TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
AGENDA ITEM REQUEST

AGENDA REQUESTED: August 3, 2016

DATE OF REQUEST: July 15, 2016

INDIVIDUAL TO CONTACT REGARDING CHANGES TO THIS REQUEST, IF NEEDED:
Joyce Spencer-Nelson, (512) 239-5017

CAPTION: Docket No. 2015-1819-MIS. Consideration of the adoption of revisions to *Texas Emissions Reduction Plan: Guidelines for Emissions Reduction Incentive Grants (RG-388)* and *Texas Emissions Reduction Plan: Guidelines for the Drayage Truck Incentive Program (RG-524).*

The *Guidelines for Emissions Reduction Incentive Grants* establish criteria for implementation of the Diesel Emissions Reduction Incentive (DERI) Program under the Texas Emissions Reduction Plan (TERP). The *Guidelines for the Drayage Truck Incentive Program* establish criteria for implementation of the Drayage Truck Incentive Program (DTIP).

Revisions to the DTIP guidelines are needed to be consistent with changes made to the DTIP rules in 30 TAC Chapter 114, Control of Air Pollution from Motor Vehicles, Subchapter K, Division 3. The changes to the DTIP rules added "cargo handling equipment" as eligible for replacement under the DTIP and removed the requirement that a drayage truck purchased under the DTIP must have a day cab only. The DTIP rules also were revised to expand the definition of a seaport to include publically and privately owned property within a ship channel security district established under Texas Water Code, Chapter 68. The revisions to the DTIP guidelines incorporate changes consistent with the revised DTIP rules.

Additional revisions to the DERI and DTIP guidelines were also proposed by the executive director. These changes included removing the authorization for the executive director to allow an engine replaced under the DERI program or the DTIP to be sent to a remanufacturing facility in lieu of destruction. Additional changes proposed by the executive director clarify existing requirements and procedures.

The proposed revisions to the DERI and DTIP guidelines were made available for public comment. Comments received have been considered and responded to in the Response to Comments. (Steve Dayton, Sierra Redding) (Non-Rule Project No. 2016-011-OTH-NR)

Jayme Sadlier for Steve Hagle, P.E.
Deputy Director

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Copy to CCC Secretary? NO X YES

Texas Commission on Environmental Quality
Interoffice Memorandum

To: Commissioners **Date:** July 15, 2016

Thru: Bridget C. Bohac, Chief Clerk
Richard A. Hyde, P.E., Executive Director

From: Steve Hagle, P.E., Deputy Director
Office of Air

Docket No.: 2015-1819-MIS

Subject: Commission Approval for Adoption of Revisions to *Texas Emissions Reduction Plan: Guidelines for Emissions Reduction Incentive Grants (RG-388)* and *Texas Emissions Reduction Plan: Guidelines for the Drayage Truck Incentive Program (RG-524)*

Background and reason(s) for the guideline revisions:
The *Texas Emissions Reduction Plan: Guidelines for Emissions Reduction Incentive Grants* (DERI program guidelines) provide procedures and criteria for implementing the Diesel Emissions Reduction Incentive (DERI) program established under Texas Health and Safety Code (THSC), Chapter 386, Subchapter C, Diesel Emissions Reduction Incentive Program. Rules for the DERI program are included under 30 Texas Administrative Code (TAC) Chapter 114, Subchapter K, Division 3, Diesel Emissions Reduction Incentive Program for On-Road and Non-Road Vehicles.

The Texas Emissions Reduction Plan: Guidelines for the Drayage Truck Incentive Program (DTIP guidelines) provide procedures and criteria for implementing the Drayage Truck Incentive Program (DTIP) established under THSC, Chapter 386, Subchapter D-1. Rules for the DTIP are included under Chapter 114, Subchapter K, Division 8, Drayage Truck Incentive Program.

Under THSC, §386.053, the Texas Commission on Environmental Quality (TCEQ or commission) is required to adopt grant guidelines and criteria consistent with Chapter 386 and update the guidelines as necessary. The commission may propose revisions to the guidelines and criteria as necessary to improve the ability of the Texas Emissions Reduction Plan (TERP) to achieve its goals. In addition, THSC, §386.183, authorizes the commission to modify the DTIP to improve its effectiveness or further the goals of the TERP.

Revisions are needed to the DTIP guidelines to make the guidelines consistent with changes made to the DTIP rules under Chapter 114, Subchapter K, Division 8. Additional revisions are proposed to both the DERI program and DTIP guidelines to improve the effectiveness of both programs and to further the goals of the TERP.

Scope of the revisions:

A.) Summary of what the revisions to the guidelines will do: Several revisions to the DTIP guidelines will make the guidelines consistent with changes made to the DTIP rules. Additional revisions to both the DERI program and DTIP guidelines will improve the effectiveness of the programs, as well as clarify some of the existing language.

A summary of the revisions is included with the back-up materials. In addition, the changes are highlighted in the revised DERI program and DTIP guidelines presented for adoption.

B.) Scope required by federal regulations or state statutes: The changes are not required by federal regulations or state statutes. However, several changes to the DTIP guidelines are needed to make the guidelines consistent with changes to the DTIP rules adopted by the commission.

A change is needed to add cargo handling equipment as eligible for replacement under the DTIP to be consistent with changes made to the DTIP rules. The added definition of "cargo handling equipment" includes heavy-duty non-road, self-propelled vehicles or equipment used at a seaport or rail yard to lift or move cargo, such as containerized, bulk, or break bulk goods. This equipment may include, but is not limited to, rubber-tired gantry cranes, yard trucks, top handlers, side handlers, reach stackers, forklifts, loaders, and aerial lifts.

Changes are also needed to remove the requirement that the drayage truck being purchased must have a day cab. In addition, the definition of "seaport" would be amended to include publically and privately owned property within a ship channel security district established under Texas Water Code, Chapter 68.

C.) Additional staff recommendations that are not required by federal rule or state statute: Staff recommends additional changes to the DERI program and DTIP guidelines to improve the effectiveness of the programs and to further the goals of the TERP.

Revisions are proposed to both the DERI program and DTIP guidelines to remove the authorization for the executive director to allow an engine replaced under these two programs to be sent to a remanufacture facility in lieu of destruction.

Staff also recommends amending the DTIP guidelines to remove the requirement that a non-road yard truck eligible for replacement and purchase under the DTIP have an engine rated at greater than 125 horsepower.

In addition, staff recommends adding language to make it clear that the requirement that an engine on a non-road yard truck or other cargo handling equipment be certified to the U.S. Environmental Protection Agency's (EPA) final Tier 4 emission standards only applies to diesel engines.

Statutory authority:

- Texas Water Code (TWC), §5.102, which provides the commission with the general powers to carry out its duties;
- TWC, §5.103, which authorizes the commission to adopt any rules necessary to carry out the powers and duties under the provisions of the TWC and other laws of the state;
- TWC, §5.105, which authorizes the commission by rule to establish and approve all general policy of the commission;

- THSC, §382.017, which authorizes the commission to adopt rules consistent with the policy and purposes of the Texas Clean Air Act;
- THSC, §382.011, which authorizes the commission to establish the level of air quality to be maintained in the state's air and to control the quality of the state's air;
- THSC, §382.012, which authorizes the commission to prepare and develop a general, comprehensive plan for the control of the state's air;
- THSC, §386.053, which directs the commission to adopt guidelines consistent with the requirements of THSC, Chapter 386;
- THSC, Chapter 386, Subchapter C, which establishes the DERI program; and
- THSC, Chapter 386, Subchapter D-1, which establishes the DTIP.

Effect on the:

A.) Regulated community: The guidelines will not affect regulated entities.

B.) Public: The change to the DTIP guidelines will expand the area considered a seaport and the types of equipment eligible for funding under the DTIP. These changes will potentially make more individuals and entities eligible for funding under the DTIP.

The change to the DERI program and DTIP guidelines to remove authorization for the executive director to allow for an engine replaced under these programs to be sent for remanufacture in lieu of destruction will affect those grantees or potential grantees that may have been interested in that option. However, to date, very few grantees have requested this option, and staff has determined that it will not have a major impact on participation in these programs.

C.) Agency programs: Program processes, criteria, and forms will need to be updated.

Stakeholder meetings: Stakeholder meetings were not held for the revisions to the DERI program and DTIP guidelines.

Public comment: The notice of the availability of the draft revisions to the DERI program and DTIP guidelines and the public comment period was published in the April 18, 2016, issue of the *Texas Register* (41 TexReg 2217), published in eight major newspapers within the TERP eligible counties, posted on the TERP website, sent by electronic mail to the TERP listserv, mailed to the TERP Advisory Board, and mailed to the United States Environmental Protection Agency Region 6.

Public hearings were held on April 12, 2016, in Austin and on April 14, 2016, in Houston. The commission received comments from four entities, North American Repower (NAR), North Central Texas Council of Governments (NCTCOG), Port of Houston Authority (POHA), and Regional Transportation Council of the Dallas-Fort Worth Metropolitan Planning Organization (RTC). Significant comments are summarized below.

NCTCOG and POHA commented in support of the changes to the DERI program and DTIP guidelines to remove the provision authorizing the executive director to allow an engine

replaced under the DERI program or DTIP to be sent to a remanufacturing facility in lieu of destruction. NAR recommended altering the language to allow an engine replaced under the DERI or DTIP program to be sent for remanufacturing if the project involves a qualified alternative fuel modernization program that is certified by the California Air Resources Board (CARB). In the Response to Comments staff outlined a number of concerns and questions regarding the efficacy of allowing engines replaced under the program to be used for conversion to an alternative fuel instead of destruction. Staff stated that the commission will continue to assess these and other issues regarding alternative fuel conversion systems and may revisit this issue in the future. No changes were made as a result of these comments.

NCTCOG recommended removal of the existing requirement in the DERI program guidelines prohibiting funding for administrative expenses under a third-party grant. This issue was previously considered by the commission and the commission decided to not allow funding for those costs. In making that decision, it was considered that funding for third-party administrative expenses would need to come from the commission's allocation for administering the TERP programs and not from funds allocated for grants. In addition, under state requirements for expenditure of funds, funding provided under a particular third-party grant contract must be expended within two fiscal years after the fiscal year of the grant award. The responsibility of a third-party grant recipient to monitor sub-grants made under the program extend for the life of the sub-grant projects, which may extend seven years or longer. If a third-party grantee must rely on funding from the commission to administer the third-party grant, including monitoring the sub-grant projects, there would be a risk that the third-party grantee would not have the resources to continue monitoring the sub-grants for the life of those projects. No changes were made as a result of this comment.

NCTCOG recommended that clarifying language be included in sections of the DERI program guidelines discussing repowers to ensure that repowers may include electric motors. In response to this comment, changes were made to the appropriate sections to refer to the existing full definition of a repower, which includes reference to "one or more electric motors, drives, or fuel cells" in addition to reference to replacing an existing engine with a new, used, or remanufactured engine.

NCTCOG recommended removing language in the DERI program guidelines that limits eligibility of on-site and on-vehicle idle reduction activities within areas that have adopted state idling restrictions. Under statutory and regulatory requirements, an activity is not eligible for funding if it is required by state or federal law, rule, regulation, memorandum of agreement, or other legally binding document. In order to set a baseline for determining emissions reductions that could be attributed to a grant-funded project, it would be necessary to make assumptions of prospective use of the idle reduction technology in these areas. Staff determined that those assumptions could not be verified in practice. Therefore, no changes were made in response to this comment.

NCTCOG recommended expanding the definition of "activity" in the DTIP guidelines to ensure that there is no confusion that cargo handling equipment is included as an eligible activity. In response to this comment, a change was made to the definition of "drayage truck" to clarify that cargo handling equipment is included under the drayage truck

definition. By adding the clarifying language, the reference to a drayage truck in the definition of an activity would include cargo handling equipment.

NCTCOG recommended a change to the DTIP guidelines to expand the existing language pertaining to situations where a drayage truck can be replaced with a different type of drayage truck in order to accommodate instances in which technology advances and efficiency gains of new engines and vehicles, especially in the case of hybridization and electrification, allow for much smaller horsepower engines to accomplish the same work. Staff determined that the existing language was sufficient to allow for consideration of the replacement of a drayage truck with a different type of drayage truck. No changes were made in response to this comment.

NCTCOG recommended that the commission use a competitive process when selecting DTIP projects for funding, rather than the first-come, first-served process that has been used to date. The existing language provides for use of either approach and no changes were made in response to this comment.

NCTCOG and POHA commented in support of the change to the DTIP guidelines to remove the requirement that to be eligible under the DTIP a non-road yard truck must have an engine rated at over 125 horsepower. POHA also commented in support of the addition of cargo handling equipment to the DTIP and the removal of the requirement that a drayage truck purchased under the DTIP have a day cab only. No changes were made in response to these comments.

NCTCOG and RTC encouraged the commission to request full funding of the TERP as budgets are prepared for the next biennium. This recommendation is outside of the scope of the guideline revisions. No changes were made in response to these comments.

Significant changes from the draft guidelines released for public comment: Several changes were made in response to the public comments in order to clarify existing language.

In response to a comment by NCTCOG, changes were made to the appropriate sections of the appendices to the DERI program guidelines to refer to the existing full definition of a repower, which includes reference to "one or more electric motors, drives, or fuel cells" in addition to reference to replacing an existing engine with a new, used, or remanufactured engine. This change is made to remove possible uncertainty regarding whether a repower may include the replacement of an existing engine with an electric motor.

In response to a comment by NCTCOG, an additional change is made to the definition of "drayage truck" in Chapter 2, Glossary, of the DTIP guidelines to add a clarifying sentence to read "Cargo handling equipment is considered a non-road vehicle for purposes of this definition."

A change is also made to the DTIP guidelines under the section entitled “Drayage Trucks Eligible for Purchase” to clarify that the requirement that the engine on a non-road yard truck or other cargo handling equipment be certified to the EPA’s final Tier 4 emission standards only applies to diesel engines. This change is made to avoid confusion about

electric motors, which are not required to be certified, and propane non-road engines, which must conform to a different emission standard that was effective beginning with 2007 model year engines.

Potential controversial concerns and legislative interest: Some engine manufacturers and potential applicants to the DERI program or the DTIP may not agree with the changes to the DERI program and DTIP guidelines to remove the provision authorizing the executive director to allow an engine replaced under these programs to be sent to a remanufacturing facility in lieu of destruction. However, this option has been rarely used and the number of potential projects affected by this change would be small.

Do these revisions to the guidelines affect any current policies or require development of new policies? Program application and contracting materials will need to be updated.

What are the consequences if this revision to the guidelines does not go forward? Are there alternatives to revising the guidelines? Revisions to the DTIP guidelines are needed to implement the changes to the DTIP rules. If the revisions are not adopted, implementation of the program under the existing guidelines would be inconsistent with the regulatory provisions. Possible alternatives are not adopting the revised DTIP guidelines or adopting the revisions at a later date and delaying implementation of the program.

Alternatives for the DERI program guidelines would be to not adopt the guidelines or adopting the revisions at a later date and implementing the DERI program under the existing guidelines.

Key points in the adoption schedule: The revised DERI program and DTIP guidelines will become effective upon adoption.

Agency contacts:
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Attachments

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Summary of Revisions to
Texas Emissions Reduction Plan
Guidelines for Emissions Reduction Incentive Grants (RG-388)
and
Guidelines for the Drayage Truck Incentive Program (RG-524)

Docket No. 2015-1819-MIS

The Texas Commission on Environmental Quality (TCEQ or commission) revises *Texas Emissions Reduction Plan: Guidelines for Emissions Reduction Incentive Grants (RG-388)* and *Texas Emissions Reduction Plan: Guidelines for the Drayage Truck Incentive Program (RG-524).*

Revisions are made to the Drayage Truck Incentive Program (DTIP) guidelines to make the DTIP guidelines consistent with changes to the program rules under 30 Texas Administrative Code (TAC) Chapter 114, Subchapter K, Division 8. Several additional revisions are made to both guideline documents that are not included as part of the rule changes.

Changes to *Texas Emissions Reduction Plan: Guidelines for Emissions Reduction Incentive Grants (RG-388)*

The Texas Emissions Reduction Plan (TERP) was established in Texas Health and Safety Code (THSC), Chapter 386, to provide grant funding for projects that reduce nitrogen oxides (NO_x) emissions and other pollutants. The Diesel Emissions Reduction Incentive (DERI) program was established under THSC, Chapter 386, Subchapter C, to provide grants for replacement or upgrade of heavy-duty on-road vehicles, heavy-duty non-road equipment, locomotives, marine vessels, and stationary equipment in order to reduce NO_x emissions in the state's nonattainment areas and other affected counties.

Under THSC, §386.053(d), the commission may propose revisions to the guidelines and criteria adopted consistent with the requirements of THSC, Chapter 386, as necessary to improve the ability of the TERP to achieve its goals. Changes made to the DERI program guidelines are explained below.

Chapter 4, Emissions Reduction Incentive Grants Program, Verification of Vehicle, Equipment, and Engine Disposition, page 17
Chapter 5, Rebate Grants Program, Verification of Vehicle, Equipment, and Engine Disposition, pages 23-24
Chapter 6, Small-Business Grants Program, Verification of Vehicle, Equipment, and Engine Disposition, page 29
Chapter 7, Third-Party Grants Program, Verification of Vehicle, Equipment, and Engine Disposition, page 35

The DERI program guidelines are amended to remove the provision that the executive director may allow an engine replaced under the DERI program to be sent to a remanufacturing facility instead of being destroyed.

The revisions remove the executive director's authorization to allow an engine replaced under the DERI program to be sent to a remanufacturing facility in lieu of destruction is intended to ensure that an engine replaced under the program is permanently removed from the emissions inventory. This provision was intended to allow engine cores that were replaced under the DERI program to be used in a remanufacturing process by the original engine manufacturer. However, the commission has determined that making the engine cores available may increase the availability of remanufactured engines for use in older, higher-emitting vehicles and equipment. The purpose of the DERI program is to encourage the replacement or upgrade of older vehicles and equipment rather than continued operation of the vehicles or equipment. This change is made to help ensure that the program does not inadvertently help facilitate the continued use of older vehicles and equipment.

Appendix 1: On-Road Heavy-Duty Vehicles, page 40
Appendix 2: Non-Road Equipment, page 58
Appendix 3: Marine Vessels, page 75
Appendix 4: Locomotives, page 90
Appendix 5: Stationary Equipment, page 104

In response to comments received regarding the proposed revisions to the DERI program guidelines, the first sentence in each section dealing with repowers in Appendices 1, 2, 3, 4, and 5 is amended to add the phrase "....., or one or more electric motors, drives, or fuel cells" to the end of the sentence. These changes make the language regarding repowers consistent with the definition of "repower" in Chapter 2, Glossary, which defines the term as "To replace an old engine with a new engine, a used engine, a remanufactured engine, or one or more electric motors, drives, or fuel cells."

Changes to *Texas Emissions Reduction Plan: Guidelines for the Drayage Truck Incentive Program (RG-524)*

In addition to the provisions of THSC, §386.053(d), THSC, §386.183(f), also authorizes the commission to modify the DTIP to improve its effectiveness or further the goals of the TERP. The proposed revisions to the DTIP guidelines are intended to improve the effectiveness of the DTIP to reduce emissions at and near seaports and rail yards in the state's nonattainment areas and will make the DTIP guidelines consistent with revisions to the DTIP rules.

Chapter 2, Glossary, pages 5 and 6

In response to comments received on the proposed revisions to the DTIP guidelines, the definition of "drayage truck" is amended to add a clarifying sentence after the existing language to read "This term includes heavy-duty non-road, self-propelled vehicles or equipment meeting the definition of cargo handling equipment." This change will ensure that references to a drayage truck in the DTIP guidelines will be understood to include cargo handling equipment.

The definition of "day cab" is removed and a definition of "cargo handling equipment" is added to the glossary. The definition of a day cab is no longer needed because the requirement that a new drayage truck purchased under the DTIP have a day cab only is also removed. This change is consistent with changes made to the DTIP rules.

The definition of "cargo handling equipment" is added in conjunction with the addition of cargo handling equipment as eligible for replacement and purchase under the DTIP. The definition of cargo handling equipment includes any heavy-duty non-road, self-propelled vehicle or equipment used at a seaport or rail yard to lift or move cargo, such as containerized, bulk, or break-bulk goods. The equipment includes, but is not limited to, rubber-tired gantry cranes, yard trucks, top handlers, side handlers, reach stackers, forklifts, loaders, and aerial lifts. This change is consistent with changes made to the DTIP rules.

The definition of "seaport" is amended to include publically or privately owned property within a ship channel security district established under Texas Water Code, Chapter 68. Only one ship channel security district has been formed in Texas, the Houston Ship Channel Security District. In the Port of Houston area there are multiple businesses and facilities with substantial drayage truck activity located in proximity to, but separate from, the cargo transfer locations. The revision to the definition of a seaport will allow for the replacement of drayage trucks that operate in this broader area. This change is consistent with changes made to the DTIP rules.

Chapter 3, Eligible Seaports and Rail Yards, page 7

Language is added corresponding to the revised definition of a seaport to state that eligible seaports also include facilities that are included in a ship channel security district established under Texas Water Code, Chapter 68. This change is consistent with changes made to the DTIP rules.

Chapter 4, Eligibility Criteria, pages 11 – 13

The requirement that a heavy-duty on-road vehicle eligible for purchase under the DTIP have a day cab only is removed. Based on visits to many of the rail and port facilities and discussion with port administrators and drayage truck owners, the commission has determined that the goals of the DTIP could be better accomplished by allowing on-road heavy-duty vehicles with sleeper cabs to be eligible for purchase under the program. The commission has determined that a number of the drayage truck owners are individual truck owners who contract to provide drayage services and that use vehicles with sleeper berths. The day cab requirement is removed in order to improve the ability of the DTIP to achieve its goals and the goals of the TERP. This change is consistent with changes made to the DTIP rules.

The DTIP guidelines are revised to add "other cargo handling equipment" to the list of drayage truck models eligible for replacement and purchase under the DTIP. This change expands the program to include replacement and purchase of heavy-duty non-road, self-propelled vehicles or equipment used at a seaport or rail yard to lift or move cargo, such as containerized, bulk, or break-bulk goods. As noted under the definition added to Chapter 2, Glossary, this equipment would include, but would not be limited to, rubber-tired gantry cranes, yard trucks, top handlers, side handlers, reach stackers, forklifts, loaders, and aerial lifts. The commission has determined that expanding the program to include other cargo handling equipment at seaports and rail yards would help achieve the goals of the DTIP and the TERP by further reducing the concentrated emissions associated with the movement of cargo at those facilities. This change is consistent with the changes to the DTIP rules.

In addition, the requirements that a non-road yard truck eligible for replacement and purchase under the DTIP have an engine rated at greater than 125 horsepower are removed. These requirements were included in the guidelines to ensure that only non-road yard trucks of a size generally equivalent to an on-road heavy-duty vehicle would be eligible for replacement and purchase. However, with the change to include other cargo handling equipment, the limit on minimum horsepower is removed to allow lower horsepower cargo handling equipment that may be considered a yard truck to be eligible.

A change is also made to the provision on page 13 that requires that engines on non-road yard trucks and other cargo handling equipment be certified to the EPA's Tier 4 non-road emission standards. Language is added to clarify that this requirement only applies to diesel engines. Electric motors do not have to be certified and propane engines must be certified to a different emission standard that was effective beginning model year 2007.

Chapter 5, Program Procedures, Verification of Vehicle, Equipment, and Engine Disposition, page 19

The DTIP guidelines are revised to remove the provision in Chapter 5 authorizing the executive director to allow an engine replaced under the DTIP to be sent to a remanufacture facility operated or authorized by the original engine manufacturer in lieu of crushing the engine block or cutting a hole in it. This change will help ensure that the program does not inadvertently help facilitate the continued use of older vehicles.

Revisions To
Texas Commission on Environmental Quality (TCEQ)
Texas Emissions Reduction Plan:
Guidelines for Emissions Reduction Incentive Grants (RG-388)
and
Texas Emissions Reduction Plan:
Guidelines for the Drayage Truck Incentive Program

Response to Comments
Docket No.: 2015-1819-MIS

PUBLIC COMMENT

The *Texas Emissions Reduction Plan: Guidelines for Emissions Reduction Incentive Grants* (DERI program guidelines) provide procedures and criteria for implementing the Diesel Emissions Reduction Incentive (DERI) program established under Texas Health and Safety Code (THSC), Chapter 386, Subchapter C.

The *Texas Emissions Reduction Plan: Guidelines for the Drayage Truck Incentive Program* (DTIP guidelines) provide procedures and criteria for implementing the Drayage Truck Incentive Program (DTIP) established under THSC, Chapter 386, Subchapter D-1.

The DERI program and DTIP guidelines were made available for public comment in accordance with the provisions of THSC, §386.053. Notice of the public comment period was published in the April 18, 2016, issue of the *Texas Register* (41 TexReg 2217). Notice was also published in eight major newspapers within the Texas Emissions Reduction Plan (TERP) eligible counties, posted on the TERP website, sent by electronic mail to the TERP listserv, mailed to the TERP Advisory Board, and mailed to the United States Environmental Protection Agency (EPA) Region 6.

Public meetings were held on April 12, 2016, in Austin and April 14, 2016, in Houston. The public comment period closed April 18, 2016. The commission received comments from four entities. Comments were received from North American Repower (NAR), North Central Texas Council of Governments (NCTCOG), Port of Houston Authority (POHA), and Regional Transportation Council of the Dallas-Fort Worth Metropolitan Planning Organization (RTC). NCTCOG and POHA commented in support of the changes. NCTCOG also provided recommendations for additional changes to the DTIP guidelines. NAR recommended an additional change to the DERI program and DTIP guidelines. NCTCOG and RTC also commented in support of the TERP in general and recommended actions outside of the guideline revisions.

RESPONSE TO COMMENTS

Comments on both the DERI Program Guidelines and DTIP Guidelines

Comment

NCTCOG and POHA commented in support of the revisions to both the DERI program guidelines and DTIP guidelines to remove the provision authorizing the executive director to allow an engine replaced under the DERI program or DTIP to be sent to a remanufacturing facility in lieu of being destroyed.

NAR recommended altering the language to allow an engine replaced under these programs to be sent for remanufacturing if the project involves a qualified alternative fuel modernization program that is certified by the California Air Resources Board (CARB). NAR commented that by altering the language, rather than striking the provision completely, the commission will once again show its greater wisdom by both reducing the number of older diesel engines being brought back into commerce while at the same time supporting the lowest carbon and most cost-effective pathway to reduce emissions from the primary mobile source of criteria pollutants, the legacy diesel fleet. NAR further stated that by allowing for the reuse of the high monetary and carbon cost components from the donor diesel engines, the commission would enable NAR to bring the benefits of the alternative fuel engines to Texas at the lowest possible price.

Response

The commission appreciates the support expressed for the change. Regarding the NAR recommendation, the commission does not agree to modify the language instead of removing the option for sending an engine replaced under these programs to a remanufacture facility in lieu of destruction. The change to the remanufacture language is based on concerns that it is difficult to ensure that an engine replaced under the DTIP or DERI program will not return to Texas and allowing for remanufacture of the old engine could perpetuate the continued use of higher-emitting engines. The NAR recommendation would provide special consideration for engines being replaced that would then be converted to alternative fuel, presumably on the assumption that an engine converted to alternative fuel will have fewer emissions of nitrogen oxides (NO_x) and other pollutants than the original engine. While this may be true in some cases, the commission has not determined that making the engine cores available for additional alternative fuel conversions instead of destroying those cores is an appropriate approach for meeting the DTIP and DERI program goals. One issue is that acceptance by CARB or the EPA does not mean that the converted engine is certified to meet a more stringent NO_x emission standard. Under both CARB and

EPA regulations, acceptance of an alternative fuel conversion system is based on a requirement that the alteration of an engine may not make the emissions worse, and acceptance and certification does not mean that CARB or EPA are certifying the converted engine to a new emission standard. Both CARB and EPA regulations appear to have a mechanism for an alternative fuel conversion system manufacturer to obtain certification of a system to meet a new, more stringent emission standard. However, it appears that few alternative fuel conversion manufacturers have sought or received that type of certification, particularly for systems to convert engines that are near or at the end of the useful life period established for that engine under CARB or EPA regulations for compliance with emissions regulations. The commission also understands that certification by CARB or EPA does not necessarily extend the warranty on the engine, although CARB requires a minimum three-year or 50,000-mile warranty on converted engines. In addition, it is not clear that if an alternative fuel conversion system is certified by CARB to a more stringent emission standard, but an equivalent EPA certification to a more stringent standard is not obtained, how an engine conversion sold outside of California should be viewed in regards to the certified emissions of the converted engine. The commission will continue to assess these and other issues regarding alternative fuel conversion systems and may revisit this issue in the future. No changes were made to DERI program or DTIP guidelines as a result of these comments.

Comments on the DERI Program Guidelines

Comment

NCTCOG commented on the existing requirement on page 32 of Chapter 7, Third-Party Grants Program, in the third paragraph under the section entitled "Awarding of Grants and Contracting" that states that administrative costs of the third-party grant recipient will not be eligible for funding under the DERI program. NCTCOG recommended that the commission allow for a small amount of funds awarded under a third-party grant to be used for expenses of the third-party grantee to administer the grant. NCTCOG recommended that the sentence containing the requirement be removed.

Response

The commission does not agree with this recommendation. The issue of whether to allow funding for administrative costs under a third-party grant was considered previously by the commission and the commission decided to not allow funding for those costs. In making that decision, it was considered that funding for expenses of a third-party grantee to administer a third-party grant would need to come from the commission's allocation for administering the TERP programs and not from funds

allocated for grants. In addition, under state requirements for expenditure of funds from a particular appropriation year, the funding provided under a particular third-party grant contract must be expended within two fiscal years after the fiscal year of grant award, while the responsibility of the third-party grantee to monitor the status of sub-grants awarded from those funds extends through the life of each of those sub-grant projects, which may extend seven years or longer. If a third-party grantee must rely on funding from the commission to administer the third-party grant, there would be a risk that the third-party grantee would not have the resources to continue monitoring the sub-grants beyond the limited time period in which funds would be available under the grant contract. No changes were made to the DERI program guidelines as a result of this comment.

Comment

NCTCOG commented on the sections in Appendix 1, 2, 4, and 5 referring to the "repower" project category in each appendix. NCTCOG stated that currently the DERI program guidelines describe a repower as "the replacement of an existing engine.....with a new, rebuilt, or remanufactured engine." NCTCOG expressed concern that as electrification options have become more prevalent, and electric vehicles and equipment are repowered by motors rather than engines, use of the words "new, rebuilt, or remanufactured engine" could be interpreted to prohibit replacing an existing engine with an electric motor. NCTCOG recommended that electric motors be specifically included as eligible repower options to ensure technology neutrality while maximizing emission reductions and cost effectiveness. NCTCOG specifically recommended that the term "electric motors" be added to the applicable repower sections on pages 40, 58, 90, and 104.

Response

The commission agrees that additional clarifying language to the discussion on repowers would be appropriate. Although the commission has not experienced any questions or confusion about this language in the past, the commission notes that the language explaining the repower project category in these appendices is not as descriptive as the definition of "repower" on page 6 of Chapter 2, Glossary, which defines the term as "To replace an old engine with a new engine, a used engine, a remanufactured engine, or one or more electric motors, drives, or fuel cells." The commission agrees that it would be appropriate to make the language in the appendices consistent with the definition of "repower" in the Glossary. In addition, although NCTCOG did not reference language in Appendix 3, Marine Vessels, the commission determined that it would be appropriate to add language in that appendix in addition to the appendices referred to by NCTCOG. The first sentence of each section dealing with repowers on page 40 of Appendix 1: On-Road Heavy-Duty Vehicles, page 58 of Appendix 2: Non-Road Equipment, page 75 of Appendix 3:

Marine Vessels, page 90 of Appendix 4: Locomotives, and page 104 of Appendix 5: Stationary Equipment is amended to add the phrase "....., or one or more electric motors, drives, or fuel cells" to the end of the sentence.

Comment

NCTCOG recommended removing the language that limits eligibility of idle reduction activities within areas that have adopted idling restrictions on page 124 of Appendix 7: On-Site Electrification and Idle-Reduction Infrastructure, under the section entitled "Eligible Activities and Costs" and on page 134 of Appendix 8: On-Vehicle Electrification and Idle-Reduction Infrastructure, under the section entitled "Eligible Activities and Costs." The language in question in the DERI program guidelines states that in some areas, idling of on-road vehicles may be limited by state regulations and that the project emissions reductions used to determine the cost-effectiveness for infrastructure activities in an area with such a requirement may not include the replacement of idling hours of operation for on-road vehicles. The state idling rule referred to by NCTCOG is established in 30 Texas Administrative Code (TAC), Chapter 114, Subchapter J, Division 2: Locally Enforced Motor Vehicle Idling Limitations. Under 30 TAC §114.511, the idling restrictions imposed by the rules are only applicable within the jurisdiction of a local government that has signed a Memorandum of Agreement (MOA) with the commission to delegate enforcement of the provisions to that local government. NCTCOG noted in its comment that 30 TAC §114.517 in the state idling rule includes 13 exemptions to the idling restrictions. NCTCOG further stated that enforcement personnel of municipalities that have implemented the idling restrictions have indicated that the vast majority of vehicles idling for more than five minutes can qualify for one of the exemptions. NCTCOG noted that much on-road truck idling occurs during the government-mandated rest period, as allowed under §114.517(13), and that many hours of allowable idling still occur within areas that have adopted idling restrictions. NCTCOG commented that the idling regulations should not preclude grant eligibility for idle reduction technologies that would lead to additional emissions reductions by reducing allowable idling. NCTCOG recommended removing the restrictions in the DERI program guidelines or, at a minimum, allowing a grant applicant to claim the replacement of idling hours equal to the government-mandated rest period.

Response

The commission does not agree with the recommendation to remove the subject language. Although the exemptions in the idling rules make it easier for an on-road vehicle to idle in one of these areas and still comply with the rules, the exemptions are not predictable enough in application to form a reliable baseline for calculating emissions reductions based on idle reduction. Under statutory and regulatory requirements, an activity is not eligible for funding under the DERI program if it is

required by any state or federal law, rule, regulation, MOA, or other legally binding document. In order to set a baseline for determining emissions reductions that could be attributed to a grant-funded project, it would be necessary to make assumptions of prospective use of the idle reduction technology that could not be verified in practice. As one example, in order to attribute emissions reductions to funding for an on-site idle reduction system, the TCEQ would need to assume that the vehicles using the system were on a government-mandated rest period in order to not take credit for reducing idling that was otherwise prohibited under the state regulation and the MOA signed by the local government. No changes were made to the DERI program guidelines in response to this comment.

Comments on the DTIP Guidelines

Comment

NCTCOG recommended expanding the definition of "activity" under Chapter 2, Glossary, to encompass cargo handling equipment to ensure consistency between the DTIP guidelines and the DTIP rules in light of the proposed changes to the rules.

Response

The definition of "activity" in the glossary refers to each replacement of a drayage truck. NCTCOG appears to be concerned that the definition only uses the term "drayage truck" and should also specifically refer to "cargo handling equipment." The commission intends for cargo handling equipment used at a seaport or rail yard to be considered a type of drayage truck. However, the commission agrees that there might be some confusion regarding whether cargo handling equipment is included in the definition of a drayage truck. In response to this comment, the definition of "drayage truck" in Chapter 2, Glossary, is amended to add a clarifying sentence after the existing language to read "This term includes heavy-duty non-road, self-propelled vehicles or equipment meeting the definition of cargo handling equipment."

Comment

NCTCOG and POHA expressed support for the revision to remove the requirement that in order to be eligible for replacement and/or purchase a non-road yard truck must have an engine rated at greater than 125 horsepower (hp) on pages 11 and 13, Chapter 4, Eligibility Criteria, under the sections entitled "Drayage Trucks Eligible for Replacement" and "Drayage Trucks Eligible for Purchase." POHA explained that a significant percentage of cargo handling equipment operated at the Port of Houston is below 125 hp.

Response

The commission appreciates the support expressed for the changes. No changes were made to the proposed text as a result of these comments.

Comment

POHA commented in support of the changes on pages 11 – 13 of Chapter 14, Eligibility Criteria, under the sections entitled "Drayage Trucks Eligible for Replacement" and "Drayage Trucks Eligible for Purchase" to add "other cargo handling equipment" to the list of drayage trucks eligible for replacement and the list of drayage trucks eligible for purchase under the DTIP. POHA commented that adding cargo handling equipment to the DTIP will give POHA and its tenants and any other port-related facilities an additional opportunity to reduce emissions.

