the **Clean Transportation Triangle Program**, also established in 2011, provided over $34.5 million to establish or upgrade 172 natural, alternative fueling, or electric charging facilities, including 69 stations providing CNG, 85 electric charging stations, six stations providing LPG, and 12 biodiesel stations. In 2017, the Clean Transportation Triangle program was incorporated into the Alternative Fueling Facilities Program and the area of eligibility was designated the Clean Transportation Zone.
- More than $37.5 million has been awarded under the **Texas Clean School Bus Program** since 2005, including $4.7 million in federal funds, for the retrofit or replacement of more than 7,500 buses in Texas.
- The **New Technology Implementation Grants Program**, established in 2009, has awarded over $16.7 million through FY 2018 for projects with potential to reduce emissions from stationary sources and projects to store and distribute electricity from renewable sources. Approximately $3.6 million in grants remain available to be awarded under the program in FY 2019.
- Approximately $15.8 million in TERP funding has been expended through the **Regional Air Monitoring Program**. The program established 21 air monitoring sites since 2012 in the North Texas area, including 13 Automated Gas Chromatograph systems that provide near real-time volatile organic compound data on an hourly basis and eight volatile organic compound canister systems that collect ambient air samples every six days.
- The **Light-Duty Motor Vehicle Purchase or Lease Incentive Program** was implemented in 2013 and expired on August 31, 2015. The program was reinstated by the Texas Legislature in 2017 and has awarded more than $5.4 million in rebates for the purchase of light-duty alternative fuel and electric-powered vehicles, including 2,205 plug-in electric and plug-in hybrid electric vehicles, and 196 vehicles powered by natural gas. More than $6.3 million in rebates remain available to be awarded under the program in FY 2019.

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I. Overview

The Texas Emissions Reduction Plan (TERP) was established by Senate Bill (SB) 5, 77th Texas Legislature, Regular Session, 2001, under Texas Health and Safety Code (THSC), Chapter 386. Subsequent updates and changes have been made to the TERP to ensure effectiveness in meeting program objectives and to address new priorities.

Under THSC 386.052(b) the statutory objectives of the TERP include:

1. achieving maximum reductions in nitrogen oxides (NO_X) to demonstrate compliance with the Texas State Implementation Plan (SIP);
2. preventing areas of the state from being in violation of National Ambient Air Quality Standards established by the United States Environmental Protection Agency (EPA) under authority of the Federal Clean Air Act (FCAA);
3. achieving cost-saving and multiple benefits by reducing emissions of other pollutants;
4. achieving reductions of emissions of diesel exhaust from school buses; and
5. advancing technologies that reduce NO_X and other emissions from facilities and other stationary sources.

Since 2011, the TERP also includes programs to support increased use of alternative fuel for transportation in Texas.

Since NO_X is a primary precursor to the formation of ground-level ozone, the TERP targets areas in Texas designated as nonattainment for ground-level ozone under the FCAA, as well as other areas of concern for ozone. Lowering NO_X emissions from TERP-eligible sources remains an important component of the SIP, which details how the state will meet FCAA requirements.

The TERP is currently comprised of the following incentive grant programs:

- Diesel Emissions Reduction Incentive (DERI) Program
- Texas Clean Fleet Program (TCFP)
- Texas Natural Gas Vehicle Grant Program (TNGVGP)
- Seaport and Rail Yard Areas Emissions Reduction (SPRY) Program
- Alternative Fueling Facilities Program (AFFP)
- Texas Clean School Bus (TCSB) Program
- New Technology Implementation Grants (NTIG) Program
- Light-Duty Motor Vehicle Purchase or Lease Incentive Program (LDPLIP)

Additional TERP programs include:

- Port Authorities Studies and Pilot Projects
- Energy Efficiency Programs
  - Goal for Energy Efficiency
  - Energy Efficiency Programs in Institutions of Higher Education and Certain Government Entities
  - Texas Building Energy Performance Standards
- Regional Air Monitoring Program
- Health Effects Study
- Air Quality Research Support Program

Subsequent sections explain the status of the TERP programs.

II. Funding

Texas Emissions Reduction Plan Fund

The TERP is funded from revenue deposited to the TERP Fund established under THSC 386.251 as an account in the State treasury. The revenue going to the TERP Fund comes from the fees and surcharges listed below. All TERP Fund revenue deposits are currently set to expire August 31, 2019.

- Tax Code 151.0515(b): A 1.5% surcharge on the sale price or lease/rental amount of off-road diesel equipment sold, rented, or leased (a surcharge is also applied to the storage, use, or consumption of this equipment in Texas).
- Tax Code 152.0215(a): A 2.5% surcharge of the total consideration on sale or lease of model year pre–1997 on-road diesel vehicles over 14,000 pounds and a 1% surcharge for vehicle model year 1997 and newer.
- Texas Transportation Code 502.358: A 10% surcharge of the total fees due for the registration of truck-tractors and commercial motor vehicles.
- Texas Transportation Code 501.138(a): A portion of the vehicle certificate of title fee, $20 of the $33 fee for applicants in the nonattainment counties and affected counties and $15 of the $28 fee for applicants in all other counties.
- Texas Transportation Code 548.5055: A $10 fee on commercial motor vehicles required to have an annual safety inspection.

Use of the revenue deposited to the TERP Fund is authorized through appropriation by the Texas Legislature and other statutorily-directed deductions from the Fund. Revenue into the TERP Fund during the Fiscal Year (FY) 2018–2019 biennium is projected to be $502,000,000. The revenue deposits and the appropriation from the TERP Fund are listed in Appendix 1, *TERP Fund*.

Funds Allocation

The TCEQ was appropriated $77,369,870 in FY 2018 and $77,369,867 in FY 2019 to implement and administer the TERP programs. The allocation of appropriated amounts from the TERP Fund is set forth in THSC 386.252. The amounts are listed by program in Appendix 2, *TERP Funding Allocation*.

Money is also appropriated by the Texas Legislature directly to the Energy Systems Laboratory (ESL) of the Texas A&M Engineering Experiment Station, Texas A&M University System, for administrative costs associated with evaluating energy efficiency programs established under the TERP.

Notwithstanding the allocation formula in THSC 386.352, the legislative appropriations under the State Appropriations Act dictate the specific funding amounts that may be used and how those funds are allocated. In addition, the

TCEQ may reallocate the funds among the TERP programs after applications are solicited according to the initial allocation of funds.

III. Program Accomplishments

Since the establishment of the TERP in 2001, the plan has been updated several times to address legislative priorities and the air quality issues facing the state. Changes to the TERP have since increased its role in encouraging use of alternative fuels for transportation in Texas and to support new and innovative technologies for reduction of emissions from stationary sources. The TCEQ continues to conduct outreach through program workshops and application training sessions in targeted areas across the state, as well as through participation in related transportation industry and air-quality focused events.

Grants to Reduce NO_X Emissions from Vehicles and Equipment

Diesel Emissions Reduction Incentive (DERI) Program

The DERI program is managed by the TCEQ and provides grants to fund projects in the 42 DERI-eligible counties, including counties designated nonattainment (see Appendix 3, *Texas Nonattainment Area Counties*) and other affected counties. A map of the DERI-eligible counties is provided in Appendix 4, *Diesel Emissions Reduction Incentive Program Counties*. The DERI Program encompasses several associated grant programs.

A summary by area of grants awarded under these programs from 2001 through August 31, 2018, is provided in Appendix 5, *DERI Program Projects by Area*. Appendix 6, *DERI Program Projects by Emissions Source*, summarizes these grants by emission source. A complete list of the individual grant awards is available on the TERP website at <www.terpgrants.org>.

From 2001 through FY 2018, 11,899 projects under all DERI grant categories were either active or completed at the end of FY 2018, for a total of $1,102,232,075. These projects are projected to reduce NO_X emissions by 179,878.45 tons, at an average cost per ton of $6,128. Of these totals, $12,460,077 in federal American Recovery and Reinvestment Act (ARRA) funding was awarded in 2010 through the DERI Rebate program, with 1,326 tons of NO_X reduced. These totals do not include grants awarded and subsequently canceled.

Prior to changes to THSC 386.106, grants were previously limited to projects that did not exceed a cost-effectiveness limit of $15,000 per ton of NO_X reduced. The TCEQ had the authority to set cost-per-ton-limits lower than the maximum amount authorized in the statute. For each grant round, the TCEQ established a maximum cost per ton for eligible activities that was less than the statutorily-authorized maximum. From FY 2007 through FY 2013, the cost-per-ton-limits were set at $5,000 per ton of NO_X reduced for marine and locomotive projects and $10,000 per ton of NO_X reduced for all other projects.

Changes made by SB 1727, 83rd Texas Legislature, Regular Session, 2013, removed the $15,000 per ton statutory cap on the cost-effectiveness of a project. From FY 2015 through FY 2017, the cost per ton limits were set by the TCEQ at $10,000 per ton of NO_X reduced for marine and locomotive projects and $15,000 per ton of NO_X reduced for all other projects. Beginning in FY 2018, the cost per ton limits were set by the TCEQ at $12,500 per ton of NO_X reduced for marine and locomotive projects and $17,500 per ton of NO_X reduced for all other projects. The increase in the maximum cost per ton will help ensure continued participation in the programs as the most cost-effective projects are awarded and less cost-effective projects remain to be awarded. Therefore, the TCEQ expects the average cost per ton of NO_X reduced in future grant rounds to increase from the historical averages for the program.

To illustrate this, the FY 2015–2016 grant rounds funded more than 1,000 projects for a total of $121,687,680, with projected NO_X reductions of 14,401 tons at an average cost per ton of $8,450. The FY 2017–2018 grant rounds funded more than 1,200 projects for a total of $101,112,142, with projected NO_X reductions of 8,501 tons at an average cost per ton of $11,894. The TCEQ estimates that the cost per ton of projects funded over the next several years will continue to be higher than previous grant rounds.

The emissions reductions presented are projections based on the emissions reduction calculations for the grant projects. The projections are continually updated to account for newly-awarded projects and changes to existing projects. However, not all projects will be finally implemented, and the actual emissions reductions achieved by the projects that are implemented may be lower than the projections. The timing on when the emissions reductions are achieved may also be delayed as grantees begin operating grant-funded equipment later than the dates used to determine the original projections.

On average, grantees have achieved at least 85% of the annual commitments for use of the grant-funded vehicles and equipment for DERI grant projects that were active and subject to reporting during 2018. This percentage includes the annual commitments by grant recipients that were under action for noncompliance with the grant contract conditions. In some cases, the noncompliance issues will be resolved and either the funds will be returned or the grantee will come into compliance. If those grants are not included, the successful projects are reporting achieving at least 92% of the annual commitments. The TCEQ considers an achievement rate of 80% or higher to be a success, given the uncertainties with projecting future use over a five-to-seven-year period, or longer, when the grants are awarded.

The status of each DERI grant program is explained below.

Emissions Reduction Incentive Grants (ERIG) Program

Eligible projects under the ERIG Program may include new purchases and leases, replacements, repowers, retrofit technologies, infrastructure, qualifying fuels, and rail relocation and improvement. Eligible emission sources include heavy-duty on-road vehicles, non-road equipment, marine vessels, locomotives, and certain stationary engines.

In FY 2017, $60,165,431 in grants were awarded to 659 projects under the ERIG program. Since the program was first implemented in 2001, $825,888,515 has been awarded to 4,990 projects. These projects are projected to reduce NO_X emissions by about 147,439 tons at a cost of $6,128 per ton of NO_X reduced.

The most recent ERIG application period closed in August 2018, with approximately $53 million in available funds. More than $100 million in grants were requested by applicants. A list of the grant awards will be available on the TERP website at <www.terpgrants.org>.