Response

The commission appreciates the support expressed for the addition of cargo handling equipment and agrees that this change will provide an additional opportunity to reduce emissions at port facilities. No changes were made to the proposed text in response to these comments.

Comment

NCTCOG recommended that the second bullet on page 12 of Chapter 4, Eligibility Criteria, in the section entitled "Drayage Trucks Eligible for Replacement" be revised to strike the words "of the truck" in order to be inclusive of all eligible vehicles and equipment.

Response

The commission agrees that the change could help address any confusion about the terminology in this bullet. In response to this comment, the wording of the second bullet on page 12, Chapter 4, in the section entitled "Drayage Trucks Eligible for Replacement" is amended to remove the phrase "of the truck" from the sentence in this bullet.

Comment

POHA commented in support of the change to the list on page 13, Chapter 4, Eligibility Criteria, under the section entitled "Drayage Trucks Eligible for Replacement" to remove the requirement that in order to be eligible for replacement a drayage truck

must have a day cab only. POHA explained that it supports the change because the majority of drayage truck owners are independent owner-operators and that the truck owners want to be a flexible as possible in what they want to do with their trucks. POHA further commented that removing the day cab requirement will give the truck owners some comfort in knowing that after they meet their grant requirements they could use those trucks for long-haul purposes and any other purpose where a sleeper cab would help them. POHA stated that, at the same time, the change will help ensure that the DTIP results in more emissions reductions.

Response

The commission appreciates the support expressed for the changes. The commission agrees that the removal of the day cab requirement will encourage more independent owner-operators to participate in the DTIP. No changes to the proposed text were made as a result of these comments.

Comment

NCTCOG recommended that on page 14, Chapter 4, Eligibility Criteria, in the section entitled "Drayage Trucks Eligible for Purchase" language be added to expand the situations where a drayage truck can replace a different type of drayage truck to include a fourth bullet to read "replacement of an on-road or non-road drayage truck with a new drayage truck, regardless of horsepower or size, that can fulfill the same function." NCTCOG commented that this additional language would accommodate instances in which technology advances and efficiency gains of new engines and vehicles, especially in the case of hybridization and electrification, allow for much smaller horsepower engines to accomplish the same work.

Response

The commission does not agree with this change. The additional language proposed by NCTCOG is not needed. Existing language in the second sentence of the last full paragraph on page 13 already explains that the commission may accept replacement of one type of drayage truck with a different type of drayage truck. Also, the bullets at the top of page 14 are not inclusive of all situations that may be considered by the commission. No changes were made to the proposed text in response to this comment.

Comment

NCTCOG referred to the section entitled "Application Review and Selection" on page 17 and encouraged the commission to use a competitive selection process based on cost-effectiveness to maximize emissions reductions, rather than exercising the option to

award grants based on the order of submission. NCTCOG further commented that utilizing a competitive selection process based on cost-effectiveness will ensure that the greatest emissions reductions are achieved with the least amount of funds expended.

Response

The commission agrees that it is important to work to achieve the greatest amount of emissions reductions through the TERP grant programs. As noted by NCTCOG, the existing language includes options for selecting projects based on a competitive process or selecting projects based on the order of submission. In its comment, NCTCOG is not recommending a change to the existing language but is recommending that the commission use the competitive selection option. In planning for each grant application period, the commission will continue to assess which grant selection approach is appropriate for that grant round. The commission will take NCTCOG's recommendation into account when making those decisions. No changes were made to the DTIP guidelines in response to this comment.

<u>Additional General Comments</u>

Comment

NCTCOG and RTC commented in support of the TERP and encouraged the commission to request full funding of the program as budgets are prepared for the next biennium.

Response

The commission appreciates the comments in support of funding the TERP programs; however, these comments are outside of the scope of the guideline revisions. Decisions on appropriation levels are made by the Texas Legislature. Also, how the commission structures the biennial appropriations request is guided by direction from the Legislature Budget Board (LBB). The commission will continue to work with members of the legislature and the LBB regarding the appropriation funding levels for the TERP programs. No changes to the DERI program or DTIP guidelines were made in response to these comments.

RG-388
Draft for Commission Agenda
August 3, 2016
Proposed changes are highlighted

Texas Emissions Reduction Plan: Guidelines for Emissions Reduction Incentive Grants

Air Quality Division

printed on
recycled paper

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Texas Emissions Reduction Plan: Guidelines for Emissions Reduction Incentive Grants

Prepared by
Air Quality Division

RG-388
Draft for Commission Agenda
August 3, 2016

Page to be added in final publication

Contents

Chapter 1
Summary

These guidelines contain the criteria for grants under the Texas Emissions Reduction Plan (TERP), authorized under Chapter 386, Subchapter C, of the Texas Health and Safety Code. The Texas Commission on Environmental Quality has adopted rules to implement this program under Title 30, Texas Administrative Code (30 TAC), Chapter 114, Subchapter K.

Purpose

This program was established by the Texas Legislature to create monetary incentives for projects to improve air quality in the state's nonattainment areas. These areas have been determined not to meet certain air quality standards established by the U.S. Environmental Protection Agency (EPA). Other eligible counties of the state that may face air quality challenges in the future are also eligible for incentives under this program.

Activities eligible for funding under this program are intended to reduce the emissions of nitrogen oxides (NO_x). NO_x is usually a by-product of high-temperature combustion. Everyday functions like driving a motor vehicle or operating heavy equipment contribute to the creation of NO_x. It reacts with volatile organic compounds (VOCs) in the presence of sunlight to form ground-level ozone.

As required under the statute, these guidelines establish the standards and criteria for grants issued under the TERP. Along with the statutory and regulatory provisions applicable to this program, recipients of incentive funding must adhere to the criteria set forth in these guidelines.

The TCEQ may also establish more specific criteria, through contracts or other funding mechanisms, consistent with these guidelines.

Funding

This program is funded through revenue deposited into the Texas Emissions Reduction Plan Fund. That revenue consists of fees and surcharges established by the Texas Legislature.

The amount of funds available for grants during each year may vary depending on the cash flow to the program and the amount of revenues received, as well as legislative appropriations to the program. The TCEQ will periodically issue notices and

information regarding the grant programs, including information on the amount of funds available.

Grant-Program Descriptions

Several grant programs are administered through the TERP:

Emissions Reduction Incentive Grants Program. Authorized in Texas Health and Safety Code 386.102, this program awards grants to cover the incremental costs of projects in the state's 41 air quality nonattainment and near-nonattainment counties.

Rebate Grants Program. THSC 386.117 directs the TCEQ to award rebate grants in order to streamline grant applications, contracting, reimbursement, and reporting for project categories designated by the TCEQ.

Small-Business Grants Program. Per THSC 386.116, businesses that own and operate one or two vehicles or pieces of equipment—one of which must be diesel-powered and a pre–1994 model vehicle—or pieces of non-road equipment with "uncontrolled emissions" are considered small businesses. This program is intended to afford these small businesses greater opportunities to participate in the emissions-reduction incentive programs.

Third-Party Grants Program. THSC 385.103(a) authorizes the TCEQ to allow a person other than the owner to apply for and receive a grant in order to improve the ability of the program to achieve its goals.

Particulate Matter Reduction Retrofits Grants Program. THSC 386.053(d) authorizes adding pollutants in order to improve the ability of the plan to achieve its goals. Accordingly, funding may be made available for retrofit or add-on technologies to achieve the reduction of particulate-matter emissions from school buses.

Grant funding levels for activities of these types will be developed consistent with the TCEQ Clean School Bus program. Funding determinations will be a result of TCEQ analysis of the cost and relative effectiveness of available retrofit technology to reduce PM. Projects will be limited to retrofit activities located in the eligible counties and specifically identified and approved by the TCEQ. Funding for these activities shall be awarded consistent with the provisions of THSC Chapter 390 and 30 TAC Chapter 114, Subchapter K, Division 4.

Other Programs. Other air quality grant, monitoring, and research programs are paid for via the TERP Fund. Programs not specifically addressed in these guidelines are administered under separate requirements established for those programs.

How to Contact Us

For information about the grant programs, interested parties should check the TERP website at <www.terpgrants.org>. Also linked from that page are electronic versions of this document, the technical supplements to the guidelines, and the application forms, as well as other information that may be helpful to a potential applicant.

Staffers at the TCEQ are available to answer questions and offer assistance with the grant programs. If you are unclear about whether a proposed project would qualify for a grant, please feel free to contact TCEQ personnel to discuss the project.

Program staffers may be reached by calling 800-919-TERP (8377) between 8 a.m. and 5 p.m., Monday–Friday, by E-mail at <terp@tceq.texas.gov>, or by mail at:

Implementation Grants Section, MC 204
Air Quality Division
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, TX 78711-3087

Chapter 2
Glossary

Terms as they are defined in Texas Health and Safety Code, Chapter 386, and the TCEQ rules (30 TAC 114.620) apply to this program, except as such terms are further defined and have the meanings as explained below.

activity Each individual purchase or lease, replacement, repower, retrofit of an on-road vehicle, non-road piece of equipment, locomotive, marine vessel, or stationary equipment. An activity also includes each purchase of on-vehicle infrastructure, on-site infrastructure, or qualifying fuel as may be specifically grouped as an activity by the TCEQ in the application forms and approved under a grant contract.

activity life The period used to determine the emissions reductions and cost-effectiveness of the activity. The minimum activity life for most projects is five years, although a longer minimum activity life may be established by the TCEQ for a particular grant-application period. For all on-road heavy-duty vehicle replacement, purchase, or lease activities, the activity life will be five years or more, or 400,000 miles, whichever occurs earlier. The TCEQ will establish a start date for each type of activity. For replacement and repower projects, the activity life usually begins as soon as the TCEQ has verified that proper disposal of the vehicle, equipment, or engine has occurred.

cost-effectiveness The total dollar amount expended divided by the total number of tons of reduced emissions of nitrogen oxides attributable to that expenditure. In calculating cost-effectiveness, one-time grants of money are annualized using a time value of public funds or discount rate determined for each project by the TCEQ, taking into account the interest rate on bonds, interest earned by state funds, and other factors the TCEQ considers appropriate. The current discount rate used to determine cost-effectiveness is 3% per year.

incremental cost The cost of an applicant's project, less a baseline cost that would otherwise be incurred by an applicant in the normal course of business. It may include added lease or fuel costs, as well as additional capital costs.

motor vehicle A self-propelled device designed for transporting persons or property on a public highway that is required to be registered under Texas Transportation Code Chapter 502.

non-road equipment A piece of equipment, excluding a motor vehicle or on-road heavy-duty vehicle, that is powered by a non-road engine, including non-road and non-recreational equipment and vehicles, construction equipment, industrial equipment, mining equipment, locomotives, marine vessels, and other categories of high-emitting engines.

non-road engine An internal combustion engine that is in or on a piece of equipment that is self-propelled or that propels itself and performs another function, excluding a vehicle that is used solely for competition, a piece of equipment that is intended to be propelled while performing its function, or a piece of equipment designed to be capable of being carried or moved from one location or another. In general, an engine that will stay at a single site for at least a full year will be considered a stationary engine, rather than a non-road engine. The TCEQ will make the final determination of the type of engine.

on-road heavy-duty vehicle An on-road motor vehicle that has a gross vehicle weight rating of 8,500 pounds or more. This definition does not include a vehicle over 8,500 pounds that is classified by the EPA as a medium-duty passenger vehicle subject to the federal light-duty on-road vehicle emission standards.

person An individual, corporation, organization, government or governmental subdivision or agency, business trust, partnership, association, or any other legal entity. This may include a corporation headquartered outside Texas that operates equipment or vehicles primarily in an eligible county in Texas.

project One or more activities approved by the TCEQ under one grant contract.

qualifying fuel Any liquid or gaseous fuel or additive that is ultimately dispensed into a motor vehicle, on-road heavy-duty vehicle, non-road equipment, or a stationary engine that reduces emissions of nitrogen oxides, as determined by the TCEQ, beyond reductions required by state or federal law.

repower To replace an old engine with a new engine, a used engine, a remanufactured engine, or one or more electric motors, drives, or fuel cells.

retrofit To equip an engine, a fuel system, or both with new emissions-reducing parts or technology after the manufacture of the original engine or fuel system.

stationary engine A machine used in non-mobile applications that converts fuel into mechanical motion, including turbines and other internal combustion devices. In general, a stationary engine is used either in a fixed application or in a portable (i.e., transportable) application in which it will stay at a single site for at least a full year (12 consecutive months). The TCEQ will make the final determination of the type of engine.

Uniform Grant Management Standards (UGMS) Standards issued by the Office of the Governor for use by state agencies in issuing and administering grants under the authority of the Uniform Grant and Contract Management Act, Texas Government Code, Chapter 783.

Chapter 3
Eligible Areas

The counties eligible under this program (eligible counties) include those counties within the nonattainment areas designated under the Federal Clean Air Act, Section 107(d), as well as other counties identified as "Affected Counties" in Texas Health and Safety Code 386.001(2) and TCEQ rules (30 TAC 114.629). The 42 eligible counties currently located within a nonattainment area or designated as affected are listed in Table 3.1 (see also map, Figure 3.1). While this list is accurate at the time of publication, eligible counties and the boundaries of nonattainment areas may be subject to change.

Table 3.1
Counties in Texas Eligible for the TERP Program

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

The TCEQ may limit funding under a grant period to projects in only some of the eligible counties based on the funding allocation decisions for that period.

The TCEQ may also designate highways and roadways, or portions of highways and roadways, to count towards requirements outlined later in these guidelines that at least 75% of the miles driven by grant-funded on-road vehicles be in the eligible counties. Usage outside of the TERP eligible counties will not count towards emissions reductions used to determine the cost-effectiveness of the project.

The following are portions of highways that are designated for travel by grant-funded on-road vehicles to meet the 75% usage requirement:

- Interstate Highway 10 from the Texas–New Mexico border to the Texas-Louisiana border,
- IH 20 from IH 10 to the Texas-Louisiana border,
- IH 30 from the Rockwall County border to the Texas-Arkansas border,

- IH 35 from the Texas-Mexico border to the Texas-Oklahoma border,
- IH 37 from the Gulf of Mexico to the Bexar County border,
- IH 45 from the Montgomery County border to the Ellis County border,
- U.S. Highway 59 from the Texas-Mexico border to the Texas-Arkansas border,
- US 79 from the Williamson County border to the Texas-Louisiana border,
- US 281 from the Texas-Mexico border to the Texas-Oklahoma border,
- US 77 from the Texas-Mexico border to the Ellis County border, and
- US 290 from IH 10 to the Waller County border.

A number of the United States Highway segments shown above are in the process of being re-designated as part of the new Interstate Highway 69. Those highway segments will remain on this list after conversion to IH 69.

(See also Figure 3.2.)

The TCEQ may limit the funding under a grant period to only some of these highways based on allocation decisions for that period.

Figure 3.1
TERP Eligible Counties (subject to change)

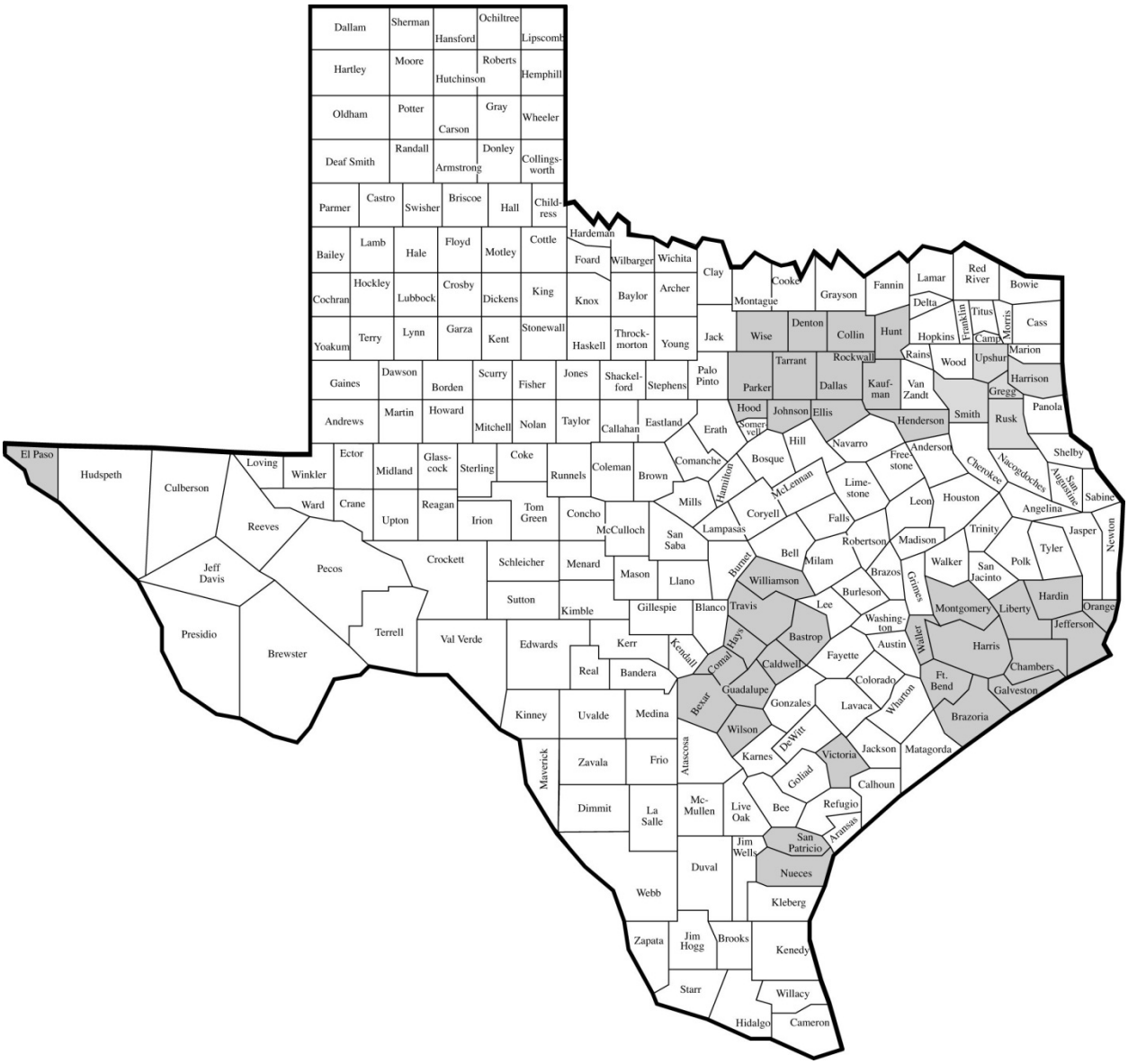
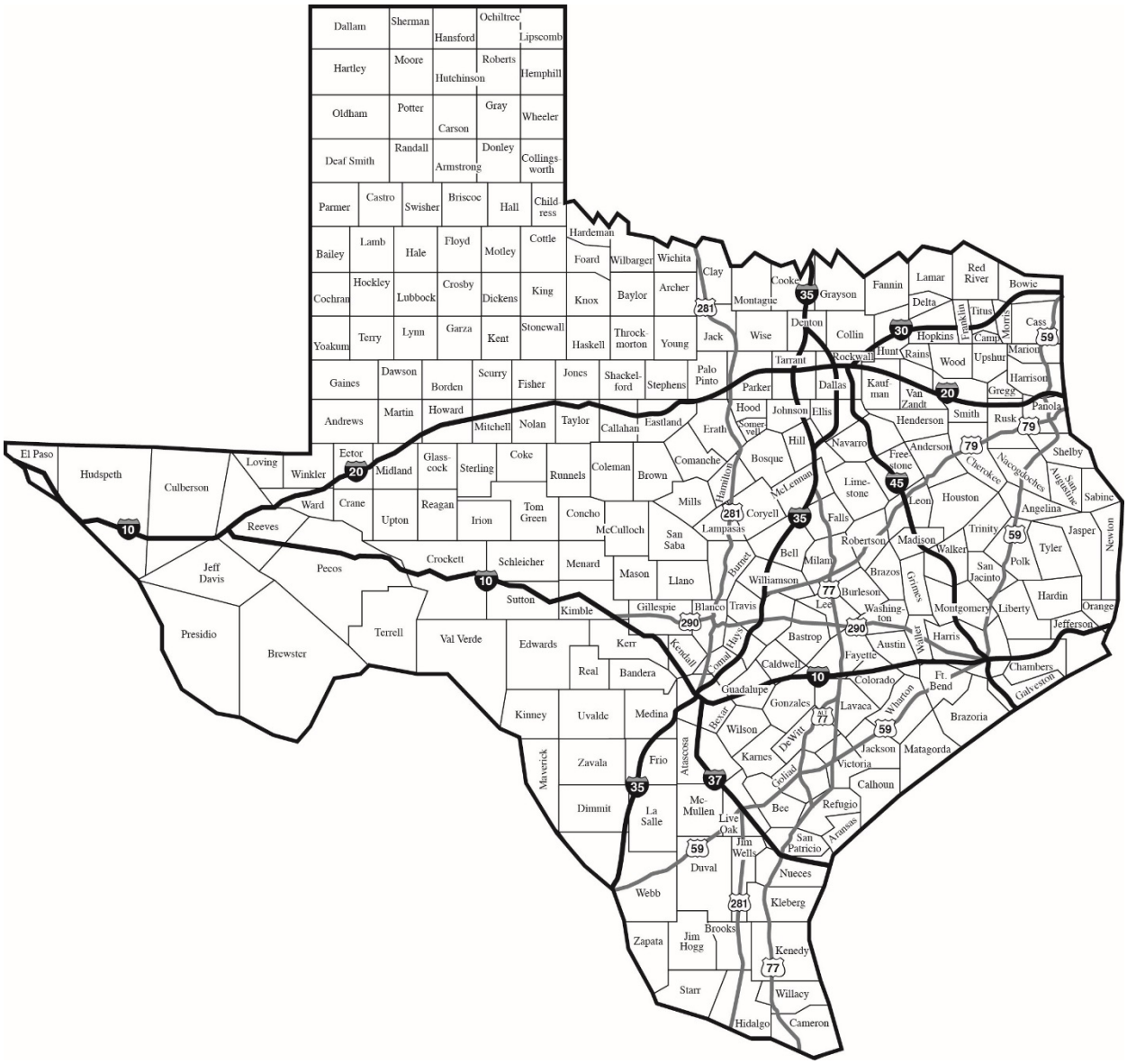


Figure 3.2
TERP Designated Highways and Roadways (subject to change)*



*A number of the United States Highway segments shown above are being re-designated as part of the new Interstate Highway 69. Those highway segments will remain on this list after conversion to IH 69. The TCEQ may periodically issue updated maps to show the IH 69 designations, as those changes are made.

Chapter 4
Emissions Reduction Incentive Grants Program

The Emissions Reduction Incentive Grants (ERIG) program awards grants to fund the incremental costs of projects in the eligible counties.

Activities that may be eligible under this program are outlined below. Vehicles and equipment used primarily for competition or recreation are not eligible for funding under any of the project categories. The TCEQ may more narrowly define or limit the types of eligible activities for a particular funding period.

Eligible Applicants

Applicants are potentially eligible for incentive funding if they operate or plan to operate on-road heavy-duty vehicles, non-road equipment, marine vessels, locomotives, or stationary engines primarily in one or more of the eligible counties, or if they otherwise contribute to NO_x emissions in the eligible counties.

For infrastructure activities (see Appendixes 6–8) persons owning and operating the infrastructure in an eligible county may also be eligible for funding. For demonstration projects, persons may be eligible for funding if they own the technology to be demonstrated in an eligible county, or if they own the vehicles or equipment on which the technology will be demonstrated.

For particular funding periods, the TCEQ may limit eligibility to certain types of applicants. The TCEQ may also allow a person other than the owner or operator of the vehicle or equipment to apply for and receive a grant, as long as the grant-funded project supports activities that meet these guidelines and will help to achieve the goals of the TERP.

Eligible Activities

Activities eligible for incentive funding are intended to reduce NO_x emissions in the designated eligible counties from on-road heavy-duty vehicles, non-road equipment, marine vessels, locomotives, or stationary engines when compared with a baseline vehicle or piece of equipment. Additional information and criteria on eligible activities and costs are available in the appendixes to this volume.

Most of the engines eligible under this program will be powered by diesel-fueled compression-ignition engines. However, engines powered by other fuels may also

be eligible, subject to decisions by the TCEQ for particular funding periods and geographic areas.

The TCEQ may further limit the types of eligible activities, and may more narrowly define eligibility requirements under a particular funding period, as needed to best achieve the goals of the TERP.

On-Road Heavy-Duty Vehicles

On-road heavy-duty vehicles with a gross vehicle weight rating of 8,500 pounds or more are eligible for grants under this program. Activities and eligible costs are explained in Appendix 1. Eligible activities include:

- lease or purchase of new on-road vehicles (fleet expansion),
- replacement of on-road vehicles,
- repower of on-road vehicles, and
- retrofit or add-on of emissions-reduction technology.

Non-Road Heavy-Duty Equipment

Non-road equipment powered by an engine rated at 25 horsepower or greater is eligible for grants under this program. For replacement and repower projects, this requirement refers to the horsepower of the engine being replaced and does not apply to the replacement engine or technology. Activities and eligible costs are explained in Appendix 2. Eligible activities include:

- lease or purchase of new non-road vehicles (fleet expansion),
- replacement of non-road vehicles,
- repower of non-road vehicles, and
- retrofit or add-on of emissions-reduction technology.

Marine Vessels

Marine vessels powered by engines of at least 25 hp, and associated auxiliary marine engines of at least 25 hp, are eligible for grants under this program. For replacement and repower projects, the requirement refers to the horsepower of the engine being replaced and does not apply to the replacement engine or technology. Activities and eligible costs are explained in Appendix 3. Eligible activities include:

- lease or purchase of new marine vessels (fleet expansion),
- replacement of marine vessels,

- repower of marine vessels, and
- retrofit or add-on of emissions-reduction technology.

Locomotives

Locomotives are eligible projects under this grant program. Activities and eligible costs are explained in Appendix 4. Eligible activities include:

- lease or purchase of new locomotives (fleet expansion),
- replacement of locomotives,
- repower of locomotives, and
- retrofit or add-on of emissions-reduction technology.

Stationary Equipment

Activities involving stationary engines of at least 25 hp are eligible for grants under this program. For replacement and repower projects, this requirement refers to the horsepower of the engine being replaced and does not apply to the replacement engine or technology.

An activity is not eligible if the activities or emissions reductions to be funded are already required by any state or federal law, rule, regulation, memorandum of agreement, or other legally binding document. In addition, any emissions-reduction credits generated by a project must be transferred to the state for the State Implementation Plan, and permanently retired.

Activities and eligible costs are explained in Appendix 5. Eligible activities include:

- lease or purchase of new stationary equipment (fleet expansion),
- replacement of stationary equipment,
- repower of stationary equipment, and
- retrofit or add-on of emissions-reduction technology.

Refueling Infrastructure

An eligible activity may include the purchase and installation of stationary or mobile on-site infrastructure for refueling motor vehicles, on-road heavy-duty vehicles, non-road equipment, marine vessels, locomotives, and stationary engines with a qualifying liquid or gaseous fuel. In some cases, the TCEQ may accept applications for refueling infrastructure related to stationary equipment. The applicant will need to supply proof that the infrastructure is needed and will be used in an eligible county.

A qualifying fuel is a liquid or gaseous fuel or additive, other than gasoline or diesel fuel, that is ultimately dispensed into a motor vehicle, an on-road heavy-duty vehicle, non-road equipment, a locomotive, a marine vessel, or a stationary engine, where the provision of the fuel results in reductions in NO_x emissions, as determined by the TCEQ, beyond reductions required by state or federal law. The reductions in NO_x emissions may be achieved directly through the use of the fuel or as a result of the replacement, repower, or retrofit of vehicles or equipment using gasoline or diesel fuel to vehicles or equipment using the qualifying fuel.

Activities and eligible costs are explained in Appendix 6.

On-Site Electrification and Idle-Reduction Infrastructure

An eligible activity may include the purchase and installation of on-site infrastructure—including auxiliary power units—designed to dispense electricity to motor vehicles, on-road heavy-duty vehicles, non-road equipment, marine vessels, locomotives, and stationary engines. The electricity may replace the power normally supplied by the engine while the vehicle or equipment is parked (idle reduction) or may recharge electric vehicles or equipment being used in lieu of vehicles or equipment powered by an internal combustion engine. The applicant will need to supply proof that the infrastructure is needed and will be used in an eligible county.

The TCEQ may also tender funds to other state agencies to implement infrastructure projects at rest areas and other public facilities on major highway transportation routes within eligible areas. Projects may also be funded for marine vessels operating in eligible waterways. Funding may be used for initial start-up and proper operation of the idle-reduction technologies.

Activities and eligible costs are explained in Appendix 7.

On-Vehicle Electrification and Idle-Reduction Infrastructure

An eligible activity may include the purchase and installation of equipment that enables an on-road vehicle, non-road equipment, a marine vessel, a locomotive, or a stationary engine to use electric power to operate, while the vehicle or equipment is parked, the systems normally supplied power by the propulsion engine or another on-board internal combustion engine that emits NO_x.

Activities and eligible costs are explained in Appendix 8. Eligible equipment may include:

- devices added on to enable acceptance of electricity from an external power source
- an auxiliary power unit purchased and installed on the vehicle or equipment to generate electricity.

Activities and eligible costs are explained in Appendix 8.

Rail Relocation and Improvements

Eligible activities may include rail-line relocation and improvements at rail intersections and grade crossings that will reduce emissions of NO_x by reducing locomotive and on-road vehicle idle time at those intersections.

Activities and eligible costs are explained in Appendix 9.

Use of Qualifying Fuel

The incremental costs associated with the purchase and use of a qualifying fuel or fuel additive in a motor vehicle, an on-road heavy-duty vehicle, non-road equipment, a marine vessel, a locomotive, or a stationary engine may be eligible for funding under this program. The incremental cost is the difference in cost between the qualifying fuel and a baseline fuel. For the purchase of fuel additives, the incremental costs include the full cost of the additive.

To determine an incremental cost for fuel purchases, the cost per gallon of the baseline fuel should be compared with the cost for an equivalent amount of the qualifying fuel. Equivalency between the qualifying fuel and the baseline fuel should be determined based on the energy content of the fuel, as measured by the use per mile or hour, or other method.

Activities and eligible costs are explained in Appendix 10.

Demonstration of New Technology

Projects under this category must demonstrate practical low-emissions retrofit technologies, repower options, and advanced technologies for on-road heavy-duty diesel vehicles and diesel-powered non-road equipment. Projects under this category may include:

- use of retrofit, repower, and add-on technologies to reduce NO_x emissions from the existing stock of heavy-duty diesel vehicles and non-road diesel equipment
- use of advanced technologies, including use of qualifying fuels, for new engines and vehicles that produce very low or zero emissions of NO_x—including stationary and mobile fuel cells—which could replace the use of higher-emitting diesels

Activities and eligible costs are explained in Appendix 11.

Grant-Program Procedures

This section contains the general procedures that will be used for applying for, awarding, and administering grants under this program. The TCEQ may adjust these

procedures and develop more detailed procedures, as needed, to ensure the effectiveness of the program.

Project Solicitation

Grant projects will be solicited through periodic or open-ended Requests for Applications and through other mechanisms to solicit grant applications. Copies of the RFAs and the necessary application forms are made available at the TERP website <www.terpgrants.org> and directly from the TCEQ.

Application Review and Selection

The program will review and evaluate grant applications according to criteria established in these guidelines and the RFAs. When it uses a competitive process, the agency will select among projects using ranking and scoring procedures explained in the RFAs. In general, the selection priorities may include allocation of the funding among a subset of the eligible counties, as well as allocation among the various types of project categories. Grants may also be selected in the order received or by another mechanism.

The TCEQ may also establish a cost-effectiveness threshold for particular funding periods and geographic areas.

Application-Verification Visits

Upon receipt of a grant application, the TCEQ may check the vehicle and equipment for condition, engine identification, and vehicle identification.

Awarding of Grants and Contracting

Projects selected for funding will be awarded a grant through the development and execution of a grant contract that is signed by the recipient and by an official of the TCEQ. Grant contracts may contain additional and more specific requirements beyond those contained in these guidelines. Grant recipients should review the contract's language carefully before accepting and signing it.

Because the funding for this program comes from revenue that is received throughout the year, all grant awards and contracts will be contingent upon the receipt of sufficient revenue to cover the grant. The TCEQ may issue grant contracts on a contingency basis, subject to a follow-up Notice to Proceed, once sufficient funds are available.

Reimbursement

Grant payments will be reimbursements, meaning that the agency will remit payment **after** the eligible expense has been incurred by the recipient. Recipients will also have the option to assign their grant payments directly to a dealer or service provider. The TCEQ will supply reimbursement request and reporting forms for use by the recipient.

In some cases, particularly for large projects and projects of long duration, the TCEQ may also authorize advance payments, based on a percentage of the expected final costs. The grant contract and the reimbursement forms will include requirements for documentation of expenses.

Upon completion of all grant-funded purchases, the grant recipient will need to submit a final request for reimbursement of all remaining expenses. The final request must include a completed and signed release of claims.

The grant recipient must also agree to place a label or sticker on the grant-funded vehicles and equipment, as may be supplied by the TCEQ.

Verification of Vehicle, Equipment, and Engine Disposition

The applicant must agree to decommission any old vehicle, equipment, or engine replaced under this program no later than 90 days after receiving reimbursement by the TCEQ.

Unless the executive director agrees to an alternative method, the decommissioning must be carried out by complete crushing or other complete destruction of the vehicle, equipment, or engine, or by making a hole in the engine block on both sides large enough to prevent repairs (usually at least 3 inches) and, for a replacement project, permanently destroying the frame by cutting the frame rails or main structural components of the vehicle or equipment.

[~~In lieu of crushing an engine block or cutting a hole in it, the executive director may also allow the engine to be sent to a remanufacture facility operated or authorized by the original engine manufacturer. The remanufacture of the engine must include removing all parts and using the old block to build a remanufactured engine with a new serial number.~~]

For a locomotive-replacement project, the executive director may allow permanent removal from Texas, in lieu of destruction, in specific grants where the applicant has furnished adequate assurances that the old locomotive will not be returned to Texas. This option will not normally be available for other types of projects, although exceptions may be established for specific grant rounds to meet the goals of the program.

The applicant must certify the disposition of the vehicle, equipment, or engine using forms supplied by the TCEQ. The executive director may require a certified or

duplicate Texas Nonrepairable Vehicle Title as evidence that an on-road vehicle has been rendered permanently inoperable. Grantees may be required to return grant funds if they fail to meet the disposition requirements, including if the vehicle, equipment, or engine is later returned to operation.

Monitoring and Reporting

The grant recipient must agree to monitor and track the use of grant-funded vehicles, equipment, infrastructure, and qualifying fuel for the activity life designated in the grant contract. The activity life is used to determine the total reductions in NO_x emissions and cost-effectiveness of the activities and the project.

Monitoring reports must be submitted to the TCEQ twice a year, unless the TCEQ authorizes an alternative reporting schedule. The reports will document the usage over the required reporting period. The TCEQ may, at its sole discretion, authorize an annual or longer reporting schedule, including suspending the reporting requirements, if a grant recipient is meeting the reporting requirements and is otherwise complying with all program requirements. The TCEQ may require applicants to use global-positioning-system units to monitor grant-funded equipment or allow voluntary use of a GPS unit in lieu of filing the required reports. All applicants monitoring via GPS will be required to use a vendor the TCEQ selects.

If an alternative disposition plan is approved for a locomotive project, the grant recipient must agree to monitor and track the location of the old locomotive to ensure that it is not returned to Texas. The grant recipient must also agree to supply monitoring information to the TCEQ on request. The grant recipient must notify the TCEQ immediately if the use of the locomotive, including where it is used, deviates from any approved alternative disposition plan.

Emissions-Reduction Commitment

Over the activity life of each grant-funded activity, the grant recipient commits the generated emissions reductions to the State Implementation Plan. The recipient is responsible for performing the activities, as defined in the contract, necessary to achieve the calculated reductions in NO_x emissions within the eligible areas. Unless the TCEQ has determined that the intent of the program has been met, recipients will be required to return all or a pro rata share of the grant funds to the TCEQ if the emissions reductions over the activity life are not achieved.

The emissions reduction calculations are based on a *usage amount* (miles, hours, or fuel use) over the activity life. In order to verify that the required emissions reductions are actually achieved, the TCEQ may require a usage commitment by the grant recipient or may establish default usage amounts either based on the category the project belongs to or for individual types of vehicles or equipment. If a specific usage commitment is required, grant recipients must agree to operate the grant-

funded vehicles or equipment in the eligible counties for the usage amounts committed to in the contract. If the TCEQ establishes default usage amounts, a grant recipient may not be required to commit to a specific usage amount over the activity life but will still need to meet commitments on the percentage of annual use in the eligible counties.

In determining whether the intent of the program has been met, the TCEQ may consider the good-faith efforts of the grant recipient to meet the usage commitments originally projected. The TCEQ may consider circumstances that impeded the recipient's use of the grant-funded vehicle or equipment, such as natural disasters and other factors not under the recipient's control.

The TCEQ may include an annual commitment to reduce NO_x in the contract, where appropriate. At its discretion, the TCEQ may require the return of all or a pro rata share of grant funds if the annual emissions reductions are not being achieved. The decision to require the return of grant funds may be based on—but need not be limited to—an assessment that the annual performance is so low that it is unlikely that the grant recipient will be able to achieve the emissions reductions committed to over the activity life. The TCEQ may also use annual emissions-reduction commitments to ensure that a grant recipient does not overachieve emissions reductions during the first years of the activity life in order to underachieve the emissions reductions in later years.

The TCEQ may work with the grant recipient to implement other options for ensuring that the emissions-reduction commitments will be achieved before it requires a return of the grant funds. If the TCEQ requires the return of a pro rata share of the grant funds for underachievement of the annual emissions-reduction commitment, the TCEQ may revise the commitment over the remaining activity life to a lower amount, based on a new projection of the emissions reductions.

Except where no percentage-of-use commitment is required for that type of project, grant recipients must also agree to operate the grant-funded vehicle or equipment in the eligible counties for a minimum percentage of the annual or total usage (or both). Except when the TCEQ determines that the intent of the program has been met, the recipient will be required to return all or a pro rata share of the grant funds to the TCEQ if the percentage-of-use commitment is not met. The TCEQ may work with the grantee to implement other options for ensuring that a percentage-of-use commitment will be met before it requires the return of grant funds.

Chapter 5
Rebate Grants Program

The Rebate Grants Program awards grants to fund the incremental costs of projects in the eligible counties.

Activities that may be eligible under this program are outlined below. Vehicles and equipment used primarily for competition or recreation are not eligible for funding under any of the project categories. The TCEQ may more narrowly define or limit the types of eligible activities for a particular funding period. The TCEQ may also establish more than one rebate-grants program to include various emission-source categories and types of projects, such as replacements, repowers, and retrofits.

Eligible Applicants

Applicants are potentially eligible for incentive funding if they operate or plan to operate on-road heavy-duty vehicles, non-road equipment, marine vessels, locomotives, or stationary engines primarily in one or more of the eligible counties, or if they otherwise contribute to NO_x emissions in the eligible counties.

For particular funding periods, the TCEQ may limit eligibility to certain types of applicants. The TCEQ may also allow a person other than the owner or operator of the vehicle or equipment to apply for and receive a grant, as long as the grant-funded project supports activities that meet these guidelines and will help to achieve the goals of the TERP.

Eligible Activities

Activities eligible for rebate grants are intended to reduce NO_x emissions in the designated eligible counties from on-road heavy-duty vehicles, non-road equipment, marine vessels, locomotives, or stationary engines.

Most of the engines eligible under this program will be powered by diesel-fueled compression-ignition engines. However, engines powered by other fuels may also be eligible, subject to decisions by the TCEQ for particular funding periods and geographic areas.

All project categories and types of activities, such as replacements, repowers, and retrofits, listed under the Emissions Reduction Incentive Grants program in Chapter 4 of these guidelines may be eligible for funding in the Rebate Grants program. The

TCEQ may limit the types of activities that may be funded under a rebate grant for particular funding periods.

The TCEQ may establish default usage rates to determine the rebate grant amounts. The TCEQ may also establish a minimum average annual usage for vehicles and equipment being replaced under a rebate grant.

Grant-Program Procedures

This section contains the general procedures that will be used for applying for, awarding, and administering grants under this program. The TCEQ may adjust these procedures and develop more detailed procedures, as needed, to ensure the effectiveness of the program.

Project Solicitation

The agency will solicit project grants through a periodic or open-ended Notice of Rebate Grants and through other processes. Copies of the NRG and the necessary application forms will be made available at the TERP website <www.terpgrants.org> and directly from the TCEQ.

The TCEQ may establish a cost-effectiveness threshold for particular funding periods and geographic areas.

Application Review and Selection

Grant applications will be reviewed and evaluated according to criteria established in these guidelines and the NRGs. In general, the selection priorities may include allocation of the funding among a subset of the eligible counties, as well as allocation among the various types of project categories.

The agency will review applications for rebate grants in the order received and will fund projects as money becomes available.

Application-Verification Visits

Upon receipt of a grant application, the TCEQ may check any vehicles and equipment for condition, engine identification, and vehicle identification number.

Awarding of Grants and Contracting

Projects selected for funding will be awarded a grant through the development and execution of a grant contract that is signed by the recipient and by an official of the TCEQ. Grant contracts may contain additional and more specific requirements beyond those contained in these guidelines. Grant recipients should review the contract's language carefully before accepting and signing it.

Because the funding for this program comes from revenue that is received throughout the year, all grant awards and contracts will be contingent upon the receipt of sufficient revenue to cover the grant.

Reimbursement

Grant payments will be reimbursements, meaning that the agency will remit payment after the eligible expense has been incurred by the recipient. Recipients will also have the option to assign their grant payments directly to a dealer or service provider. The TCEQ will supply reimbursement request and reporting forms for use by the recipient.

In some cases, particularly for large projects and projects of long duration, the TCEQ may also authorize advance payments, based on a percentage of the expected final costs. The grant contract and the reimbursement forms will include requirements for documentation of expenses.

Upon completion of all grant-funded purchases, the grant recipient will need to submit a final request for reimbursement of all remaining unreimbursed expenses. The final request must include a completed and signed release of claims.

The grant recipient must also agree to place a label or sticker on the grant-funded vehicles and equipment, as may be supplied by the TCEQ.

Verification of Vehicle, Equipment, and Engine Disposition

The applicant must agree to decommission any old vehicle, equipment, or engine replaced under this program no later than 90 days after receiving reimbursement by the TCEQ.

Unless the executive director agrees to an alternative method, the decommissioning must be carried out by complete crushing or other complete destruction of the vehicle, equipment, or engine, or by making a hole in the engine block on both sides large enough to prevent repairs (usually at least 3 inches) and, for a replacement project, permanently destroying the frame by cutting the frame rails or main structural components of the vehicle or equipment.

[~~In lieu of crushing an engine block or cutting a hole in it, the executive director may also allow the engine to be sent to a remanufacture facility operated or authorized by~~

~~the original engine manufacturer. The remanufacture of the engine must include removing all parts and using the old block to build a remanufactured engine with a new serial number.~~]

For a locomotive replacement project the executive director may allow permanent removal from Texas, in lieu of destruction, in specific grants where the applicant has furnished adequate assurances that the old locomotive will not be returned to Texas. This option will not normally be available for other types of projects, although exceptions may be established for specific grant rounds to meet the goals of the program.

The applicant must certify the disposition of the vehicle, equipment, or engine using forms supplied by the TCEQ. The executive director may require a certified or duplicate Texas Nonrepairable Vehicle Title as evidence that an on-road vehicle has been rendered permanently inoperable. Grantees may be required to return grant funds if they fail to meet the disposition requirements, including if the vehicle, equipment, or engine is later returned to operation.

Monitoring and Reporting

The grant recipient must agree to monitor and track the use of grant-funded vehicles, equipment, infrastructure, and qualifying fuel for the activity life designated in the grant contract. The activity life is used to determine the total reductions in NO_x emissions and cost-effectiveness of the activities and the project.

Monitoring reports must be submitted to the TCEQ twice a year, unless the TCEQ authorizes an alternative reporting schedule. The reports will document the usage over the required reporting period. The TCEQ may, at its sole discretion, authorize an annual or longer reporting schedule, including suspending the reporting requirements, if a grant recipient is meeting the reporting requirements and is otherwise complying with all program requirements. The TCEQ may require applicants to use global-positioning-system units to monitor grant-funded equipment or allow voluntary use of a GPS unit in lieu of filing the required reports. All applicants monitoring via GPS will be required to use a vendor the TCEQ selects.

If an alternative disposition plan is approved for a locomotive project, the grant recipient must agree to monitor and track the location of the old locomotive to ensure that it is not returned to Texas. The grant recipient must also agree to supply the monitoring information to the TCEQ upon request. The grant recipient must notify the TCEQ immediately if the use of the locomotive, including where it is used, deviates from any approved alternative disposition plan.

Emissions-Reduction Commitment

Over the activity life of each grant-funded activity, the grant recipient commits the generated emissions reductions to the State Implementation Plan. The recipient is

responsible for performing the activities, as defined in the contract, necessary to achieve the calculated reductions in NO_x emissions within the eligible areas. Except in circumstances where the TCEQ determines that the intent of the program has been met, recipients will be required to return all or a pro rata share of the grant funds to the TCEQ if the emissions reductions over the activity life are not achieved.

The emissions reduction calculations are based on a *usage amount* (miles, hours, or fuel use) over the activity life. In order to verify that the required emissions reductions are actually achieved, the TCEQ may require a usage commitment by the grant recipient or may establish default usage amounts either based on the category the project belongs to or for individual types of vehicles or equipment. If a specific usage commitment is required, grant recipients must agree to operate the grant-funded vehicles or equipment in the eligible counties for the usage amounts committed to in the contract. If default usage amounts are established by the TCEQ, a grant recipient may not be required to commit to a specific usage amount over the activity life but will still need to meet commitments on the percentage of annual use in the eligible counties.

In determining whether the intent of the program has been met, the TCEQ may consider the good-faith efforts of the grant recipient to meet the usage commitments originally projected. The TCEQ may consider circumstances that impeded the recipient's use of the grant-funded vehicle or equipment, such as natural disasters and other factors not under the control of the grant recipient.

The TCEQ may include an annual commitment to reduce NO_x emissions in the contract, where appropriate. At its discretion, the TCEQ may require the return of all or a pro rata share of grant funds if the annual emissions reductions are not being achieved. The decision to require the return of grant funds may be based on—but need not be limited to—an assessment that the annual performance is so low that it is unlikely that the grant recipient will be able to achieve the emissions reductions committed to over the activity life. The TCEQ may also use annual emissions-reduction commitments to ensure that a grant recipient does not overachieve emissions reductions during the first years of the activity life in order to underachieve the emissions reductions in later years.

The TCEQ may work with the grant recipient to implement other options for ensuring that the emissions-reduction commitments will be achieved before it requires a return of the grant funds. If the TCEQ requires the return of a pro rata share of the grant funds for underachievement of the annual emissions-reduction commitment, the TCEQ may revise the commitment over the remaining activity life to a lower amount, based on a new projection of the emissions reductions.

Except where no percentage-of-use commitment is required for that type of project, grant recipients must also agree to operate the grant-funded vehicle or equipment in the eligible counties for a minimum percentage of the annual or total usage (or both). Except when the TCEQ determines that the intent of the program has been met, the recipient will be required to return all or a pro rata share of the grant funds to the

TCEQ if the percentage-of-use commitment is not met. The TCEQ may work with the grantee to implement other options for ensuring that a percentage-of-use commitment will be met before it requires the return of grant funds.

Chapter 6
Small-Business Grants Program

In accordance with Texas Health and Safety Code 386.116, the TCEQ is required to establish and administer a grant program targeted at small businesses and other entities that operate only a limited number of eligible vehicles and equipment.

Eligible Applicants

Applicants are potentially eligible for incentive funding if they operate or plan to operate on-road heavy-duty vehicles, non-road equipment, marine vessels, locomotives, or stationary engines primarily in one or more of the eligible counties, or if they otherwise contribute to NO_x emissions in the eligible counties.

For particular funding periods, the TCEQ may limit eligibility to certain types of applicants. The TCEQ may also allow a person other than the owner or operator of the vehicle or equipment to apply for and receive a grant, as long as the grant-funded project supports activities that meet these guidelines and will help to achieve the goals of the TERP.

Under this program, a "small business" is defined as a "person" (that is, an individual or organization; see Glossary [Chapter 2] for a more specific definition) that has owned (for more than one year) and operates not more than two vehicles or pieces of equipment, one of which is an on-road diesel heavy-duty vehicle with an engine from a model year before 1994 or a non-road diesel-powered piece of equipment with an engine with uncontrolled emissions.

Eligible Activities

Activities eligible for small-business grants are intended to reduce NO_x emissions in the designated eligible counties from on-road heavy-duty vehicles, non-road equipment, marine vessels, locomotives, or stationary engines.

Most of the engines eligible under this program will be powered by diesel-fueled compression-ignition engines. However, engines powered by other fuels may also be eligible, subject to decisions by the TCEQ for particular funding periods and geographic areas.

All project categories listed under the Emissions Reduction Incentive Grants program described in Chapter 4 of these guidelines may be eligible for funding in the small-business grants program. At a minimum, the grants will be available for the

replacement or repower of an on-road heavy-duty vehicle with an engine from a model year before 1994, and for the replacement or repowering of non-road equipment with an engine with uncontrolled emissions.

Grant-Program Procedures

This section contains the general procedures that will be used for applying for, awarding, and administering grants under this program. The TCEQ may adjust these procedures and develop more detailed procedures, as needed, to ensure the effectiveness of the program.

Project Solicitation

The TCEQ will make information available on times when applications may be filed for small-business grants, based on the expected availability of funding for the program. To the extent possible, the TCEQ will keep dealers and installers informed of the availability of funds for the program. The TCEQ may also limit the grants to certain geographic areas, based on the needs of the program. Small-business grants may be funded through another grant program, such as the Rebate Grants program. Information and funds available for small-business grants will be posted in the Requests for Applications or Notices of Rebate Grants (NRGs).

The TCEQ may establish a cost-effectiveness threshold for particular funding periods and geographic areas.

Application Review and Selection

Grant applications will be reviewed and evaluated according to criteria established inthese guidelines and the NRG. In general, the selection priorities may include allocation of the funding among a subset of the eligible counties, as well as allocation among the various types of project categories.

Verification of Vehicle, Equipment, and Engine Disposition

The applicant must agree to decommission any old vehicle, equipment, or engine replaced under this program no later than 90 days after receiving reimbursement by the TCEQ.

Unless the executive director agrees to an alternative method, the decommissioning must be carried out by complete crushing or other complete destruction of the vehicle, equipment, or engine, or by making a hole in the engine block on both sides large enough to prevent repairs (usually at least 3 inches) and, for a replacement

project, permanently destroying the frame by cutting the frame rails or main structural components of the vehicle or equipment.

[~~In lieu of destroying an engine block or cutting a hole in it, the executive director may also allow the engine to be sent to a remanufacture facility operated or authorized by the original engine manufacturer. The remanufacture of the engine must include removing all parts and using the old block to build a remanufactured engine with a new serial number.~~]

For a locomotive-replacement project, the executive director may allow permanent removal from Texas, in lieu of destruction, in specific grants where the applicant has furnished adequate assurances that the old locomotive will not be returned to Texas. This option will not normally be available for other types of projects, although exceptions may be established for specific grant rounds to meet the goals of the program.

The applicant must certify the disposition of the vehicle, equipment, or engine using forms supplied by the TCEQ. The executive director may require a certified or duplicate Texas Nonrepairable Vehicle Title as evidence that an on-road vehicle has been rendered permanently inoperable. Grantees may be required to return grant funds if they fail to meet the disposition requirements, including if the vehicle, equipment, or engine is later returned to operation.

Monitoring and Reporting

The grant recipient must agree to monitor and track the use of grant-funded vehicles and equipment for the activity life designated in the grant contract. The activity life is used to determine the total reductions in NO_x emissions and cost-effectiveness of the activities and the project.

Monitoring reports must be submitted to the TCEQ twice a year, unless the TCEQ authorizes an alternative reporting schedule. The reports will document the usage over the required reporting period. The TCEQ, at its sole discretion, may authorize an annual or longer reporting schedule, including suspending the reporting requirements, if a grant recipient is meeting the reporting requirements and is otherwise complying with all program requirements. The TCEQ may require applicants to use global-positioning-system units to monitor grant-funded equipment or allow voluntary use of a GPS unit in lieu of filing the required reports. All applicants monitoring via GPS will be required to use a vendor the TCEQ selects.

If an alternative disposition plan is approved for a locomotive project, the grant recipient must agree to monitor and track the location of the old locomotive to ensure that it is not returned to Texas. The grant recipient must also agree to supply the monitoring information to the TCEQ upon request. The grant recipient must notify the TCEQ immediately if the use of the locomotive, including where it is used, deviates from any approved alternative disposition plan.

Emissions-Reduction Commitment

Over the activity life of each grant-funded activity, the grant recipient commits the generated emissions reductions to the State Implementation Plan. The recipient is responsible for performing the activities, as defined in the contract, necessary to achieve the calculated reductions in NO_x emissions within the eligible areas. Except when the TCEQ determines that the intent of the program has been met, recipients will be required to return all or a pro rata share of the grant funds to the TCEQ if the emissions reductions are not achieved.

A small-business grant may be awarded under the criteria for either the Emissions Reduction Incentive Grants Program or the Rebate Grants Program. The requirements for emissions reductions and usage for the applicable program will apply.

Chapter 7
Third-Party Grants Program

Texas Health and Safety Code 385.103(a) authorizes the TCEQ to allow a person other than the owner to apply for and receive a grant in order to improve the ability of the program to achieve its goals.

Eligible Applicants

Public agencies, such as those able to coordinate local and regional projects, are eligible to apply for third-party grants. Third-party applicants will need to be able to pass through money to eligible applicants. The TCEQ may limit eligible applicants, areas, and projects. Applicants will be considered case by case.

Eligible Activities

Activities eligible for third-party grants are intended to reduce NO_x emissions in the designated eligible counties from on-road heavy-duty vehicles, non-road equipment, marine vessels, locomotives, or stationary engines.

Most of the engines eligible under this program will be diesel-fueled compression-ignition engines. However, engines powered by other fuels may also be eligible, subject to decisions by the TCEQ for particular funding periods and geographic areas.

All project categories listed under the Emissions Reduction Incentive Grants program in Chapter 4 of these guidelines may be eligible for funding under the Third-Party Grants program, subject to a determination by the TCEQ for each third-party grant. In some cases, the TCEQ may require that a third party has already identified the projects to be funded before submitting an application.

Grant-Program Procedures

This section contains the general procedures that will be used for applying for, awarding, and administering grants under this program. The TCEQ may adjust these procedures and develop more detailed procedures, as needed, to ensure the effectiveness of the program.

Project Solicitation

The TCEQ will make information available on times when applications may be filed for third-party grants, based on the expected availability of funding for the program.

The TCEQ may establish a cost-effectiveness threshold for particular funding periods and geographic areas.

Application Review and Selection

The agency will evaluate grant applications according to the project's ability to meet and support the goals of the TERP. In general, the selection priorities may include allocation of the funding among a subset of the eligible counties, as well as allocation among the various emissions-reduction categories.

Potential applicants will work with the TCEQ to determine the goals and priorities of the third-party grants.

Awarding of Grants and Contracting

Projects selected for funding will be awarded a grant through the development and execution of a contract that is signed by the third-party grant recipient and by an official of the TCEQ. Grant contracts may contain additional and more specific requirements than those contained in these guidelines. Grant recipients should review the contract's language carefully before accepting and signing it.

Because the funding for this program comes from revenue that is received throughout the year, all grant awards and contracts will be contingent upon the receipt of sufficient revenue to cover the grant.

Grant contracts will include the minimum requirements for use of the funds, including the pass-through of funding by the recipient. Administrative costs of the third-party grant recipient will not be eligible for funding under this program.

To the extent needed to ensure compliance with the program requirements, the TCEQ may require preapproval authority over the funding decisions of the grant recipient and over the contracts and agreement used by the recipient as part of a pass-through program.

Any pass-through agreements and other contracts used by the grant recipient must ensure compliance with these guidelines and other requirements imposed by the TCEQ.

Reimbursement

The TCEQ will establish the payment and reporting processes case by case. Payments may be reimbursements, meaning that payment will be made after expenses are incurred by the grant recipient. In some cases, the TCEQ may also authorize advance payments, based on the expected or final selection of pass-through projects or other projects.

The grant contract and the payment forms will include requirements for documentation of expenses. The TCEQ may also require approval authority over the payment processes used by the grant recipient to fund a pass-through project or other project.

Monitoring and Reporting

The grant recipient will be required to establish a mechanism to monitor and track the use of grant-funded on-road heavy-duty vehicles, non-road equipment, marine vessels, locomotives, or stationary engines.

The recipient must also submit reports on project status for the period designated by the TCEQ in the grant contract and upon completion of all grant-funded activities.

Emissions-Reduction Commitment

Over the activity life of each grant-funded activity, the third-party grant recipient commits the generated emissions reductions to the State Implementation Plan. The recipient is responsible for enforcing the emissions-reduction commitments by sub-grant recipients. The TCEQ may require return of all or a pro rata share of the grant funds for failure to enforce the emissions reduction requirements.

Procedures of the Sub-Grant Program

This section contains the general procedures that will be used for the application, awarding, and administration of sub-grants (pass-through grants). The TCEQ may adjust these procedures and develop more detailed ones, as needed, to ensure the effectiveness of the program.

Project Solicitation

The third-party grant recipient will announce solicitations for projects in accordance with the third-party grant contract between the TCEQ and the recipient.

The third-party grant recipient will make information available on times when applications may be filed for grants, based on the expected availability of funding for the program. To the extent possible, the recipient will keep dealers and installers informed of the availability of funds for the program.

Application Review and Selection

The third-party grant recipient will evaluate grant applications according to criteria established in these guidelines and the Request for Applications. In selecting among projects, the third party must use ranking and scoring procedures to be explained in the RFA or the order received. The RFA will explain the procedure for application review and selection.

The TCEQ will establish cost-effectiveness thresholds that may not be exceeded by the third-party grant recipients in awarding pass-through grants. However, a third-party grant recipient may establish a lower threshold than the limit set by the TCEQ for particular funding periods and geographic areas.

Application-Verification Visits

Upon receipt of a grant application, the third-party grant recipient may check the vehicle and equipment for condition, engine identification, and vehicle identification.

Awarding of Grants and Contracting

Projects selected for funding will be awarded a grant through the development and execution of a grant contract that is signed by the sub-grant recipient and by the third-party grantee. Grant contracts may contain additional and more specific requirements beyond those contained in these guidelines. Grant recipients should review the contract language carefully before accepting and signing the contract.

Because the funding for this program comes from revenue that is received throughout the year, all grant awards and contracts will be contingent upon the TCEQ's receipt of sufficient revenue to cover the grant.

Reimbursement

Grant payments will be reimbursements, meaning that payment will be made after the eligible expense has been incurred by the grant recipient. The third-party grant recipient may, but is not required to, give the sub-grant recipients the option to assign their grant payments directly to a dealer or service provider. The third-party

grantee will supply reimbursement request and reporting forms for use by the grant recipient.

In some cases, particularly for large and lengthy projects, the TCEQ may also authorize advance payments, based on a percentage of the expected final costs. The grant contract and the reimbursement forms will include requirements for documentation of expenses.

Upon completion of all grant-funded purchases, the grant recipient will need to submit a final request for reimbursement of all remaining unreimbursed expenses. The final reimbursement request must include a completed and signed release of claims.

The grant recipient must also agree to place a label or sticker on grant-funded vehicles and equipment, as may be supplied by the TCEQ.

Verification of Vehicle, Equipment, and Engine Disposition

The sub-grant applicant must agree to decommission any old vehicle, equipment, or engine replaced under this program no later than 90 days after receiving reimbursement by the third-party grant recipient.

The third-party grant recipient may request approval from the executive director to allow an alternate disposition method. Otherwise, the decommissioning must be carried out by complete crushing or other complete destruction of the vehicle, equipment, or engine, or by making a hole in the engine block on both sides large enough to prevent repairs (usually at least 3 inches) and, for a replacement project, permanently destroying the frame by cutting the frame rails or main structural components of the vehicle or equipment.

[~~In lieu of crushing an engine block or cutting a hole in it, the third-party grant recipient may also allow the engine to be sent to a remanufacture facility operated or authorized by the original engine manufacturer. The remanufacture of the engine must include removing all parts and using the old block to build a remanufactured engine with a new serial number.~~]

For a locomotive project, the executive director may authorize the third-party grant recipient to allow permanent removal from Texas in specific grants where the sub-grant applicant has furnished adequate assurances that the old locomotive will not be returned to Texas. This option will not normally be available for other types of projects, although exceptions may be established by the executive director and included in the third-party grant contract for specific grant rounds to meet the goals of the program.

The pass-through-grant recipient must certify the disposition of the old vehicle or equipment to the third-party grantee, using forms supplied by the third-party grantee. The third-party grant recipient must require a certified or duplicate Texas Nonrepairable Vehicle Title as evidence that an on-road vehicle has been

permanently rendered inoperable. The third-party grant recipient should require the return grant funds if a sub-grant recipient fails to meet the disposition requirements, including if the vehicle, equipment, or engine is later returned to operation.

Monitoring and Reporting

The grant recipient must agree to monitor and track the use of grant-funded vehicles, equipment, infrastructure, and qualifying fuel for the activity life designated in the grant contract. The activity life is used to determine the total reductions in emissions of NO_x and the cost-effectiveness of the activities and the project.

The recipient must submit monitoring reports to the third-party grantee twice a year, unless the TCEQ authorizes an alternative reporting schedule. These reports will include information on usage over the required reporting period. The TCEQ may, at its sole discretion, authorize an annual or longer reporting schedule, including suspending the reporting requirements, if a grant recipient is meeting the reporting requirements and is otherwise complying with all program requirements. The third-party grantee may require applicants to use global-positioning-system units to monitor grant-funded equipment, or allow voluntary use of a GPS unit in lieu of filing the required reports. All applicants monitoring via GPS will be required to use a vendor the TCEQ selects.

If an alternative disposition plan is approved for a locomotive-replacement project, the grant recipient must agree to monitor and track the location of the old locomotive to ensure that it is not returned to Texas. The grant recipient must also agree to supply all monitoring information to the third-party grantee upon request. The grant recipient must notify the third-party grantee immediately if the use of the locomotive, including where it is used, deviates from the approved alternative disposition plan.

Emissions-Reduction Commitment

Over the life of each grant-funded activity, the sub-grant recipient commits the generated emissions reductions to the State Implementation Plan. The sub-grant recipient is responsible for performing the activities, as defined in the contract, necessary to achieve the calculated reductions in NO_x emissions within the eligible areas.

The third-party grant recipient will implement and enforce emissions-reduction commitments by the sub-grant recipient according to the criteria established for the Emissions Reduction Incentive Grants Program or the Rebate Grants Program, as applicable to the approach used to award and administer the sub-grants. The TCEQ may include more specific enforcement requirements in the third-party grant contracts.

Appendix 1
On-Road Heavy-Duty Vehicles

This appendix outlines the criteria for project eligibility and gives the methods for calculating the reductions in NO_x emissions for an on-road vehicle project. Most of the calculations will require input of an NO_x emissions factor applicable to the engine, the vehicle, or both. The emissions standards and emissions factors applicable to this program are included in a technical supplement, which will be made available in conjunction with these guidelines at the TERP website, <www.terpgrants.org>. Examples of the calculations will also be available in the supplement, along with other materials prepared by the TCEQ. Potential grant applicants may also contact the TCEQ for hard copies of the supplement and for answers to questions about the applicable emissions standards and factors.

In accordance with Texas Health and Safety Code 386.104(j) and TERP program rules, 30 TAC 114.622(g), the executive director has the authority to waive certain eligibility requirements, based on a finding of good cause. Situations where good cause may be determined and a waiver granted are explained in the discussion of eligibility requirements in this appendix.

The executive director may identify other eligibility criteria for which a waiver may be considered, based on a finding of good cause and subject to the statutory and regulatory requirements. Waiver options will be explained in the grant-application materials.

The granting of a waiver to the eligibility requirements is at the discretion of the executive director or the executive director's designee. In determining good cause and deciding whether to grant a waiver, the executive director shall ensure that the emissions reductions that will be attributable to the project will still be valid and, where applicable, meet the conditions for assignment for credit to the State Implementation Plan.

Eligible Activities and Costs

Eligible activities and costs under each project category are explained in this section. The TCEQ may further limit the types of eligible activities and may more narrowly define eligibility requirements during a particular funding period, as needed to best achieve the goals of the TERP.

Purchase or Lease of On-Road Heavy-Duty Vehicles

This category is for the purchase or lease of **new** on-road heavy-duty vehicles. The cost may also include the purchase and installation of a global positioning system, subject to approval by the TCEQ. For this category, the TCEQ does not consider whether the applicant is replacing an existing vehicle; the baseline for comparison of emissions is the current federal NO_x emissions standard for that vehicle. The baseline vehicles used for determining the difference in cost must be **new**.

To be eligible for funding, the new vehicle must be certified as emitting at least 25% less NO_x than required (in other words, no more than 75% of the NO_x allowable) under the current federal standard for that vehicle. "Certification" means approval by the U.S. EPA or the California Air Resources Board (CARB), or acceptance on other grounds by the TCEQ.

A *lease* is defined as the use and control of a new on-road heavy-duty vehicle, in accordance with a lease contract for five or more years. The TCEQ will reimburse the incremental costs of the lease above those that would otherwise have been incurred for the lease of a baseline vehicle.

The TCEQ will reimburse the incremental cost of the **purchase** of a new on-road heavy-duty vehicle subject to cost-effectiveness limits established by the TCEQ. The incremental cost is the difference between the manufacturer's suggested retail price, the documented dealer price of a baseline vehicle, or other appropriate baseline cost established by the TCEQ, and the actual cost of the cleaner vehicle.

Replacement of On-Road Heavy-Duty Vehicles

This category is for the replacement of an on-road heavy-duty vehicle with a new or late-model on-road heavy-duty vehicle. For a replacement project, the TCEQ will evaluate whether the vehicle being replaced would have otherwise been used in the eligible counties for the period within which the emissions reductions will be claimed. Standards that apply include **all** of the following.

- The applicant must be named as the owner on the front of the vehicle title or submit other documentation, as determined by the executive director, that the applicant has authority to dispose of the vehicle and engine being replaced.
- The applicant must have continuously owned, leased, or otherwise commercially financed the vehicle for the two years preceding the grant application.
- The vehicle must currently be registered for operation in Texas in the applicant's name.
- Unless otherwise approved by the TCEQ, the vehicle must have been continuously registered and used in Texas for the two years preceding the application date.
- The vehicle must be in good operating condition and capable of performing its primary function.

- The vehicle must have a current safety inspection (if a safety inspection is required for that vehicle and use) and must have continuously had an up-to-date safety inspection over the preceding two years.

The TCEQ may waive the two-year ownership, lease, or commercial financing requirement, case by case, where the ownership of the company has changed, the assets of the company have been purchased by another company, or the company has changed its name or incorporation status. The use or vocation (for example, regional delivery) of the vehicles being replaced must not have changed.

The TCEQ may waive the two-year registration, use, and safety-inspection requirements for short lapses in registration or operation attributable to economic conditions, seasonal work, or other circumstances, based on a finding of good cause. The historical usage described by the applicant on the grant-application forms must reflect the lapses in use of the vehicle in those activities.

For on-road vehicles used exclusively for off-road purposes the TCEQ may, in specific cases, waive the requirements regarding registration and safety inspections. The vehicle must not be subject to state registration and inspection requirements. The historical usage described by the applicant on the grant-application forms must reflect the use of the vehicle for those off-road purposes.

In order for a replacement activity to result in creditable emissions reductions, the applicant must intend to continue to use the vehicle being replaced for the same type of use and amount of use over the same period as the activity life, absent the award of a grant. The TCEQ may require additional assurances, certifications, and documentation to verify that the applicant would continue to use the vehicle being replaced if the grant is not awarded.

For replacement projects, the emissions reductions are based on replacement of the future use of the original vehicle or equipment with the use of the reduced-emission vehicle or equipment. The estimated future use of the original vehicle or equipment is determined from the recent historical use. Except when a default usage amount is used for the emissions reduction calculations, the activity level used for the emissions-reduction calculations and the corresponding usage commitment for a replacement project may not exceed the average annual use of the vehicle or equipment being replaced for the two years preceding the application.

The replacement vehicle must be certified to emit at least 25% less NO_x than the vehicle being replaced. The baseline for comparison of emissions is the difference between the emissions of the vehicle being replaced and the emissions of the vehicle being purchased. “Certification” means approval by the EPA or the CARB, or acceptance on other grounds by the TCEQ.

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, vehicles of a different type, weight category, or body and axle configuration to

account for the latest technology used in a specific vocation. In addition, the TCEQ may accept, case by case, the replacement of a multi-engine vehicle with a single-engine vehicle, or vice versa, as long as the new vehicle will have the same use as the vehicle being replaced and the emissions reductions can be adequately determined.

The model year of the replacement vehicle may not be more than three years prior to the current calendar year, unless an alternative age limit is established by the TCEQ for a particular grant round. The TCEQ may also waive the age-limit requirements, case by case, where the vehicle has a unique or specialized use and where a recently manufactured model is not available.

The grant recipient may be eligible for reimbursement of up to 80% of the eligible costs for the purchase or lease of the replacement vehicle, subject to cost-effectiveness limits established by the TCEQ. The TCEQ may further limit the incentive amount to a lower percentage of the eligible costs for particular funding periods, as needed to best achieve the goals of the TERP.

Costs may include the invoice price, with taxes and delivery charges included in the price of the replacement vehicle, or the cash basis for the lease charges. The cost may also include the purchase and installation of a global positioning system, subject to approval by the TCEQ. Delivery charges from a third party not included in the invoice price from the vehicle or equipment vendor may be included also, subject to approval by the TCEQ.

The total incentive amount must not exceed 80% of the cost of the replacement vehicle minus the scrappage value received for the old vehicle. The TCEQ may establish a default scrappage value.

Repower of On-Road Heavy-Duty Vehicles

This category is for the replacement of an existing engine on an on-road heavy-duty vehicle with a new, rebuilt, or remanufactured engine, or one or more electric motors, drives, or fuel cells. The upgrade of an engine with an emissions upgrade kit certified by the EPA or CARB may also be considered under the repower category. The engine must be certified to emit 25% less NO_x than the engine being replaced, based on the federal standard for that engine. “Certification” means approval by the EPA or the CARB, or acceptance on other grounds by the TCEQ.

Repowers resulting in any alteration from an original configuration of a vehicle or engine must comply with the provisions of EPA Memorandum 1A related to ensuring that altered vehicles and engines continue to meet required emissions standards. Copies of Memo 1A are available from the EPA and the TCEQ, and will be made available on the TERP website at <www.terpgrants.org>.

Eligible rebuilt or remanufactured engines must use only components from the original engine manufacturer and be purchased from the OEM or its authorized

dealers and distributors. However, the TCEQ may accept engines from suppliers not connected with the OEM, subject to a case-by-case determination.

The grant recipient may be eligible for reimbursement of up to 80% of the incremental cost of the repower, subject to the cost-effectiveness limits established by the commission. The TCEQ may further limit the incentive amount to a lower percentage of eligible costs as needed to best achieve the goals of the TERP.

The incremental cost for an engine replacement is the cost to purchase and install the replacement engine and associated equipment minus the scrappage value received for the old engine, if applicable. The TCEQ may establish a default scrappage value. The total incentive amount also must not exceed the cost of the replacement engine.

For certified emissions-upgrade kits, the incremental cost is the cost to purchase and install the conversion system or kit. Other upgrades or modifications to the engine or vehicle that are not necessary for the conversion or upgrade of the engine are not eligible.

Costs that may be reimbursed, subject to approval by the TCEQ, include:

- the invoice cost of the new engine or upgrade, including sales tax and delivery charges;
- the invoice cost of additional equipment that must be installed with the new engine or upgrade;
- associated supplies directly related to the installation of the engine or system;
- the costs to remove and dispose of the old engine, if applicable;
- installation costs;
- reengineering costs, if the vehicle or equipment must be modified for the new engine to fit; and
- other costs directly related to the project, including the purchase and installation of a global positioning system.

Retrofit or Add-On of Emissions-Reduction Technology

This category is for the retrofit of an existing engine on an on-road heavy-duty vehicle, or adding on devices to the vehicle. To be eligible for funding, the retrofit or add-on systems must be verified to emit at least 25% less NO_x than the engine prior to the retrofit or add-on. "Verification" means approval by the EPA or the CARB, or acceptance on other grounds by the TCEQ.