Rebate Grants Program

In 2006, the TCEQ initiated a Rebate Grants Program to implement a portion of the TERP as authorized under THSC 386.117. The purpose of this program is to provide a streamlined and simplified process for submission and approval of grant applications and contracting.

Activities eligible for a rebate grant are intended to reduce NO_X emissions in the designated 42 TERP-eligible counties from on-road heavy-duty diesel vehicles and non-road diesel equipment. Rebate grants have been based on pre-approved maximum rebate grant amounts for eligible on-road and non-road replacement and repower projects.

Since the program was first implemented in 2006, $198,394,334 has been awarded to 3,087 projects. These projects are projected to reduce NO_X emissions by about 22,419 tons, at a cost of $8,849 per ton of NO_X reduced. Of these totals, $12,460,077 in federal ARRA funding was awarded in 2010, with 1,326 tons of NO_X reduced.

The TCEQ anticipates opening a new application period in Summer 2019 to award any remaining unexpended funds from the TERP programs in the FY 2018–2019 biennium. A list of the grant awards will be available on the TERP website at <www.terpgrants.org>.

Small Business Grants Program

From FY 2004 through FY 2017, the Small Business Grants Program targeted small businesses and other entities that owned and operated no more than two vehicles or pieces of equipment, or a combination of the two, one of which must have been diesel-powered and a pre-1994 model year vehicle or non-road equipment with “uncontrolled emissions.” SB 1731, 85th Texas Legislature, Regular Session, 2017, changed the definition of a “Small Business” under THSC 386.116 to include small businesses and other entities that, for more than two

years, has owned and operated up to five vehicles or pieces of equipment, or a combination of the two, one of which must be diesel-powered.

The program is streamlined for small businesses in the 42 TERP-eligible counties to apply for financial assistance to replace or repower vehicles or equipment, via a simplified application process. The TCEQ has incorporated the small business grants into the Rebate Grants Program.

Of the small business rebate grants awarded under the Rebate Grants Program 1,072 small business projects were either active or completed by the end of FY 2018. These grants total $71,080,010 and are projected to reduce NO_x emissions by approximately 8,907 tons, at a cost per ton of $7,980.

Third-Party Grant Program

The TCEQ has awarded eight third-party grant contracts to four grantees to assist with the implementation of TERP projects in the TERP-eligible areas: the Railroad Commission of Texas to fund propane and natural gas vehicles and equipment projects; the North Central Texas Council of Governments to fund various TERP projects, including refuse haulers; the Houston-Galveston Area Council to fund local government and commercial TERP projects, including projects to replace vehicles operating at or near the ports; and the Texas General Land Office to fund natural gas vehicle and equipment projects.

There are no current Third-Party grants in effect, although the previous grantees are expected to continue to monitor the sub-grant projects over the life of those projects.

Through FY 2018, there were 3,589 third-party sub-grants, totaling $65,489,149, that were active or completed. These sub-grants are projected to reduce NO_x emissions by 8,694 tons, at a cost per ton of $7,532.

Texas Clean Fleet Program (TCFP)

From FY 2010 through FY 2018, The TCFP provided grants to owners of at least 75 vehicles in Texas to replace a minimum of 20 diesel vehicles with new alternative-fuel or hybrid vehicles. In 2017, SB 1731 lowered the minimum number of vehicles to be replaced with each application to ten. Under the program, alternative fuels include: compressed natural gas (CNG), liquefied natural gas (LNG), liquefied petroleum gas (LPG), hydrogen, methanol (85 % by volume), and electricity.

From FY 2010 through FY 2012, the program focused on projects that would reduce NO_x emissions in the counties designated as nonattainment for ground-level ozone under the FCAA, as well as other areas where ground-level ozone is of concern. From FY 2012 through FY 2017, the TCEQ set the eligible counties for the TCFP to be consistent with the counties eligible under the Texas Natural Gas Vehicle Grant Program, which included the counties designated under the Clean Transportation Triangle. A map of those counties is included in Appendix

7, *Clean Transportation Triangle Counties*. SB 1731 expanded the Clean Transportation Triangle to include additional counties in Texas and changed the name to the Clean Transportation Zone. A map of those counties is included in *Appendix 8, Clean Transportation Zone Counties.*

Through FY 2018, the TCEQ awarded 27 TCFP grants to replace 626 vehicles, for a total of $55,910,503. These included 257 CNG vehicles, 314 LPG vehicles and 55 diesel hybrid vehicles. These grants are projected to reduce about 633 tons of NO_x over the five-year life of the projects, for an average cost per ton of NO_x reduced of $88,294.

A summary by area and fuel type of grants awarded under the TCFP from 2010 through August 31, 2018, is provided in Appendix 9, *TCFP Projects by Area and Fuel Type*.

The latest grant application period opened in November 2018 with $7,736,987 in available grant funds and will close in February 2019. A complete list of the individual grant awards will be made available on the TERP website at <www.terpgrants.org>.

Texas Natural Gas Vehicle Grant Program (TNGVGP)

The TNGVGP provides grants for projects to replace or repower existing heavy-duty and medium-duty vehicles with natural gas vehicles and engines. From FY 2010 through FY 2017, grant-funded vehicles were required to operate at least 75% of annual use in one or more of the counties included in the Clean Transportation Triangle. Those counties are shown in Appendix 7, *Clean Transportation Triangle Counties*. In 2017, SB 1731 expanded the Clean Transportation Triangle to include additional counties in Texas and changed the name to the Clean Transportation Zone. A map of those counties is included in Appendix 8, *Clean Transportation Zone Counties.*

From the beginning of the program in FY 2012 through FY 2018, the TCEQ awarded 107 TNGVGP grants to replace 939 vehicles, for a total of $42,396,348. The grants included 717 CNG vehicles, 115 LNG vehicles, and 76 vehicles powered by LNG with diesel used for ignition of the fuel. These grants are projected to reduce about 1,495 tons of NO_x over the four-year life of the projects, for an average cost per ton of NO_x reduced of $28,361.

A summary by area and fuel type of grants awarded under the TNGVGP from 2009 through August 31, 2018, is provided in Appendix 10, *TNGVGP Projects by Area and Fuel Type.*

The latest grant application period opened in April 2018 with $15,473,974 in available grant funds. Eligible projects will be awarded on a first-come, first-served basis through May 2019, or until all available funds are awarded. A complete list of the individual grant awards will be made available on the TERP website at <www.terpgrants.org>.

Seaport and Rail Yard Areas Emissions Reduction (SPRY) Program

The Drayage Truck Incentive Program (DTIP) was established by SB 1727 in 2013 to fund the replacement of drayage trucks operating at seaports and rail yards in the state's nonattainment areas (see Appendix 3, *Texas Nonattainment Area Counties*). Program criteria required that at least 50% of the annual mileage of the grant-funded drayage trucks must occur in the counties eligible under the DERI Program (see Appendix 4, *Diesel Emissions Reduction Incentive Program Counties*). In 2017, SB 1731 changed the name of the program to the Seaport and Rail Yard (SPRY) Areas Emissions Reduction Program.

In many cases, vehicles used for drayage are older, higher-polluting vehicles that were previously used for long-haul operations. The concentration of these vehicles operating at seaports and rail yards warranted the establishment of a separate program specifically for replacement of older drayage trucks with newer, less-polluting models. The rules and guidelines for DTIP were adopted in FY 2014, and the initial grant application period opened September 2014 through January 2015.

In order to enhance the program's ability to capture NO_x emissions from significant sources in and near the eligible areas, rule and guideline changes were adopted in FY 2016 that expanded the definition of an eligible seaport area to include certain facilities immediately surrounding a port and removed the requirement that drayage trucks being purchased have a day cab only. The new criteria also included non-road cargo handling equipment as eligible for replacement under the program. The second grant application period opened October 2016 through May 2017 with the newly adopted criteria.

In 2017, SB 1731 changed the name of the program to the Seaport and Rail Yard (SPRY) Areas Emissions Reduction Program. Legislative changes codified many of the rule and guideline changes adopted in FY 2016, added repowers as an eligible project category under the program, and eliminated the requirement that a vehicle to be replaced be of a certain age, replacing it with the requirement that the new equipment or engine be certified to the current federal standard for that equipment type, with at least 25 percent lower NO_x emissions rate than the old equipment or engine. Rule and guideline changes implementing the new statutory program requirements were adopted in April 2017.

From the beginning of the program in FY 2015 through FY 2018, the TCEQ awarded 17 DTIP grants to replace 77 drayage trucks and pieces of cargo handling equipment, for a total of $6,209,424. These grants are projected to reduce about 362 tons of NO_x over the life of the projects, for an average cost per ton of NO_x reduced of $17,160.

A summary by areas of use of grants awarded under the DTIP from 2015 through August 31, 2018, is provided in Appendix 11, *DTIP Projects by Area*.

The latest application period, under the renamed SPRY Program, will open in December 2018 with $9,284,384 in grant funds available. Eligible projects will be awarded on a first-come, first-served basis through May 2019, or until all available funds are awarded. A complete list of the individual grant awards is available on the TERP website at <www.terpgrants.org>.

Grants to Provide Alternative Fuels for Transportation

Clean Transportation Triangle (CTT) Grant Program

The CTT program was established in 2011 to provide grants for natural gas fueling stations along interstate highways between the Houston, Dallas, Fort Worth, and San Antonio areas.

In 2013, SB 1727 amended the areas eligible under the CTT program to include counties located within the triangular area between the previously designated interstate highways and counties included in the Texas nonattainment areas and other TERP affected counties. A map of the eligible counties is provided in Appendix 7, *Clean Transportation Triangle Counties*.

From FY 2012 through FY 2017, the TCEQ awarded 21 grants for projects under the CTT program, for a total of $6,300,000. These projects included 18 CNG facilities and three facilities providing CNG and LNG.

The statutory authorization for the CTT program expired August 31, 2017, and the program's grant categories were included under the Alternative Fueling Facilities Program (AFFP) by the 85th Texas Legislature, Regular Session.

Alternative Fueling Facilities (AFFP) Program

The AFFP was established in 2011 to provide grants for the construction, reconstruction, or acquisition of facilities to store, compress, or dispense alternative fuel in Texas nonattainment areas (see Appendix 3, *Texas Nonattainment Area Counties*). Under the program, alternative fuels include: CNG, LNG, LPG, biodiesel, hydrogen, methanol (85 percent by volume), and electricity.

In 2017, SB 1731 incorporated the CTT grant categories into the AFFP, combining the two programs, changed the name of the "Clean Transportation Triangle" to the Clean Transportation Zone," and added the areas in and between San Antonio, Corpus Christi, Laredo, and Houston to the eligible areas for the program. While grants were previously limited to facilities that could guarantee regular public access, changes under SB 1731 also allowed the TCEQ to fund alternative fueling infrastructure for private use once all eligible applications for projects with public access have been awarded.

From FY 2012 through FY 2018, the TCEQ awarded 128 grants for projects under the AFFP, for a total of $18,802,595. These projects included:

- 6 Biodiesel Facilities

- 5 Biodiesel and Electric Charging Facilities
- 25 CNG facilities
- 1 CNG and Electric Charging Facility
- 1 CNG and LNG facility
- 83 Electric Charging Stations
- 7 LPG facilities

No funds were allocated for the AFFP in FY 2019. A list of individual grant awards is available on the TERP website at <www.terpgrants.org>.