The conversion of an existing on-road heavy-duty diesel engine to operate under a dual-fuel configuration that uses natural gas and diesel fuel through an alternative-fuel conversion system certified by the EPA or the CARB may also be considered under the retrofit category. Per Texas Health and Safety Code 386.104(f-1), the TCEQ may establish alternative minimum standards for the percentage reduction in NO_x that must be achieved by the conversion of the engine. Under this provision, the

TCEQ will establish any alternative standards on a grant-round basis after considering the effectiveness of available dual-fuel conversion technology in reducing emissions.

Retrofits and add-on activities resulting in any alteration from an original configuration of a vehicle or engine must comply with the provisions of EPA Memorandum 1A, related to ensuring that altered vehicles and engines continue to meet required emissions standards. Importantly, aftermarket systems for converting a vehicle and engines to alternative fuel operation must comply with EPA certification requirements under Memo 1A. Copies of Memo 1A are available from the EPA and the TCEQ, and will be made available on the TERP website at <www.terpgrants.org>.

The TCEQ will reimburse the incremental cost of the purchase and installation of the retrofit or add-on technology subject to cost-effectiveness limits established by the TCEQ. If the engine is to be rebuilt to install the emissions-reduction devices, the incremental cost is the difference between the cost of rebuilding the existing engine and the cost of rebuilding the engine to include the retrofit or add-on technology. If the engine does not need to be rebuilt in conjunction with installing the new technology, then the incremental cost will be the full cost of purchasing and installing the technology. The TCEQ may further limit the incentive amount to a lower percentage of the eligible costs for particular funding periods, as needed to best achieve the goals of the TERP.

Costs that may be reimbursed, subject to approval by the TCEQ, include:

- the invoice cost of the retrofit kit or add-on devices, including sales tax and delivery charges,
- associated supplies directly related to the installation of the devices,
- installation costs,
- reengineering costs, if the vehicle or equipment must be modified for the retrofit or add-on devices to be installed and used, and
- other costs directly related to the project, including the purchase and installation of a global positioning system.

Project Criteria

In addition to the eligibility criteria previously presented, the following list of criteria applies to projects involving on-road heavy-duty vehicle activities. The TCEQ may impose additional criteria, and may more narrowly define the criteria established in this guide, under a particular funding period, as needed to best achieve the goals of the TERP.

- One or more eligible **activities** of the same project type (i.e., on-road, non-road, locomotive, etc.) that will occur in the same primary area may be included under one project application.

- The applicant must own the vehicle being replaced, repowered, or retrofitted and the applicant's name must appear on the front of the vehicle title.
- Vehicles and equipment used primarily for competition or recreation are not eligible for funding under any of the project categories.
- On-road heavy-duty vehicle activities must reduce NO_x emissions compared to baseline emissions. The NO_x emissions of vehicles, engines, and retrofit or add-on devices used to achieve the emissions reductions must be certified or verified by the EPA or the CARB, or otherwise accepted by the TCEQ. In situations where the model year of the vehicle and the model year of the existing engine are different, such as in a vehicle that has already had its engine replaced with a newer engine, the model year of the engine must be used to determine the baseline emissions standard for emissions-reduction calculations. How the 25% reduction criterion applies to each type of activity is explained below.

  Purchases and leases are allowed based on what year the purchase or lease is completed. At a minimum, the vehicle and engine being purchased or leased must be certified to emit at least 25% less NO_x than (that is, no more than 75% as much NO_x as) the current federal NO_x emissions standard for that vehicle.

  Replacements. The replacement vehicle and engine must have been certified to emit at least 25% less NO_x than (that is, no more than 75% as much NO_x as) the vehicle being replaced. For example, if an applicant wants to replace a 1989 bus with a 1999 bus, the replacement bus and engine must have been certified to emit 25% less NO_x than the 1989 emissions standard.

  Repowers. The replacement engine must be certified to emit at least 25% less NO_x than the engine being replaced.

  Retrofits and add-ons. Emissions standards for retrofit and add-on activities are based on the model year of the engine being retrofitted. The retrofit or add-on technology must be verified to emit at least 25% less NO_x than the standard for the vehicle and engine being retrofitted. For example, if an applicant wants to retrofit the engine on a bus, and the bus engine was originally manufactured in 1996, then the retrofit kit must have been verified to result in NO_x emissions that are 25% less than the original (1996) certified emissions level of the vehicle and engine. The TCEQ may establish an alternate standard for the conversion of an on-road heavy-duty diesel engine to operate under a dual-fuel configuration that uses natural gas and diesel fuel through an alternative fuel conversion system.

  Combined technologies. Where two technologies (for example, repower plus retrofit) are combined on the same vehicle or engine, the TCEQ may consider the combined reductions from the two technologies in meeting the 25% requirement. This decision will be solely at the discretion of the TCEQ, and will be based on its determination that the combination of the two technologies will permanently reduce emissions by at least 25%.

- The cost-effectiveness of a project must not exceed any limits set by the TCEQ on the cost per ton of NO_x emissions reduced in the eligible counties for which the project is proposed.
- An activity is not eligible if it is required by any state or federal law, rule, regulation, memorandum of agreement, or other legally binding document. However, this restriction does not apply to an otherwise qualified activity—regardless of the State Implementation Plan's assumption that the change in equipment, vehicles, or operations will occur—if, on the date the grant is awarded, the change is not yet required by any state or federal law, rule, regulation, memorandum of agreement, or other legally binding document. This restriction also does not apply to a purchase of vehicles or equipment that is required only by local law or regulation, or by controlling-board policy of a public or private entity. Projects used to demonstrate a technology that may be used to comply with an emissions-reduction requirement may be funded, as long as the reductions directly attributable to the project are not used to comply with those requirements.
- The incremental cost of the proposed activity must be reduced by the value of any existing financial incentive that directly reduces the cost of the proposed activity, including tax credits or deductions, other grants, or any other public financial assistance.
- In the areas of the state where Texas Low Emission Diesel is required the baseline and reduced emissions-rate calculations for diesel-engine usage after September 2005 must be adjusted using a correction factor, in addition to any other calculation adjustments.
- An activity involving a new emissions-reduction measure that would otherwise generate marketable credits under state or federal emissions reduction credit averaging, banking, or trading programs is not eligible for funding under this program unless:
    - the activity includes the transfer of the reductions that would otherwise be marketable credits to the State Implementation Plan or the owner or operator as provided under Texas Health and Safety Code 386.056, and
    - the reductions are permanently retired.
- For repower activities, eligible rebuilt or remanufactured engines must use only components from the original engine manufacturer and be purchased from the OEM or its authorized dealers and distributors. However, the TCEQ may accept engines from suppliers not connected with the OEM, subject to a case-by-case determination.
- For all on-road heavy-duty vehicle replacement, purchase, or lease activities, the minimum activity life will be five years or more, or 400,000 miles of operation, whichever occurs earlier. For all other on-road vehicle activities, the activity life must be a minimum of five years. For activities other than an on-road vehicle replacement, purchase, or lease activity, the TCEQ may establish longer activity-life requirements for each grant period. At least 75% of the annual usage of the vehicle must take place in one or more of the eligible counties and designated highways

throughout the life of the project. Leases that do not include a binding commitment to purchase must be for the length of the activity life, and 75% of the annual usage over the lease period must take place in one or more of the eligible counties and designated highways or roadways. At the executive director's discretion, the TCEQ may require a minimum percentage for use of the vehicle in the eligible counties with any grant-application period.

- For most on-road vehicles, annual usage is to be measured using miles of operation. For refuse vehicles, street sweepers, and other vehicles with substantial power-take-off operations, fuel consumption normally should be used as the usage factor. The TCEQ may consider using either miles of operation or fuel consumption for particular applications, case by case.
- Applicants should refer to the technical supplements to these guidelines available at the TERP website <www.terpgrants.org> for the maximum acceptable activity life established by the TCEQ for each type of activity.
- Applicants must agree to monitor the use of grant-funded vehicles, equipment, infrastructure, and fuel, and to report to the TCEQ for the life of each grant-funded activity.
- Applicants must also agree to notify the TCEQ of any changes during the life of the following activities: termination of use; change in use, sale, transfer, or accidental or intentional destruction of grant-funded vehicles or equipment; or change in use of the qualifying fuel.

Figure A1.1
Correction Factor for TxLED

The TCEQ adopted rules (30 TAC 114.312–19) requiring that diesel fuel sold or supplied for use in compression-ignition engines in certain counties in Texas must meet low-emission-diesel standards.

The counties affected by the Texas Low Emission Diesel (TxLED) requirements currently include all of the counties eligible for TERP incentive funding, as listed in Table 3.1, except for El Paso County.

The requirements set a maximum for content of aromatic hydrocarbons of 10% by volume. The requirements also set a minimum cetane number for TxLED of 48.

The TxLED requirements are intended to result in reductions in NO_x emissions from diesel engines. Currently, reduction factors of **5.7%** (0.057) for on-road use and **7.0%** (0.07) for non-road use have been accepted as estimates for use of TxLED. However, these estimates are subject to change, based on the standards accepted by the EPA for use in the Texas State Implementation Plan. The TCEQ will identify the appropriate reduction factors to use in the technical supplement prepared to support these guidelines.

For activities in the applicable counties, a correction factor will need to be applied when calculating the baseline or reduced emissions for diesel engines.

On-road:
TxLED correction factor = 1 – 0.057 = ***0.943***

Non-road:
TxLED correction factor = 1 – 0.070 = ***0.93***

- Administrative costs and other internal costs of the grant recipient—including but not limited to personnel expenses, internal salaries, indirect costs, and travel—are not eligible. This restriction also applies to situations where the grant recipient acts as a transportation provider for delivery of the grant-funded vehicle or equipment before or after accepting it.
- Consultant fees for the preparation of a grant application, either directly or as an addition to the cost basis of the grant-funded vehicle, equipment, or engine, are not eligible.
- Fees for a third-party consultant hired by the grant recipient to manage and administer the grant-funded activities, including coordination of the work and submission of reports and paperwork to the TCEQ for the grant recipient, are not eligible. This restriction is not intended to limit the ability of the vehicle or equipment supplier or installer to include reasonable and necessary costs for managing the work to be performed in the price of the vehicle, equipment, or installation. The costs for professional services, including engineering and technical work, required for completion of the activity may be included, subject to the restrictions pertaining to that type of project. Per the Uniform Grant Management Standards, the "cost plus a percentage of cost" method of contracting for professional services must not be used.
- Vehicles used at port facilities and other intermodal delivery and transportation facilities, commonly referred to as *terminal tractors* or *yard trucks,* may have engines certified to either the federal on-road or non-road emission standards. Both the on-road and non-road versions of these vehicles perform the same primary functions; the on-road versions usually travel only limited distances on roads and highways. To account for these similarities in use, the TCEQ may allow, at its discretion, an applicant to apply for a project involving a terminal tractor with an on-road engine under the non-road forms and criteria. This provision does not include any on-road vehicle not designed and manufactured as a terminal tractor, even if the vehicle is being used in that role.
- The TCEQ may impose additional criteria for certain projects and funding periods, consistent with these guidelines.

NO_x Emissions Factors

The baseline NO_x emissions factors for this program will normally be the federal standard for NO_x emissions applicable to the type of engine and model year of vehicle. However, if the baseline engine was certified by the EPA or the CARB to a Family Emissions Limit, the TCEQ may use the FEL for the baseline NO_x emissions factor.

The federal NO_x emissions standards for on-road (highway) heavy-duty engines are listed in the technical supplement that will be made available by the TCEQ during each grant-application period. Potential grant applicants should consult with the TCEQ to ensure they use the appropriate baseline standards. The NO_x emissions factor for the reduced-emission engines will normally be the federal NO_x emissions standard or the FEL to which the reduced-emission engine is certified. For retrofit

and add-on activities verified by the EPA or the CARB to reduce NO_x emissions by a specified percentage, the verified percentage will be applied to the baseline emissions factor to determine the emissions factor for the retrofitted engine.

Emissions Factors for Retrofits with Dual-Fuel Conversion Systems

The TCEQ may consider alternative information to determine the emissions factors and calculate the emissions reductions for retrofit projects involving the conversion of a heavy-duty on-road vehicle engine to operate under a dual-fuel configuration that uses natural gas and diesel fuel through an alternative fuel conversion system certified by the EPA or the CARB. In particular, if the TCEQ determines it to be necessary and appropriate, the TCEQ may consider certified engine test information that demonstrates reductions of NO_x emissions and other information to determine the emissions reductions.

To be considered under this alternative approach, the TCEQ may require that manufacturers or dealers apply to the TCEQ for a determination of the appropriate emissions factors and reductions that will be accepted for that system. In general, any testing performed to verify the emissions should be performed and certified by an independent testing service or facility. The TCEQ is not required to accept a dual-fuel conversion system under this alternative, and it will be the responsibility of the manufacturer to provide sufficient test data and other information to verify the emissions factors.

The TCEQ may determine an appropriate factor for the percentage reduction in NO_x emissions as a result of the dual-fuel engine conversion. The percentage-reduction factor will be applied to the baseline emissions factor determined by the TCEQ for that engine in order to calculate the emissions reductions. Alternatively, the TCEQ may determine a specific NO_x-emission rate for the converted engine based on the certified test results. In that case, the TCEQ may also consider the certified test results of either the original engine or the converted engine operating in diesel-only mode to determine the baseline emission rate.

In considering certified test information and agreeing to an appropriate percentage reduction in emissions or a specific emission rate, the TCEQ will take into account whether the engine can operate solely on diesel fuel in addition to dual-fuel operation. The TCEQ may adjust the percentage-reduction factor or the specific emission rate to account for the difference in emissions using solely diesel fuel and dual-fuel operation of the engine. In determining appropriate adjustments to the emissions factors, the TCEQ may also take into account the level of confidence the can be given to the test information. In addition, a correction factor may be applied to account for the partial use of TxLED in dual-fuel operation of the engine.

Calculating Reductions in NO_x Emissions

In general, the emissions-reduction benefit represents the difference in the emissions level of a baseline vehicle or engine and a reduced-emissions vehicle or engine. In situations where the model year of the vehicle chassis and the model year of the existing 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. Because conversion factors and the activity levels may be expressed in different units for the existing and replacement engines, the emissions levels for the baseline and reduced-emissions vehicles or engines should be calculated separately and then differences taken to determine emissions reductions.

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).

Different types of on-road vehicles operate very differently. For most on-road applications, the activity level should be established by the annual mileage. Refuse haulers, street sweepers, and other on-road vehicles with significant power-take-off operations are an exception, and the activity level may be determined based on annual fuel consumption. Emissions-reduction calculations should be consistent with the type of records maintained over the life of each activity.

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 A1.1. The applicable NO_x emissions standards are included in the technical supplement available from the TERP Program. For retrofit and add-on activities, as well as other activities, where the emissions reductions are based on a percentage reduction from the baseline, the verified percentage-reduction factor can be applied to the applicable emissions factor to determine the reduced NO_x emissions factor.

Table A1.1
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 those eligible for TERP incentive funding, as listed in Table 3.1, except for El Paso County.	
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 Reduction

Baseline g/mi – reduced emissions g/mi	
× annual miles of operation	
× percent within eligible counties (%)	
= g/yr	
	÷ 907,200 grams per ton
= estimated annual NO_x-emissions reduction (tons/yr)	
× activity life (years)	
= estimated activity-life NO_x-emissions reduction (tons)	

Alternatively, for activities where the emissions of the new or replacement engine are certified at a specific emissions level (g/bhp-hr), such as purchases or repowers, 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, are included in the technical supplement available from the TERP Program.

Calculation of NO_x-Emissions Reductions Based on Annual Fuel Use

The calculation of emissions and emissions reductions using annual mileage as the usage factor is determined by the steps in Table A1.2.

Refuse vehicles, street sweepers, and other on-road vehicles with significant power-take-off operations accrue low mileage, yet intermittently operate at high load during compaction or sweeping mode. Therefore, annual fuel use is a more appropriate emissions factor to use for these vehicles. Alternatively, an applicant may base the emissions reductions on annual mileage for these vehicle uses, provided sufficient supporting documentation is submitted as determined by the TCEQ.

If annual fuel consumption is the basis for the emissions reductions, an energy-consumption factor is used to convert g/bhp-hr to g/gal of fuel used. There are two ways of calculating an engine-specific energy-consumption factor:

1. divide the hp of the engine by the fuel economy in gal/hr, or
2. divide the density of the fuel by the brake-specific fuel consumption of the engine.

While actual fuel receipts or other documentation may support the annual fuel consumption for a baseline engine, the annual fuel consumption of the new vehicle or engine is an estimated proportion to the change in the energy-consumption factor.

Heavy-duty diesel engines typically have a brake-specific energy consumption of 6,500 to 7,000 British thermal units (Btu) per hp-hour on the certification cycle. Diesel fuel has an energy density of about 18,000 Btu/lb and a mass density of 7.0 lb/gal. This results in an energy-consumption factor of about 18.5 hp-hour/gal of fuel consumed, which should be used as the default for vehicles.

In general, the calculation of emissions reductions should be based on the same amount of fuel for the baseline and the reduced-emission vehicle or engine. However, the TCEQ may accept, at its discretion, fuel-economy benefits of the new or repowered vehicle over the baseline unit when calculating emissions reductions.

For example, a new hybrid-electric utility truck may save fuel by powering the non-propulsive systems with a battery. The TCEQ may consider the emissions reductions from this fuel savings based on the particular case.

To use this approach, the application must list the percentage reduction in fuel use expected through use of the reduced-emission vehicle when compared to the baseline. For **replacement activities**, the application should also list the **historical**

average annual fuel use of the old vehicle (the baseline) and commit to an annual fuel use for the new or repowered vehicle.

Documentation must accompany with the application to justify the amount of reduced fuel use. The TCEQ will evaluate the documentation to determine the level of fuel savings that it may accept.

Regardless of the fuel-use baseline listed in the application, the TCEQ will apply an economy factor to the fuel-use commitment for the reduced-emission vehicle and engine. For instance, if the TCEQ agrees that the reduced-emission vehicle will use 30% less fuel than the baseline vehicle for the same amount of work, then the baseline fuel use will be the fuel-use commitment times 1.43 (1/0.70). If the historical annual fuel use listed in the application is less than the number derived by applying the fuel-economy factor, then that lower baseline number will be used.

The applicant must commit to realistic fuel use for the work expected from the reduced-emission vehicle. If a grant is awarded, the recipient is obligated to use at least that amount of fuel annually in order to meet the grant usage requirements over the activity life.

Table A1.2
Calculating Reductions in NO_x Emissions Based on Annual Fuel Use

Applying the TxLED Correction Factor

The counties affected by the TxLED requirements currently include all those eligible for TERP incentive funding, as listed in Table 3.1, except for El Paso County.	
TxLED correction factor for on-road: *1 – 0.057*	0.943

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 standard (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

Baseline		Reduced Emissions	
NO_x emissions factor (g/bhp-hr)		NO_x emissions factor (g/bhp-hr)	
× TxLED correction factor (*diesel engines only*)		× TxLED correction factor (*diesel engines only*)	
= corrected NO_x emissions factor (g/bhp-hr)		= corrected NO_x emissions factor (g/bhp-hr)	
× energy-consumption factor (hp-hr/gal)		× energy-consumption factor (hp-hr/gal)	
× annual fuel consumption (gal/yr)		× annual fuel consumption (gal/yr)	
= g/yr		= g/yr	
Baseline g/yr – reduced emissions g/yr =			
× percent within eligible counties (%)			
= g/yr			
		÷ 907,200 grams per ton	
= estimated annual NO_x-emissions reduction (tons/yr)			
× activity life (years)			
= estimated activity-life NO_x emissions reduction (tons)			

Calculating Cost-Effectiveness

Only the amount of incentive funds requested under the program can be used in the cost-effectiveness calculation for on-road heavy-duty vehicles. The incremental costs for each activity must be reduced by the value of any existing financial incentive that directly reduces the cost of the proposed activity, including tax credits or deductions, other grants, or any other public financial assistance.

To determine the cost-effectiveness of an activity—with the exception of qualifying fuel activities—the incentive amount for the activity included in the project must be amortized over the activity life designated by the applicant, at a discount rate of 3%.

The following amortization formula yields a *capital-recovery factor* (CRF).

$$\text{capital-recovery factor} = [(1 + i)^n (i)] / [(1 + i)^n - 1]$$

where i = discount rate (3%)
n = activity life

The discount rate of 3% reflects the opportunity cost of public funds—the level of earning that reasonably could be expected by investing state funds in various financial instruments, such as U.S. Treasury securities.

The incentive amount should be multiplied by the incremental cost, or incentive amount requested, to determine the annualized cost.

$$Incremental\ cost \times CRF = annualized\ cost$$

The cost-effectiveness calculations appear in Table A1.3. Capital-recovery factors for use in calculations for up to 20 years appear in Table A1.4.

Table A1.3
Calculating Cost-Effectiveness

Step 1. Determine the capital-recovery factor (CRF)	
$CRF = [(1 + i)^n (i)] / [(1 + i)^n - 1]$ i = discount rate (.03) n = activity life	
Capital-recovery factor:	
Step 2. Determine the annualized cost	
Incentive amount × CRF = annualized cost	
Annualized cost ($/year):	
Step 3. Determine cost-effectiveness	
Annualized cost ($/year) / annual NO_x-emissions reduction (tons/year) = cost-effectiveness ($/ton)	
Cost-effectiveness ($/ton):	

Table A1.4
Capital-Recovery Factors Using a Discount Rate of 0.03

Activity Life	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CRF	1.00	.5226	.3535	.2690	.2184	.1846	.1605	.1425	.1284	.1172
Activity Life	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
CRF	.1081	.1005	.0940	.0885	.0838	.0796	.0760	.0727	.0698	.0672

For projects that include more than one activity, the total project incentive amount must be used to determine the cost-effectiveness of the project. The applicant may request an incentive amount that is less than the full incremental costs, in order to meet the cost-effectiveness criteria.

To determine the cost-effectiveness: First sum all of the annualized costs for the activities included in the project. Also sum the annual emissions reductions from each activity to determine an annual emissions reduction for the project. Then divide the combined annualized costs for all activities included in the project application by the total annual NO_x emissions reductions for the combined project activities.

total annualized cost / total annual NO_x reductions = project cost-effectiveness

Appendix 2
Non-Road Equipment

This appendix outlines the criteria for project eligibility and gives the methods for calculating the reductions in NO_x emissions for a non-road equipment project. The emissions standards and emissions factors applicable to this program are included in a technical supplement, which will be made available in conjunction with these guidelines at the TERP website, <www.terpgrants.org>. Examples of the calculations will also be available in the supplement, along with other materials prepared by the TCEQ. Potential grant applicants may also contact the TCEQ for hard copies of the supplement and for answers to questions about the applicable emissions standards and factors.

In accordance with Texas Health and Safety Code 386.104(j) and TERP program rules, 30 TAC 114.622(g), the executive director has the authority to waive certain eligibility requirements, based on a finding of good cause. Situations where good cause may be determined and a waiver granted are explained in the discussion of eligibility requirements in this appendix.

The executive director may identify other eligibility criteria for which a waiver may be considered, based on a finding of good cause and subject to the statutory and regulatory requirements. Waiver options will be explained in the grant-application materials.

The granting of a waiver to the eligibility requirements is at the discretion of the executive director or the executive director's designee. In determining good cause and deciding whether to grant a waiver, the executive director shall ensure that the emissions reductions that will be attributable to the project will still be valid and, where applicable, meet the conditions for assignment for credit to the State Implementation Plan.

Eligible Activities and Costs

The activities and eligible costs under each project category are explained in this section. The TCEQ may further limit the types of eligible activities, and may more narrowly define eligibility requirements, during a particular funding period, as needed to best achieve the goals of the TERP. Administrative costs, in-house labor costs, and travel costs are not eligible expenses.

Purchase or Lease of Non-Road Equipment

This category is for the purchase or lease of new non-road equipment. The cost may also include the purchase and installation of a global positioning system, subject to approval by the TCEQ. For this category, the TCEQ does not consider whether the applicant is replacing an existing piece of equipment, and the baseline for comparison of emissions is the current federal NO_x emissions standard for a non-road engine of that horsepower. The baseline non-road equipment used for determining the difference in cost must be **new**.

To be eligible for funding, the engine on the new piece of equipment must be certified to emit at least 25% less NO_x than required (in other words, no more than 75% of the NO_x allowable) under the current federal standard for a non-road engine of that horsepower. "Certification" means approval by the EPA or the California Air Resources Board (CARB), or acceptance on other grounds by the TCEQ.

A *lease* is defined as the use and control of a new piece of non-road equipment in accordance with a lease contract for a period of five or more years. The TCEQ will reimburse the incremental costs of the lease—costs above those that would otherwise have been incurred for the lease of a baseline vehicle.

The TCEQ will reimburse the incremental cost of the purchase of non-road equipment subject to cost-effectiveness limits established by the TCEQ. The incremental cost is the difference between the documented dealer price of a baseline piece of equipment, or other appropriate baseline cost established by the TCEQ, and the actual cost of the cleaner equipment.

Replacement of Non-Road Equipment

This category is for the replacement of non-road equipment with a new or newer piece of non-road equipment. For this category, the applicant must be replacing a piece of equipment with a minimum of five years of remaining useful life. However, the TCEQ may establish longer activity-life requirements for any grant period. The baseline for comparison of emissions is the difference between the emissions of the equipment being replaced and the emissions of the equipment being purchased.

For a replacement project, the TCEQ will evaluate whether the equipment being replaced would have otherwise been used in the eligible counties for the period within which the emissions reductions will be claimed. Standards that apply include **all** of the following:

1. The owner must have continuously owned the equipment for at least the two years immediately preceding the grant application date.
2. Unless otherwise approved by the TCEQ, the equipment must have been continuously located and used in Texas over the preceding two years.

3. The equipment must be in good operating condition and capable of performing its primary function.

The TCEQ may waive the two-year ownership requirement, case by case, where the ownership of the company has changed, the assets of the company have been purchased by another company, or the company has changed its name or incorporation status. The use of the equipment being replaced must not have changed.

The TCEQ may waive the requirement for two years of continuous use for short lapses in operation attributable to economic conditions, seasonal work, or other circumstances, based on a finding of good cause. The historical usage described by the applicant on the grant-application forms must reflect the lapses in use of the equipment in those activities.

In order for a replacement activity to result in creditable emissions reductions, the applicant must intend to continue to use the equipment being replaced for the same type of use and amount of use over the same period as the activity life, absent the award of a grant. The TCEQ may require additional assurances, certifications, and documentation to verify that the applicant would continue to use the equipment being replaced if the grant is not awarded.

For replacement projects, the emissions reductions are based on replacement of the future use of the original vehicle or equipment with the use of the reduced-emission vehicle or equipment. The estimated future use of the original vehicle or equipment is determined from the recent historical use. Except when a default usage amount is used for the emissions-reduction calculations, the activity level used for those calculations and the corresponding usage commitment for a replacement project may not exceed the average annual use of the vehicle or equipment being replaced for the two years preceding the application.

The engine on the replacement equipment must be certified to emit at least 25% less NO_x (that is, no more than 75% as much NO_x) compared with the engine being replaced. “Certification” means approval by the EPA or the CARB, or acceptance on other grounds by the TCEQ.

The replacement equipment must be of the same type and should be intended for use in the same application or vocation (for example, excavator, compactor, grader) as the equipment being replaced. The TCEQ may accept, case by case, equipment of a different type to account for the latest technology used for a specific vocation. In addition, the TCEQ may accept, case by case, the replacement of a multi-engine piece of equipment with a single-engine piece of equipment, or vice versa, as long as the new equipment will have the same use as the equipment being replaced and the emissions reductions can be adequately determined.

The year of manufacture of the engine installed on the replacement equipment may not be more than three years prior to the current calendar year, unless an alternative age limit is established by the TCEQ for a particular grant round. The TCEQ may also waive the age-limit requirements, case by case, where the equipment has a unique or

specialized use and where a model with a recently manufactured engine is not available.

The grant recipient may be eligible for reimbursement of up to 80% of the eligible costs for the purchase or lease of the replacement equipment, subject to cost-effectiveness limits established by the TCEQ. The TCEQ may further limit the incentive amount to a lower percentage of eligible costs as needed to best achieve the goals of the TERP. The cost may also include the purchase and installation of a global positioning system, subject to approval by the TCEQ.

Costs may include the invoice price, including taxes and delivery charges included in the price of the replacement equipment, or the cash basis for the lease charges. Delivery charges from a third party, not included in the invoice price from the vehicle or equipment vendor, may be included, subject to approval by the TCEQ.

The total incentive amount also must not exceed 80% of the cost of the replacement equipment minus the scrappage value received for the old equipment. The TCEQ may establish a default scrappage value.

Repower of Non-Road Equipment

This category is for the replacement of an existing engine on a non-road piece of equipment with a new, rebuilt, or remanufactured engine, or one or more electric motors, drives, or fuel cells. The upgrade of an engine with an emissions upgrade kit certified by the EPA or CARB may also be considered under the repower category. The engine must be certified to emit at least 25% less NO_x (that is, no more than 75 as much NO_x) as compared with the engine being replaced. "Certification" means approval by the EPA or the CARB, or acceptance on other grounds by the TCEQ. Eligible rebuilt or remanufactured engines must use only components from the original engine manufacturer and be purchased from the OEM or its authorized dealers and distributors. However, the TCEQ may accept engines from suppliers not connected with the OEM, subject to a case-by-case determination.

The grant recipient may be eligible for reimbursement of up to 80% of the incremental cost of the repower, subject to cost-effectiveness limits established by the TCEQ. The TCEQ may further limit the incentive amount to a lower percentage of the eligible costs as needed to best achieve the goals of the TERP.

The incremental cost for an engine replacement is the cost to purchase and install the replacement engine and associated equipment minus the scrappage value received for the old engine, if applicable. The TCEQ may establish a default scrappage value. The TCEQ may further limit the incentive amount to a lower percentage of the eligible costs as needed to best achieve the goals of the TERP.

For engine conversions and emissions upgrade kits certified by the EPA or CARB, the incremental cost is the cost to purchase and install the conversion system or kit, including the new fuel system, if applicable. Other upgrades or modifications to the

engine or vehicle that are not necessary for the conversion or upgrade of the engine are not eligible.

Expenses for salaries, travel, and overhead, including indirect costs, will not be covered. Costs that may be reimbursed, subject to approval by the TCEQ, include:

- the invoice cost of the new engine or conversion system, including sales tax and delivery charges;
- the invoice cost of additional equipment that must be installed with the new engine or upgrade system;
- associated supplies directly related to the installation of the engine or system;
- costs to remove and dispose of the old engine, if applicable;
- installation costs;
- reengineering costs, if the vehicle or equipment must be modified for the new engine to fit; and
- other costs directly related to the project.

Retrofit or Add-on of Emissions-Reduction Technology

This category is for the retrofit of an existing engine on a non-road piece of equipment, or adding devices onto the equipment.

To be eligible for funding, the retrofit or add-on systems must be verified to emit at least 25% less NO_x (that is, no more than 75% as much NO_x) as compared with the engine prior to the retrofit or add-on. "Verification" means approval by the EPA or the CARB, or acceptance on other grounds by the TCEQ.

The conversion of an existing non-road diesel engine to operate under a dual-fuel configuration that uses natural gas and diesel fuel through an alternative fuel conversion system certified by the EPA or the CARB may also be considered under the retrofit category. Per Texas Health and Safety Code 386.104(f-1), the TCEQ may establish alternative minimum standards for the percentage reduction in NO_x that must be achieved by the conversion of the engine. Under this provision, the TCEQ will establish alternative standards on a grant-round basis after considering the effectiveness of available dual-fuel conversion technology in reducing emissions.

The TCEQ will reimburse the incremental cost of the purchase and installation of the retrofit or add-on technology subject to cost-effectiveness limits established by the TCEQ. If the engine is to be rebuilt to install the emissions-reduction devices, the incremental cost is the difference between the cost of rebuilding the existing engine and the cost of rebuilding the engine to include the retrofit or add-on technology. If the engine does not need to be rebuilt in conjunction with installing the new technology, then the incremental cost will be the full cost of purchasing and installing the technology. The TCEQ may further limit the incentive amount to a lower percentage of the eligible costs as needed to best achieve the goals of the TERP.

Expenses for salaries, travel, and overhead, including indirect costs, will not be covered. Costs that may be reimbursed, subject to approval by the TCEQ, include:

- the invoice cost of the retrofit kit or add-on devices, including sales tax and delivery charges;
- costs of associated supplies directly related to the installation of the devices;
- installation costs;
- reengineering costs, if the vehicle or equipment must be modified for the retrofit or add-on devices to be installed and used; and
- other costs directly related to the project, including the purchase and installation of a global positioning system.

Project Criteria

In addition to the eligibility criteria previously presented, the following list of criteria applies to projects involving non-road equipment activities. The TCEQ may impose additional criteria, and may more narrowly define the criteria established in this guide during a particular funding period, as needed to best achieve the goals of the TERP.

- One or more eligible **activities** of the same project type (i.e., on-road, non-road, locomotive, etc.) that will occur in the same primary area may be included under one project application.
- The applicant must own the equipment being replaced, repowered, or retrofitted.
- Vehicles and equipment used primarily for competition or recreation are not eligible for funding under any of the project categories.
- Non-road equipment activities must reduce emissions of NO_x compared to baseline NO_x emissions. The NO_x emissions of equipment, engines, and retrofit or add-on devices used to achieve the emissions reductions must be certified or verified by the EPA or the CARB, or otherwise accepted by the TCEQ. Where the model year of the equipment and the model year of the existing engine are different—such as equipment that has already had the engine replaced with a newer engine—the model year of the engine must be used to determine the baseline emissions standard for emissions-reduction calculations. The application of the "25% reduction" criterion for each type of activity is explained below.

  Purchases and leases are allowed based on what year the purchase or lease is completed. At a minimum, the equipment and engine being purchased or leased must be certified to emit at least 25% less NO_x (in other words, no more than 75% as much NO_x) as compared with the current federal NO_x emissions standard for that engine.

Replacements. The replacement equipment and engine must have been certified to emit at least 25% less NO_x than the engine being replaced.

Repowers. The replacement engine must be certified to emit at least 25% less NO_x than the engine being replaced.

Retrofits and add-ons. Emissions standards for retrofit and add-on activities are based on the engine being retrofitted. The retrofit or add-on technology must be verified to emit at least 25% less NO_x than the federal standard for the engine being retrofitted. The TCEQ may establish an alternate standard for the conversion of a non-road diesel engine to operate under a dual-fuel configuration that uses natural gas and diesel fuel through an alternative fuel conversion system.

Combined technologies. Where two technologies (for example, repower plus retrofit) are combined on the same equipment, engine, or both, the TCEQ may consider the combined reductions from the two technologies in meeting the 25% requirement. This decision will be solely at the discretion of the TCEQ, and will be based on its determination that the combination of the two technologies will permanently reduce emissions by at least 25%.

- The cost-effectiveness of a project, other than a demonstration project, must not exceed any limits set by the TCEQ on the cost per ton of NO_x emissions reduced in the eligible counties for which the project is proposed.
- In the areas of the state where Texas Low Emission Diesel (TxLED) is required, the baseline and reduced emissions-rate calculations for diesel-engine usage after September 2005 must be adjusted using a correction factor, in addition to any other calculation adjustments. See Figure A2.1 for more information about the TxLED correction factor.
- An activity is not eligible if it is required by any state or federal law, rule, regulation, memorandum of agreement, or other legally binding document. However, this restriction does not apply to an otherwise qualified activity—regardless of the State Implementation Plan's assumption that the change in equipment, vehicles, or operations will occur—if, on the date the grant is awarded, the change is not yet required by any state or federal law, rule, regulation, memorandum of agreement, or other legally binding document. This restriction also does not apply to a purchase of vehicles or equipment required only by local law or regulation, or by controlling-board policy of a public or private entity. Projects used to demonstrate a technology that may be used to comply with an emissions-reduction requirement may be funded, as long as the reductions directly attributable to the project are not used to comply with those requirements.
- An activity involving a new emissions-reduction measure that would otherwise generate marketable credits under state or federal emissions-reduction credit averaging, banking, or trading programs is not eligible for funding under this program unless:

  - the activity includes the transfer of the reductions that would otherwise be marketable credits to the State Implementation Plan or the owner or operator, as provided under Texas Health and Safety Code 386.056; and
  - the reductions are permanently retired.
- The incremental cost of the proposed activity must be reduced by the value of any existing financial incentive that directly reduces the cost of the proposed activity, including tax credits or deductions, other grants, or any other public financial assistance.
- For repower activities, eligible rebuilt or remanufactured engines must use only components from the original engine manufacturer and be purchased from the OEM or its authorized dealers and distributors. However, the TCEQ may accept engines from suppliers not connected with the OEM, subject to a case-by-case determination.
- For all activities, the activity life must be a minimum of five years. The TCEQ may establish longer activity-life requirements for each grant period. Except for non-road equipment used for natural gas recovery, not less than 75% of the annual usage of the equipment must take place in one or more of the eligible counties throughout the life of the project. Leases that do not include a binding commitment to purchase must be for the length of the activity life. Annual usage is to be measured by either hours of operation or fuel consumption.

Figure A2.1
Correction Factor for TxLED

The TCEQ adopted rules (30 TAC 114.312–19) requiring that diesel fuel sold or supplied for use in compression-ignition engines in certain counties in Texas must meet low-emission-diesel standards.

The counties affected by the TxLED requirements currently include all those eligible for TERP incentive funding, as listed in Table 3.1, except for El Paso County.

The requirements set a maximum for content of aromatic hydrocarbons of 10% by volume. The requirements also set a minimum cetane number for TxLED of 48.

The TxLED requirements are intended to result in reductions in NO_x emissions from diesel engines. Currently, reduction factors of **5.7%** (0.057) for on-road use and **7.0%** (0.07) for non-road use have been accepted as estimates for use of TxLED. However, these estimates are subject to change, based on the standards accepted by the EPA for use in the Texas State Implementation Plan. The TCEQ will identify the appropriate reduction factors to use in the technical supplement prepared to support these guidelines.

For activities in the applicable counties, a correction factor will need to be applied when calculating the baseline or reduced emissions for diesel engines.

On-road:
TxLED correction factor = 1 – 0.057 = ***0.943***

Non-road:
TxLED correction factor = 1 – 0.070 = ***0.93***

- Non-road equipment used for natural gas recovery must be operated in the eligible counties for a sufficient amount of use over the activity life to meet the requirements of a commitment to reduce emissions and cost effectiveness. To qualify for this provision, the primary purpose and use of the equipment must be natural gas recovery, as determined by the TCEQ. For example, a generator used on a natural gas drill rig may qualify, but a tracked dozer used to build a road to a drill site would not.
- For most non-road equipment, annual usage is to be measured using hours of operation. For equipment without an hour meter installed and no viable mechanism for measuring the hours of operation, fuel consumption may be used as the usage factor, if accepted by the TCEQ.
- Applicants should refer to the technical supplement to these guidelines for the maximum acceptable activity life established by the TCEQ for each type of activity.
- Applicants must agree to monitor the use of grant-funded vehicles, equipment, infrastructure, and fuel, and to report to the TCEQ for the life of each grant-funded activity.
- Applicants must also agree to notify the TCEQ of any changes during the life of the following activities: termination of use; change in use, sale, transfer, or accidental or intentional destruction of grant-funded vehicles or equipment; or change in use of the qualifying fuel.
- Administrative costs and other internal costs of the grant recipient—including but not limited to personnel expenses, internal salaries, indirect costs, and travel—are not eligible. This restriction also applies to situations where the grant recipient acts as a transporter for delivery of the grant-funded vehicle or equipment before or after its acceptance.
- Consultant fees for the preparation of a grant application, either directly or as an addition to the cost basis of the grant-funded vehicle, equipment, or engine, are not eligible.
- Fees for a third-party consultant hired by the grant recipient to manage and administer the grant-funded activities, including coordination of the work and submission of reports and paperwork to the TCEQ for the grant recipient, are not eligible. This restriction is not intended to limit the ability of the vehicle or equipment supplier or installer to include reasonable and necessary costs for managing the work to be performed in the price of the vehicle, equipment, or installation. The costs for professional services, including engineering and technical work, required for completion of the activity may be included, subject to the restrictions pertaining to that type of project. Per the Uniform Grant Management Standards, the “cost plus a percentage of cost” method of contracting for professional services must not be used.
- The TCEQ may impose additional criteria for certain projects and funding periods, consistent with these guidelines.

NO_x Emissions Factors

The baseline NO_x emissions factors for this program will normally be the federal standards applicable to the type of engine and model year. However, if the baseline engine was certified by the EPA or the CARB to a Family Emissions Limit, the TCEQ may use the FEL for the baseline NO_x emissions factor.

The federal NO_x emissions standards for non-road engines are listed in the technical supplement available from the TERP Program. Potential grant applicants should consult with the TCEQ to ensure they use the appropriate baseline standards.

The NO_x emissions factor for the reduced-emission engines will normally be the federal NO_x emissions standard or the FEL to which the reduced-emission engine is certified. If a retrofit or add-on system is verified by the EPA or the CARB to reduce NO_x emissions by a specified percentage, the verified percentage will be applied to the baseline emissions factor to determine the emissions factor for the retrofitted engine.

Emissions Factors for Retrofits with Dual-Fuel Conversion Systems

The TCEQ may consider alternative information to determine the emissions factors and calculate the emissions reductions for retrofit projects involving the conversion of a non-road engine to operate under a dual-fuel configuration that uses natural gas and diesel fuel through an alternative fuel conversion system certified by the EPA or the CARB. In particular, if the TCEQ determines it is necessary and appropriate, the TCEQ may consider certified engine-test information that demonstrates reductions of NO_x emissions and other information to determine the emissions reductions.

To be considered under this alternative approach, the TCEQ may require that manufacturers or dealers apply to the TCEQ for a determination of the appropriate emissions factors and reductions that will be accepted for that system. In general, any testing to verify the emissions should be performed and certified by an independent testing service or facility. The TCEQ is not required to accept a dual-fuel conversion system under this alternative, and it will be the responsibility of the manufacturer to submit sufficient test data and other information to verify the emissions factors.

The TCEQ may determine an appropriate factor for the percentage reduction in NO_x emissions as a result of the dual-fuel engine conversion. The percentage-reduction factor will be applied to the baseline emissions factor determined by the TCEQ for that engine in order to calculate the emissions reductions. Alternatively, the TCEQ may determine a specific NO_x-emission rate for the converted engine based on the certified test results. In that case, the TCEQ may also consider the certified test results of either the original engine or the converted engine operating in diesel-only mode to determine the baseline emission rate.

In considering certified test information and agreeing to an appropriate percentage reduction in emissions or a specific emission rate, the TCEQ will take into account whether the engine can operate solely on diesel fuel in addition to dual-fuel operation. The TCEQ may adjust the percentage-reduction factor or the specific emission rate to account for the difference in emissions using solely diesel fuel and

dual-fuel operation of the engine. In determining appropriate adjustments to the emissions factors, the TCEQ may also take into account the level of confidence the can be given to the test information. In addition, a correction factor may be applied to account for the partial use of TxLED in dual-fuel operation of the engine.

Calculating Reductions in NO_x Emissions

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. Because conversion factors and activity levels may be expressed in different units for the existing and replacement engines, the emissions levels for the baseline and reduced-emissions engines should be calculated separately, and then differences taken to determine emissions reductions.

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 non-road applications, the activity level should be established by the annual hours of operation. For equipment without an hour meter installed, and no other mechanism to track hours of operation, the activity level should be determined based on annual fuel consumption. Emissions-reduction calculations should be consistent with the type of records maintained over the life of each activity.

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 A2.1.

Appropriate baseline NO_x emissions factors and default load factors are included in the technical supplement to these guidelines. Use the emissions factors associated with engine horsepower and model year. Use the load factor associated with the type of equipment. Potential grant applicants should consult with the TCEQ to ensure they use the appropriate factors.

Table A2.1
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 those eligible for TERP incentive funding, as listed in Table 3.1, except for El Paso County.	
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

Baseline		Reduced Emissions	
NO_x emissions factor (g/bhp-hr)		NO_x emissions factor (g/bhp-hr)	
× TxLED correction factor (*diesel engines only*)		× TxLED correction factor (*diesel engines only*)	
= corrected NO_x emissions factor (g/bhp-hr)		= corrected NO_x emission factor (g/bhp-hr)	
× load factor		× load factor	
× horsepower		× horsepower	
= g/hr		= g/hr	
Baseline g/hr – reduced emissions g/hr =			
× annual hours of operation			
× percent within eligible counties (%)			
= g/year			
		÷ 907,200 grams per ton	
= estimated annual NO_x emissions reduction (tons/yr)			
× activity life (years)			
= estimated activity-life NO_x emissions reduction (tons)			

For retrofit and add-on activities, as well as other activities where the emissions reductions are based on a percentage reduction from the baseline, the verified percentage-reduction factor can be applied to the baseline emissions factor to determine the reduced NOxX emissions factor.

Alternatively, for activities where the emissions of the new or replacement engine are certified at a specific emissions level (g/bhp-hr), such as purchases or repowers, use that emissions level as the emissions factor.

Calculation of NO_x-Emissions Reductions Based on Annual Fuel Use

If the annual fuel consumption is used, the activity level should be based on actual annual fuel receipts or other available documentation to estimate the expected annual fuel use of the equipment. An energy-consumption factor must also be calculated. This factor converts the emissions factor in terms of g/bhp-hr to g/gal of fuel used. There are two ways of calculating the energy-consumption factor:

1. dividing the hp of the engine by the fuel economy in gal/hr, or
2. dividing the density of the fuel by the brake-specific fuel consumption of the baseline engine.

Check with your equipment dealer to confirm the fuel economy or fuel consumption of the equipment for the type of application.

The calculation of reductions in NO_x emissions using annual fuel use is outlined in Table A2.2. Applicants should consult with the TCEQ for the appropriate calculations for projects involving non-diesel engines.

Calculating Cost-Effectiveness

Only the amount of incentive funds requested under the program can be used in calculating cost-effectiveness. The incremental costs for each activity must be reduced by the value of any existing financial incentive that directly reduces the cost of the proposed activity, including tax credits or deductions, other grants, or any other public financial assistance.

Table A2.2
Calculating Reductions in NO_x Emissions Based on Annual Fuel Use

Applying the TxLED Correction Factor

The counties affected by the TxLED requirements currently include all those eligible for TERP incentive funding, as listed in Table 3.1, except for El Paso County.	
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

Baseline		Reduced Emissions	
NO_x emissions factor (g/bhp-hr)		NO_x emissions factor (g/bhp-hr)	
× TxLED correction factor *(diesel engines only)*		× TxLED correction factor *(diesel engines only)*	
= corrected NO_x emissions factor (g/bhp-hr)		= corrected NO_x emissions factor (g/bhp-hr)	
× energy-consumption factor (hp-hr/gal)		× energy-consumption factor (hp-hr/gal)	
× annual fuel consumption (gal/yr)		× annual fuel consumption (gal/yr)	
= g/yr		= g/yr	
Baseline g/yr – reduced emissions g/yr =			
× percent within eligible counties (%)			
= g/yr			
		÷ 907,200 grams per ton	
= estimated annual NO_x-emissions reduction (tons/yr)			
× activity life (years)			
= estimated activity-life NO_x emissions reduction (tons)			

To determine the cost-effectiveness of an activity—with the exception of qualifying fuel activities—the incentive amount for the activity included in the project must be amortized over the activity life designated by the applicant, at a discount rate of 3%.

The following amortization formula yields a *capital-recovery factor* (CRF).

$$\text{capital-recovery factor} = [(1 + i)^n (i)] / [(1 + i)^n - 1]$$

where i = discount rate (3%)
n = activity life

The discount rate of 3% reflects the opportunity cost of public funds—the level of earning that reasonably could be expected by investing state funds in various financial instruments, such as U.S. Treasury securities.

The incentive amount should be multiplied by the incremental cost or incentive amount requested to determine the annualized cost.

$$\textit{incremental cost} \times \textit{CRF} = \textit{annualized cost}$$

The cost-effectiveness calculations appear in Table A2.3. For use in the calculations, capital-recovery factors for up to 20 years appear in Table A2.4.

For projects that include more than one activity, the total project incentive amount must be used to determine the cost-effectiveness of the project. The applicant may request an incentive amount that is less than the full incremental costs, in order to meet the cost-effectiveness criteria.

To determine the cost-effectiveness: First sum all of the annualized costs for the activities included in the project. Also sum the annual emissions reductions from each activity to determine an annual emissions reduction for the project. Then divide the combined annualized costs for all activities included in the project application by the total annual NO_x emissions reductions for the combined project activities.

total annualized cost / total annual NO_x reductions = project cost-effectiveness

Table A2.3
Calculating Cost-Effectiveness

Step 1. Determine the capital-recovery factor (CRF)	
CRF = $[(1 + i)^n (i)] / [(1 + i)^n - 1]$ i = discount rate (.03) n = activity life	
Capital-recovery factor:	
Step 2. Determine the annualized cost	
Incentive amount × CRF = annualized cost	
Annualized cost ($/year):	
Step 3. Determine cost-effectiveness	
Annualized cost ($/year) / annual NO_x-emissions reduction (tons/year) = cost-effectiveness ($/ton)	
Cost-effectiveness ($/ton):	$

Table A2.4
Capital-Recovery Factors Using a Discount Rate of 0.03

Activity Life	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CRF	1.00	.5226	.3535	.2690	.2184	.1846	.1605	.1425	.1284	.1172
Activity Life	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
CRF	.1081	.1005	.0940	.0885	.0838	.0796	.0760	.0727	.0698	.0672

Appendix 3
Marine Vessels

This appendix outlines the criteria for project eligibility and gives the methods for calculating the reductions in NO_x emissions for a marine-vessel project. Most of the calculations will require input of an NO_x emissions factor applicable to the engine. The emissions standards and factors applicable to this program are included in a technical supplement, which will be made available in conjunction with these guidelines at the TERP website, <www.terpgrants.org>. Examples of the calculations will also be available in the supplement, along with other materials prepared by the TCEQ. Potential grant applicants may also contact the TCEQ for hard copies of the supplement and for answers to questions about the applicable emissions standards and factors.

In accordance with Texas Health and Safety Code 386.104(j) and TERP program rules, 30 TAC 114.622(g), the executive director or his or her designee has the authority to waive certain eligibility requirements, based on a finding of good cause. Situations where good cause may be determined and a waiver granted are explained in the discussion of eligibility requirements in this appendix.

The executive director may identify other eligibility criteria for which a waiver may be considered, based on a finding of good cause and subject to the statutory and regulatory requirements. Waiver options will be explained in the grant-application materials.

In determining good cause and deciding whether to grant a waiver, the executive director will ensure that the emissions reductions attributable to the project will still be valid and, where applicable, meet the conditions for assignment for credit to the State Implementation Plan.

Eligible Activities and Costs

The activities and eligible costs under each project category are explained in this section. The TCEQ may further limit the types of eligible activities, and may more narrowly define eligibility requirements, during a particular funding period, as needed to best achieve the goals of the TERP.

The types of vessels that may be eligible for funding are diverse, and may include both oceangoing vessels and harbor craft. However, to be eligible for funding, at least 75% of a vessel's annual use must occur in the bays adjacent to an eligible county or in the Texas Intracoastal Waterway. Therefore, there will probably be few projects involving large oceangoing vessels.

The TCEQ may also consider, case by case, vessels that operate in coastal or international waters, where it can be definitively shown that the emissions from those vessels are included by the TCEQ in the inventory of emissions for an eligible county or area made up of eligible counties. This decision will be solely at the discretion of the TCEQ. It is recommended that potential applicants contact the TCEQ to discuss this type of project before submitting an application.

In addition, many marine vessels will have one or more propulsion engines, as well as one or more auxiliary engines. In most cases, for lease or purchase and replacement projects, the combined NO_x emissions for both the propulsion and the auxiliary engine will be used to determine the reductions in NO_x emissions for the project. For engine repower, retrofit, and add-on projects, the NO_x emissions reductions will be based on the individual engines being replaced or retrofitted.

This section explains the eligible activities and costs under each project category. The TCEQ may further limit the types of eligible activities, and may more narrowly define eligibility requirements under a particular funding round, or by geographic area, as needed to best achieve the objectives of the TERP. Administrative costs, in-house labor costs, and travel costs are not eligible expenses.

Purchase or Lease of Marine Vessels

This category is for the purchase or lease of new marine vessels. The cost may also include the purchase and installation of a global positioning system, subject to approval by the TCEQ. For this category, the TCEQ does not consider whether the applicant is replacing an existing piece of equipment; the baseline for comparison of emissions is the current NO_x standard for a marine engine of that horsepower and use. The baseline vessel used for determining the difference in cost must be **new**.

To be eligible for funding, the engine on the new piece of equipment must be certified to emit at least 25% less NO_x than required (in other words, no more than 75% as much NO_x as is allowable) under the current standard for that engine.

A *lease* is defined as the use and control of a new marine vessel in accordance with a lease contract for a period of five or more years. The TCEQ will reimburse the incremental costs of the lease—costs above those that would otherwise have been incurred for the lease of a baseline vessel.

The TCEQ will reimburse the incremental cost of the purchase of a new marine vessel subject to cost-effectiveness limits established by the TCEQ. The incremental cost is the difference between the documented dealer price of a baseline vessel or other appropriate baseline cost established by the TCEQ and the actual cost of the cleaner vessel.

Replacement of Marine Vessels

This category is for the replacement of marine vessels with a new or newer marine vessel. For this category, the applicant must be replacing a vessel with a minimum of five years of remaining useful life. The TCEQ may establish longer activity-life requirements for any grant period. The baseline for comparison of emissions is the difference between the emissions standard (or in some cases, the certified emissions level) for the engine or engines on the vessel being replaced, and the certified emissions level of the engine or engines installed on the vessel being purchased.

For a replacement project, the TCEQ will evaluate whether the vessel being replaced would have otherwise been used in the bays adjacent to the eligible counties or in the Texas portion of the Gulf Intracoastal Waterway for the period within which the emissions reductions will be claimed. Standards that apply include **all** of the following:

1. The owner must have owned the vessel continuously for at least the two years immediately preceding the grant-application date.
2. Unless otherwise approved by the TCEQ, the vessel must have been continuously located and used in Texas over the preceding two years.
3. The vessel must currently be registered for operation in Texas in the applicant's name.
4. The vessel must be in good operating condition and capable of performing its primary function.

The TCEQ may waive the two-year ownership requirement, case by case, where the ownership of the company has changed, the assets of the company have been purchased by another company, or the company has changed its name or incorporation status. The use of the vessels being replaced must not have changed.

The TCEQ may waive the requirement for two years of continuous use for short lapses in operation attributable to economic conditions, seasonal work, or other circumstances, based on a finding of good cause. The historical usage described by the applicant on the grant-application forms must reflect the lapses in use of the vessel in those activities.

In order for a replacement activity to result in creditable emissions reductions, the applicant must intend to continue to use the marine vessel being replaced for the same type of use and amount of use over the same period as the activity life, absent the award of a grant. The TCEQ may require additional assurances, certifications, and documentation to verify that the applicant would continue to use the marine vessel being replaced if the grant is not awarded.

For replacement projects, the emissions reductions are based on replacement of the future use of the original vehicle or equipment with the use of the reduced-emission vehicle or equipment. The estimated future use of the original vehicle or equipment is determined from the recent historical use. Except when a default usage amount is

used for the emissions-reduction calculations, the activity level used for those calculations and the corresponding usage commitment for a replacement project may not exceed the average annual use of the vehicle or equipment being replaced for the two years preceding the application.

The combined NO_x emissions of the engines on the replacement vessel must be certified to be at least 25% less than (that is, no more than 75% as much as) the combined NO_x emissions of the engines on the vessel being replaced, based on the emissions standard for those engines. "Certification" means approval by the EPA or the California Air Resources Board (CARB), or acceptance on other grounds by the TCEQ.

The replacement vessel must be of the same type and should be intended for use in the same application or vocation (for example, tug, fireboat, pusher) as the vessel being replaced. The TCEQ may accept, based on the particular case, a vessel of a different type to account for the latest technology used for a specific vocation. In addition, the TCEQ may accept, case by case, the replacement of a multi-engine vessel with a single-engine vessel, or vice versa, as long as the new vessel will have the same use as the vessel being replaced and the emissions reductions can be adequately determined.

The year of manufacture of the engine installed on the replacement vessel may not be more than three years prior to the current calendar year, unless an alternative age limit is established by the TCEQ for a particular grant round. The TCEQ may also waive the age-limit requirements, case by case, where the vessel has a unique or specialized use and where a model with a recently manufactured engine is not available.

The grant recipient may be eligible for reimbursement of up to 80% of the eligible costs for the purchase or lease of the replacement vessel subject to cost-effectiveness limits established by the TCEQ. The TCEQ may further limit the incentive amount to a lower percentage of eligible costs as needed to best achieve the goals of the TERP.

Costs may include the invoice price, including taxes and delivery charges included in the price of the replacement vessel, or the cash basis for the lease charges. The cost may also include the purchase and installation of a global positioning system, subject to approval by the TCEQ. Delivery charges from a third party, not included in the invoice price from the vehicle or equipment vendor, may be included, subject to approval by the TCEQ.

The total incentive amount must not exceed 80% of the cost of the replacement vessel minus the scrappage value received for the old vessel. The TCEQ may establish a default scrappage value.

Repower of Marine Vessels

This category is for the replacement of an existing engine on a marine vessel with a new, rebuilt, or remanufactured engine, or one or more electric motors, drives, or fuel cells. The upgrade of an engine with an emissions-upgrade kit certified by the EPA or CARB may also be considered under the repower category. The replacement, rebuilt, or remanufactured engine must be certified to emit at least 25% less NO_x (in other words, no more than 75% as much NO_x) compared with the engine being replaced, or the engine before rebuilding or remanufacture, based on the standard for that engine. "Certification" means approval by the EPA or the CARB, or acceptance on other grounds by the TCEQ.

Eligible rebuilt or remanufactured engines must use only components from the original engine manufacturer only and be purchased from the OEM or its authorized dealers and distributors. However, the TCEQ may accept engines from suppliers not connected with the OEM, subject to a case-by-case determination.

The grant recipient may be eligible for reimbursement of up to 80% of the incremental cost of the repower subject to cost-effectiveness limits established by the TCEQ. The TCEQ may further limit the incentive amount to a lower percentage of the eligible costs as needed to best achieve the goals of the TERP.

The incremental cost for an engine replacement is the cost to purchase and install the replacement engine and associated equipment minus the scrappage value received for the old engine, if applicable. The TCEQ may establish a default scrappage value. The TCEQ may further limit the incentive amount to a lower percentage of the eligible costs as needed to best achieve the goals of the TERP.

For engine conversions and emissions-upgrade kits certified by the EPA or CARB, the incremental cost is the cost to purchase and install the conversion system or kit, including the new fuel system, if applicable. Other upgrades or modifications to the engine or vehicle that are not necessary for the conversion or upgrade of the engine are not eligible.

Expenses for salaries, travel, and overhead, including indirect costs, will not be covered. Costs that may be reimbursed, subject to approval by the TCEQ, include:

- the invoice cost of the new engine, including sales tax and delivery charges;
- the invoice cost of additional equipment that must be installed with the new engine;
- associated supplies directly related to the installation of the engine;
- costs to remove and dispose of the old engine, if applicable;
- installation costs;
- reengineering costs, if the vessel must be modified for the new engine to fit; and
- other costs directly related to the project, including the purchase and installation of a global positioning system.

Retrofit or Add-on of Emissions-Reduction Technology

This category is for the retrofit of an existing engine on a marine vessel, or for adding devices onto the vessel. To be eligible for funding, the retrofit or add-on systems must be verified to cause the engine to emit at least 25% less NO_x (that is, no more than 75% as much NO_x) compared with emissions prior to the retrofit or add-on. Certification means approval by the EPA or the CARB, or acceptance on other grounds by the TCEQ.

The TCEQ will reimburse the incremental cost of the purchase and installation of the retrofit or add-on technology subject to cost-effectiveness limits established by the TCEQ. If the engine is to be rebuilt to install the emissions-reduction devices, the incremental cost is the difference between the cost of rebuilding the existing engine and the cost of rebuilding the engine to include the retrofit or add-on technology. If the engine does not need to be rebuilt, then the incremental cost will be the full cost of purchasing and installing the technology. The TCEQ may further limit the incentive amount to a lower percentage of the eligible costs as needed to best achieve the goals of the TERP.

Expenses for salaries, travel, and overhead, including indirect costs, will not be covered. Costs that may be reimbursed, subject to approval by the TCEQ, include:

- the invoice cost of the retrofit kit or add-on devices, including sales tax and delivery charges;
- the cost of associated supplies directly related to the installation of the devices;
- installation costs;
- reengineering costs, if the marine vessel must be modified for the retrofit or add-on devices to be installed and used; and
- other costs directly related to the project, including the purchase and installation of a global positioning system.

Project Criteria

In addition to the eligibility criteria previously presented, the following list applies to projects involving marine vessels. The TCEQ may impose additional criteria, and may more narrowly define the criteria established in this guide, under a particular funding round, or by geographic area, as needed to best achieve the goals of the TERP.

- One or more eligible **activities** of the same project type (i.e., on-road, non-road, locomotive, etc.) and that will occur in the same primary area may be included under one project application.
- The applicant must own the vessel being replaced, repowered, or retrofitted.
- Marine vessels used primarily for competition or recreation are not eligible for funding.

- Marine-vessel activities must reduce emissions of NO_x by at least 25% compared to baseline NO_x emissions. The NO_x emissions of engines and retrofit or add-on devices used to achieve the emissions reductions must be certified or verified by the EPA or the CARB, or accepted on other grounds by the TCEQ. Where the model year of the marine vessel and the model year of the existing engine are different—such as in a vessel that has already had its engine replaced with a newer engine—the model year of the engine must be used to determine the baseline emissions standard for emissions-reduction calculations. The application of the 25% reduction criteria for each type of activity is explained below.

  Purchases and leases are allowed based on what year the purchase or lease is completed. At a minimum, the combined NO_x emissions of the vessel being purchased or leased must be certified to be at least 25% less than the NO_x emissions would have been if the engine or engines only met the minimum standard.

  Replacements. The combined certified NO_x emissions of the replacement marine vessel must be at least 25% less than the combined NO_x emissions of the vessel being replaced, based on the emissions standards for those engines.

  Repowers. The replacement engine must be certified to emit at least 25% less NO_x than the engine being replaced, based on the federal standard for that engine.

  Retrofits and add-ons. Emissions standards for retrofit and add-on activities are based on the engine being retrofitted. If an applicant wants to retrofit or add on a device, the technology must be verified to emit at least 25% less NO_x than the standard for the engine being retrofitted.

  Combined technologies. Where two technologies (for example, repower plus retrofit) are combined on the same vessel or engine, the TCEQ may consider the combined reductions from the two technologies in meeting the 25% requirements. This decision will be solely at the discretion of the TCEQ, and will be based on a determination that the combination of the two technologies will permanently reduce emissions by at least 25%.

- The cost-effectiveness of a project, other than a demonstration project, may not exceed any limits established by the TCEQ on the cost per ton of NO_x emissions reduced in the eligible counties for which the project is proposed.
- An activity is not eligible if it is required by any state or federal law, rule, regulation, memorandum of agreement, or other legally binding document. However, this restriction does not apply to an otherwise qualified activity—regardless of the State Implementation Plan's assumption that the change in equipment, vehicles, or operations will occur—if, on the date the grant is awarded, the change is not yet required by any state or federal law, rule, regulation, memorandum of agreement, or other legally binding document. This restriction also does not apply to a purchase of vehicles or equipment that is required only by local law or regulation or by controlling-board policy of a public or private entity.

Projects used to demonstrate a technology that may be used to comply with an emissions-reduction requirement may be funded, as long as the reductions directly attributable to the project are not used to comply with that requirement.

- Activities for the repower or retrofit of an existing engine that must meet a more stringent emissions standard under state or federal regulations at the time of engine replacement, overhaul, or remanufacture may also be eligible if the requirement does not include a deadline or specific time period for the upgrade. The more stringent standard will be used as the baseline emissions rate in the calculation to determine the emissions reductions and the determination that the activity will reduce NO_x at least 25%.
- In the areas of the state where Texas Low Emission Diesel (TxLED) is required, the baseline and reduced emissions-rate calculations for diesel engine usage after September 2005 must be adjusted using a correction factor, in addition to any other calculation adjustments.
- An activity involving a new emissions-reduction measure that would otherwise generate marketable credits under state or federal emissions-reduction-credit averaging, banking, or trading programs is not eligible for funding under this program unless:
    - the activity includes the transfer of the reductions that would otherwise be marketable credits to the State Implementation Plan or the owner or operator as provided under Texas Health and Safety Code 386.056; and
    - the reductions are permanently retired.
- The incremental cost of the proposed activity must be reduced by the value of any existing financial incentive that directly reduces its cost, including tax credits or deductions, other grants, or any other public financial assistance.
- For repower activities, eligible rebuilt or remanufactured engines must use only components from the original engine manufacturer and be purchased from the OEM or its authorized dealers and distributors. However, the TCEQ may accept engines from suppliers not connected with the OEM, subject to a case-by-case determination.
- For all activities, the activity life must be a minimum of five years. The TCEQ may establish longer activity-life requirements for each grant period. Not less than 75% of the annual use of the marine vessel must take place in the Texas portion of the Gulf Intracoastal Waterway or in bays adjacent to an eligible county throughout the life of the project. Leases that do not include a binding commitment to purchase must be for the length of the activity life.
- For most marine vessels, annual use must be measured using hours of operation. For vessels with no viable mechanism for measuring the hours of operation, fuel consumption normally should be chosen as the usage factor.
- Applicants should refer to the technical supplement to these guidelines for the maximum acceptable life established by the TCEQ for each type of activity.

Figure A3.1
Correction Factor for TxLED

The TCEQ adopted rules (30 TAC 114.312–19) requiring that diesel fuel sold or supplied for use in compression-ignition engines in certain counties in Texas must meet low-emission-diesel standards.

The counties affected by the TxLED requirements currently include all those eligible for TERP incentive funding, as listed in Table 3.1, except for El Paso County.

The requirements set a maximum for content of aromatic hydrocarbons of 10% by volume. The requirements also set a minimum cetane number for TxLED of 48.

The TxLED requirements are intended to result in reductions in NO_x emissions from diesel engines. Currently, reduction factors of **5.7%** (0.057) for on-road use and **7.0%** (0.07) for non-road use have been accepted as estimates for use of TxLED. However, these estimates are subject to change, based on the standards accepted by the EPA for use in the Texas State Implementation Plan. The TCEQ will identify the appropriate reduction factors to use in the technical supplement prepared to support these guidelines.

For activities in the applicable counties, a correction factor will need to be applied when calculating the baseline or reduced emissions for diesel engines.

On-road:
TxLED correction factor = 1 – 0.057 = ***0.943***

Non-road:
TxLED correction factor = 1 – 0.070 = ***0.93***

- Applicants must agree to monitor the use of grant-funded vehicles, equipment, infrastructure, and fuel, and to report to the TCEQ for the life of each grant-funded activity.
- Applicants must also agree to notify the TCEQ of any changes during the life of the following activities: termination of use; change in use, sale, transfer, or accidental or intentional destruction of grant-funded vehicles or equipment; or change in use of the qualifying fuel.
- Administrative costs and other internal costs of the grant recipient—including but not limited to personnel expenses, internal salaries, indirect costs, and travel—are not eligible. This restriction also applies to situations when the grant recipient delivers the grant-funded vehicle or equipment before or after accepting it.
- Consultant fees for the preparation of a grant application, either directly or as an addition to the cost basis of the grant-funded vehicle, equipment, or engine, are not eligible.
- Fees for a third-party consultant hired by the grant recipient to manage and administer the grant-funded activities, including coordination of the work and submission of reports and paperwork to the TCEQ for the grant recipient, are not eligible. This restriction is not intended to limit the ability of the vehicle or equipment supplier or installer to include reasonable and necessary costs for managing the work to be performed in the price of the vehicle, equipment, or installation. The costs for professional services, including engineering and

technical work, required for completion of the activity may be included, subject to the restrictions pertaining to that type of project. Per the Uniform Grant Management Standards, the "cost plus a percentage of cost" method of contracting for professional services must not be used.

- The TCEQ may impose additional criteria for certain projects and funding periods, consistent with these guidelines.

NO_x Emissions Factors

The EPA has adopted exhaust emissions standards for marine diesel engines. These standards apply to the following:

- **Marine diesel engines with displacement at or above 30 liters per cylinder.** These engines are also known as Category 3 marine diesel engines. They range from about 2,500 to 70,000 kilowatts (3,000 to 100,000 hp). These are very large marine diesel engines used for propulsion power on oceangoing vessels such as container ships, oil tankers, bulk carriers, and cruise ships.
- **Marine diesel engines with displacement ranging from 2.5 liters per cylinder to below 30 liters per cylinder.** These engines are also known as Category 1 and Category 2 marine diesel engines. They range in power from about 500 to 8,000 kilowatts (700 to 11,000 hp). These engines are used to propel many kinds of vessels, including tugboats, push boats, supply vessels, fishing vessels, and other commercial vessels in and around U.S. ports. They are also used as stand-alone generators for auxiliary power on many types of vessels.

For purposes of this program, the EPA standards for marine engines are to be used for propulsion engines, where applicable. These standards are included in the technical supplement to these guidelines. To determine the emissions level for an engine manufactured before the EPA standards applied to that engine, the TCEQ will work with the applicant to determine the most appropriate level, based on information supplied by the manufacturer and from other sources.

For new leases and purchases, where the vessel's NO_x emissions must be at least 25% less than the current minimum standards, and where the EPA standards do not yet apply to the engines installed on the vessel, the TCEQ will work with the applicant to determine whether the engines meet the requirements for this program.

In most cases, the EPA standards for non-road engines will be used for determining the emissions of auxiliary engines on marine vessels.

For activities involving oceangoing vessels, the TCEQ will work with the applicant to determine the appropriate standards to use, case by case.

Calculating Reductions in NO_x Emissions

In general, the emissions-reduction benefit represents the difference in the emissions level of a baseline engine and a reduced-emissions engine. In situations where the model year of the marine vessel 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 and an activity level. Because conversion factors and the activity levels may be expressed in different units for the existing and replacement engines, the emissions levels for the baseline and reduced-emissions engines should be calculated separately, and then differences taken to determine emissions reductions.

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 marine applications, the activity level should be established by the annual hours of operation. For engines without an hour meter installed, and no other mechanism to track hours of operation, the activity level should be determined from annual fuel consumption. Emissions-reduction calculations should be consistent with the type of records maintained over the life of each activity.

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 shown in Table A3.1.

Appropriate baseline NO_x emissions factors are included in a technical supplement available from the TCEQ. Use the emissions factors associated with engine horsepower and model year. Potential grant applicants should consult with the TCEQ to ensure they use the appropriate factors.

For retrofit and add-on activities, and other activities where the emissions reductions are based on a percentage reduction from the baseline, the verified percentage-reduction factor can be applied to the baseline emissions factor to determine the reduced NO_x emissions factor.

Alternatively, for activities where the emissions of the new or replacement engine are certified at a specific emissions level (g/bhp-hr), such as purchases or repowers, that emissions level should be used as the emissions factor.

Table A3.1
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 those eligible for TERP incentive funding, as listed in Table 3.1, except for El Paso County.	
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

Baseline		**Reduced Emissions**	
NO_x emissions factor (g/bhp-hr)		NO_x emissions factor (g/bhp-hr)	
× TxLED correction factor (*diesel engines only*)		× TxLED correction factor (*diesel engines only*)	
= corrected NO_x emissions factor (g/bhp-hr)		= corrected NO_x emissions factor (g/bhp-hr)	
× horsepower		× horsepower	
= g/hr		= g/hr	
Baseline g/hr – reduced emissions g/hr =			
× annual hours of operation			
× percent within eligible counties (%)			
= g/year			
		÷ 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 Fuel Use

If annual fuel consumption is the basis for the emissions reductions, an energy-consumption factor is used to convert g/bhp-hr to g/gal of fuel used. There are two ways of calculating an engine-specific energy-consumption factor:

1. divide the hp of the engine by the fuel economy in gal/hr; or
2. divide the density of the fuel by the brake-specific fuel consumption of the engine.

While actual fuel receipts or other documentation may support the annual fuel consumption for an engine being replaced, repowered, or retrofitted, the annual fuel consumption of the new vehicle or engine is an estimate, proportional to the change in the energy-consumption factor. Check with your equipment dealer to confirm the fuel economy or fuel consumption of the equipment for the type of application.

Otherwise, there are two ways of calculating an engine-specific energy-consumption factor:

1. divide the hp of the engine by the fuel economy in gal/hr; or
2. divide the density of the fuel by the brake-specific fuel consumption of the engine.

While actual fuel receipts or other documentation may support the annual fuel consumption for a baseline engine, the annual fuel consumption of the new vehicle or engine is an estimated proportion to the change in the energy-consumption factor. For example, a reduced-emissions engine having an energy-consumption factor of 18.5, which replaces a baseline engine that uses 5,000 gallons/year, and that has a factor of 17.8, would have an estimated annual fuel consumption of 5,197 gal/yr.