Other Grants to Reduce Vehicle Emissions

Texas Clean School Bus (TCSB) Program

The TCSB Program aims to reduce diesel exhaust emissions inside and around school buses throughout the state. From FY 2008 through FY 2017, projects involved emissions-reducing add-on equipment such as closed-crankcase filtration systems and diesel particulate filters or diesel oxidation catalysts on engine model years 1998 and older. In 2017, SB 1731 added replacement of pre-2007 model year school buses as an eligible project category.

From FY 2008 through 2017, the TCEQ funded the retrofit of 7,560 school buses for a total funding amount of $34,558,623, including $29,864,522 in state TERP funds and $4,694,101 in federal funds awarded by the EPA under the State Clean Diesel Program and other federal programs. In FY 2018, the TCEQ funded the replacement of 61 school buses, for a total funding amount of $2,976,000.

The TCEQ anticipates funding approximately $3.2 million in school bus replacement projects in FY 2019. A complete list of the school districts awarded grant funding will be provided on the TERP website at <www.terpgrants.org>.

Light-Duty Motor Vehicle Purchase or Lease Incentive Program (LDPLIP)

The LDPLIP was originally established under SB 5 in 2001 to provide grant funding for the purchase of new light-duty vehicles weighing less than 10,000 pounds that met certain low-emission standards under the EPA light-duty vehicle requirements. The rebates were to be administered by the Texas Comptroller of Public Accounts (CPA) with guidelines established by the TCEQ. However, sufficient revenue was not received for the CPA to begin implementation of the program in FY 2002. Beginning in FY 2003, the legislature did not appropriate funds for this program.

In 2013, SB 1727 revised the program to provide up to $2,500 in grant funding for the purchase or lease of a new light-duty vehicle that operates on CNG, LPG, or electricity. Rules for the LDPLIP were adopted on April 30, 2014, and the

grant application period was opened from May 13, 2014 through June 26, 2015. The statutory authorization for the program expired August 31, 2015.

In 2017, SB 1731 re-established the LDPLIP and added hydrogen fuel cells as an eligible fuel type. The bill set the rebate amount for a CNG or LPG vehicle at $5,000, up from $2,500 in the previous grant round, and at $2,500 for an electric vehicle, the same as the previous grant round. SB 1731 capped the number of CNG or LPG vehicles that may be funded over a biennium at 1,000, down from 2,000 in the previous grant round, and at 2,000 for electric vehicles, the same as the previous grant round.

From FY 2014 through FY 2018, the program provided a total of $5,427,915 for the purchase or lease of 2,401 vehicles, including $4,941,665 in rebates for 2,205 electric and plug-in electric hybrid vehicles and $486,250 in rebates for 196 CNG vehicles. A summary by area of rebates awarded under the LDPLIP from 2014 through August 31, 2018, is provided in Appendix 12, *LDPLIP Projects by Area*.

More than $6.9 million remains available for eligible rebates in FY 2019. A complete list of the school districts awarded grant funding will be provided on the TERP website at <www.terpgrants.org>.

Programs to Encourage Energy Efficiency

Energy Efficiency Programs

Under THSC 386.057, the TCEQ is to include information in this report regarding the effectiveness of certain energy efficiency programs in avoiding and reducing emissions. These programs include:

- Goal for Energy Efficiency, established under the Texas Utilities Code (TUC) 39.905;
- Energy Efficiency Programs in Institutions of Higher Education and Certain Government Entities, established under THSC 388.005; and
- Texas Building Energy Performance Standards, established under THSC 388.003.

Goal for Energy Efficiency

Electric utilities are required to establish and administer energy efficiency programs. Under rules adopted by the Public Utility Commission (PUC), electric utilities are required to acquire energy efficiency savings through the administration of standard offer programs, market transformation programs, pilot programs, and in some cases self-directed programs.

Per TUC 39.095, the PUC rules establish a savings goal for electric utilities of 30% of growth in demand and a goal to reduce four-tenths of 1% of summer weather-adjusted peak demand in subsequent years once the utility reaches the 30% goal. The PUC provides information on these programs to the ESL, at the Texas A&M Engineering Experiment Station of the Texas A&M University System, to assess the emissions reductions achieved through these programs.

Energy Efficiency Programs in Institutions of Higher Education and Certain Government Entities

Political subdivisions, institutions of higher education, and state agencies located in nonattainment areas or affected counties, are required to establish a goal to reduce the electric consumption by the entity by at least 5% each state fiscal year for 10 years, beginning October 1, 2011.

These entities are also required to implement energy efficiency measures that meet the standards established for a contract for energy conservation measures under Local Government Code 302.004(b) in order to reduce electricity consumption by the existing facilities of the entity. The entities are required to report to the State Energy Conservation Office (SECO) within the CPA on the implementation of these requirements. SECO provides the information to the ESL to assess the emissions reductions achieved through these programs.

Texas Building Energy Performance Standards

These provisions adopt the energy efficiency chapter of the International Residential Code to achieve energy conservation in single-family residential construction and the International Energy Conservation Code to achieve energy conservation in all other residential, commercial, and industrial construction. Local governments have the responsibility to administer and enforce the standards found in the International Energy Conservation Code and the Energy Efficiency chapter of the International Residential Code. The ESL is responsible for determining the energy savings from energy code adoption and, when applicable, from more stringent or above-code performance ratings.

Effectiveness of Energy-Efficiency and Renewable Energy Programs

The ESL compiles the information on energy-efficiency programs and assesses the annual electricity savings and annual NO_x emissions reductions that can be attributed to those savings. In addition to the programs explained above, under THSC 386.252(a) the TCEQ contracts with the ESL for the development of annual computation of statewide emissions reductions obtained through wind and renewable energy resources. The ESL has also assessed the electricity savings from residential air conditioner replacements.

The ESL prepares a report of integrated annual electricity savings and total NO_x emissions reductions from these programs entitled *Energy Efficiency/Renewable Energy Impact in the Texas Emissions Reduction Plan (TERP)*. The ESL reports are available from the ESL website at <http://esl.tamu.edu/terp/reports>. A link to the reports is also provided on the TERP website at <www.terpgrants.org>.

The latest ESL report (ESL-TR-17-10-10) was published in October 2017 for the period January 2016 through December 2016 (CY 2016 Report). The calendar year 2017 report is anticipated to be published by the end of 2018 and will be available on the ESL website.

The tables below provide information from the CY 2016 report on total annual electricity savings in megawatt hours per year (MWh/year) and the ESL's calculated annual NO_x emissions reductions from these programs in 2016. The savings and emissions reductions for 2017 are based on ESL's preliminary projections included in the CY 2016 report. Updated estimates for 2017 will be available in the calendar year 2017 report. The estimates of energy savings, renewable generation, and emissions reductions provided by ESL use 2008 as a base year.

Annual Electricity Savings and Wind Generation (2016 and 2017)

Program	2016 (MWh/year)	2017*[1] (MWh/year)
Texas Building Energy Performance Standards	3,087,080	4,065,005
Goal for Energy Efficiency	3,498,867	3,897,019
Energy Efficiency Programs in Institutions of Higher Education and Certain Government Entities	1,100,775	1,191,083
Renewable Generation - Wind (ERCOT)	36,069,833	39,135,769
Residential Air Conditioner Retrofits	260,026	247,025
Total Integrated Annual Savings	**44,016,581**	**48,535,902**

[1] The 2017 figures are the ESL's projections through the end of 2017 included in the CY2016 final report.

Annual NO_x Emissions Reductions (2016 and 2017)

Program	2016 Tons of NO_x	2017*[1] Tons of NO_x
Texas Building Energy Performance Standards	769	1019
Goal for Energy Efficiency	874	973
Energy Efficiency Programs in Institutions of Higher Education and Certain Government Entities	294	322
Renewable Generation - Wind (ERCOT)	10,143	11,005
Residential Air Conditioner Retrofits	61	58
Total Integrated Annual NO_x Emissions Reductions	**12,142**	**13,377**

Energy-Efficiency and Renewable Energy Programs and the Texas SIP

The programs administered by the PUC and SECO under the mandates of SB 5 (2001) and SB 7 (1999) provide avenues for potentially creditable emission reductions to be claimed in the SIP. Accurate quantification of emissions reductions from energy efficiency and renewable energy (EE/RE) is challenging due to the complex nature of the electrical grid system. It is not possible to determine exactly where on the electrical grid electricity comes from for any certain electrical user. In order to factor in the degree of the complexity of the electrical grid and the uncertainties in the data and methods used, emission reduction estimates are modified using a discounting formula to arrive at the reduction estimates reported in the SIP.

The TCEQ has not specifically claimed creditable NO_x reductions for EE/RE in the SIP since the 2005 Dallas-Fort Worth 5% Increment of Progress SIP Revision. The current guidance provided by the EPA for claiming emission reductions from EE/RE presents additional challenges for taking direct credit for EE/RE measures in areas that have a NO_x cap and trade program. Furthermore, the EPA guidance requires a number of additional commitments for states claiming reductions from EE/RE measures. Given the uncertainties associated with ensuring that reductions from EE/RE measures meet the EPA's criteria to be SIP eligible (emissions reductions must be quantifiable, permanent, enforceable, and surplus) and current guidance, the TCEQ has in more recent SIP revisions included EE/RE measures in the Weight of Evidence portion of the SIP rather than claim direct creditable reductions in the SIP.

[1] The 2017 figures are the ESL's projections through the end of 2017 included in the CY2016 final report.

Program for Emissions Reductions from Facilities

New Technology Implementation Grants (NTIG) Program

The NTIG was established in 2009 with a primary purpose to offset the incremental cost of emissions reductions of pollutants from facilities and other stationary sources in the State of Texas. Projects that may be funded under the NTIG include: Advanced Clean Energy Projects, as defined in THSC 382.003; New Technology Projects that reduce emissions of regulated pollutants from point sources; and Electricity Storage Projects related to renewable energy. Of the money allocated to the NTIG, the TCEQ is to set aside at least $1 million annually to fund Electricity Storage Projects. In 2017, SB 1731 added a new project category to include new technology projects that reduce emissions from upstream and midstream oil and gas production, completions, gathering, storage, processing, and transmission activities.

The TCEQ has awarded $10,599,765 to help fund eight projects since 2010, six of which involve electricity storage and three of which involve new technology implementation. In the FY 2014 grant round, the TCEQ awarded a $1 million grant for a utility-scale electricity storage project in Travis County, and a new technology project involving carbon filtration for pollution abatement in Bexar County for $500,000.

In FY 2016, the TCEQ awarded a $3 million grant to help fund a battery-powered electricity storage project in Bexar County, and approximately $544,000 toward a new technology project in Wise County designed to help integrate alternative fuel in asphalt production.

In FY 2017 through FY 2018, the TCEQ awarded $2 million, $1.5 million, and $1 million grants toward solar-powered electricity storage projects in Harris, Hays, and Upton Counties, respectively, with a combined energy storage capacity of approximately 52 megawatt hours (MWh). Each battery electricity storage system intends to discharge the stored energy to the grid during peak demand hours.

The latest application period was opened September 28 through December 14, 2018, with more than $3.6 million in available funds. The final project list will be available on the TERP website at <www.terpgrants.org>.

Other Programs Included under the TERP

Regional Air Monitoring Program

SB 527, 82nd Texas Legislature, Regular Session, 2012, amended THSC 386.051 (b)(6) and 386.252 to establish a regional air monitoring program in the TCEQ's Regions 3 and 4, which includes the Barnett Shale geological area. The statutory language directs the TCEQ to allocate TERP funds for a regional air monitoring program implemented under the Commission's oversight, including direction

regarding the type, number, location, and operation of, and data validation practices for, monitors funded by the program through a regional nonprofit entity located in North Texas having representation from counties, municipalities, higher education institutions, and private sector interests across the area. The North Texas Commission (NTC) was found to meet all eligibility requirements and received a contract from the TCEQ on October 21, 2011.