The calculation of reductions in NO_x emissions using annual fuel use is outlined in Table A3.2. Applicants should consult with the TCEQ for the appropriate calculations for projects involving non-diesel engines.

Table A3.2
Calculating Reductions in NO_x Emissions Based on Annual Fuel Use

Applying the TxLED Correction Factor

The counties affected by the TxLED requirements currently include all those eligible for TERP incentive funding, as listed in Table 3.1, except for El Paso County.	
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

Baseline		**Reduced Emissions**	
NO_x emissions factor (g/bhp-hr)		NO_x emissions factor (g/bhp-hr)	
× TxLED correction factor (*diesel engines only*)		× TxLED correction factor (*diesel engines only*)	
= corrected NO_x emissions factor (g/bhp-hr)		= corrected NO_x emissions factor (g/bhp-hr)	
× energy-consumption factor (hp-hr/gal)		× energy-consumption factor (hp-hr/gal)	
× annual fuel consumption gallons per year (gal/yr)		× annual fuel consumption (gal/yr)	
= g/yr		= g/yr	
Baseline g/yr – reduced emissions g/yr =			
× percent within eligible counties (%)			
= g/yr			
		÷ 907,200 grams per ton	
= estimated annual NO_x emissions reduction (tons/yr)			
× activity life (years)			
= estimated activity-life NO_x emissions reduction (tons)			

Calculating Cost-Effectiveness

Only the amount of incentive funds requested under the program will be used in calculating cost-effectiveness. The incremental costs for each activity must be reduced by the value of any existing financial incentive that directly reduces the cost of the proposed activity, including tax credits or deductions, other grants, or any other public financial assistance.

To determine the cost-effectiveness of an activity—with the exception of qualifying fuel activities—the incentive amount for the activity included in the project must be amortized over the activity life designated by the applicant, at a discount rate of 3%.

The following amortization formula yields a *capital-recovery factor* (CRF).

$$\text{capital-recovery factor} = [(1 + i)^n (i)] / [(1 + i)^n - 1]$$

where i = discount rate (3%)
n = activity life

The discount rate of 3% reflects the opportunity cost of public funds—the level of earning that reasonably could be expected by investing state funds in various financial instruments, such as U.S. Treasury securities.

The incentive amount should be multiplied by the incremental cost or incentive amount requested to determine the annualized cost.

$$\textit{incremental cost} \times \textit{CRF} = \textit{annualized cost}$$

The cost-effectiveness calculations appear in Table A3.3. For use in the calculations, capital-recovery factors for up to 20 years appear in Table A3.4.

For projects that include more than one activity, the total project incentive amount must be used to determine the cost-effectiveness of the project. The applicant may request an incentive amount that is less than the full incremental costs, in order to meet the cost-effectiveness criteria.

To determine the cost-effectiveness: First sum all of the annualized costs for the activities included in the project. Also sum the annual emissions reductions from each activity to determine an annual emissions reduction for the project. Then divide the combined annualized costs for all activities included in the project application by the total annual reductions in NO_x emissions for the combined project activities.

$$\textit{total annualized cost / total annual } NO_x \textit{ reductions} = \textit{project cost-effectiveness}$$

Table A3.3
Calculating Cost-Effectiveness

Step 1. Determine the capital-recovery factor (CRF)	
$CRF = [(1 + i)^n (i)] / [(1 + i)^n - 1]$ i = discount rate (.03) n = activity life	
Capital-recovery factor:	
Step 2. Determine the annualized cost	
Incentive amount × CRF = annualized cost	
Annualized cost ($/year):	
Step 3. Determine cost-effectiveness	
Annualized cost ($/year) / annual NO_x emissions reduction (tons/year) = cost-effectiveness ($/ton)	
Cost-effectiveness ($/ton):	$

Table A3.4
Capital-Recovery Factors Using a Discount Rate of 0.03

Activity Life	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CRF	1.00	.5226	.3535	.2690	.2184	.1846	.1605	.1425	.1284	.1172
Activity Life	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
CRF	.1081	.1005	.0940	.0885	.0838	.0796	.0760	.0727	.0698	.0672

Appendix 4
Locomotives

This appendix outlines the criteria for project eligibility and gives the methods for calculating the reductions in NO_x emissions for a locomotive project. The emissions standards and emissions factors applicable to this program are included in a technical supplement, which will be made available in conjunction with these guidelines at the TERP website, <www.terpgrants.org>. Examples of the calculations will also be available in the supplement, along with other materials prepared by the TCEQ. Potential grant applicants may also contact the TCEQ for hard copies of the supplement and for answers to questions about the applicable emissions standards and factors.

In accordance with Texas Health and Safety Code 386.104(j) and TERP program rules, 30 TAC 114.622(g), the executive director has the authority to waive certain eligibility requirements, based on a finding of good cause. Situations where good cause may be determined and a waiver granted are explained in the discussion of eligibility requirements in this appendix.

The executive director may identify other eligibility criteria for which a waiver may be considered, based on a finding of good cause and subject to the statutory and regulatory requirements. Waiver options will be explained in the grant-application materials.

The granting of a waiver to the eligibility requirements is at the discretion of the executive director or the executive director's designee. In determining good cause and deciding whether to grant a waiver, the executive director shall ensure that the emissions reductions that will be attributable to the project will still be valid and, where applicable, meet the conditions for assignment for credit to the State Implementation Plan.

Eligible Activities and Costs

Locomotives are eligible for grants under this program. Most of the engines eligible under this program will be powered by diesel-fueled compression-ignition engines. However, engines powered by other fuels may also be eligible, subject to decisions by the TCEQ for particular funding periods. Eligible activities and costs under each project category are explained in this section. The TCEQ may further limit the types of eligible activities, and may more narrowly define eligibility requirements under a particular funding round or by geographic area, as needed to best achieve the goals of the TERP. Administrative costs, in-house labor costs, and travel costs are not eligible expenses.

Purchase or Lease of Locomotives

This category is for the purchase or lease of new locomotives. The cost may also include the purchase and installation of a global positioning system, subject to approval by the TCEQ. For this category, the TCEQ does not consider whether the applicant is replacing an existing locomotive, and the baseline for comparison of emissions is the current federal NO_x emissions standard for that locomotive.

To be eligible for funding, the engine on the new locomotive must be certified to emit at least 25% less NO_x than required (in other words, no more than 75% as much NO_x as is allowable) under the current federal standard for that engine.

A *lease* is defined as the use and control of a new locomotive in accordance with a lease contract for a period of five or more years. The TCEQ will reimburse the incremental costs of the lease—costs above those that would otherwise have been incurred for the lease of a baseline locomotive.

The TCEQ will reimburse the incremental cost of the purchase of a new locomotive subject to cost-effectiveness limits established by the TCEQ. The incremental cost is the difference between the documented dealer price of a baseline locomotive or other appropriate baseline cost established by the TCEQ, and the actual cost of the cleaner locomotive.

The baseline locomotive used for determining the difference in cost must be a **new** locomotive certified to the current federal NO_x emission standards.

The EPA has previously defined "new locomotive" to mean a freshly manufactured or remanufactured locomotive, and "remanufacture" of a locomotive as replacement of all the power assemblies of a locomotive engine with freshly manufactured (containing no previously used parts) or reconditioned assemblies. The TCEQ will make the final determination regarding the applicability of a baseline new locomotive.

Replacement of Locomotives

This category is for the replacement of a locomotive with a new or newer locomotive. For this category, the applicant must be replacing a locomotive with a minimum of five years of remaining useful life. The TCEQ may establish longer activity-life requirements for each grant period. The baseline for comparison is the emissions of the locomotive being replaced and the emissions of the locomotive being purchased.

For a replacement project, the TCEQ will evaluate whether the locomotive being replaced would have otherwise been used in the eligible counties for the period within which the emissions reductions will be claimed. Standards that apply include **all** of the following:

1. The owner must have continuously owned the locomotive for at least the two years immediately preceding the grant application date.

2. Unless otherwise approved by the TCEQ, the locomotive must have been continuously located and used in Texas over the preceding two years.
3. The locomotive must be in good operating condition and capable of performing its primary function.

The TCEQ may waive the two-year ownership requirement, case by case, where the ownership of the company has changed, the assets of the company have been purchased by another company, or the company has changed its name or incorporation status. The use of the locomotives being replaced must not have changed.

The TCEQ may waive the requirement for two years of continuous use for short lapses in operation attributable to economic conditions, seasonal work, or other circumstances, based on a finding of good cause. The historical usage described by the applicant on the grant-application forms must reflect the lapses in use of the locomotive in those activities.

In order for a replacement activity to result in creditable emissions reductions, the applicant must intend to continue to use the locomotive being replaced for the same type of use and amount of use over the same period as the activity life, absent the award of a grant. The TCEQ may require additional assurances, certifications, and documentation to verify that the applicant would continue to use the locomotive being replaced if the grant is not awarded.

For replacement projects, the emissions reductions are based on replacement of the future use of the original vehicle or equipment with the use of the reduced-emission vehicle or equipment. The estimated future use of the original vehicle or equipment is determined from the recent historical use. Except when a default usage amount is used for the emissions reduction calculations, the activity level used for the emissions-reduction calculations and the corresponding usage commitment for a replacement project may not exceed the average annual use of the vehicle or equipment being replaced for the two years preceding the application.

The engine on the replacement locomotive must be certified to emit at least 25% less NO_x (in other words, no more than 75% as much NO_x) compared with the engine being replaced. “Certification” means approval by the EPA or the California Air Resources Board (CARB), or acceptance on other grounds by the TCEQ.

The replacement locomotive must be of the same type and should be intended for use in the same application or vocation (for example, switcher) as the locomotive being replaced. The TCEQ may accept, case by case, engines or equipment of a different type to account for the latest technology used for a specific vocation. In addition, the TCEQ may accept, case by case, the replacement of a multi-engine locomotive with a single-engine locomotive, or vice versa, as long as the new locomotive will have the same use as the locomotive being replaced and the emissions reductions can be adequately determined.

The year of manufacture of the engine installed on the replacement locomotive may not be more than three years prior to the current calendar year, unless an alternative age limit is established by the TCEQ for a particular grant round. The TCEQ may also waive the age-limit requirements, case by case, where the locomotive has a unique or specialized use and where a model with a recently manufactured engine is not available.

The grant recipient may be eligible for reimbursement of up to 80% of the eligible costs for the purchase or lease of the replacement locomotive, subject to cost-effectiveness limits established by the TCEQ. The TCEQ may further limit the incentive amount to a lower percentage of eligible costs as needed to best achieve the goals of the TERP. The cost may also include the purchase and installation of a global positioning system, subject to approval by the TCEQ. The TCEQ may further limit the incentive amount to a lower percentage of the eligible costs, as needed to best achieve the goals of the TERP.

Costs may include the invoice price, including taxes and delivery charges included in the price of the replacement locomotive, or the cash basis for the lease charges. Delivery charges from a third party not included in the invoice price from the vehicle or equipment vendor may be included, subject to approval by the TCEQ.

The total incentive amount also must not exceed 80% of the cost of the replacement locomotive minus the scrappage value received for the old locomotive. The TCEQ may establish a default scrappage value.

Repower of Locomotives

This category is for the replacement of an existing engine on a locomotive with a new, rebuilt, or remanufactured engine, or one or more electric motors, drives, or fuel cells. The upgrade of an engine with an emissions upgrade kit certified by the EPA or CARB may also be considered under the repower category. The engine must be certified to emit at least 25% less NO_x than the engine being replaced (in other words, no more than 75% of the NO_x allowable), based on the federal standard for that engine. "Certification" means approval by the EPA or the CARB, or acceptance on other grounds by the TCEQ.

Eligible rebuilt or remanufactured engines must use only components from the original engine manufacturer only and be purchased from the OEM or its authorized dealers and distributors. However, the TCEQ may accept engines from suppliers not connected with the OEM, subject to a case-by-case determination.

The grant recipient may be eligible for reimbursement of up to 80% of the incremental cost of the report, subject to the cost-effectiveness limits established by the TCEQ. The TCEQ may further limit the incentive amount to a lower percentage of eligible costs as needed to best achieve the goals of the TERP. The incremental cost for an engine replacement is the cost to purchase and install the replacement engine and associated equipment minus the scrappage value received for the old engine, if

applicable. The TCEQ may establish a default scrappage value. The TCEQ may further limit the incentive amount to a lower percentage of the eligible costs as needed to best achieve the goals of the TERP.

For engine conversions and emissions-upgrade kits certified by the EPA or CARB, the incremental cost is the cost to purchase and install the conversion system or kit, including the new fuel system, if applicable. Other upgrades or modifications to the engine or vehicle that are not necessary for the conversion or upgrade of the engine are not eligible.

Expenses for salaries, travel, and overhead, including indirect costs, will not be covered. Costs that may be reimbursed, subject to approval by the TCEQ, include:

- the invoice cost of the new engine, including sales tax and delivery charges;
- the invoice cost of additional equipment that must be installed with the new engine;
- associated supplies directly related to the installation of the engine;
- costs to remove and dispose of the old engine, if applicable;
- installation costs;
- reengineering costs, if the locomotive must be modified for the new engine to fit; and
- other costs directly related to the project, including the purchase and installation of a global positioning system.

Retrofit or Add-on of Emissions-Reduction Technology

This category is for the retrofit of an existing engine on a locomotive, or for adding devices onto the locomotive.

To be eligible for funding, the retrofit or add-on systems must be verified to reduce the NO_x produced by the engine by 25% or more, compared with the engine prior to the retrofit or add-on. "Certification" means approval by the EPA or the CARB, or acceptance on other grounds by the TCEQ.

The TCEQ will reimburse the incremental cost of the purchase and installation of the retrofit or add-on technology subject to cost-effectiveness limits established by the TCEQ. If the engine is to be rebuilt to install the emissions-reduction devices, the incremental cost is the difference between the cost of rebuilding the existing engine and the cost of rebuilding the engine to include the retrofit or add-on technology. If the engine does not need to be rebuilt in conjunction with installing the new technology, then the incremental cost is the full cost of purchasing and installing the technology. The TCEQ may further limit the incentive amount to a lower percentage of the eligible costs as needed to best achieve the goals of the TERP.

Expenses for salaries, travel, and overhead, including indirect costs, will not be covered. Costs that may be reimbursed, subject to approval by the TCEQ, include:

- the invoice cost of the retrofit kit or add-on devices, including sales tax and delivery charges;
- the cost of associated supplies directly related to the installation of the devices;
- installation costs;
- reengineering costs, if the vehicle or equipment must be modified for the retrofit or add-on devices to be installed and used; and
- other costs directly related to the project, including the purchase and installation of a global positioning system.

Project Criteria

In addition to the eligibility criteria previously presented, the following list of criteria applies to projects involving locomotives. The TCEQ may impose additional criteria, and may more narrowly define the criteria established in this guide, during a particular funding period or by geographic area, as needed to best achieve the objectives of the TERP.

- One or more eligible **activities** of the same project type (i.e., on-road, non-road, locomotive, etc.) and that will occur in the same primary area may be included under one project application.
- The applicant must own the locomotive being replaced, repowered, or retrofitted.
- Locomotives used primarily for competition or recreation are not eligible for funding.
- An activity must reduce NO_x emissions compared to baseline emissions. The NO_x emissions of locomotives, engines, and retrofit or add-on devices used to achieve the emissions reductions must be certified or verified by the EPA or the CARB, or otherwise accepted by the TCEQ. In situations where the model year of the locomotive and the model year of the existing engine are different—such as a locomotive that has already had the engine replaced with a newer engine—the model year of the engine must be used to determine the baseline emissions standard for emissions-reduction calculations. The 25% reduction criterion for each type of activity is explained below.

  Purchases and leases are allowed based on what year the purchase or lease is completed. At a minimum, the locomotive and engine being purchased or leased must be certified to emit at least 25% less NO_x (that is, no more than 75% as much NO_x) compared with the current federal NO_x emissions standard for that locomotive.

  Replacements. The replacement locomotive and engine or engines must have been certified to emit at least 25% less NO_x than the locomotive being replaced.

  Repowers. The replacement engine must be certified to emit at least 25% less NO_x than the engine being replaced.

Retrofits and add-ons. Emissions standards for retrofit and add-on activities are based on the engine being retrofitted. If an applicant wants to retrofit or add on a device, the technology must be verified to emit at least 25% less NO_x than the federal standard for the engine being retrofitted.

Combined technologies. Where two technologies (for example, repower plus retrofit) are combined on the same locomotive, engine, or both, the TCEQ may consider the combined reductions from the two technologies in meeting the 25% requirement. This decision will be solely at the discretion of the TCEQ, and will be based on its determination that the combination of the two technologies will permanently reduce emissions by at least 25%.

- The cost-effectiveness of a project, other than a demonstration project, must not exceed any limits established by the TCEQ on the cost per ton of NO_x emissions reduced in the eligible counties for which the project is proposed. Individual activities included under a single project application may exceed that amount, but the combined project must meet the cost-effectiveness standard.
- An activity is not eligible if it is required by any state or federal law, rule, regulation, memorandum of agreement, or other legally binding document. However, this restriction does not apply to an otherwise qualified activity—regardless of the State Implementation Plan's assumption that the change in equipment, vehicles, or operations will occur—if, on the date the grant is awarded, the change is not yet required by any state or federal law, rule, regulation, memorandum of agreement, or other legally binding document. This restriction also does not apply to a purchase of vehicles or equipment that is required only by local law or regulation, or by controlling-board policy of a public or private entity. Projects used to demonstrate a technology that may be used to comply with an emissions-reduction requirement may be funded, as long as the reductions directly attributable to the project are not used to comply with those requirements.
- Activities for the repower or retrofit of an existing engine that must meet a more stringent emissions standard under state or federal regulations at the time of engine replacement, overhaul, or remanufacture may also be eligible if the requirement does not include a deadline or specific time period for the upgrade. The more stringent emissions standard will be used as the baseline rate in the calculation to determine the emissions reductions and whether the activity will result in at least a 25% reduction in NO_x.
- In the areas of the state where Texas Low Emission Diesel (TxLED) is required, the baseline and reduced-emissions-rate calculations for diesel-engine usage after September 2005 must be adjusted using a correction factor, in addition to any other calculation adjustments.
- An activity involving a new emissions-reduction measure that would otherwise generate marketable credits under state or federal emissions-reduction credit averaging, banking, or trading programs is not eligible for funding under this program unless:

  - the activity includes the transfer of the reductions that would otherwise be marketable credits to the State Implementation Plan or the owner or operator, as provided under Texas Health and Safety Code 386.056; and
  - the reductions are permanently retired.
- The incremental cost of the proposed activity must be reduced by the value of any existing financial incentive that directly reduces the cost of the proposed activity, including tax credits or deductions, other grants, or any other public financial assistance.
- For repower activities, eligible rebuilt or remanufactured engines must use only components from the original engine manufacturer components only and be purchased from the OEM or its authorized dealers and distributors. However, the TCEQ may accept engines from suppliers not connected with the OEM, subject to a case-by-case determination.
- For all activities, the activity life must be for a minimum of five years. The TCEQ may establish longer activity-life requirements for each grant period. Not less than 75% of the annual usage of the locomotive must take place in one or more of the eligible counties throughout the life of the project. Leases that do not include a binding commitment to purchase must be for the length of the activity life.
- Annual use normally should be measured using fuel consumption.

Figure A4.1
Correction Factor for TxLED

The TCEQ adopted rules (30 TAC 114.312–19) requiring that diesel fuel sold or supplied for use in compression-ignition engines in certain counties in Texas must meet low-emission-diesel standards.

The counties affected by the TxLED requirements currently include all those eligible for TERP incentive funding, as listed in Table 3.1, except for El Paso County.

The requirements set a maximum for content of aromatic hydrocarbons of 10% by volume. The requirements also set a minimum cetane number for TxLED of 48.

The TxLED requirements are intended to result in reductions in NO_x emissions from diesel engines. Currently, reduction factors of **5.7%** (0.057) for on-road use and **7.0%** (0.07) for non-road use have been accepted as estimates for use of TxLED. However, these estimates are subject to change, based on the standards accepted by the EPA for use in the Texas State Implementation Plan. The TCEQ will identify the appropriate reduction factors to use in the technical supplement prepared to support these guidelines.

For activities in the applicable counties, a correction factor will need to be applied when calculating the baseline or reduced emissions for diesel engines.

On-road:
TxLED correction factor = 1 – 0.057 = ***0.943***

Non-road:
TxLED correction factor = 1 – 0.070 = ***0.93***

- Applicants should refer to the technical supplement to these guidelines for the maximum acceptable life established by the TCEQ for each type of activity.
- Applicants must agree to monitor the use of grant-funded vehicles, equipment, infrastructure, and fuel, and to report to the TCEQ for the life of each grant-funded activity.
- Applicants must also agree to notify the TCEQ of any changes during the life of the following activities: termination of use; change in use; sale, transfer, or accidental or intentional destruction of grant-funded vehicles or equipment; or change in use of the qualifying fuel.
- Administrative costs and other internal costs of the grant recipient—including but not limited to personnel expenses, internal salaries, indirect costs, and travel—are not eligible. This restriction also applies when the grant recipient delivers the grant-funded vehicle or equipment before or after accepting it.
- Consultant fees for the preparation of a grant application, either directly or as an addition to the cost basis of the grant-funded vehicle, equipment, or engine, are not eligible.
- Fees for a third-party consultant hired by the grant recipient to manage and administer the grant-funded activities, including coordination of the work and submission of reports and paperwork to the TCEQ for the grant recipient, are not eligible. This restriction is not intended to limit the ability of the vehicle or equipment supplier or installer to include reasonable and necessary costs for managing the work to be performed in the price of the vehicle, equipment, or installation. The costs for professional services, including engineering and technical work, required for completion of the activity may be included, subject to the restrictions pertaining to that type of project. Per the Uniform Grant Management Standards, the "cost plus a percentage of cost" method of contracting for professional services must not be used.
- The TCEQ may impose additional criteria for certain projects and funding periods, consistent with these guidelines.

NO_x Emissions Factors

The EPA adopted emissions standards for locomotives in December 1997, which took effect in 2000. Federal standards apply to locomotives originally manufactured in 1973 and later, and apply any time they are rebuilt or remanufactured. Not regulated are electric locomotives, historic steam-powered locomotives, and locomotives originally manufactured before 1973.

The baseline NO_x emissions factors for this program are the federal standards for NO_x emissions applicable to the type of locomotive and model year. The federal NO_x emissions standards for locomotives are listed in a technical supplement to these guidelines. Potential grant applicants should consult with the TCEQ to ensure they use the appropriate baseline standards.

The NO_x emissions factor for the reduced-emission engines will normally be the federal NO_x emissions standard or the Family Emissions Limit to which the reduced-emission engine is certified. For retrofit and add-on activities verified by the EPA or the CARB to reduce NO_x emissions by a specified percentage, the verified percentage will be applied to the baseline emissions factor to determine the emissions factor for the retrofitted engine.

Calculating Reductions in NO_x Emissions

In general, the emissions-reduction benefit represents the difference in the emissions level of a baseline engine and a reduced-emissions engine. Where the model year of the locomotive 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. Because conversion factors and activity levels may be expressed in different units for the existing and replacement engines, the emissions levels for the baseline and reduced-emissions engines should be calculated separately and then differences taken to determine emissions reductions.

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 locomotive applications, the activity level should be based on annual fuel consumption. Emissions-reduction calculations should be consistent with the type of records maintained over the life of each activity.

Calculation of NO_x-Emissions Reductions Based on Annual Fuel Use

If the annual fuel consumption is used, the activity level should be based on actual annual fuel receipts or other available documentation to estimate the expected annual fuel use of the equipment. An energy-consumption factor will also need to be calculated. This factor converts the emissions factor in terms of g/bhp-hr to g/gal of fuel used. There are two ways of calculating the energy-consumption factor:

1. by dividing the hp of the engine by the fuel economy in gal/hr, or
2. by dividing the density of the fuel by the brake-specific fuel consumption of the baseline engine.

Check with your equipment dealer to confirm the fuel economy or fuel consumption of the equipment for the type of application.

For most locomotive applications a default fuel-consumption factor of 20.8 bhp-hr/gal should be used. The technical supplement to these guidelines will include the appropriate emissions factors, as well as any alternative fuel-consumption factors.

In general, the calculation of emissions reductions should be based on the same amount of fuel for the baseline and the reduced-emission locomotive or engine. However, the TCEQ may accept, at its discretion, fuel-economy benefits of the new or repowered locomotive engine over the baseline unit when calculating emissions reductions. In general, fuel savings may result from idle-reduction systems that come with the new or repowered locomotive as well as from the enhanced fuel economy of the new engine.

To request the use of this approach, the application must list the percentage reduction in fuel use expected through use of the reduced-emission locomotive when compared to the baseline. For replacement activities, the application should also list the historical average annual fuel use of the old locomotive (the baseline) and commit to an annual fuel use for the new or repowered locomotive.

The TCEQ may consider a fuel-economy benefit based on independent studies and test data. Documentation must accompany the application to justify the reduced fuel amount. The TCEQ will evaluate the documentation to determine the level of fuel savings that it may accept.

Regardless of the baseline fuel-use amount listed in the application, the TCEQ will apply a fuel-economy factor to the fuel-use commitment listed for the reduced-emission locomotive and engine. For instance, if the TCEQ agrees that the reduced-emission locomotive fuel use will be 30% less than the baseline locomotive fuel use for the same amount of work, then the baseline fuel use for the calculation will be the fuel-use commitment times 1.43 (1/0.70). If the historical annual fuel use listed in the application is less than the number derived by applying the fuel economy factor, then that lower baseline number will be used.

The applicant must commit to realistic fuel use for the work expected from the reduced-emission locomotive. If a grant is awarded, the recipient is obligated to use at least that amount of fuel annually in order to meet the grant usage requirements over the activity life.

The calculation of reductions in NO_x emissions using annual fuel use is outlined in Table A4.1. Applicants should consult with the TCEQ for the appropriate calculations for projects involving non-diesel engines.

Calculating Cost-Effectiveness

Only the amount of incentive funds requested under the program can be used in calculating cost-effectiveness. The incremental costs for each activity must be reduced by the value of any existing financial incentive that directly reduces the cost

of the proposed activity, including tax credits or deductions, other grants, or any other public financial assistance.

To determine the cost-effectiveness of an activity, the incentive amount for the activity—with the exception of qualifying fuel activities—included in the project must be amortized over the activity life designated by the applicant, at a discount rate of 3%.

The following amortization formula yields a *capital-recovery factor* (CRF).

$$\text{capital-recovery factor} = [(1 + i)^n (i)] / [(1 + i)^n - 1]$$

where i = discount rate (3%)
n = activity life

The discount rate of 3% reflects the opportunity cost of public funds—the level of earning that reasonably could be expected by investing state funds in various financial instruments, such as U.S. Treasury securities.

Table A4.1
Calculating Reductions in NO_x Emissions Based on Annual Fuel Use

Applying the TxLED Correction Factor

The counties affected by the TxLED requirements currently include all those eligible for TERP incentive funding, as listed in Table 3.1, except for El Paso County.	
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

Baseline		Reduced Emissions	
NO_x emissions factor (g/bhp-hr)		NO_x emissions factor (g/bhp-hr)	
× TxLED correction factor (*diesel engines only*)		× TxLED correction factor (*diesel engines only*)	
= corrected NO_x emissions factor (g/bhp-hr)		= corrected NO_x emissions factor (g/bhp-hr)	
× energy-consumption factor (hp-hr/gal)		× energy-consumption factor (hp-hr/gal)	
× annual fuel consumption (gal/yr)		× annual fuel consumption (gal/yr)	
= g/yr		= g/yr	
Baseline g/yr – reduced emissions g/yr =			
× percent within eligible counties (%)			
= g/yr			
		÷ 907,200 grams per ton	
= estimated annual NO_x-emissions reduction (tons/yr)			
× activity life (years)			
= estimated activity-life NO_x emissions reduction (tons)			

The incentive amount should be multiplied by the incremental cost or incentive amount requested to determine the annualized cost.

incremental cost × *CRF* = *annualized cost*

The cost-effectiveness calculations appear in Table A4.2. For use in the calculations, capital-recovery factors for up to 20 years appear in Table A4.3.

For projects that include more than one activity, the total project incentive amount must be used to determine the cost-effectiveness of the project. The applicant may request an incentive amount that is less than the full incremental costs, in order to meet the cost-effectiveness criteria.

To determine the cost-effectiveness: First sum all of the annualized costs for the activities included in the project. Also sum the annual emissions reductions from each activity to determine an annual emissions reduction for the project. Then divide the combined annualized costs for all activities included in the project application by the total annual NO_x emissions reductions for the combined project activities.

total annualized costs / total annual NO_x reductions = project cost-effectiveness

Table A4.2
Calculating Cost-Effectiveness

Step 1. Determine the capital-recovery factor (CRF)	
CRF = $[(1 + i)^n (i)] / [(1 + i)^n - 1]$ i = discount rate (.03) n = activity life	
Capital-recovery factor:	
Step 2. Determine the annualized cost	
Incentive amount × CRF = annualized cost	
Annualized cost ($/year):	
Step 3. Determine cost-effectiveness	
Annualized cost ($/year) / annual NO_x-emissions reduction (tons/year) = cost-effectiveness ($/ton)	
Cost-effectiveness ($/ton):	$

Table A4.3
Capital-Recovery Factors Using a Discount Rate of 0.03

Activity Life	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CRF	1.00	.5226	.3535	.2690	.2184	.1846	.1605	.1425	.1284	.1172
Activity Life	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
CRF	.1081	.1005	.0940	.0885	.0838	.0796	.0760	.0727	.0698	.0672

Appendix 5
Stationary Equipment

This appendix outlines the criteria for project eligibility and gives the methods for calculating the reductions in NO_x emissions for a project involving stationary equipment. Most of the calculations will require input of an NO_x emissions factor applicable to the engine. The emissions standards and factors applicable to this program are included in a technical supplement, which will be made available in conjunction with these guidelines at the TERP website, <www.terpgrants.org>. Examples of the calculations will also be available in the supplement, along with other materials prepared by the TCEQ. Potential grant applicants may also contact the TCEQ for hard copies of the supplement and for answers to questions about the applicable emissions standards and factors.

In accordance with Texas Health and Safety Code 386.104(j) and TERP program rules, 30 TAC 114.622(g), the executive director has the authority to waive certain eligibility requirements, based on a finding of good cause. Situations where good cause may be determined and a waiver granted are explained in the discussion of eligibility requirements in this appendix.

The executive director may identify other eligibility criteria for which a waiver may be considered, based on a finding of good cause and subject to the statutory and regulatory requirements. Waiver options will be explained in the grant-application materials.

The granting of a waiver to the eligibility requirements is at the discretion of the executive director or the executive director's designee. In determining good cause and deciding whether to grant a waiver, the executive director shall ensure that the emissions reductions that will be attributable to the project will still be valid and, where applicable, meet the conditions for assignment for credit to the State Implementation Plan.

Eligible Activities and Costs

The eligible activities and costs under each project category are explained in this section. The TCEQ may further limit the types of eligible activities, and may more narrowly define eligibility requirements, under a particular funding round or by geographic area, as needed to best achieve the goals of the TERP. Administrative costs, in-house labor costs, and travel costs are not eligible expenses.

Purchase or Lease of Stationary Equipment

This category is for the purchase or lease of new stationary equipment. For this category, the TCEQ does not consider whether the applicant is replacing an existing piece of equipment, and the baseline for comparison of emissions is the current NO_x emissions standard for an engine of that horsepower. The baseline equipment used for determining the difference in cost must be **new**.

To be eligible for funding, the engine on the new piece of equipment must be certified to emit at least 25% less NO_x than required (that is, no more than 75% of the NO_x allowable) under the current standard for an engine of that horsepower. "Certification" means approval by the EPA or the California Air Resources Board (CARB), or acceptance on other grounds by the TCEQ.

A *lease* is defined as the use and control of a new piece of equipment in accordance with a lease contract for five or more years. The TCEQ will reimburse the incremental costs of the lease—costs above those that would otherwise have been incurred for the lease of a baseline piece of stationary equipment.

The TCEQ will reimburse the incremental cost of the purchase of a new piece of equipment subject to cost-effectiveness limits established by the TCEQ. The incremental cost is the difference between the documented dealer price of a baseline piece of equipment or other appropriate baseline cost established by the TCEQ and the actual cost of the cleaner equipment.

Replacement of Stationary Equipment

This category is for the replacement of stationary equipment with a new or newer piece of equipment. For this category, the applicant must be replacing a piece of equipment with a minimum of five years of remaining useful life. However, the TCEQ may establish longer activity-life requirements for each grant period. The baseline for comparison of emissions is the difference between the emissions of the equipment being replaced and those of the equipment being purchased.

For a replacement project, the TCEQ will evaluate whether the equipment being replaced would otherwise have been used in the eligible counties for the period within which the emissions reductions will be claimed. Standards that apply include **all** of the following:

1. The owner must have continuously owned the equipment for a minimum of two years immediately preceding the grant application date.
2. Unless otherwise approved by the TCEQ, the equipment must have been continuously located and used in Texas over the preceding two years.
3. The equipment must be in good operating condition and capable of performing its primary function.

The TCEQ may waive the two-year ownership requirement, case by case, where the ownership of the company has changed, the assets of the company have been purchased by another company, or the company has changed its name or incorporation status. The use of the equipment being replaced must not have changed.

The TCEQ may waive the requirement for two years of continuous use for short lapses in operation attributable to economic conditions, seasonal work, or other circumstances, based on a finding of good cause. The historical usage described by the applicant on the grant-application forms must reflect the lapses in use of the equipment in those activities.

In order for a replacement activity to result in creditable emissions reductions, the applicant must intend to continue to use the equipment being replaced for the same type of use and amount of use over the same period as the activity life, absent the award of a grant. The TCEQ may require additional assurances, certifications, and documentation to verify that the applicant would continue to use the equipment being replaced if the grant is not awarded.

For replacement projects, the emissions reductions are based on replacement of the future use of the original vehicle or equipment with the use of the reduced-emission vehicle or equipment. The estimated future use of the original vehicle or equipment is determined from the recent historical use. Except when a default usage amount is used for the emissions reduction calculations, the activity level used for the emissions reduction calculations and the corresponding usage commitment for a replacement project may not exceed the average annual use of the vehicle or equipment being replaced for the two years preceding the application.

The engine on the replacement equipment must be certified to emit at least 25% less NO_x (that is, no more than 75% as much NO_x) compared with the engine being replaced. “Certification” means approval by the EPA or the CARB, or acceptance on other grounds by the TCEQ.

The replacement equipment must be of the same type and horsepower and be intended for use in the same application or vocation (for example, well pump or generator) as the equipment being replaced. The TCEQ may accept, based on the particular case, equipment of a different type to account for the latest technology used for a specific vocation. In addition, the TCEQ may accept, case by case, the replacement of a multi-engine piece of equipment with a single-engine piece of equipment, or vice versa, as long as the new piece of equipment will have the same use as the piece of equipment being replaced and the emissions reductions can be adequately determined.

The year of manufacture of the engine installed on the replacement equipment may not be more than three years prior to the current calendar year, unless an alternative age limit is established by the TCEQ for a particular grant round. The TCEQ may also waive the age-limit requirements, case by case, where the equipment has a unique or

specialized use and where a model with a recently manufactured engine is not available.

The grant recipient may be eligible for reimbursement of up to 80% of the eligible costs for the purchase or lease of the replacement equipment, subject to cost-effectiveness limits established by the TCEQ. The TCEQ may further limit the incentive amount to a lower percentage of the eligible costs, as needed to best achieve the goals of the TERP.

Costs may include the invoice price, including taxes and delivery charges included in the price of the replacement equipment, or the cash basis for the lease charges. Delivery charges from a third party, not included in the invoice price from the vehicle or equipment vendor, may be included, subject to approval by the TCEQ.

The total incentive amount must also not exceed 80% of the cost of the replacement equipment, minus the scrappage value received for the old equipment. The TCEQ may establish a default scrappage value.

Repower of Stationary Equipment

This category is for the replacement of an existing engine on a piece of stationary equipment with a new, rebuilt, or remanufactured engine, or one or more electric motors, drives, or fuel cells. The upgrade of an engine with an emissions upgrade kit certified by the EPA or CARB may also be considered under the repower category.

The engine must be certified to emit at least 25% less NO_x (that is, no more than 75% as much NO_x) compared with the engine being replaced, based on the federal standard for that engine. "Certification" means approval by the EPA or the CARB, or acceptance on other grounds by the TCEQ.