The program was allocated up to $7 million per fiscal year over FY 2012-2013 to establish monitoring sites and begin monitoring activities and up to $3 million in 2014 and subsequent years. The cumulative TERP expenditures for the program through August 31, 2018, were $15,877,793.

The NTC Regional Air Monitoring Program has a total of 21 monitoring sites to include 13 Automated Gas Chromatograph systems that provide near real-time volatile organic compound (VOC) data on an hourly basis and eight VOC canister systems that collect ambient air samples every six days. The regional air monitoring program was designed to collect air toxics data to determine the potential for health effects with the growth in the region due to Barnett Shale gas production. Monitoring data to date has provided evidence that overall, shale play activity does not significantly impact air quality or pose a threat to human health.

Furthermore, the TCEQ has conducted extensive ambient air monitoring in this area, specifically looking at air emissions from natural gas operations. Based on the ambient air monitoring data collected in the Dallas–Fort Worth area, and the TCEQ's conservative evaluation of the potential for human health risk to occur upon exposure to the measured concentrations, the TCEQ has concluded that there is no substantial health risk from short-term or long-term exposure to air emissions from natural gas operations.

In June 2015, the TCEQ published a peer-reviewed paper in the *Journal of Unconventional Oil and Gas Resources* summarizing these findings.

Air Quality Research Support Program

The Air Quality Research Program (AQRP) is established under THSC, Chapter 387. This program identifies and prioritizes scientific questions important to air quality management in Texas and funds scientific investigations to provide answers to these questions.

This program was originally part of the New Technology Research and Development (NTRD) Program, which was one of the original programs under the TERP. Through FY 2009, the NTRD Program, including the research program, was administered by the Texas Environmental Research Consortium (TERC) in Houston under contracts with the TCEQ. In 2009, HB 1796, 81st Texas Legislature, Regular Session, transferred the responsibility for administering the NTRD grants back to the TCEQ and authorized the TCEQ to contract with a

nonprofit organization or institution of higher education to administer the program to support research related to air quality.

In 2011, SB 527, 82nd Texas Legislature, Regular Session, amended THSC, Chapter 387 to eliminate the NTRD Program, but retained the air quality research component under a revised Chapter 387. Since the change to the NTRD program in 2009, the TCEQ has contracted with the University of Texas at Austin to administer the research program. Research topics are identified and prioritized by an Independent Technical Advisory Committee (ITAC). Projects to be funded under the research program are selected from lists of ITAC recommended projects by the TCEQ and an Advisory Council.

The TERP allocations to this program are determined each fiscal biennium. The latest annual TERP allocation for FY 2018 through 2019 is $750,000 per fiscal year. The total allocation since the AQRP was established is $15,038,142, funding 70 separate projects by 20 individual lead entities and numerous collaborating entities.

Some of the major projects that have been sponsored through this program from FY 2010 through FY 2018 include:

- air quality measurements in the Houston area that quantified continuing progress in reducing emissions of Highly Reactive Volatile Organic Compounds;
- full-scale measurements of industrial flares that have led to operator training to reduce flaring emissions, and improved quantification of flare emissions;
- studies of natural emission sources, such as wildfires and biogenic emissions;
- air quality measurement programs in the Barnett Shale natural gas production region, near Fort Worth, that examined the role of emissions associated with natural gas production on ozone formation;
- improvements to the air quality models used to simulate air pollution events, and to evaluate proposed air quality regulations; and
- analysis of rich data sets collected during air quality field studies, including seven major field campaigns that took place in Texas during 2006, 2009, 2011, 2013, and 2017.

Health Effects Studies

Each fiscal year, $200,000 has been allocated from the TERP Fund for use by the TCEQ in conducting studies on health effects related to air quality and exposure to certain compounds and pollutants. The TCEQ will continue funding additional health effects studies with the allocation from the TERP Fund, as well

as through other non-TERP funding sources. Recent studies and activities conducted in FY 2017 and 2018 are outlined below.

- A quantitative carcinogenicity assessment of oral exposure to inorganic arsenic was published in a peer-reviewed journal. Further analyses on the weight of evidence of inorganic arsenic's carcinogenic mode of action were undertaken and are anticipated to also be published in a peer-reviewed journal.
- Studies that began in FY 2014 and FY 2015 on the association between asthma and ozone were concluded, and three peer-reviewed journal articles were published.
- An evaluation of the lung function decrement modeling conducted by the EPA for predicting potential health outcomes due to ambient ozone levels was conducted and two articles are currently being considered by peer-review journals.
- Simulation studies were begun that investigate the impact of data quality problems on the outcomes of long-term health effects studies. This applies to studies about many different types of air pollutants, including particulate matter (PM). When complete, these analyses will be published in a peer-reviewed journal.

The TCEQ has also contracted to conduct other studies addressing statistical and mathematical aspects of the health effects data for NAAQS criteria pollutants using non-TERP funding. This includes investigations of the uncertainties inherent in the studies that inform the NAAQS.

IV. TCEQ Monitoring of TERP Grants

To minimize the risk of fraud, a three-tiered Quality Assurance and Fraud Prevention and Detection Program was developed for the TERP grant programs.

The three levels are listed and described below.

1. The Application Phase requires TCEQ to maintain a uniform process when reviewing applications, verify equipment and technologies, confirm emission reductions and cost-effectiveness calculations, maintain an electronic database, and perform duplicate reviews.
2. The Contract Phase requires TCEQ to consistently utilize template documents and obtain approval from TCEQ legal and central contracting offices for each contract, follow written grant management procedures, review reimbursement requests completed by fiscal and program staff prior to program management, maintain an electronic database for contract and fiscal information, perform on-site monitoring visits, and ensure an independent contractor physically verifies grantees' expenditures by performing on-site reviews of records and confirming the location and use of equipment.
3. The Tracking and Reporting Phase requires the TCEQ to ensure grantees track usage and report this usage information to the TCEQ for the life of the project, utilize internal and external auditors to perform desk and on-site reviews of activities, and maintain contract provisions for return of funds if the usage does not meet contract commitments or is not tracked and reported. This phase, along with on-site audits by the TCEQ, verifies the project's actual NO_x emission reductions and usage of the funded vehicle/equipment in the affected areas during the activity life.

Under all phases of grant administration, the TERP staff works with TCEQ legal and investigative staff to follow-up on noncompliance issues or issues of potential fraud or abuse.

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V. Future Considerations for the TERP Programs

The TCEQ will continue to focus on achieving reductions in NO_x emissions and emissions of other pollutants to help nonattainment areas meet federal air quality standards and to help other areas address air quality concerns.

Legislative Update

SB 1731, 85th Texas Legislature, Regular Session, 2017, amended the THSC to extend the TERP programs until with respect to each active or revoked National Ambient Air Quality Standard for ozone referenced in 40 CFR Section 81.344:

1. the EPA has, for each designated area referenced in that section:
    a. designated the area as attainment or unclassifiable/attainment; or
    b. approved a redesignation substitute making a finding of attainment for the area; and
2. for each designated area described by Subdivision (1), with respect to an action of the EPA described by Subdivision (1)(A) or (B):
    a. the action has been fully and finally upheld following judicial review or the limitations period to seek judicial review of the action has expired; and
    b. the rules under which the action was approved by the agency have been fully and finally upheld following judicial review or the limitations period to seek judicial review of those rules has expired.

The bill re-established the Light-Duty Motor Vehicle Purchase or Lease Incentive Program and made other changes and added new programs as outlined in this report.

The bill also established a new Governmental Alternative Fuel Fleet (GAFF) Program to use not more than 3% of the money in the TERP Fund to fund alternative fuel vehicles for state agencies and other political subdivisions. Authorization was also included to use not more than $2.5 million per fiscal year to conduct research and other activities associated with making any necessary demonstrations to the EPA to account for the impact of foreign emissions or an exceptional event. However, these programs may be implemented only if the legislature appropriates funds specifically for these programs. No funding for these programs was included in the FY 2018 and 2019 appropriation.

Finally, SB 1731 eliminated the TERP Advisory Board.

Changes to Cost-Effectiveness under the DERI Program

The statutory limits on the maximum cost-effectiveness of a project under the DERI Program were removed by the Texas Legislature in 2013, leaving the TCEQ with authority to set limits as needed to address program goals and objectives.

From FY 2015 through FY 2017, the cost per ton limits were set by the TCEQ at $10,000 per ton of NO_X reduced for marine and locomotive projects and $15,000 per ton of NO_X reduced for all other projects. Beginning in FY 2018, the cost per ton limits have been set by the TCEQ at $12,500 per ton of NO_X reduced for marine and locomotive projects and $17,500 per ton of NO_X reduced for all other projects. The TCEQ expects the average cost per ton of NO_X reduced in future grant rounds to increase from the historical averages for the program, as the most cost-effective projects are awarded, and less cost-effective projects remain to be awarded. The increase in the maximum cost per ton allowed under the TERP programs will help ensure continued participation in the programs, but more funds will be required for future grant rounds to incentivize the same level of NO_X emissions reductions that the programs are currently achieving.

The TCEQ will assess the outcomes of cost-effectiveness limits and adjust those limits as appropriate in future grant rounds to ensure participation in the program while achieving the greatest level of emissions reductions for the least cost.

Program Fees Expiration

The TERP fees and surcharges expire on August 31, 2019, except for the fee on obtaining a certificate of vehicle title. That fee will continue to be collected and deposited to the Mobility Fund, but the fund's equivalent to the revenue received from that fee would no longer be transferred from the State Highway Fund to the TERP Fund. Appendix 1, *TERP Fund* lists the revenue received in FY 2017 and 2018, and the revenue estimates for 2019. Unless the TERP fees are continued, the revenue would be zero beginning in FY 2020.

New Federal Ozone Standards

In October 2015, the EPA lowered the NAAQS for ground-level ozone from 75 parts per billion (ppb) to 70 ppb. From November 6, 2017 through July 25, 2018, the EPA published final designations for all of the areas in Texas for the 2015 Ozone NAAQS, including "attainment/ unclassifiable" designations for most areas of Texas. The EPA published nonattainment designations for a nine-county DFW area, a six-county HGB area, and Bexar County in the San Antonio Area. All three areas were classified as "marginal" nonattainment.

As a result of the final designations, Bexar County has been added to the TERP eligible counties for grant solicitations beginning on or after the effective date of the nonattainment designation, September 24, 2018.

Marginal nonattainment areas are required to meet the standards by the end of 2020. Updates on the status designations are available through the TCEQ's website at <www.tceq.texas.gov/airquality>.

Role of TERP Going Forward

The role of the TERP going forward will depend upon decisions made by the legislature regarding the expiration of program fees, funding levels, and individual grant programs.

Estimates by the TCEQ maintain that between 50% and 80% of NO_x emissions in the Texas nonattainment areas are attributable to mobile sources operating in those areas. Since inception, the TERP programs have replaced, repowered, or retrofit more than 10,000 heavy-duty on-road vehicles, and more than 10,000 heavy-duty pieces of non-road equipment in Texas nonattainment and affected areas, with newer vehicles and equipment certified to lower NO_x emissions rates. NO_x emissions reductions under the TERP DERI programs, as well as state Energy Efficiency and Renewable Energy Measures tracked and reported as part of the TERP, are currently accepted by the EPA as additional measures supporting the emissions reduction strategies in the Texas SIP.

The TCEQ continues to be available to provide analysis, data, research, and information that may be needed to assist the legislature in determining the future of the TERP.

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Appendix 1. TERP FUND

5071 Texas Emissions Reduction Plan	FY 2017	FY 2018[1]	Est FY 2019[2]
Beginning Balance (Unencumbered)	$1,159,116,839	$1,269,848,303	$1,467,307,093
REVENUE			
3004 Heavy-Duty Motor Vehicle Sales, Lease, & Use	$15,200,338	$18,000,000	$18,500,000
3012 Motor Vehicle Certificate of Title	$142,628,857	$145,000,000	$145,000,000
3014 Commercial Motor Vehicle Registration	$12,859,775	$15,600,000	$15,000,000
3016 Motor Vehicle Sales & Seller Finance	$19,243	-	-
3020 Commercial Motor Vehicle Inspection	4,862,212	$6,200,000	$6,200,000
3102 Diesel Equipment Sales, Lease, & Use	$55,398,148	$62,500,000	$70,000,000
Subtotal: Actual/Estimated Revenue	$230,968,573	$247,300,000	$254,700,000
Total Available	**$1,390,085,412**	**$1,517,148,303**	**$1,722,007,093**
DEDUCTIONS:			
Regular Appropriation to the TCEQ	($118,138,163)	($77,369,870)	($77,369,867)
Statewide Cost Allocation Plan	($713,154)	($717,540)	($716,862)
Transfer - Employee Benefits	($712,771)	($1,499,013)	($1,557,935)
Transfer – Retire Benefits	($152,035)	($183,789)	($394,939)
Lapsed Appropriation	$4,047,215	-	-
Savings due to Hiring Freeze	$34,242	-	-
Art VI, Rider 18 UB Authority within the Biennium (2016-17 GAA)	($34,640,400)	-	-
Art VI, Rider 18, UB Authority within the Biennium (2018-19 GAA)	-	$30,872,564	($30,872,564)
HB 37, 79th Session - Transfer to Fund 151	($500,000)	($500,000)	($500,000)
Article III – Appropriation to the Energy Systems Laboratory, Texas A&M Engineering Experiment Station	($462,043)	($443,562)	($443,561)
HB2, 85th Leg, Regular Session[3]	31,000,000	-	-
TOTAL DEDUCTIONS	**($120,237,109)**	**($49,841,210)**	**($111,855,728)**
Ending Fund / Account Balance	**$1,269,848,303**	**$1,467,307,093**	**$1,610,151,365**

[1] Amounts listed for FY 2018 are still subject to change as the fiscal year finances are reconciled.
[2] Amounts listed for FY 2019 are estimated.
[3] The reduction occurred in the unencumbered balances in the Texas Natural Gas Vehicle Grant Program. after low demand in the program. Texas Health & Safety Code 386.252(d) prohibited the TCEQ from moving these funds to another TERP program.

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Appendix 2. TERP Funding Allocation

Program	FY 2018/2019 Annual Allocation	Statutory Allocation Percentage (%)[1]
TCEQ Administration	$8,000,000 (FY 18) $8,000,000 (FY 19)	not more than $8,000,000/ FY
Texas Clean School Bus Program	$3,094,795 (FY 18) $3,094,795 (FY 19)	4%
New Technology Implementation Grants	$2,321,096 (FY 18) $2,321,096 (FY 19)	3%*; with at least $1,000,000 set aside for battery storage*
Texas Clean Fleet Program	$3,868,494 (FY 18) $3,868,493 (FY 19)	5%
Regional Air Monitoring Program	$3,000,000/ FY	$3,000,000/ FY
Texas Natural Gas Vehicle Grant Program	$7,736,987 (FY 18) $7,736,987 (FY 19)	10%
Alternative Fueling Facilities Program	$6,000,000 (FY 18) $0.00 (FY 19)	not more than $6,000,000; *allocated for FY 18 only*
Health Effects Study	$200,000/ FY	not more than $200,000/ FY
Research	$750,000/ FY	not more than $750,000/ FY
Energy Systems Laboratory Contract	$216,000/ FY	not more than $216,000
Seaport and Rail Yards Emissions Reduction Program	$ 4,642,192 (FY 18) $ 4,642,192 (FY 19)	6%
Light-Duty Motor Vehicle Purchase or Lease Incentive Program	$3,868,494 (FY 18) $3,868,493 (FY 19)	5%
Port Authorities Studies & Pilot Projects	$500,000/ FY	$500,000/ FY
Diesel Emission Reduction Incentive Programs	$33,171,812 (FY 18) $39,171,811 (FY 19)	balance of the TCEQ appropriation
TCEQ TERP Appropriation	**$77,369,870 (FY 18)** **$77,369,867 (FY 19)**	

[1] THSC 386.252 outlines the percentages for allocating the amounts appropriated to the TCEQ from the TERP Fund.

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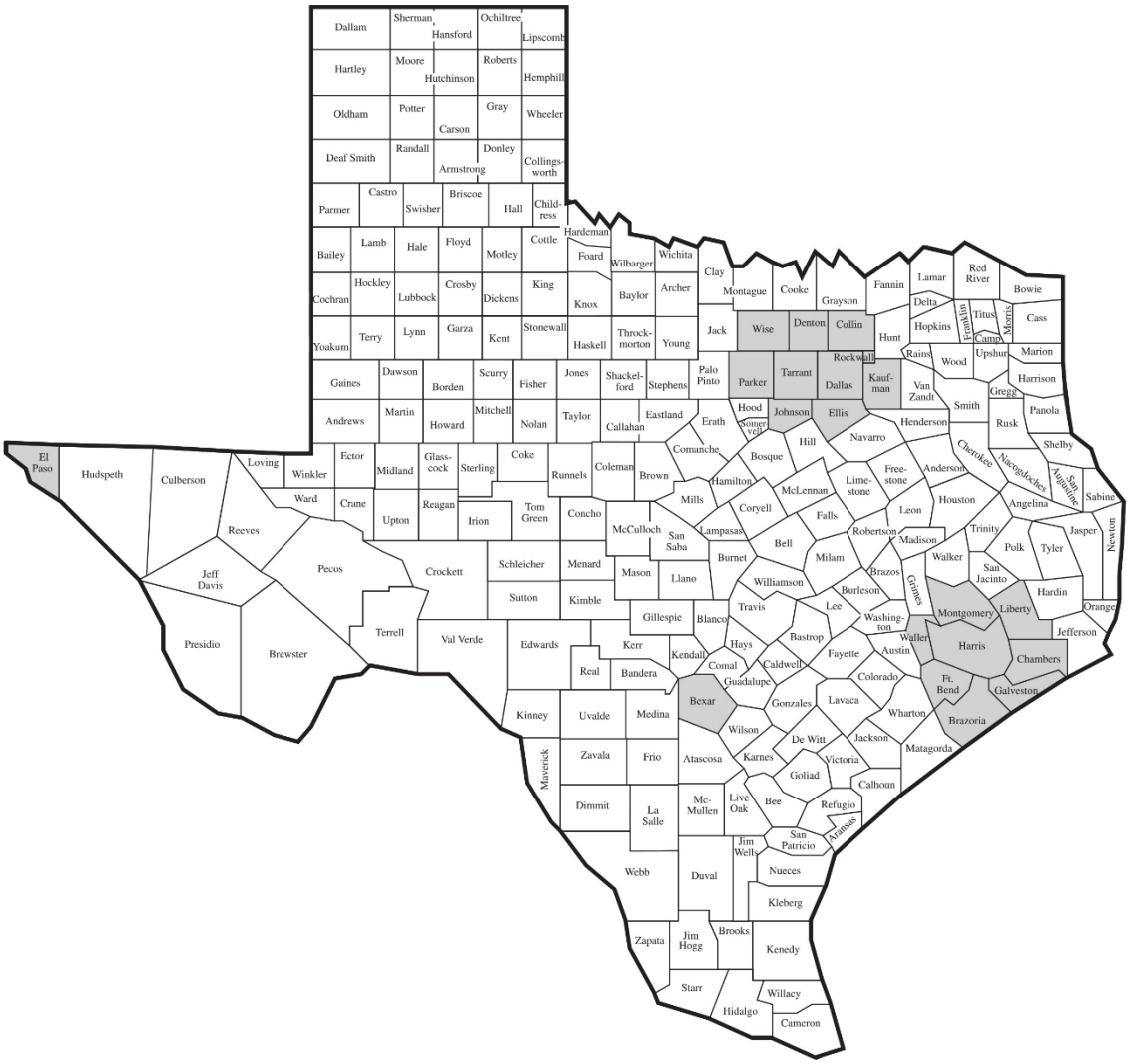
Appendix 3. Texas Nonattainment Area Counties

Area	Counties
Dallas-Fort Worth Eight-Hour Ground-Level Ozone Nonattainment Area	Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, Tarrant, and Wise
Houston-Galveston-Brazoria Eight-Hour Ground-Level Ozone Nonattainment Area	Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller
Bexar County Eight-Hour Ground-Level Ozone Nonattainment Area	Bexar County
City of El Paso Particulate Matter (PM_{10}) Nonattainment Area	El Paso County (for purposes of TERP eligibility, the TCEQ includes the entire county)
Colin County Lead Nonattainment Area	Part of Colin County



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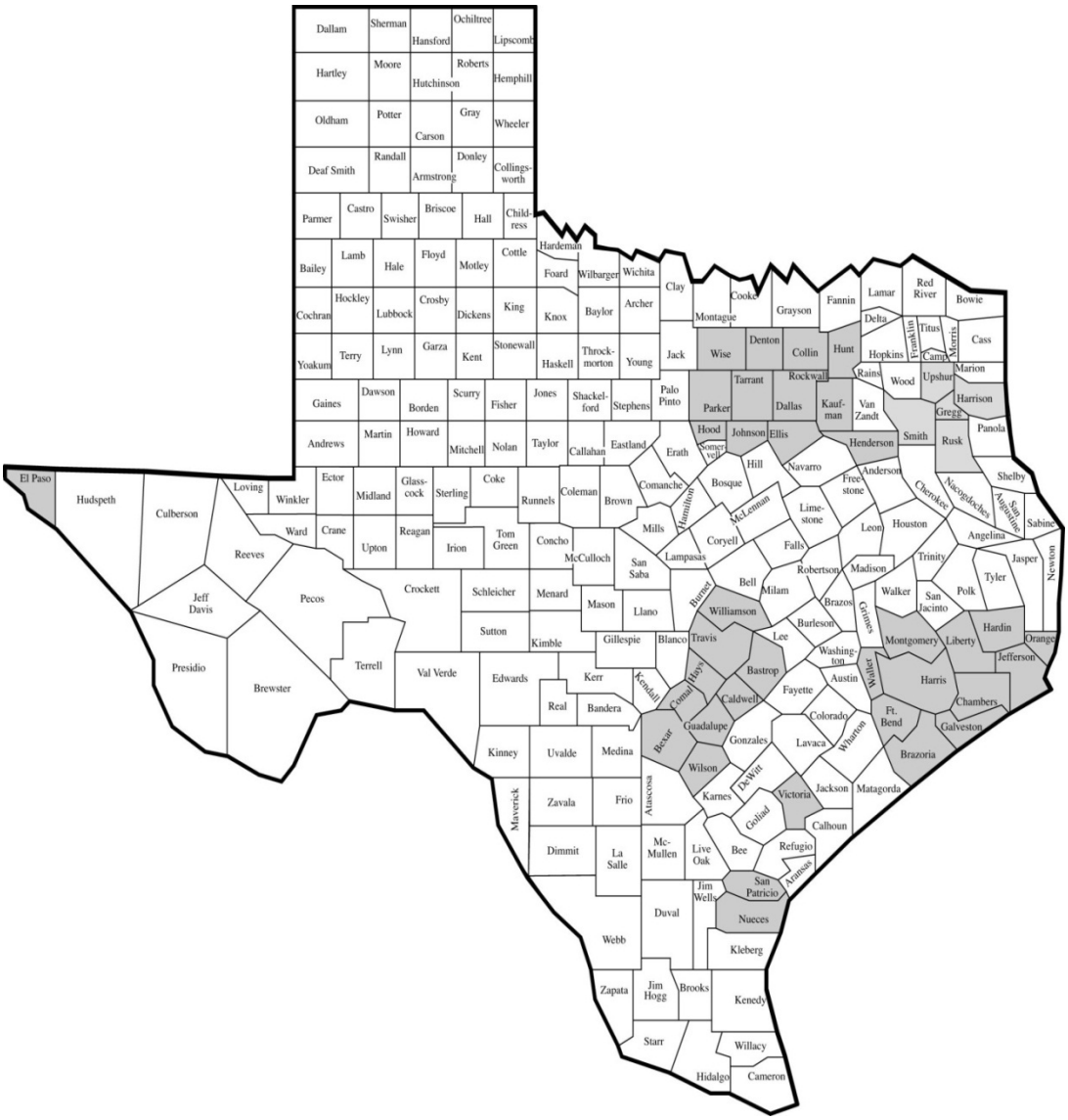
Appendix 4. Diesel Emissions Reduction Incentive Program Counties