The TCEQ may also consider the conversion of a currently installed engine to operate on a different fuel or to install an emissions-upgrade kit under the repower category.

Eligible rebuilt or remanufactured engines must use only components from the original engine manufacturer and be purchased from the OEM or its authorized dealers and distributors. However, the TCEQ may accept engines from suppliers not connected with the OEM, subject to a case-by-case determination.

The grant recipient may be eligible for reimbursement of up to 80% of the incremental cost of the repower subject to cost-effectiveness limits established by the TCEQ. The TCEQ may further limit the incentive amount to a lower percentage of the eligible costs as needed to best achieve the goals of the TERP.

The incremental cost for an engine replacement is the cost to purchase and install the replacement engine and associated equipment, minus the scrappage value received for the old engine. The TCEQ may establish a default scrappage value. The TCEQ may further limit the incentive amount to a lower percentage of the eligible costs as needed to best achieve the goals of the TERP.

For engine conversions and emissions upgrade kits certified by the EPA or CARB, the incremental cost is the cost to purchase and install the conversion system or kit, including the new fuel system, if applicable. Other upgrades or modifications to the engine or vehicle that are not necessary for the conversion or upgrade of the engine are not eligible.

Expenses for salaries, travel, and overhead, including indirect costs, are not covered. Costs that may be reimbursed, subject to approval by the TCEQ, include:

- the invoice cost of the new engine, including sales tax and delivery charges;
- the invoice cost of additional equipment that must be installed with the new engine;
- the cost of associated supplies directly related to the installation of the engine;
- costs to remove and dispose of the old engine, if applicable;
- installation costs;
- reengineering costs, if the vehicle or equipment must be modified for the new engine to fit; and
- other costs directly related to the project.

Retrofit or Add-on of Emissions-Reduction Technology

This category is for the retrofit of an existing engine on a stationary piece of equipment, or for adding devices onto the equipment.

To be eligible for funding, the retrofit or add-on systems must be verified to emit at least 25% less NO_x (that is, no more than 75% as much NO_x) compared with the engine prior to the retrofit or add-on. "Verification" means approval by the EPA or the CARB, or acceptance on other grounds by the TCEQ.

The TCEQ will reimburse the incremental cost of the purchase and installation of the retrofit or add-on technology subject to cost-effectiveness limits established by the TCEQ. If the engine is to be rebuilt to install the emissions- reduction devices, the incremental cost is the difference between the cost of rebuilding the existing engine and the cost of rebuilding the engine to include the retrofit or add-on technology. If the engine does not need to be rebuilt in conjunction with installing the new technology, then the incremental cost is the full cost of purchasing and installing the technology. The TCEQ may further limit the incentive amount to a lower percentage of the eligible costs as needed to best achieve the goals of the TERP.

Expenses for salaries, travel, and overhead, including indirect costs, will not be covered. Costs that may be reimbursed, subject to approval by the TCEQ, include:

- the invoice cost of the retrofit kit or add-on devices, including sales tax and delivery charges;
- the cost of associated supplies directly related to the installation of the devices;
- installation costs;

- reengineering costs, if the vehicle or equipment must be modified for the retrofit or add-on devices to be installed and used; and
- other costs directly related to the project.

Project Criteria

In addition to the eligibility criteria previously presented, the following list applies to projects involving stationary engines. The TCEQ may impose additional criteria, and may more narrowly define the criteria established in this guide, under a particular funding period, as needed to best achieve the goals of the TERP.

- One or more eligible activities of the same project type (i.e., on-road, non-road, locomotive, etc.) and that will occur in the same primary area may be included under one project application.
- The applicant must own the equipment being replaced, repowered, or retrofitted.
- Stationary equipment used primarily for competition or recreation, or used primarily to support those types of activities, is not eligible for funding.
- Stationary-equipment activities must reduce NO_x emissions at least 25% compared to baseline NO_x emissions. The NO_x emissions of equipment, engines, and retrofit or add-on devices used to achieve the emissions reductions must be certified or verified by the EPA orthe CARB, or otherwise accepted by the TCEQ. Where the model year of the equipment and the model year of the existing engine are different—such as equipment that has already had the engine replaced with a newer engine—the model year of the engine must be used to determine the baseline emissions standard for emissions-reduction calculations. The application of the 25% reduction criterion for each type of activity is explained as follows.

  Purchases and leases are allowed based on what year the purchase or lease is completed. At a minimum, the equipment and engine being purchased or leased must be certified to emit at least 25% less NO_x (that is, no more than 75% as much NO_x) compared with the current standard for that engine.

  Replacements. The replacement equipment and engine must have been certified to emit at least 25% less NO_x than the standard for the engine installed on the equipment being replaced.

  Repowers. The replacement engine must be certified to emit at least 25% less NO_x than the engine being replaced, based on the standard for that engine.

  Retrofits and add-ons. Emissions standards for retrofit and add-on activities are based on the engine being retrofitted. If an applicant wants to retrofit or add on a device, the technology must be verified to emit at least 25% less NO_x than the standard for the engine being retrofitted.

  Combined technologies. Where two technologies (for example, repower plus retrofit) are combined on the same equipment, engine, or both, the TCEQ may consider the combined reductions from the two technologies in meeting the 25% requirement. This decision will be solely at the discretion of the

TCEQ, and will be based on a determination that the combination of the two technologies will permanently reduce emissions by at least 25%.

- In the areas of the state where TxLED is required, the baseline and reduced-emissions-rate calculations for diesel-engine use after September 2005 must be adjusted using a correction factor, in addition to any other calculation adjustments.
- The cost-effectiveness of a project, other than a demonstration project, must not exceed any limits established by the TCEQ on the cost per ton of NO_x emissions reduced in the eligible counties for which the project is proposed.

  An activity is not eligible if it is required by any state or federal law, rule, regulation, memorandum of agreement, or other legally binding document. However, this restriction does not apply to an otherwise qualified activity—regardless of the State Implementation Plan's assumption that the change in equipment, vehicles, or operations will occur—if, on the date the grant is awarded, the change is not yet required by any state or federal law, rule, regulation, memorandum of agreement, or other legally binding document. This restriction also does not apply to a purchase of vehicles or equipment that is required only by local law or regulation or by controlling-board policy of a public or private entity. Projects used to demonstrate a technology that may be used to comply with an emissions-reduction requirement may be funded, as long as the reductions directly attributable to the project are not used to comply with those requirements.

Figure A5.1
Correction Factor for TxLED

The TCEQ adopted rules (30 TAC 114.312–19) requiring that diesel fuel sold or supplied for use in compression-ignition engines in certain counties in Texas must meet low-emission-diesel standards.

The counties affected by the TxLED requirements currently include all those eligible for TERP incentive funding, as listed in Table 3.1, except for El Paso County.

The requirements set a maximum for content of aromatic hydrocarbons of 10% by volume. The requirements also set a minimum cetane number for TxLED of 48.

The TxLED requirements are intended to result in reductions in NO_x emissions from diesel engines. Currently, reduction factors of **5.7%** (0.057) for on-road use and **7.0%** (0.07) for non-road use have been accepted as estimates for use of TxLED. However, these estimates are subject to change, based on the standards accepted by the EPA for use in the Texas State Implementation Plan. The TCEQ will identify the appropriate reduction factors to use in the technical supplement prepared to support these guidelines.

For activities in the applicable counties, a correction factor will need to be applied when calculating the baseline or reduced emissions for diesel engines.

On-road:
TxLED correction factor = 1 – 0.057 = ***0.943***

Non-road:
TxLED correction factor = 1 – 0.070 = ***0.93***

- Activities for the repower or retrofit of an existing engine that must meet a more stringent emissions standard under state or federal regulations at the time of engine replacement, overhaul, or remanufacture may also be eligible if the requirement does not include a deadline or specific time period for the upgrade. The more stringent emissions standard will be used as the baseline emissions rate in the calculation to determine the emissions reductions and the determination that the activity will reduce NO_x at least 25%.
- An activity involving a new emissions-reduction measure that would otherwise generate marketable credits under state or federal programs for averaging, banking, or trading emissions-reduction credits is not eligible for funding under this program unless:
    - the activity includes the transfer of the reductions that would otherwise be marketable credits to the State Implementation Plan or the owner or operator as provided under Texas Health and Safety Code 386.056, and
    - the reductions are permanently retired.
- The incremental cost of the proposed activity must be reduced by the value of any existing financial incentive that directly reduces the cost of the proposed activity, including tax credits or deductions, other grants, or any other public financial assistance.
    - For repower activities, eligible rebuilt or remanufactured engines must use only components from the original engine manufacturer and be purchased from the OEM or its authorized dealers and distributors. However, the TCEQ may accept engines from suppliers not connected with the OEM, subject to a case-by-case determination.
- For all activities, the activity life must be a minimum of five years. The TCEQ may establish longer activity-life requirements for any grant period. Not less than 75% of the annual use of the equipment must take place in one or more of the eligible counties throughout the life of the project. Leases that do not include a binding commitment to purchase must be for the length of the activity life. Annual use will be measured by either hours of operation or fuel consumption.
- For most equipment, annual use normally will be measured using hours of operation. For equipment without an hour meter installed, and no viable mechanism for measuring the hours of operation, fuel consumption normally should be used as the usage factor.
- Applicants should refer to the technical supplement to these guidelines for the maximum acceptable activity life established by the TCEQ for each type of activity.
- Applicants must agree to monitor the use of grant-funded vehicles, equipment, infrastructure, and fuel, and to report to the TCEQ for the life of each grant-funded activity.
- Applicants must also agree to notify the TCEQ of any changes in the following during the activity life: termination of use; change in use, sale, transfer, or accidental or intentional destruction of grant-funded vehicles or equipment; or change in use of the qualifying fuel.

- Administrative costs and other internal costs of the grant recipient—including but not limited to personnel expenses, internal salaries, indirect costs, and travel—are not eligible. This restriction also applies to situations where the grant recipient acts as a transporter for delivery of the grant-funded vehicle or equipment before or after accepting it.
- Consultant fees for the preparation of a grant application, either directly or as an addition to the cost basis of the grant-funded vehicle, equipment, or engine, are not eligible.
- Fees for a third-party consultant hired by the grant recipient to manage and administer the grant-funded activities, including coordination of the work and submission of reports and paperwork to the TCEQ for the grant recipient, are not eligible. This restriction is not intended to limit the ability of the vehicle or equipment supplier or installer to include reasonable and necessary costs for managing the work to be performed in the price of the vehicle, equipment, or installation. The costs for professional services, including engineering and technical work, required for completion of the activity may be included, subject to the restrictions pertaining to that type of project. Per the Uniform Grant Management Standards, the "cost plus a percentage of cost" method of contracting for professional services must not be used.
- The TCEQ may impose additional criteria for certain projects and funding periods, consistent with these guidelines.

NO_x Emissions Factors

The baseline NO_x emissions factors for this program normally should be the federal standards for NO_x emissions applicable to the type of engine involved. For most agricultural irrigation-pump activities, the standards applicable to non-road engines will apply. The federal NO_x emissions standards for non-road diesel engines are listed in a technical supplement available from the TCEQ. For gas turbine engines and alternative-fuel engines the emission standards and applicable baseline factors may not be listed in the technical supplement, and may need to be determined case by case. Potential grant applicants should consult with the TCEQ to ensure that they use the appropriate baseline standards.

The NO_x emissions factor for the reduced-emission engines will normally be the federal NO_x emissions standard or the Family Emissions Limit to which the reduced-emission engine is certified. For retrofit and add-on activities verified by the EPA or the CARB to reduce NO_x emissions by a specified percentage, the verified percentage will be applied to the baseline emissions factor to determine the emissions factor for the retrofitted engine.

Calculating Reductions in NO_x Emissions

In general, the emissions-reduction benefit represents the difference in the emissions level 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. Because conversion factors and activity levels may be expressed in different units for the existing and replacement engines, the emissions levels for the baseline and reduced-emissions engines should be calculated separately, and then differences taken to determine emissions reductions.

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 stationary-engine applications, the activity level should be established by the annual hours of operation. For equipment without an hour meter installed, and no other mechanism to track hours of operation, the activity level should be determined based on annual fuel consumption. Emissions-reduction calculations should be consistent with the type of records maintained over the life of each activity.

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 shown in Table A5.1.

For diesel engines, appropriate baseline NO_x emissions factors and default load factors are included in a technical supplement to these guidelines. Potential applicants may need to contact the TCEQ for appropriate factors to use for gas turbine and alternative-fuel engines. Use the emissions factors associated with engine horsepower and model year. Use the load factor associated with the type of equipment. In general, grams per kilowatt-hour should be converted to grams per brake horsepower-hour for the calculations. Potential grant applicants should consult with the TCEQ to ensure they use the appropriate factors.

For retrofit and add-on activities, and other activities where the emissions reductions are based on a percentage reduction from the baseline, the verified percentage-reduction factor can be applied to the baseline emissions factor to determine the reduced NO_x emissions factor.

Alternatively, for activities where the emissions of the new or replacement engine are certified at a specific emissions level (in g/bhp-hr), such as purchases or repowers, use that emissions level as the emissions factor.

Table A5.1
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 those eligible for TERP incentive funding, as listed in Table 3.1, except for El Paso County.	
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

Baseline		Reduced Emissions	
NO_x emissions factor (g/bhp-hr)		NO_x emissions factor (g/bhp-hr)	
× TxLED correction factor (*diesel engines only*)		× TxLED correction factor (*diesel engines only*)	
= corrected NO_x emissions factor (g/bhp-hr)		= corrected NO_x emissions factor (g/bhp-hr)	
× load factor		× load factor	
× horsepower		× horsepower	
= g/hr		= g/hr	
Baseline g/hr – reduced emissions g/hr =			
× annual hours of operation			
× percent within eligible counties (%)			
= g/year			
		÷ 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 Fuel Use

If the annual fuel consumption is used, the activity level should be based on actual annual fuel receipts or other available documentation to estimate the expected annual fuel use of the equipment. An energy-consumption factor must also be calculated. This factor converts the emissions factor in g/bhp-hr to g/gal of fuel used. There are two ways of calculating the energy-consumption factor:

1. by dividing the hp of the engine by the fuel economy in gal/hr, or
2. by dividing the density of the fuel by the brake-specific fuel consumption of the baseline engine.

Check with your equipment dealer to confirm the fuel economy or fuel consumption of the equipment for the type of application.

The calculation of reductions in NO_x emissions based on annual fuel use is outlined in Table A5.2. Applicants should consult with the TCEQ for the appropriate calculations for projects involving non-diesel engines.

Calculating Cost-Effectiveness

Only the amount of incentive funds requested under the program will be used in calculating cost-effectiveness . The incremental costs for each activity must be reduced by the value of any existing financial incentive that directly reduces the cost of the proposed activity, including tax credits or deductions, other grants, or any other public financial assistance.

To determine the cost-effectiveness of an activity—with the exception of qualifying fuel activities—the incentive amount for the activity included in the project must be amortized over the activity life designated by the applicant, at a discount rate of 3%.

The following amortization formula yields a *capital-recovery factor* (CRF).

$$\text{capital-recovery factor} = [(1 + i)^n (i)] / [(1 + i)^n - 1]$$

where i = discount rate (3%)
n = activity life

Table A5.2
Calculating Reductions in NO_x Emissions Based on Annual Fuel Use

Applying the TxLED Correction Factor

The counties affected by the TxLED requirements currently include all those eligible for TERP incentive funding, as listed in Table 3.1, except for El Paso County.	
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

Baseline		Reduced Emissions	
NO_x emissions factor (g/bhp-hr)		NO_x emissions factor (g/bhp-hr)	
× TxLED correction factor *(diesel engines only)*		× TxLED correction factor *(diesel engines only)*	
= corrected NO_x emissions factor (g/bhp-hr)		= corrected NO_x emissions factor (g/bhp-hr)	
× energy-consumption factor (hp-hr/gal)		× energy-consumption factor (hp-hr/gal)	
× annual fuel consumption (gal/yr)		× annual fuel consumption (gal/yr)	
= g/yr		= g/yr	
Baseline g/yr – reduced emissions g/yr =			
× percent within eligible counties (%)			
= g/yr			
		÷ 907,200 grams per ton	
= estimated annual NO_x-emissions reduction (tons/yr)			
× activity life (years)			
= estimated activity-life NO_x emissions reduction (tons)			

The discount rate of 3% reflects the opportunity cost of public funds—the level of earning that reasonably could be expected by investing state funds in various financial instruments, such as U.S. Treasury securities.

The incentive amount should be multiplied by the incremental cost or incentive amount requested to determine the annualized cost.

$$\textit{incremental cost} \times \textit{CRF} = \textit{annualized cost}$$

The cost-effectiveness calculations appear in Table A5.3. Capital-recovery factors for up to 20 years appear in Table A5.4, for use in the calculations.

For projects that include more than one activity, the total project incentive amount is to be used to determine the cost-effectiveness of the project. The applicant may request an incentive amount that is less than the full incremental costs, in order to meet the cost-effectiveness criteria.

Table A5.3
Calculating Cost-Effectiveness

Step 1. Determine the capital-recovery factor (CRF)	
$CRF = [(1 + i)^n (i)] / [(1 + i)^n - 1]$ i = discount rate (.03) n = activity life	
Capital-recovery factor:	
Step 2. Determine the annualized cost	
Incentive amount × CRF = annualized cost	
Annualized cost ($/year):	
Step 3. Determine cost-effectiveness	
Annualized cost ($/year) / annual NO_x -missions reduction (tons/year) = cost-effectiveness ($/ton)	
Cost-effectiveness ($/ton):	$

Table A5.4
Capital-Recovery Factors Using a Discount Rate of 0.03

Activity Life	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CRF	1.00	.5226	.3535	.2690	.2184	.1846	.1605	.1425	.1284	.1172
Activity Life	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
CRF	.1081	.1005	.0940	.0885	.0838	.0796	.0760	.0727	.0698	.0672

To determine the cost-effectiveness: First sum all of the annualized costs for the activities included in the project. Also sum the annual emissions reductions from each activity to determine an annual emissions reduction for the project. Then divide the combined annualized costs for all activities included in the project application by the total annual reductions in NO_x emissions for the combined project activities.

total annualized costs / total annual NO_x reductions = project cost-effectiveness

Appendix 6
Refueling Infrastructure

This appendix outlines the criteria for project eligibility and gives the methods for calculating the reductions in NO_x emissions for a refueling infrastructure project. To estimate emissions reductions, the TCEQ will use applicant-supplied information on the type of vehicles and equipment using the fuel. The emissions reduction for the activity will be the difference in the emissions level in tons of NO_x expected to be produced by baseline vehicles and equipment, and the emissions level in tons of NO_x expected to be produced through the use of the qualifying fuel by the vehicles and equipment, within the eligible counties.

The emissions standards and factors applicable to this program are contained in a technical supplement which the TCEQ will make available in conjunction with these guidelines. Potential grant applicants should contact the TCEQ for copies of the supplement and for answers to questions about which emissions standards and factors to use.

In accordance with Texas Health and Safety Code 386.104(j) and TERP program rules, 30 TAC 114.622(g), the executive director or his or her designee has the authority to waive certain eligibility requirements, based on a finding of good cause. Situations where good cause may be determined and a waiver granted are explained in the discussion of eligibility requirements in this appendix or the appendix applicable to the type of vehicle or equipment activities used to show that emissions reductions will be achieved as a result of the infrastructure project.

The executive director may identify other eligibility criteria for which a waiver may be considered, based on a finding of good cause and subject to the statutory and regulatory requirements. Waiver options will be explained in the grant-application materials.

In determining good cause and deciding whether to grant a waiver, the executive director shall ensure that the emissions reductions that will be attributable to the project will still be valid and, where applicable, meet the conditions for assignment for credit to the State Implementation Plan.

Eligible Activities and Costs

The TCEQ may further limit the types of eligible activities beyond policies stated here, and may more narrowly define eligibility requirements, under a particular funding round or by geographic area, as needed to best achieve the objectives of the TERP.

The grant recipient may be eligible for reimbursement up to 50% of the total eligible costs for the purchase and installation of the infrastructure. However, expenses for

salaries, travel, land purchases, and overhead, including indirect costs, will not be covered. Costs that may be reimbursed by the TCEQ include:

- the invoice cost of the infrastructure equipment, including sales tax and delivery charges;
- the cost of associated supplies directly related to the installation of the infrastructure;
- installation costs;
- costs of design and engineering work directly necessary for the installation of the infrastructure; and
- reengineering and construction costs, if the existing site must be modified to allow for installation of the infrastructure.

All grant-funded infrastructure must be purchased, not leased.

Project Criteria

In addition to the eligibility criteria previously presented, the following list of criteria applies to projects involving non-road equipment activities. The TCEQ may impose additional criteria, and may more narrowly define the criteria established in the guide, during a particular funding period or by geographic area, as needed to best achieve the objectives of the TERP.

- One or more eligible activities of the same project type (i.e., on-road, non-road, locomotive, etc.) that will occur in the same primary area may be included under one project application.
- Infrastructure for fueling vehicles and equipment used primarily for competition or recreation is not eligible for funding.
- The infrastructure project must result in new, surplus emissions reductions that will then be available to the TCEQ for use in the State Implementation Plan. In general, the TCEQ will not accept as a new emissions reduction the conversion of a vehicle or equipment fleet that occurred earlier than 12 months before the grant application deadline.
- An activity is not eligible if it is required by any state or federal law, rule, regulation, memorandum of agreement, or other legally binding document. However, this restriction does not apply to an otherwise qualified activity—regardless of the State Implementation Plan's assumption that the change in equipment, vehicles, or operations will occur—if, on the date the grant is awarded, the change is not yet required by any state or federal law, rule, regulation, memorandum of agreement, or other legally binding document. This restriction also does not apply to a purchase of vehicles or equipment that is required only by local law or regulation, or by controlling-board policy of a public or private entity. Projects used to demonstrate a technology that may be used to comply with an emissions-reduction requirement may be funded, as long as the

reductions directly attributable to the project are not used to comply with those requirements.

- An activity involving a new emissions-reduction measure that would otherwise generate marketable credits under state or federal emissions reduction credit averaging, banking, or trading programs is not eligible for funding under this program unless:
  - the activity includes the transfer of the reductions that would otherwise be marketable credits to the State Implementation Plan or the owner or operator as provided under Texas Health and Safety Code 386.056, and
  - the reductions are permanently retired.
- The incremental cost of the proposed activity must be reduced by the value of any existing financial incentive that directly reduces the cost of the proposed activity, including tax credits or deductions, other grants, or any other public financial assistance.
- In the areas of the state where TxLED is required, the baseline and reduced-emissions-rate calculations for diesel-engine use after September 2005 must be adjusted using a correction factor, in addition to any other calculation adjustments.
- The cost-effectiveness of a project, other than a demonstration project, may not exceed any limits established by the TCEQ on the cost per ton of NO_x emissions reduced in the eligible counties for which the project is proposed.
- For all activities, the activity life must be at least five years. The TCEQ may establish longer activity-life requirements for each grant period. Not less than 75% of the annual usage of the qualifying fuel dispensed from the infrastructure must take place in one or more of the eligible counties throughout the life of the project. For infrastructure activities to fuel marine vessels, not less than 75% of the annual usage of the qualifying fuel dispensed from the infrastructure must take place in bays adjacent to one or more of the eligible counties, or in the Texas portion of the Gulf Intracoastal Waterway, throughout the life of the project.
- Annual usage normally should be measured using fuel consumption by the vehicles or equipment being fueled from the infrastructure. Therefore, a grant recipient must have a viable mechanism for tracking and reporting on the use of the fuel dispensed.
- The TCEQ will determine an acceptable activity life for infrastructure activities, case by case.
- Applicants must agree to monitor the use of grant-funded vehicles, equipment, infrastructure, and fuel, and to report to the TCEQ for the life of each grant-funded activity. If the grant recipient does not own or operate the vehicles or equipment to be fueled from the infrastructure, the recipient will need to explain, as a condition of the grant, what mechanism will be used to ensure that the vehicles and equipment are operated within the eligible counties for the specified time period.

Figure 6.1
Correction Factor for TxLED

The TCEQ adopted rules (30 TAC 114.312–19) requiring that diesel fuel sold or supplied for use in compression-ignition engines in certain counties in Texas must meet low-emission-diesel standards.

The counties affected by the TxLED requirements currently include all those eligible for TERP incentive funding, as listed in Table 3.1, except for El Paso County.

The requirements set a maximum for content of aromatic hydrocarbons of 10% by volume. The requirements also set a minimum cetane number for TxLED of 48.

The TxLED requirements are intended to result in reductions in NO_x emissions from diesel engines. Currently, reduction factors of **5.7%** (0.057) for on-road use and **7.0%** (0.07) for non-road use have been accepted as estimates for use of TxLED. However, these estimates are subject to change, based on the standards accepted by the EPA for use in the Texas State Implementation Plan. The TCEQ will identify the appropriate reduction factors to use in the technical supplement prepared to support these guidelines.

For activities in the applicable counties, a correction factor will need to be applied when calculating the baseline or reduced emissions for diesel engines.

On-road:
TxLED correction factor = 1 – 0.057 = ***0.943***

Non-road:
TxLED correction factor = 1 – 0.070 = ***0.93***

- Applicants must also agree to notify the TCEQ of any changes in the following during the activity life: termination of use; change in use, sale, transfer, or accidental or intentional destruction of grant-funded vehicles, equipment, or infrastructure; or change in use of the qualifying fuel.
- Administrative costs and other internal costs of the grant recipient, including but not limited to personnel expenses, internal salaries—indirect costs, and travel—are not eligible. This restriction also applies when the grant recipient delivers the grant-funded vehicle or equipment before or after accepting it.
- Consultant fees for the preparation of a grant application, either directly or as an addition to the cost basis of the grant-funded vehicle, equipment, or engine, are not eligible.
- Fees for a third-party consultant hired by the grant recipient to manage and administer the grant-funded activities, including coordination of the work and submission of reports and paperwork to the TCEQ for the grant recipient, are not eligible. This restriction is not intended to limit the ability of the vehicle or equipment supplier or installer to include reasonable and necessary costs for managing the work to be performed in the price of the vehicle, equipment, or installation. The costs for professional services, including engineering and technical work, required for completion of the activity may be included, subject to the restrictions pertaining to that type of project. Per the Uniform Grant

Management Standards, the "cost plus a percentage of cost" method of contracting for professional services must not be used.

- The TCEQ may impose additional criteria for certain projects and funding periods, consistent with these guidelines.

NO_x Emissions Factors

The baseline NO_x emissions factors for this program normally should be the federal standards for NO_x emissions applicable to the engines being provided the fuel from the infrastructure. The federal NO_x emissions standards for various categories of engines are listed in a technical supplement available from the TCEQ. Potential grant applicants should consult with the TCEQ to ensure they use the appropriate baseline standards.

Calculating Reductions in NO_x Emissions

In general, the emissions-reduction benefit represents the difference in the emissions level of a baseline engine and a reduced-emissions engine. For refueling-infrastructure activities, reductions in NO_x emissions should be calculated based on information regarding the type of vehicles and equipment using the fuel.

NO_x-emissions reductions may be claimed for a verified fuel or fuel additive, the purchase and use of alternative-fueled vehicles or equipment, or an upgrade or conversion of vehicles or equipment. The TCEQ may limit the types of eligible activities during a particular grant period.

Emissions reductions for the use of a fuel or fuel additive must be verified by the EPA or the California Air Resources Board (CARB), or otherwise accepted by the TCEQ, as achieving the claimed reductions when used in lieu of a baseline fuel or an additive mixed with a baseline fuel. The verified fuel or additive may only be used in vehicles and equipment owned or operated by the applicant.

In some cases, the TCEQ may accept a claim of reduced NO_x emissions based on the purchase and use of alternative-fueled vehicles or equipment certified at an NO_x emissions rate that is less than the federal standard for that engine. In general, the vehicles and equipment using the qualifying fuel should be owned or operated by the applicant. However, the TCEQ will consider situations where the fuel will be supplied to upgraded fleets owned or operated by another enterprise or authority. The TCEQ will require a letter of agreement with a third party indicating the willingness to use the qualifying fuel and report on its use.

For vehicle or fleet upgrades or conversions, a reduction in NO_x emissions must occur when compared to an equivalent baseline engine. The upgraded vehicle or equipment engines must be certified to a NO_x-emissions rate that is less than the standard for

that type of engine under the test cycle used. The reductions in NO_x emissions are based on the difference in the emissions rates. In general, the baseline for comparison for natural gas vehicles certified under the diesel cycle will be the diesel-engine standard applicable to that type of engine. Similarly, for propane-, natural gas–, and other-fueled vehicles and equipment certified under the Otto-cycle standard, the baseline for comparison will be the federal Otto-cycle standard applicable to that type of engine.

The TCEQ may also consider, at its discretion, reductions in NO_x through the replacement of conventionally powered vehicles or equipment with new or late-model vehicles powered by alternative fuels to be served by the refueling infrastructure. The emissions reductions under this approach will be based on the same methodology and requirements as apply to a replacement project involving the same type of vehicle or equipment. If the grant recipient does not own the vehicles or equipment being replaced, the recipient will be responsible for securing necessary agreements from the vehicle or equipment owner to destroy the vehicle or equipment being replaced and to use the replacement vehicle or equipment in the eligible counties for the percentage of annual usage and for the annual and total usage amounts required for the activity life.

Calculating Cost-Effectiveness

Only the amount of incentive funds requested under the program will be used in calculating cost-effectiveness. The incremental costs for each activity must be reduced by the value of any existing financial incentive that directly reduces the cost of the proposed activity, including tax credits or deductions, other grants, or any other public financial assistance.

To determine the cost-effectiveness of an activity—with the exception of qualifying fuel activities—the incentive amount for the activity included in the project must be amortized over the activity life designated by the applicant, at a discount rate of 3%.

The following amortization formula yields a *capital-recovery factor* (CRF).

$$\text{capital-recovery factor} = [(1 + i)^n (i)] / [(1 + i)^n - 1]$$

where i = discount rate (3%)
n = activity life

The discount rate of 3% reflects the opportunity cost of public funds—the level of earning that reasonably could be expected by investing state funds in various financial instruments, such as U.S. Treasury securities.

The incentive amount must be multiplied by the incremental cost or incentive amount requested to determine the annualized cost.

$$\textit{incremental cost} \times \textit{CRF} = \textit{annualized cost}$$

The cost-effectiveness calculations appear in Table A6.1. Capital-recovery factors for up to 20 years appear in Table A6.2, for use in the calculations.

For projects that include more than one activity, the total project incentive amount will be used to determine the cost-effectiveness of the project. The applicant may request an incentive amount that is less than the full incremental costs, in order to meet the cost-effectiveness criteria.

To determine the cost-effectiveness: First sum all of the annualized costs for the activities included in the project. Also sum the annual emissions reductions from each activity to determine an annual emissions reduction for the project. Then divide the combined annualized costs for all activities included in the project application by the total annual reductions in NO_x emissions for the combined project activities.

total annualized costs / total annual NO_x reductions = project cost-effectiveness

Table A6.1
Calculating Cost-Effectiveness

Step 1. Determine the capital-recovery factor (CRF)	
$CRF = [(1 + i)^n (i)] / [(1 + i)^n - 1]$ i = discount rate (.03) n = activity life	
Capital-recovery factor:	
Step 2. Determine the annualized cost	
Incentive amount × CRF = annualized cost	
Annualized cost ($/year):	
Step 3. Determine cost-effectiveness	
Annualized cost ($/year) / annual NO_x-emissions reduction (tons/year) = cost-effectiveness ($/ton)	
Cost-effectiveness ($/ton):	$

Table A6.2
Capital-Recovery Factors Using a Discount Rate of 0.03

Activity Life	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CRF	1.00	.5226	.3535	.2690	.2184	.1846	.1605	.1425	.1284	.1172
Activity Life	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
CRF	.1081	.1005	.0940	.0885	.0838	.0796	.0760	.0727	.0698	.0672

Appendix 7
On-Site Electrification and Idle-Reduction Infrastructure

This appendix outlines the criteria for project eligibility and gives the methods for calculating the reductions in NO_x emissions for an on-site electrification and idle-reduction infrastructure project. The emissions reductions will be estimated using applicant-supplied information on the types of vehicles and equipment being supplied the electricity or serviced by the idle-reduction infrastructure. The emissions reduction for the activity will be the difference in the emissions level in tons of NO_x expected to be produced by baseline vehicles and equipment, and the emissions level in tons of NO_x expected to be produced through the electrification or reduction in idling of the vehicles and equipment, within the eligible counties.

The emissions standards and emissions factors applicable to this program appear in a technical supplement, which will be made available in conjunction with these guidelines on the TERP website at <www.terpgrants.org>. Potential grant applicants should contact the TCEQ for copies of the supplement and for answers to questions about which emissions standards and factors to use.

In accordance with Texas Health and Safety Code 386.104(j) and TERP program rules, 30 TAC 114.622(g), the executive director or his or her designee has the authority to waive certain eligibility requirements, based on a finding of good cause. Situations where good cause may be determined and a waiver granted are explained in the discussion of eligibility requirements in this appendix or the appendix applicable to the type of vehicle or equipment activities used to show that emissions reductions will be achieved as a result of the infrastructure project.

The executive director may identify other eligibility criteria for which a waiver may be considered, based on a finding of good cause and subject to the statutory and regulatory requirements. Waiver options will be explained in the grant-application materials.

In determining good cause and deciding whether to grant a waiver, the executive director shall ensure that the emissions reductions that will be attributable to the project will still be valid and, where applicable, meet the conditions for assignment for credit to the State Implementation Plan.

Eligible Activities and Costs

An eligible activity may include the purchase and installation of on-site infrastructure —including auxiliary power units—designed to dispense electricity to motor vehicles,

on-road heavy-duty vehicles, non-road equipment, stationary equipment, locomotives, or marine vessels. The electricity may replace the power normally supplied by the engine while the vehicle or equipment is parked (idle reduction), or recharge electric vehicles or equipment being used in lieu of vehicles or equipment powered by an internal combustion engine. The applicant will need to show that the infrastructure is needed and will be used in an eligible county.

Subject to approval of the TCEQ, the on-site infrastructure may also include other services, in addition to supplying electricity, as part of an idle-reduction program. These other services may include air conditioning and heating, phone and cable TV access, and other hospitality services directly related to reducing vehicle idling.

In some cases, the TCEQ may also accept applications for infrastructure related to electrification of stationary equipment, in lieu of equipment powered by an internal combustion engine.

State agencies may apply for grants to fund the lease, purchase, or installation of idle-reduction technologies and facilities at rest areas and other public facilities on major highway routes in eligible areas, and on eligible water routes. The TCEQ may approve operating costs for initial setup and for ensuring proper operation of the infrastructure at these facilities. Idle-reduction facilities are encouraged at the state's ports and border crossings.

In some areas, idling operation of on-road vehicles may be limited by state regulations. Accordingly, the project emissions reductions used to determine the cost-effectiveness for infrastructure activities in an area with such a requirement may not include the replacement of idling hours of operation for on-road vehicles. Non-road equipment and other eligible uses of the electricity by on-road vehicles are not covered by this restriction.

The TCEQ may further limit the types of eligible activities, and may more narrowly define eligibility requirements, during a particular funding period or by geographic area, as needed to best achieve the objectives of the TERP.

Projects Other than Idle-Reduction Infrastructure Installed by Other State Agencies

For such projects, the grant recipient may be eligible for reimbursement up to 50% of the total eligible costs for the purchase and installation of the infrastructure. However, expenses for salaries, travel, land purchases, and overhead, including indirect costs, will not be covered. Costs that may be reimbursed by the TCEQ, subject to its approval, include:

- the invoice cost of the infrastructure equipment, including sales tax and delivery charges;
- the cost of associated supplies directly related to the installation of the infrastructure;

- installation costs;
- the costs of design and engineering work directly necessary for the installation of the infrastructure;
- reengineering and construction costs, if the existing site must be modified to allow for installation of the infrastructure; and
- other costs directly related to the project.

All grant-funded idle-reduction equipment and infrastructure must be purchased and not leased.

Idle-Reduction Infrastructure Installed by Other State Agencies at Rest Stops and Other Public Facilities

Up to the full cost of idle-reduction infrastructure installed at rest stops and other public facilities by another state agency may be eligible for funding under the grant. In addition, the cost of leasing or contracting for the infrastructure installation and start-up operation of the infrastructure may be included in the grant, subject to limitations on the length of time the funds are available under the grant contract.

Project Criteria

In addition to the eligibility criteria previously presented, the following list applies to projects involving electrification infrastructure. The TCEQ may impose additional criteria, and may more narrowly define the criteria established in this guide, during a particular funding period or by geographic area, as needed to best achieve the objectives of the TERP.