Bastrop	El Paso	Hays	Nueces	Upshur
Bexar	Ellis	Henderson	Orange	Victoria
Brazoria	Fort Bend	Hood	Parker	Waller
Caldwell	Galveston	Hunt	Rockwall	Williamson
Chambers	Gregg	Jefferson	Rusk	Wilson
Collin	Guadalupe	Johnson	San Patricio	Wise
Comal	Hardin	Kaufman	Smith	
Dallas	Harris	Liberty	Tarrant	
Denton	Harrison	Montgomery	Travis	



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Appendix 5. DERI Program Projects by Area

Texas Emissions Reduction Plan (TERP)
Diesel Emissions Reduction Incentive (DERI) Program

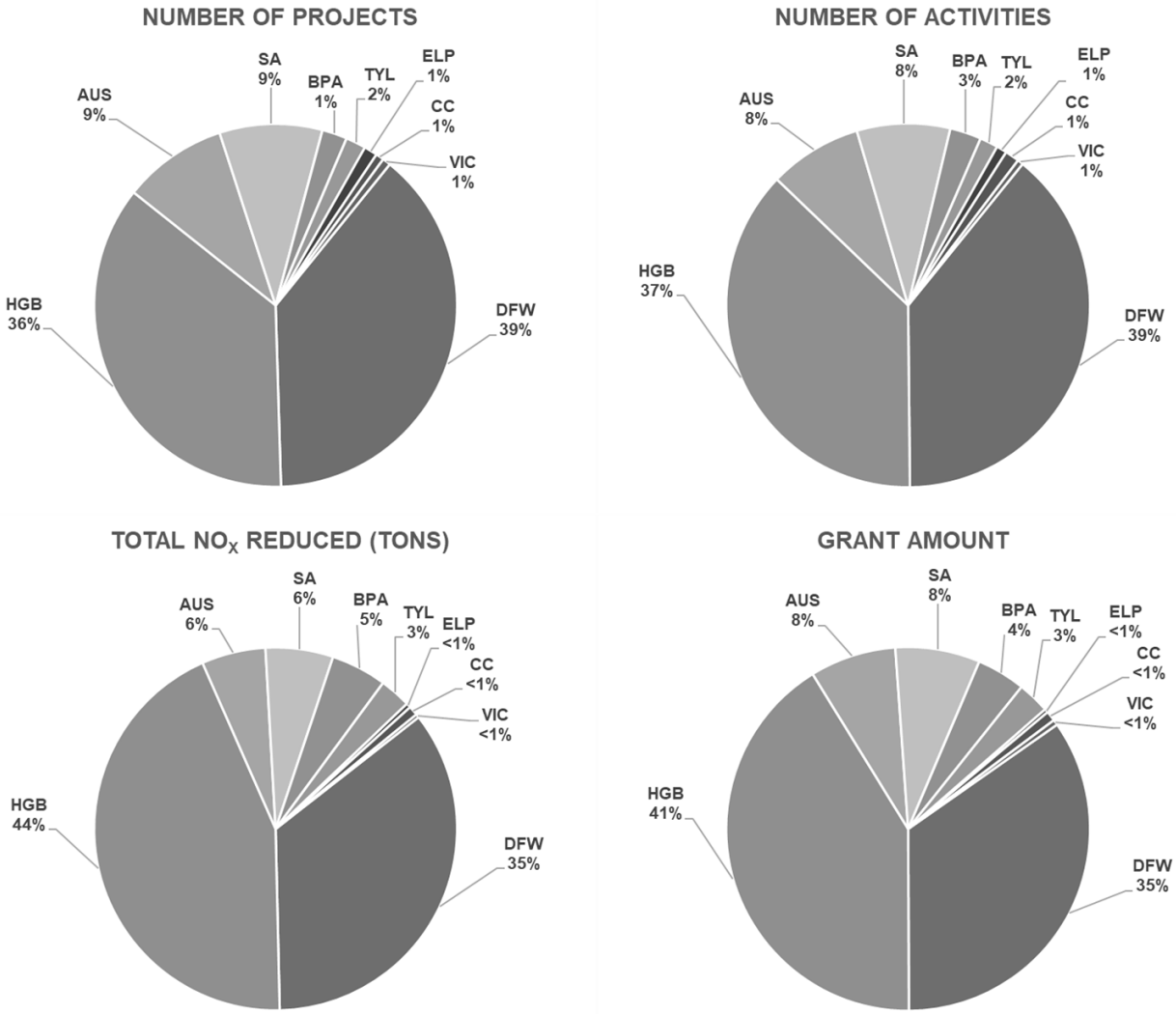
Projects by Area
2001 through August 31, 2018[1]

(Does not include projects funded and subsequently canceled)

Area	Number of Projects	Number of Activities	Total NO_X Reduced (Tons)	Grant Amount	Cost Per Ton of NO_X Reduced	Tons Per Day of NO_X Reduced 2018	Tons Per Day of NO_X Reduced 2019	Tons Per Day of NO_X Reduced 2020	Tons Per Day of NO_X Reduced 2021
Dallas/Fort Worth (DFW)	4,604	7,490	63,307.84	$381,907,227	$6,033	11.66	10.67	6.82	6.47
Houston/Galveston/Brazoria (HGB)	4,304	7,170	78,704.24	$455,054,219	$5,782	13.79	12.14	7.02	6.89
Austin (AUS)	1,107	1,590	10,273.02	$84,492,492	$8,225	2.57	2.25	1.99	2.00
San Antonio (SA)	1,090	1,591	10,844.28	$82,951,051	$7,649	2.26	2.07	1.72	1.76
Beaumont/Port Arthur (BPA)	266	535	8,934.90	$47,690,113	$5,338	1.12	1.05	0.96	0.97
Tyler/Longview (TYL)	214	310	4,998.83	$31,435,756	$6,289	0.35	0.12	0.06	0.06
El Paso (ELP)	141	178	736.38	$3,570,748	$4,849	0.01	0.01	0.02	0.02
Corpus Christi (CC)	87	242	1,521.94	$9,834,936	$6,462	0.27	0.28	0.31	0.34
Victoria (VIC)	86	97	557.02	$5,295,533	$9,507	0.22	0.24	0.26	0.27
Total	**11,899**	**19,203**	**179,878.45**	**$1,102,232,075**	**$6,128[2]**	**32.25**	**28.83**	**19.18**	**18.78**

[1] DERI numbers include $12.5 million in federal American Recovery and Reinvestment Act funding in 2010, for 1,324 tons of NO_X reduced.
[2] The cost per ton of NO_X reduced is the total grant amount divided by the total tons per day of NO_X reduced.

Texas Emissions Reduction Plan (TERP)
Diesel Emissions Reduction Incentive (DERI) Program
Percentages by Area
2001 through August 31, 2018



Appendix 6. DERI Program Projects by Emissions Source

Texas Emissions Reduction Plan (TERP)
Diesel Emissions Reduction Incentive (DERI) Program

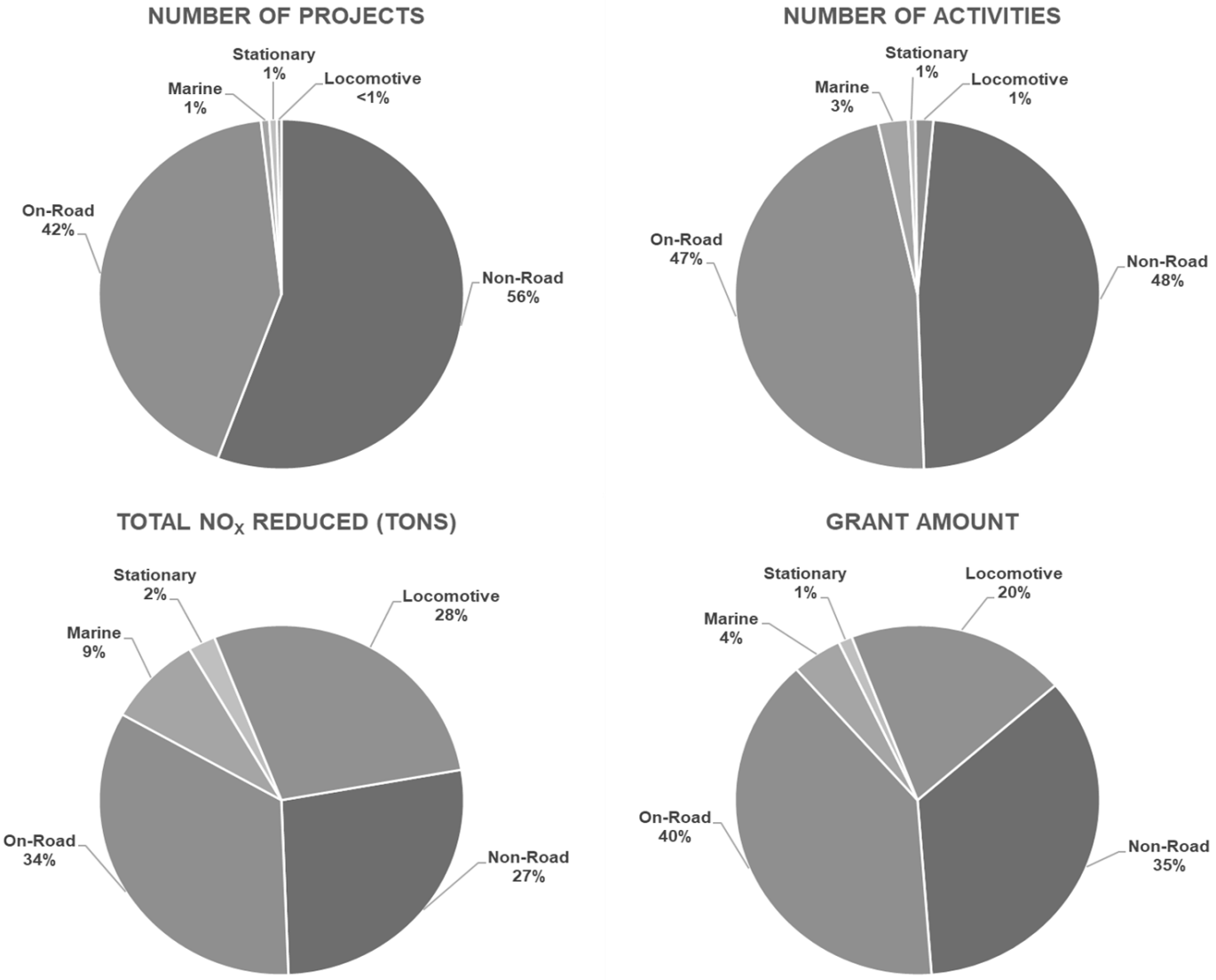
Projects by Emissions Source
2001 through August 31, 2018[11]

Emission Source	Number of Projects	Number of Activities	Total NO_X Reduced (Tons)	Grant Amount	Cost Per Ton of NO_X Reduced	Tons Per Day of NO_X Reduced 2018	Tons Per Day of NO_X Reduced 2019	Tons Per Day of NO_X Reduced 2020	Tons Per Day of NO_X Reduced 2021
Non-Road	6,624	9,226	48,859.99	$387,539,114	$7,932	9.62	8.63	7.73	7.61
On-Road	5,061	9,043	60,727.39	$437,337,981	$7,202	10.44	9.02	7.70	7.55
Marine	87	507	15,205.14	$49,052,583	$3,226	1.89	1.65	1.59	1.55
Stationary	79	125	4,339.80	$13,626,940	$3,140	0.20	0.16	0.09	0.08
Locomotive	48	302	50,746.13	$214,675,457	$4,230	10.10	9.37	2.06	1.99
Total	**11,899**	**19,203**	**179,878.45**	**$1,102,232,075**	**$6,128[22]**	**32.25**	**28.83**	**19.18**	**18.78**

(Does not include projects funded and subsequently canceled)

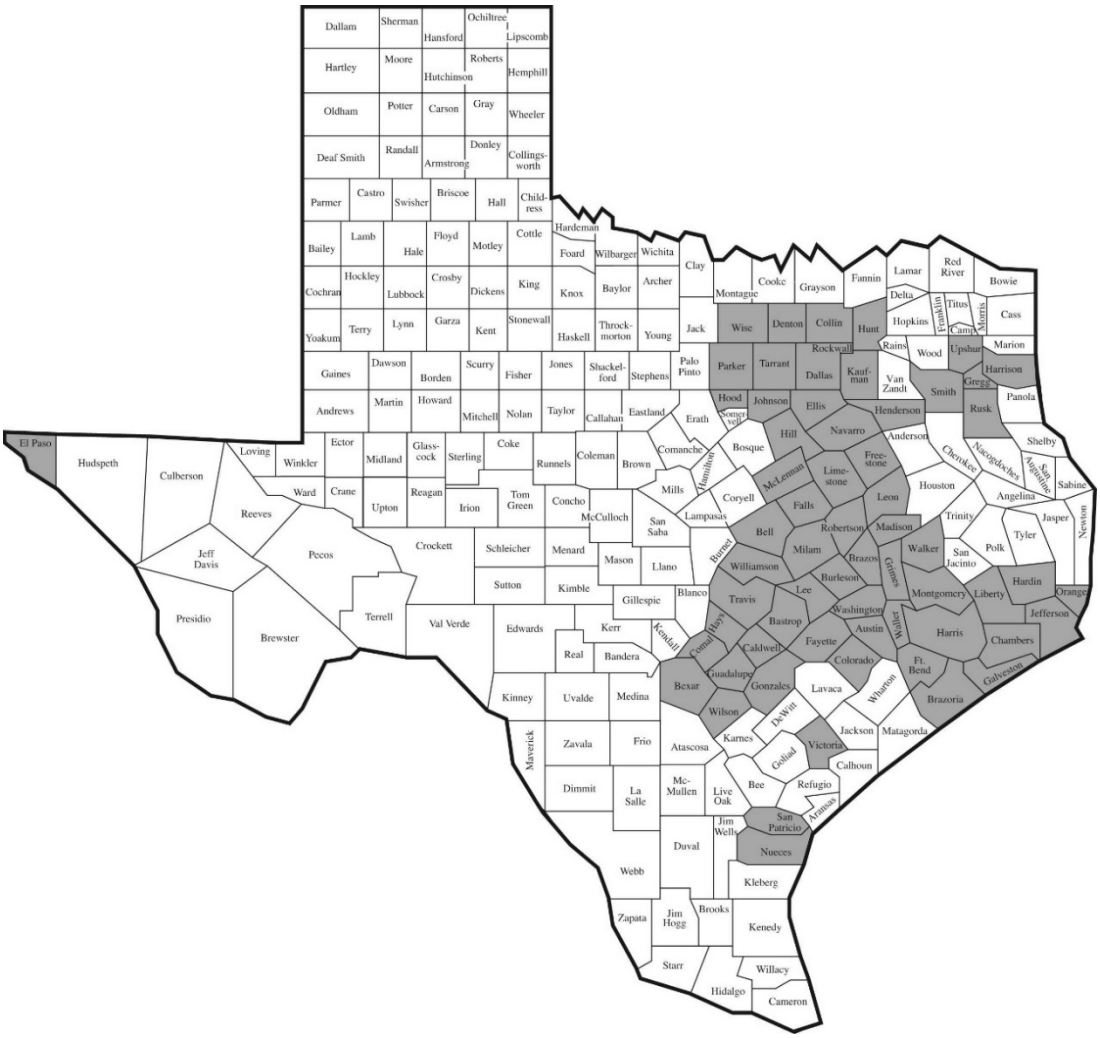
[1] DERI Rebate grant numbers include $12.5 million in federal American Recovery and Reinvestment Act funding in 2010, for 1,324 tons of NO_X reduced.
[2] The cost per ton of NO_X reduced is the total grant amount divided by the total tons per day of NO_X reduced.

Texas Emissions Reduction Plan (TERP)
Diesel Emissions Reduction Incentive (DERI) Program
Percentages by Emissions Source
2001 through August 31, 2018



Appendix 7. Clean Transportation Triangle Counties

Austin	Denton	Harrison	Madison	Tarrant
Bastrop	El Paso	Hays	McLennan	Travis
Bell	Ellis	Henderson	Milam	Upshur
Bexar	Falls	Hill	Montgomery	Victoria
Brazoria	Fayette	Hood	Navarro	Walker
Brazos	Fort Bend	Hunt	Nueces	Waller
Burleson	Freestone	Jefferson	Orange	Washington
Caldwell	Galveston	Johnson	Parker	Williamson
Chambers	Gonzales	Kaufman	Robertson	Wilson
Collin	Gregg	Lee	Rockwall	Wise
Colorado	Guadalupe	Leon	Rusk	
Comal	Hardin	Liberty	San Patricio	
Dallas	Harris	Limestone	Smith	



Note – The CTT counties also represent the counties eligible for operation of grant-funded vehicles under the Texas Clean Fleet Program and the Texas Natural Gas Vehicle Grant Program.

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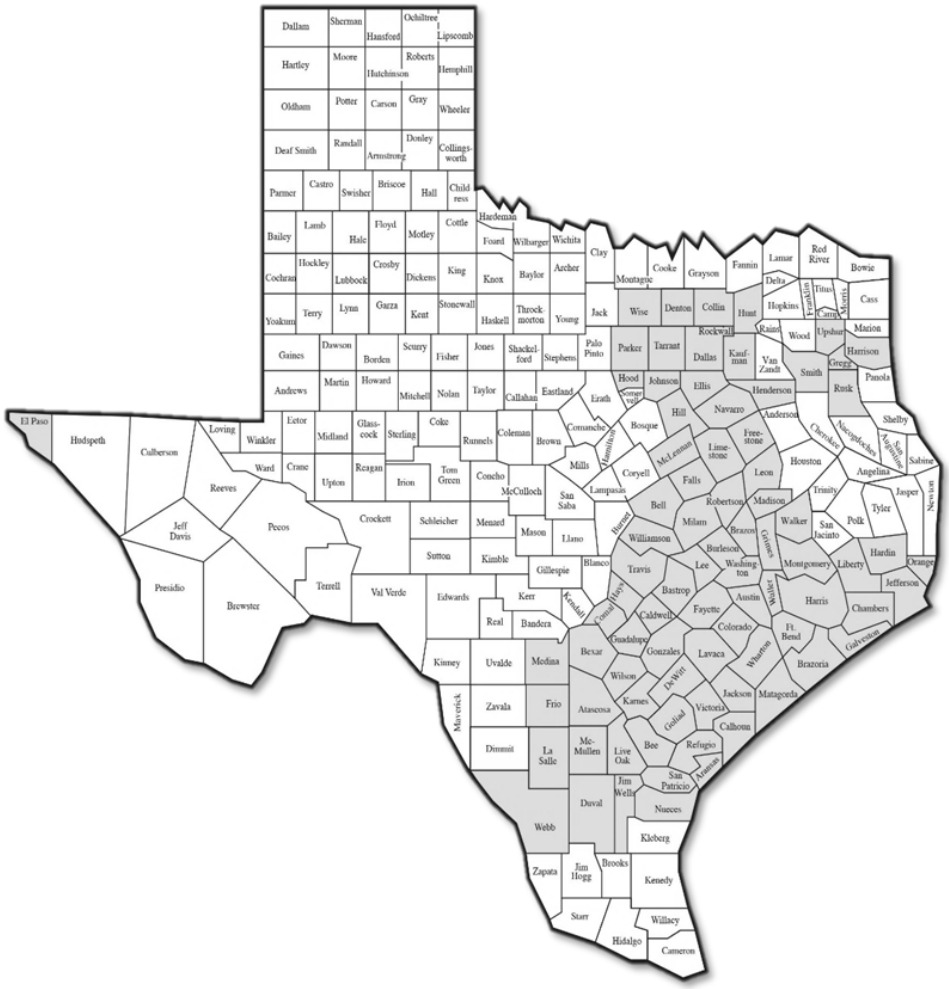
Appendix 8. Clean Transportation Zone Counties

Aransas	Denton	Harris	Liberty	Rusk
Atascosa	DeWitt	Harrison	Limestone	San Patricio
Austin	Duval	Hays	Live Oak	Smith
Bastrop	El Paso	Henderson	Madison	Tarrant
Bee	Ellis	Hill	Matagorda	Travis
Bell	Falls	Hood	McLennan	Upshur
Bexar	Fayette	Hunt	McMullen	Victoria
Brazoria	Fort Bend	Jackson	Medina	Walker
Brazos	Freestone	Jefferson	Milam	Waller
Burleson	Frio	Jim Wells	Montgomery	Washington
Caldwell	Galveston	Johnson	Navarro	Webb
Calhoun	Goliad	Karnes	Nueces	Wharton
Chambers	Gonzales	Kaufman	Orange	Williamson
Collin	Gregg	La Salle	Parker	Wilson
Colorado	Grimes	Lavaca	Refugio	Wise
Comal	Guadalupe	Lee	Robertson	
Dallas	Hardin	Leon	Rockwall	



Note – The CTZ counties also represent the counties eligible for operation of grant-funded vehicles under the Texas Clean Fleet Program and the Texas Natural Gas Vehicle Grant Program.

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Appendix 9. TCFP Projects by Area and Fuel Type

Texas Emissions Reduction Plan (TERP)
Texas Clean Fleet Program (TCFP)

Projects by Area
2009 through August 31, 2018

(Does not include projects funded and subsequently canceled)

Area	Number of Projects	Number of Activities	Grant Amount	Total NO_X Reduced (Tons)	Cost Per Ton of NO_X Reduced	Tons Per Day of NO_X Reduced 2018	Tons Per Day of NO_X Reduced 2019	Tons Per Day of NO_X Reduced 2020	Tons Per Day of NO_X Reduced 2021
Austin (AUS)	6	163	$12,886,133	139.19	$92,579	0.04	0.04	0.01	0.01
Beaumont/Port Arthur (BPA)	1	17	$912,608	8.34	$109,465	0.01	0.01	0.01	0.01
Dallas/Fort Worth (DFW)	9	188	$16,315,047	245.73	$66,393	0.17	0.17	0.12	0.12
Houston/Galveston/Brazoria (HGB)	10	233	$20,742,783	189.36	$109,541	0.12	0.05	0.09	0.09
San Antonio (SA)	1	25	$5,053,933	50.61	$99,867	0.00	0.00	0.04	0.04
Total	**27**	**626**	**$55,910,503**	**633.23**	**$88,294[1]**	**0.33**	**0.26**	**0.27**	**0.27**

Projects by Fuel Type
2009 through August 31, 2018
(Does not include projects funded and subsequently canceled)

Fuel Type	Number of Projects	Number of Activities	Grant Amount	Total NO_X Reduced (Tons)	Cost Per Ton of NO_X Reduced	Tons Per Day of NO_X Reduced 2018	Tons Per Day of NO_X Reduced 2019	Tons Per Day of NO_X Reduced 2020	Tons Per Day of NO_X Reduced 2021
CNG	12	257	$29,547,488	377.46	$78,279	0.18	0.18	0.19	0.19
Diesel Hybrid	1	55	$1,999,197	18.39	$108,696	0.00	0.00	0.00	0.00
LPG	14	314	$24,363,817	237.37	$102,640	0.15	0.08	0.08	0.08
Total	**27**	**626**	**$55,910,503**	**633.23**	**$88,294[2]**	**0.33**	**0.26**	**0.27**	**0.27**

[1] The cost per ton of NO_X reduced is the total grant amount divided by the total tons per day of NO_X reduced.
[2] The cost per ton of NO_X reduced is the total grant amount divided by the total tons per day of NO_X reduced.

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Appendix 10. TNGVGP Projects by Area and Fuel Type

Texas Emissions Reduction Plan (TERP)
Texas Natural Gas Vehicle Grant Program (TNGVGP)

Projects by Area
2009 through August 31, 2018
(Does not include projects funded and subsequently canceled)

Area	Number of Projects	Number of Activities	Total NO_X Reduced (Tons)	Grant Amount	Cost Per Ton of NO_X Reduced	Tons Per Day of NO_X Reduced 2018	Tons Per Day of NO_X Reduced 2019	Tons Per Day of NO_X Reduced 2020	Tons Per Day of NO_X Reduced 2021
Austin (AUS)	6	52	82.05	$2,547,863	$31,054	0.07	0.07	0.02	0.03
Beaumont/Port Arthur (BPA)	1	2	5.71	$90,379	$15,841	0.00	0.00	0.00	0.00
Corpus Christi (CC)	2	2	10.64	$327,406	$30,765	0.01	0.01	0.01	0.01
Dallas/Fort Worth (DFW)	50	422	515.41	$14,030,888	$27,223	0.48	0.44	0.31	0.15
El Paso (ELP)	4	27	41.43	$795,945	$19,212	0.04	0.04	0.02	0.01
Houston/Galveston/Brazoria (HGB)	20	254	298.19	$10,365,466	$34,762	0.29	0.27	0.11	0.04
San Antonio (SA)	4	39	104.56	$2,035,237	$19,464	0.09	0.04	0.01	0.02
Tyler/Longview (TYL)	2	12	30.98	$631,607	$20,390	0.03	0.03	0.02	0.01
Victoria (VIC)	0	0	3.28	$55,341	$16,869	0.00	0.00	0.00	0.00
Clean Transportation Zone (CTZ)	18	129	402.63	$11,516,216	$28,602	0.38	0.32	0.09	0.01
Total	**107**	**939**	**1,494.87**	**$42,396,348**	**$28,361[1]**	**1.40**	**1.22**	**0.60**	**0.26**

Projects by Fuel Type
2009 through August 31, 2018
(Does not include projects funded and subsequently canceled)

Fuel Type2	Number of Projects	Number of Activities	Total NO_X Reduced (Tons)	Grant Amount	Cost Per Ton of NO_X Reduced	Tons Per Day of NO_X Reduced 2018	Tons Per Day of NO_X Reduced 2019	Tons Per Day of NO_X Reduced 2020	Tons Per Day of NO_X Reduced 2021
CNG	88	717	1,059.52	$29,337,775	$27,690	0.99	0.82	0.59	0.24
LNG	7	115	206.30	$5,877,000	$28,488	0.20	0.19	0.01	0.01
LNG/Diesel	9	76	215.74	$6,240,000	$28,924	0.22	0.21	0.00	0.00
LPG	3	31	13.31	$941,573	$70,738	0.00	0.00	0.00	0.01
Total	**107**	**939**	**1,494.87**	**$42,396,348**	**$28,361[1] [2]**	**1.40**	**1.22**	**0.60**	**0.26**

[1] 1he cost per ton of NO_X reduced is the total grant amount divided by the total tons per day of NO_X reduced.
[2] The cost per ton of NO_X reduced is the total grant amount divided by the total tons per day of NO_X reduced.

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Appendix 11. DTIP Projects by Area

Texas Emissions Reduction Plan (TERP)
Drayage Truck Incentive Program (DTIP)

Projects by Area
2015 through August 31, 2018

(Does not include projects funded and subsequently canceled)

Area	Number of Projects	Number of Activities	Grant Amount	Total NO_X Reduced (Tons)	Cost Per Ton of NO_X Reduced	Tons Per Day of NO_X Reduced 2018	Tons Per Day of NO_X Reduced 2019	Tons Per Day of NO_X Reduced 2020	Tons Per Day of NO_X Reduced 2021
Houston/Galveston/Brazoria	14	64	$5,598,155	331.27	$16,899	0.22	0.26	0.26	0.26
Dallas/Fort Worth	2	11	$501,524	25.10	$19,983	0.02	0.02	0.02	0.02
El Paso	1	2	$109,745	5.49	$20,000	0.00	0.00	0.00	0.00
Total	**17**	**77**	**$6,209,424**	**361.85**	**$17,160[1]**	**0.24**	**0.29**	**0.29**	**0.29**

[1] The cost per ton of NO_X reduced is the total grant amount divided by the total tons per day of NO_X reduced.

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Appendix 12. LDPLIP Projects by Vehicle Type

Texas Emissions Reduction Plan (TERP)
Light Duty Purchase or Lease Incentive Program (LDPLIP)

Projects by Vehicle Make and Model
2014 through August 31, 2018

Fuel Type	Vehicle Make & Model	Number of Projects	Grant Amount
CNG	Chevrolet Express 2500	52	$130,000
CNG	Chevrolet Silverado 1500	1	$2,500
CNG	Chevrolet Silverado 2500	27	$67,500
CNG	Chevrolet Tahoe	1	$2,500
CNG	Dodge Ram 2500	1	$2,500
CNG	Ford F150	80	$196,250
CNG	Ford F250	7	$17,500
CNG	GMC Terrain	26	$65,000
CNG	Honda Civic Nat Gas	1	$2,500
Electricity	Audi A3 e-tron	3	$7,500
Electricity	BMW 330e	2	$5,000
Electricity	BMW 530e	6	$15,000
Electricity	BMW 740Xe	1	$2,500
Electricity	BMW i3	154	$340,415
Electricity	BMW i3 Rex	85	$195,625
Electricity	BMW i8	10	$21,875
Electricity	BMW X540e	2	$5,000
Electricity	Cadillac CT6 Plug-In	1	$2,500
Electricity	Cadillac ELR	43	$100,000
Electricity	Chevrolet Bolt EV	85	$212,500
Electricity	Chevrolet Volt	430	$1,057,500
Electricity	Chrysler Pacifica	35	$87,500
Electricity	Ford C-Max Energi	113	$254,375
Electricity	Ford Focus BEV	28	$64,375
Electricity	Ford Focus Electric	1	$2,500
Electricity	Ford Fusion Energi	136	$309,375
Electricity	Honda Clarity	43	$107,500
Electricity	Hyundai Ioniq	1	$2,500
Electricity	Mercedes-Benz Smart	26	$50,000
Electricity	Mitsubishi i-MiEV	8	$20,000
Electricity	Mitsubishi Outlander PHEV	4	$10,000
Electricity	Nissan Leaf	947	$1,965,625
Electricity	Porsche 918 Spyder	1	$2,500
Electricity	Porsche Cayenne S e-Hybrid	1	$2,500
Electricity	Porsche Panamera Hybrid	6	$15,000
Electricity	Smart Fortwo Coupe	1	$2,500
Electricity	Toyota Prime	26	$65,000
Electricity	Volvo S90	1	$2,500
Electricity	Volvo XC60 T8	3	$7,500
Electricity	Volvo XC90 T8	1	$2,500
Electricity	Volvo XC90 T8 AWD	1	$2,500
TOTAL		**2,401**	**$5,427,915**

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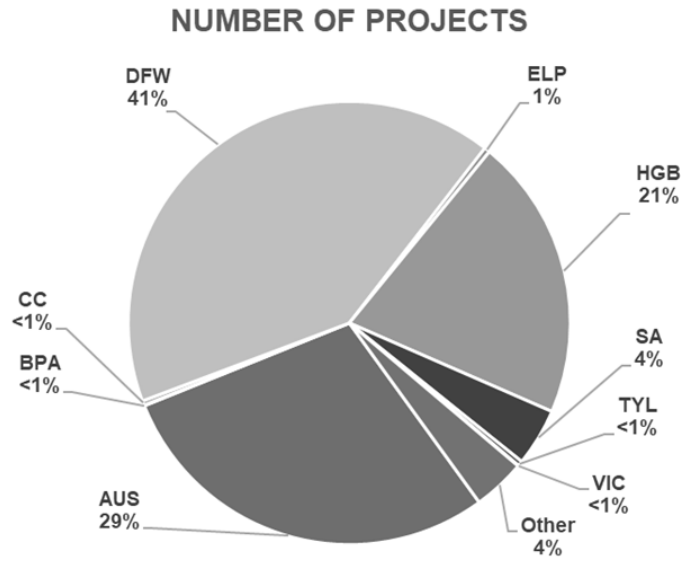
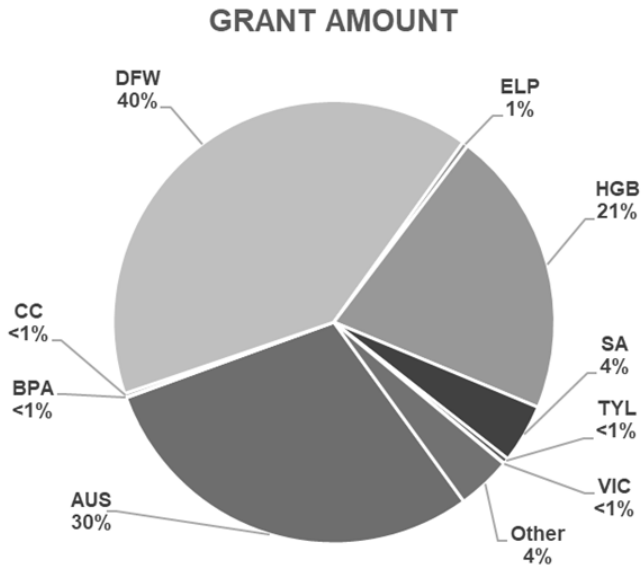
Appendix 13. LDPLIP Projects by Area

Texas Emissions Reduction Plan (TERP)
Light Duty Purchase or Lease Incentive Program (LDPLIP)

Projects by Area
2014 through August 31, 2018

(Does not include projects funded and subsequently canceled)