- One or more eligible activities of the same project type (i.e., on-road, non-road, locomotive, etc.) that will occur in the same primary area may be included under one project application.
- Infrastructure used to service vehicles and equipment used primarily for competition or recreation are not eligible for funding.
- The infrastructure project must result in new, surplus emissions reductions that will then be available to the TCEQ for assignment to the State Implementation Plan. In general, the TCEQ will not accept as a new emissions reduction the conversion of a vehicle or equipment fleet that occurred earlier than 12 months prior to the grant application deadline.
- In the areas of the state where TxLED is required, the baseline and reduced emissions-rate calculations for diesel engine usage after September 2005 must be adjusted using a correction factor, in addition to any other calculation adjustments.

Figure A7.1
Correction Factor for TxLED

The TCEQ adopted rules (30 TAC 114.312–19) requiring that diesel fuel sold or supplied for use in compression-ignition engines in certain counties in Texas must meet low-emission-diesel standards.

The counties affected by the TxLED requirements currently include all those eligible for TERP incentive funding, as listed in Table 3.1, except for El Paso County.

The requirements set a maximum for content of aromatic hydrocarbons of 10% by volume. The requirements also set a minimum cetane number for TxLED of 48.

The TxLED requirements are intended to result in reductions in NO_x emissions from diesel engines. Currently, reduction factors of **5.7%** (0.057) for on-road use and **7.0%** (0.07) for non-road use have been accepted as estimates for use of TxLED. However, these estimates are subject to change, based on the standards accepted by the EPA for use in the Texas State Implementation Plan. The TCEQ will identify the appropriate reduction factors to use in the technical supplement prepared to support these guidelines.

For activities in the applicable counties, a correction factor will need to be applied when calculating the baseline or reduced emissions for diesel engines.

On-road:
TxLED correction factor = 1 – 0.057 = ***0.943***

Non-road:
TxLED correction factor = 1 – 0.070 = ***0.93***

- The cost-effectiveness of a project, other than a demonstration project, may not exceed any limits established by the TCEQ on the cost per ton of NO_x emissions reduced in the eligible counties for which the project is proposed.
- An activity is not eligible if it is required by any state or federal law, rule, regulation, memorandum of agreement, or other legally binding document. However, this restriction does not apply to an otherwise qualified activity—regardless of the State Implementation Plan's assumption that the change in equipment, vehicles, or operations will occur—if, on the date the grant is awarded, the change is not yet required by any state or federal law, rule, regulation, memorandum of agreement, or other legally binding document. This restriction also does not apply to a purchase of vehicles or equipment that is required only by local law or regulation, or by controlling-board policy of a public or private enterprise or authority. Projects used to demonstrate a technology that may be used to comply with an emissions-reduction requirement may be funded, as long as the reductions directly attributable to the project are not used to comply with those requirements.
- An activity involving a new emissions-reduction measure that would otherwise generate marketable credits under state or federal emissions-reduction credit averaging, banking, or trading programs is not eligible for funding under this program unless:

  - the activity includes the transfer of the reductions that would otherwise be marketable credits to the State Implementation Plan or the owner or operator as provided under Texas Health and Safety Code 386.056; and
  - the reductions are permanently retired.
- The incremental cost of the proposed activity must be reduced by the value of any existing financial incentive that directly reduces the cost of the proposed activity, including tax credits or deductions, other grants, or any other public financial assistance.
- For infrastructure activities, the activity life must be a minimum of five years. The TCEQ will establish the required activity life for each grant period. Not less than 75% of the annual use of the electricity dispensed from the infrastructure—or the idling operation reduced—must take place in one or more of the eligible counties throughout the life of the project. For infrastructure activities involving marine vessels, not less than 75% of the annual use of the electricity dispensed from the infrastructure must take place in bays adjacent to one or more of the eligible counties, or in the Texas portion of the Gulf Intracoastal Waterway, throughout the life of the project.
- Annual use will normally be measured using hours of operation by the vehicles or equipment receiving the electricity from the infrastructure. Therefore, a grant recipient must have a viable mechanism for tracking and reporting on the use of those vehicles or that equipment.
- Applicants must agree to monitor the use of grant-funded vehicles, equipment, infrastructure, and fuel, and to report to the TCEQ for the life of each grant-funded activity. If the grant recipient does not own or operate the vehicles or equipment to receive electricity from the infrastructure, the recipient will need to explain, as a condition of the grant, what mechanism will be used to ensure that the vehicles and equipment are operated within the eligible counties for the specified time period.
- Applicants must also agree to notify the TCEQ of any changes in the following during the activity life: termination of use; change in use, sale, transfer, or accidental or intentional destruction of grant-funded vehicles, equipment, or infrastructure; or change in use of the qualifying fuel.
- Administrative costs and other internal costs of the grant recipient, including but not limited to personnel expenses, internal salaries—indirect costs, and travel—are not eligible. This restriction also applies when the grant recipient acts as a transportation provider for delivery of the grant-funded vehicle or equipment before or after accepting it.
- Consultant fees for the preparation of a grant application, either directly or as an addition to the cost basis of the grant-funded vehicle, equipment, or engine, are not eligible.
- Fees for a third-party consultant hired by the grant recipient to manage and administer the grant-funded activities, including coordination of the work and submission of reports and paperwork to the TCEQ for the grant recipient,

are not eligible. This restriction is not intended to limit the ability of the vehicle or equipment supplier to include reasonable and necessary costs for managing the work to be performed in the price of the vehicle, equipment, or installation. The costs for professional services, including engineering and technical work, required for completion of the activity may be included, subject to the restrictions pertaining to that type of project. Per the Uniform Grant Management Standards, the "cost plus a percentage of cost" method of contracting for professional services must not be used.

- The TCEQ may impose additional criteria for certain projects and funding periods, consistent with these guidelines.

NO_x Emissions Factors

The baseline NO_x emissions factors for this program normally should be the federal standards for NO_x emissions applicable to the engines receiving electricity from the infrastructure. The federal NO_x emissions standards for various categories of engines are listed in a technical supplement available from the TCEQ. Potential grant applicants should consult with the TCEQ to ensure they use the appropriate baseline standards.

Calculating Reductions in NO_x Emissions

In general, the emissions-reduction benefit represents the difference in the emissions level of a baseline engine and a reduced-emissions engine. For electrification infrastructure activities, the reductions in NO_x emissions should be calculated based on information regarding the type of vehicles and equipment using the electricity.

Electrification of Vehicles and Equipment

Electrification infrastructure may be purchased to support the purchase of new electric vehicles or equipment in lieu of vehicles or equipment powered by internal combustion engines. Infrastructure may also be purchased to support the electrification of existing vehicles or equipment.

NO_x-emissions reductions should be calculated based on the difference between the baseline emissions and the emissions from the electric-powered engine. In most cases, electric engines will be considered zero-emissions sources.

Grant applicants should refer to the chapter of this guide pertaining to the type of vehicle or equipment being purchased, repowered, or retrofitted for information on the methodology that should be used to determine the reductions in NO_x emissions attributable to the use of the electric-powered engine in lieu of an internal combustion engine. The applicable emissions factors for use in the calculations will

generally appear in the technical supplement to these guidelines. Activities for which appropriate emissions factors do not appear should be discussed with the TCEQ.

The usage factor for electrification of on-road vehicles normally should be miles of operation, while the usage factor for non-road and stationary equipment normally should be hours of operation.

Normally, NO_x emissions that may be attributable to the generation of the electricity should not be considered in determining the reductions in NO_x emissions if the electricity is supplied through the central power grid or other central power supply. However, if the electricity will come from a local generating source, any NO_x emissions from the source may need to be included in the calculations. As part of the grant application, the applicant will need to explain the source of the electricity.

Note that, if the vehicle or equipment purchases or conversions are included in the grant application as part of a combined project, the NO_x-emissions reductions attributable to the overall project will only be counted once, in conjunction with the purchase or conversion activities.

Alternatively, if the purchases or conversions are to be funded from another source, the NO_x-emissions reductions attributable to the electrification of the vehicles or equipment should be used to determine the reductions in NO_x emissions for the infrastructure project. The grant recipient must ensure that the reductions are surplus and available to apply to this program, and are not already being claimed by the other funding program or for another purpose.

Idle Reduction

On-site electrification of truck stops, rest stops, and other areas may also be funded under this program, in support of idle-reduction programs to reduce NO_x emissions in the eligible counties. The reductions are to be calculated based on the reduction in idling NO_x emissions for the engine.

In general, the emissions-reduction benefit represents the NO_x emissions that would have normally been generated by the engine at idle. The idling emissions level is calculated by multiplying an emissions factor, an activity level, and a conversion factor, if necessary.

For most applications, the idling activity level should be established by the annual hours of idle operation. The calculation of emissions and emissions reductions based on annual hours of operation as the usage factor is determined by the steps shown in Table A7.1.

Table A7.1
Calculating the NO_x Idling Emissions Reduction Based on Annual Hours of Operation

Applying the TxLED Correction Factor

The counties affected by the TxLED requirements currently include all those eligible for TERP incentive funding, as listed in Table 3.1, except for El Paso County.	
TxLED correction factor for on-road: *1 – 0.057*	0.943

Calculate the Reduction in Idling NO_x Emissions

NO_x idling emissions factor grams per hour (g/hr)	
× TxLED correction factor *(diesel engines only)*	
= g/hr	
× annual hours of idling reduced (within the eligible county)	
= grams per year reduced (g/year)	
	÷ 907,200 grams per ton
= estimated annual NO_x-emissions reduction (tons/yr)	
× activity life (years)	
= estimated activity-life NO_x emissions reduction (tons)	

Appropriate baseline idling NO_x emissions factors are included in the technical supplement to these guidelines. Use the emissions factors most closely associated with the vehicle or engine. Potential grant applicants should consult with the TCEQ to ensure they use the appropriate factors.

Normally, NO_x emissions that may be attributable to the generation of the electricity should not be considered in determining the reductions in NO_x emissions, if the electricity is obtained through the central power grid or other central power supply. However, if the electricity will come from a local generating source, any NO_x emissions from the generating source may need to be included in the calculations. As part of the grant application, the applicant will need to explain the source of the electricity.

Note that, if the vehicle or equipment purchases or conversions are included in the grant application as part of a combined project, the NO_x-emissions reductions

attributable to the overall project should only be counted once, in conjunction with the purchase or conversion activities.

Alternatively, if the purchases or conversions are to be funded from another source, the reductions in NO_x emissions attributable to the electrification of the vehicles or equipment should be used to determine the reductions in NO_x emissions for the infrastructure project. The grant recipient must ensure that the NO_x-emissions reductions are surplus and available to apply to this program, and are not already being claimed by the other funding program or for another purpose.

Calculating Cost-Effectiveness

Only the amount of incentive funds requested under the program should be used in calculating cost-effectiveness. The incremental costs for each activity must be reduced by the value of any existing financial incentive that directly reduces the cost of the proposed activity, including tax credits or deductions, other grants, or any other public financial assistance.

To determine the cost-effectiveness of an activity—with the exception of qualifying fuel activities—the incentive amount for the activity included in the project must be amortized over the activity life designated by the applicant, at a discount rate of 3%.

The following amortization formula yields a *capital-recovery factor* (CRF).

$$\text{capital-recovery factor} = [(1 + i)^n (i)] / [(1 + i)^n - 1]$$

where i = discount rate (3%)
n = activity life

The discount rate of 3% reflects the opportunity cost of public funds—the level of earning that reasonably could be expected by investing state funds in various financial instruments, such as U.S. Treasury securities.

The incentive amount should be multiplied by the incremental cost or incentive amount requested to determine the annualized cost.

$$\textit{incremental cost} \times \textit{CRF} = \textit{annualized cost}$$

The cost-effectiveness calculations appear in Table A7.2. Capital-recovery factors for up to 20 years appear in Table A7.3, for use in the calculations.

For projects that include more than one activity, the total project incentive amount should be used to determine the cost-effectiveness of the project. The applicant may request an incentive amount that is less than the full incremental costs, in order to meet the cost-effectiveness criteria.

To determine the cost-effectiveness: First sum all of the annualized costs for the activities included in the project. Also sum the annual emissions reductions from each activity to determine an annual emissions reduction for the project. Then divide the

combined annualized costs for all activities included in the project application by the total annual reductions in NO_x emissions for the combined project activities.

total annualized costs / total annual NO_x reductions = project cost-effectiveness

Table A7.2
Calculating Cost-Effectiveness

Step 1. Determine the capital-recovery factor (CRF)	
CRF = $[(1 + i)^n (i)] / [(1 + i)^n - 1]$ i = discount rate (.03) n = activity life	
Capital-recovery factor:	
Step 2. Determine the annualized cost	
Incentive amount × CRF = annualized cost	
Annualized cost ($/year):	
Step 3. Determine cost-effectiveness	
Annualized cost ($/year) / annual NO_x-emissions reduction (tons/year) = cost-effectiveness ($/ton)	
Cost-effectiveness ($/ton):	$

Table A7.3
Capital-Recovery Factors Using a Discount Rate of 0.03

Activity Life	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CRF	1.00	.5226	.3535	.2690	.2184	.1846	.1605	.1425	.1284	.1172
Activity Life	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
CRF	.1081	.1005	.0940	.0885	.0838	.0796	.0760	.0727	.0698	.0672

Appendix 8
On-Vehicle Electrification and Idle-Reduction Infrastructure

This appendix outlines the criteria for project eligibility and gives the methods for calculating the reductions in NO_x emissions for an on-vehicle electrification and idle-reduction infrastructure project. The emissions reductions will be estimated using the applicant's information on the type of vehicles or equipment on which the infrastructure is being installed. The emissions reduction for the activity will be the reduction in the idling emissions level in tons of NO_x expected to be produced by baseline vehicles, within the eligible counties.

The emissions standards and emissions factors applicable to this program are contained in a technical supplement, which will be made available in conjunction with these guidelines on the TERP website at <www.terpgrants.org>. Potential grant applicants should contact the TCEQ for copies of the supplement and for answers to questions about which emissions standards and factors to use.

In accordance with Texas Health and Safety Code 386.104(j) and TERP program rules, 30 TAC 114.622(g), the executive director or his or her designee has the authority to waive certain eligibility requirements, based on a finding of good cause. Situations where good cause may be determined and a waiver granted are explained in the discussion of eligibility requirements in this appendix or the appendix applicable to the type of vehicle or equipment activities used to show that emissions reductions will be achieved as a result of the infrastructure project.

The executive director may identify other eligibility criteria for which a waiver may be considered, based on a finding of good cause and subject to the statutory and regulatory requirements. Waiver options will be explained in the grant-application materials.

In determining good cause and deciding whether to grant a waiver, the executive director shall ensure that the emissions reductions that will be attributable to the project will still be valid and, where applicable, meet the conditions for assignment for credit to the State Implementation Plan.

Eligible Activities and Costs

An eligible activity may include the purchase and installation of equipment that enables a vehicle or equipment to use electric power to operate while parked, of the systems normally supplied power by the propulsion engine, or of another onboard internal combustion engine that emits NO_x.

Eligible equipment may include: (1) the add-on of devices to enable acceptance of electricity from an external power source or (2) the purchase and installation on the vehicle or equipment of an auxiliary power unit (APU) to generate electricity.

The TCEQ may also accept, case by case, idle-limiting devices for locomotives, as well as other types of idle-reduction devices.

Note, that in some areas, idling of on-road vehicles may be limited by state regulations. Accordingly, the project emissions reductions used to determine the cost-effectiveness for infrastructure activities in an area with such a requirement may not include the replacement of idling hours of operation for on-road vehicles. Non-road equipment and other eligible uses of the electricity by on-road vehicles are not covered by this restriction.

The TCEQ may further limit the types of eligible activities, and may more narrowly define eligibility requirements, during a particular funding period or by geographic area, as needed to best achieve the objectives of the TERP.

The grant recipient may be eligible for reimbursement of the cost for the purchase and installation of the infrastructure. However, expenses for salaries, travel, land purchases, and overhead, including indirect costs, will not be covered. Costs that may be reimbursed by the TCEQ, subject to its approval, include:

- the invoice cost of the infrastructure equipment, including sales tax and delivery charges;
- the cost of associated supplies directly related to the installation of the infrastructure;
- installation costs;
- reengineering costs, if the vehicle or equipment must be modified to allow for installation of the infrastructure; and
- other costs directly related to the project.

All vehicles and equipment must be owned by the grant applicant, including the vehicle and equipment that will benefit from the add-on or idle-reduction infrastructure. All grant-funded add-on devices, APUs, and other idle-reduction equipment must be purchased and not leased.

Project Criteria

In addition to the eligibility criteria previously presented, the criteria listed below apply to projects involving electrification infrastructure. The TCEQ may impose additional criteria, and may more narrowly define the criteria, during a particular funding period or by geographic area, as needed to best achieve the objectives of the TERP.

- One or more eligible activities of the same project type (i.e., on-road, non-road, locomotive, etc.) that will occur in the same primary area may be included under one project application.
- Infrastructure used to service vehicles and equipment used primarily for competition or recreation is not eligible for funding.
- The cost-effectiveness of a project, other than a demonstration project, may not exceed any limits established by the TCEQ on the cost per ton of NO_x emissions reduced in the eligible counties for which the project is proposed. An activity is not eligible if it is required by any state or federal law, rule, regulation, memorandum of agreement, or other legally binding document. However, this restriction does not apply to an otherwise qualified activity—regardless of the State Implementation Plan's assumption that the change in equipment, vehicles, or operations will occur—if, on the date the grant is awarded, the change is not yet required by any state or federal law, rule, regulation, memorandum of agreement, or other legally binding document. This restriction also does not apply to a purchase of vehicles or equipment that is required only by local law or regulation, or by controlling-board policy of a public or private entity. Projects used to demonstrate a technology that may be used to comply with an emissions reduction requirement may be funded, as long as the reductions directly attributable to the project are not used to comply with those requirements.
- In the areas of the state where TxLED is required, the baseline and reduced emissions-rate calculations for diesel engine use after September 2005 must be adjusted using a correction factor, in addition to any other calculation adjustments.
- An activity involving a new emissions-reduction measure that would otherwise generate marketable credits under state or federal programs for averaging, banking, or trading emissions-reduction credits is not eligible for funding under this program unless:
    - the activity includes the transfer of the reductions that would otherwise be marketable credits to the State Implementation Plan or the owner or operator as provided under Texas Health and Safety Code 386.056, and
    - the reductions are permanently retired.
- The incremental cost of the proposed activity must be reduced by the value of any existing financial incentive that directly reduces the cost of the proposed activity, including tax credits or deductions, other grants, or any other public financial assistance.
- For infrastructure activities, the activity life must be a minimum of five years. The TCEQ will establish the required activity life for each grant period. Not less than 75% of the annual use of the electricity dispensed from the infrastructure, or the idling operation reduced, projected for the activity life, must be projected to take place in one or more of the eligible counties. For infrastructure activities involving

marine vessels, not less than 75% of the annual use of the electricity dispensed from the infrastructure projected for the activity life must be projected to take place in bays adjacent to one or more of the eligible counties, or in the Texas portion of the Gulf Intracoastal Waterway.

- Annual use will normally be measured using hours of idling operation by the vehicles or equipment being replaced by the electricity from the infrastructure.
- The TCEQ will determine an acceptable activity life for infrastructure activities case by case.
- Applicants must agree to monitor the use of grant-funded vehicles, equipment, infrastructure, and fuel, and to report to the TCEQ for the life of each grant-funded activity.
- Applicants must also agree to notify the TCEQ of any changes in the following during the activity life: termination of use; change in use, sale, transfer, or accidental or intentional destruction of grant-funded vehicles, equipment, or infrastructure; or change in use of the qualifying fuel.
- Administrative costs and other internal costs of the grant recipient—including but not limited to personnel expenses, internal salaries, indirect costs, and travel—are not eligible. This restriction also applies when the grant recipient acts as a transportation provider for delivery of the grant-funded vehicle or equipment before or after accepting it.
- Consultant fees for the preparation of a grant application, either directly or as an addition to the cost basis of the grant-funded vehicle, equipment, or engine, are not eligible.
- Fees for a third-party consultant hired by the grant recipient to manage and administer the grant-funded activities, including coordination of the work and submission of reports and paperwork to the TCEQ for the grant recipient, are not eligible. This restriction is not intended to limit the ability of the vehicle or equipment supplier or installer to include reasonable and necessary costs for managing the work to be performed in the price of the vehicle, equipment, or installation. The costs for professional services, including engineering and technical work, required for completion of the activity may be included, subject to the restrictions pertaining to that type of project. Per the Uniform Grant Management Standards, the “cost plus a percentage of cost” method of contracting for professional services must not be used.
- The TCEQ may impose additional criteria for certain projects and funding periods, consistent with these guidelines.

Figure A8.1
Correction Factor for TxLED

The TCEQ adopted rules (30 TAC 114.312–19) requiring that diesel fuel sold or supplied for use in compression-ignition engines in certain counties in Texas must meet low-emission-diesel standards.

The counties affected by the TxLED requirements currently include all those eligible for TERP incentive funding, as listed in Table 3.1, except for El Paso County.

The requirements set a maximum for content of aromatic hydrocarbons of 10% by volume. The requirements also set a minimum cetane number for TxLED of 48.

The TxLED requirements are intended to result in reductions in NO_x emissions from diesel engines. Currently, reduction factors of **5.7%** (0.057) for on-road use and **7.0%** (0.07) for non-road use have been accepted as estimates for use of TxLED. However, these estimates are subject to change, based on the standards accepted by the EPA for use in the Texas State Implementation Plan. The TCEQ will identify the appropriate reduction factors to use in the technical supplement prepared to support these guidelines.

For activities in the applicable counties, a correction factor will need to be applied when calculating the baseline or reduced emissions for diesel engines.

On-road:
TxLED correction factor = 1 – 0.057 = ***0.943***

Non-road:
TxLED correction factor = 1 – 0.070 = ***0.93***

NO_x Emissions Factors

The baseline NO_x emissions factors for this program normally should be the federal standards applicable to the engines being provided the electricity from the infrastructure. The federal NO_x emissions standards for various categories of engines are listed in a technical supplement available from the TCEQ. Potential grant applicants should consult with the TCEQ to ensure they use the appropriate baseline standards.

Calculating Reductions in NO_x Emissions

In general, the emissions-reduction benefit represents the difference in the emissions level of a baseline engine and the auxiliary power unit, if it emits NO_x. For infrastructure to allow a vehicle or equipment to accept electricity from an external source, the emissions-reduction benefit will be the reduction in emissions from the onboard internal combustion engine as a result of the use of electricity.

For APUs and idle-limiting devices on locomotives, the emissions-reduction benefit is to be determined by the reduction in fuel use or hours of idling. Grant applicants should consult with the TCEQ to determine the most appropriate methodology to use

in calculating the reductions in NO_x emissions attributable to these types of locomotive projects.

The reductions in NO_x emissions should be calculated based on information regarding the type of vehicles and equipment using the electricity. The idling emissions level is calculated by multiplying an emissions factor, an activity level, and a conversion factor, if necessary.

Calculating NO_x Idling Emissions Reductions Based on Hours of Operation

For most applications, the idling activity level should be established by the annual hours of idle operation. The calculation of emissions and emissions reductions based on annual hours of operation as the usage factor is determined by the steps shown in Table A8.1.

For activities involving the add-on of idle-limiting devices or devices to enable acceptance of electricity from an external power source, the emissions reductions can be calculated using just the baseline emissions. The APU emissions will be set at zero.

Appropriate baseline NO_x idling emissions factors, APU NO_x emissions standards, and APU load factors appear in the technical supplement to these guidelines. Use the factors most closely associated with the vehicle or engine. Potential grant applicants should consult with the TCEQ to ensure they use the appropriate factors.

Calculating Cost-Effectiveness

Only the amount of incentive funds requested under the program should be used in calculating cost-effectiveness. The incremental costs for each activity must be reduced by the value of any existing financial incentive that directly reduces the cost of the proposed activity, including tax credits or deductions, other grants, or any other public financial assistance.

To determine the cost-effectiveness of an activity—with the exception of qualifying fuel activities—the incentive amount for the activity included in the project must be amortized over the activity life designated by the applicant, at a discount rate of 3%.

The following amortization formula yields a *capital-recovery factor* (CRF).

$$\text{capital-recovery factor} = [(1 + i)^n (i)] / [(1 + i)^n - 1]$$

where i = discount rate (3%)
n = activity life

The discount rate of 3% reflects the opportunity cost of public funds—the level of earning that reasonably could be expected by investing state funds in various financial instruments, such as U.S. Treasury securities.

Table A8.1
Calculating the Idling NO_x-Emissions Reduction Based on Annual Hours of Operation

Applying the TxLED Correction Factor

The counties affected by the TxLED requirements currently include all those eligible for TERP incentive funding, as listed in Table 3.1, except for El Paso County.	
TxLED correction factor for on-road: *1 – 0.057*	0.943

Calculate the NO_x Idling Emissions Reduction

Baseline		APU	
Idling NO_x emissions factor (g/hr)		APU NO_x emissions factor grams per brake horsepower-hour (g/bhp-hr)	
		× TxLED correction factor *(diesel engines only)*	
× TxLED correction factor *(diesel engines only)*		× APU load factor	
		× APU horsepower	
= NO_x emissions factor (g/hr)		= NO_x emissions factor (g/hr)	
Baseline g/hr – APU emissions (g/hr)			
× annual idling hours			
× percent within eligible counties (%)			
= g/yr			
		÷ 907,200 grams per ton	
= estimated annual NO_x-emissions reduction (tons/yr)			
× activity life (years)			
= estimated activity-life NO_x-emissions reduction (tons)			

The incentive amount should be multiplied by the incremental cost or incentive amount requested to determine the annualized cost.

$$incremental\ cost \times CRF = annualized\ cost$$

The cost-effectiveness calculations appear in Table A8.2. Capital-recovery factors for up to 20 years appear in Table A8.3, for use in the calculations.

Table A8.2
Calculating Cost-Effectiveness

Step 1. Determine the capital-recovery factor (CRF)	
CRF = $[(1 + i)^n (i)] / [(1 + i)^n - 1]$ i = discount rate (.03) n = activity life	
Capital-recovery factor:	
Step 2. Determine the annualized cost	
Incentive amount × CRF = annualized cost	
Annualized cost ($/year):	
Step 3. Determine cost-effectiveness	
Annualized cost ($/year) / annual NO_x-emissions reduction (tons/year) = cost-effectiveness ($/ton)	
Cost-effectiveness ($/ton):	$

Table A8.3
Capital-Recovery Factors Using a Discount Rate of 0.03

Activity Life	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CRF	1.00	.5226	.3535	.2690	.2184	.1846	.1605	.1425	.1284	.1172
Activity Life	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
CRF	.1081	.1005	.0940	.0885	.0838	.0796	.0760	.0727	.0698	.0672

For projects that include more than one activity, the total project incentive amount should be used to determine the cost-effectiveness of the project. The applicant may request an incentive amount that is less than the full incremental costs, in order to meet the cost-effectiveness criteria.

To determine the cost-effectiveness: First sum all of the annualized costs for the activities included in the project. Also sum the annual emissions reductions from each activity to determine an annual emissions reduction for the project. Then divide the combined annualized costs for all activities included in the project application by the total annual reductions in NO_x emissions for the combined project activities.

total annualized costs / total annual NO_x reductions = project cost-effectiveness

Appendix 9
Rail Relocation and Improvements

This appendix outlines the criteria for project eligibility and gives the methods for calculating the reductions in NO_x emissions for a rail relocation and improvement project. This type of project must be applied for separately from the other eligible activities.

Applicants should estimate reductions in emissions based on the type of relocation or improvements. The emissions reduction for the activity will be the difference in the emissions level in tons of NO_x expected to be produced by existing conditions and the emissions level in tons of NO_x expected after the rail relocation or improvements, within the eligible counties.

In accordance with Texas Health and Safety Code 386.104(j) and TERP program rules, 30 TAC 114.622(g), the executive director or his or her designee has the authority to waive certain eligibility requirements, based on a finding of good cause. The executive director may identify eligibility criteria for which a waiver may be considered, based on a finding of good cause and subject to the statutory and regulatory requirements. Waiver options will be explained in the grant-application materials.

In determining good cause and deciding whether to grant a waiver, the executive director shall ensure that the emissions reductions that will be attributable to the project will still be valid and, where applicable, meet the conditions for assignment for credit to the State Implementation Plan.

Eligible Activities and Costs

An eligible activity may include the relocation of rail lines to reduce the number of grade crossings, improvements at rail intersections, and other improvements that will directly reduce locomotive engine idling at rail intersections and other locations. The grant recipient must own or otherwise control the rail line, the right of way, or the facility being improved.

The TCEQ may consider various congestion-mitigation projects. Funding decisions may be based on the likelihood that the emissions reductions will be proven and accepted.

The applicant will need to show that the project is viable and can be expected to achieve significant reductions in NO_x emissions.

The TCEQ may further limit the types of eligible activities, and may more narrowly define eligibility requirements, during a particular funding period or by geographic area, as needed to best achieve the objectives of the TERP.

The grant recipient may be eligible for reimbursement of the costs of the rail relocation or improvements. Costs that may be reimbursed by the TCEQ, subject to its approval, include:

- the costs of design and engineering work directly necessary for completing the improvements;
- permitting and governmental fees needed to complete any site improvements or construction;
- costs for new construction or reengineering costs for modifications of an existing site;
- the invoice cost of equipment or other infrastructure, including sales tax and delivery charges;
- the cost of associated supplies directly related to the installation of the equipment or infrastructure;
- installation costs; and
- other costs directly related to the projects.

All grant-funded equipment will be required to be purchased, not leased. Studies and plans will not be eligible for reimbursement.

Project Criteria

In addition to the eligibility criteria previously presented, the following list applies to rail-improvement projects. The TCEQ may impose additional criteria, and may more narrowly define the criteria established in this guide, during a particular funding period or by geographic area, as needed to best achieve the objectives of the TERP.

- An activity under the category must be submitted on a separate application.
- The project must result in new, surplus emissions reductions that will be available to the TCEQ for assignment to the State Implementation Plan.
- In general, a project should involve proven techniques that ensure a reduction in air pollution.
- The project must take place within an eligible county.
- The cost-effectiveness of a project, other than a demonstration project, may not exceed any limits established by the TCEQ on the cost per ton of NO_x emissions reduced in the eligible counties for which the project is proposed. An activity is not eligible if it is required by any state or federal law, rule, regulation, memorandum of agreement, or other legally binding document. However, this restriction does not apply to an otherwise qualified activity—regardless of the State

Implementation Plan's assumption that the change in equipment, vehicles, or operations will occur—if, on the date the grant is awarded, the change is not yet required by any state or federal law, rule, regulation, memorandum of agreement, or other legally binding document. This restriction also does not apply to a purchase of vehicles or equipment that is required only by local law or regulation, or by controlling-board policy of a public or private entity. Projects used to demonstrate a technology that may be used to comply with an emissions-reduction requirement may be funded, as long as the reductions directly attributable to the project are not used to comply with those requirements.

- An activity involving a new emissions-reduction measure that would otherwise generate marketable credits under state or federal programs for averaging, banking, or trading emissions-reduction credits is not eligible for funding under this program unless:
  - the activity includes the transfer of the reductions that would otherwise be marketable credits to the State Implementation Plan or the owner or operator as provided under Texas Health and Safety Code 386.056; and
  - the reductions are permanently retired.
- The incremental cost of the proposed activity must be reduced by the value of any existing financial incentive that directly reduces the cost of the proposed activity, including tax credits or deductions, other grants, or any other public financial assistance.
- The activity life must be a minimum of five years. The TCEQ will determine an acceptable maximum activity life for infrastructure activities, case by case.
- A grant recipient must have a viable mechanism for tracking and reporting on the emissions reduced by the project.
- Applicants must agree to monitor the use of grant-funded equipment and infrastructure, and to report to the TCEQ for the life of each grant-funded activity.
- Applicants must also agree to notify the TCEQ of any changes in the following during the activity life: termination of use; change in use, sale, transfer, or accidental or intentional destruction of grant-funded vehicles, equipment, or infrastructure; or change in use of the qualifying fuel.
- Administrative costs and other internal costs of the grant recipient, including but not limited to personnel expenses, internal salaries—indirect costs, and travel—are not eligible. This restriction also applies when the grant recipient acts as a transportation provider for delivery of the grant-funded vehicle or equipment before or after accepting it.
- Consultant fees for the preparation of a grant application, either directly or as an addition to the cost basis of the grant-funded vehicle, equipment, or engine, are not eligible.
- Fees for a third-party consultant hired by the grant recipient to manage and administer the grant-funded activities, including coordination of the work and submission of reports and paperwork to the TCEQ for the grant recipient,

are not eligible. This restriction is not intended to limit the ability of the vehicle or equipment supplier or installer to include reasonable and necessary costs for managing the work to be performed in the price of the vehicle, equipment, or installation. The costs for professional services, including engineering and technical work, required for completion of the activity may be included, subject to the restrictions pertaining to that type of project. Per the Uniform Grant Management Standards, the "cost plus a percentage of cost" method of contracting for professional services must not be used.

- The TCEQ may impose additional criteria for certain projects and funding periods, consistent with these guidelines.

NO_x Emissions Factors

The baseline NO_x emissions factors will be based on the federal standards applicable to the category of locomotive for which idle time will be reduced. In general, baseline idling emissions should be based on EPA- or TCEQ-approved estimates for locomotive engine idle emissions. The TCEQ may consider default idling emissions factors of 800 grams of NO_x per hour for two-stroke engines, and 620 grams per hour for four-stroke engines.

Calculating Reductions in NO_x Emissions

In general, the emissions-reduction benefit should be calculated based on the projected number of hours of engine idling reduced, multiplied by an idle-emissions factor for that type of locomotive. The calculation of emissions and emissions reductions using annual hours of idling operation reduced is determined by the steps shown in Table A9.1.

Reductions in vehicle engine idling that are directly attributable to the project may also be included in the calculation of its emissions reductions, subject to a determination by the TCEQ that those additional reductions are verifiable and will be enforceable under the grant contract.

Because of the nature of this type of project, it will be the applicant's responsibility to verify the types of locomotives and the number of locomotive engine idling hours, as well as any reductions in vehicle engine idling to be included in the project, that will be reduced annually as a result of the rail line relocation or improvements. All studies and reports to show the projected reduction in locomotive engine idling and vehicle engine idling must be completed before an application is made, and those studies and reports must be submitted with a grant application.

Table A9.1
Calculating the Idling NO_x-Emissions Reduction Based on Annual Hours of Operation

Applying the TxLED Correction Factor

The counties affected by the TxLED requirements currently include all those eligible for TERP incentive funding, as listed in Table 3.1, except for El Paso County.	
TxLED correction factor for non-road: *1 – 0.07*	0.93

Calculate the Reduction in Idling NO_x Emissions

NO_x idling emissions factor (g/hr)	
× TxLED correction factor *(diesel engines only)*	
= g/hr	
× annual hours of idling reduced (within the eligible county)	
= g/year	
	÷ 907,200 grams per ton
= estimated annual NO_x-emissions reduction (tons/yr)	
× activity life (years)	
= estimated activity-life NO_x emissions reduction (tons)	

It is recommended that interested parties meet with TCEQ personnel before submitting an application to discuss the information that will be used to verify reductions in engine idling.

Calculating Cost-Effectiveness

Only the amount of incentive funds requested under the program should be used in calculating cost-effectiveness. The incremental costs for each activity must be reduced by the value of any existing financial incentive that directly reduces the cost of the proposed activity, including tax credits or deductions, other grants, or any other public financial assistance.

To determine the cost-effectiveness of an activity—with the exception of qualifying fuel activities—the incentive amount for the activity included in the project must be amortized over the activity life designated by the applicant, at a discount rate of 3%.

The following amortization formula yields a *capital-recovery factor* (CRF).

$$\text{capital-recovery factor} = [(1 + i)^n (i)] / [(1 + i)^n - 1]$$

where i = discount rate (3%)
n = activity life

The discount rate of 3% reflects the opportunity cost of public funds—the level of earning that reasonably could be expected by investing state funds in various financial instruments, such as U.S. Treasury securities.

The incentive amount should be multiplied by the incremental cost or incentive amount requested to determine the annualized cost.

$$\textit{incremental cost} \times \textit{CRF} = \textit{annualized cost}$$

The cost-effectiveness calculations appear in Table A9.1. Capital-recovery factors for up to 20 years appear in Table A9.2, for use in the calculations.

For projects that include more than one activity, the total project incentive amount should be used to determine the cost-effectiveness of the project. The applicant may request an incentive amount that is less than the full incremental costs, in order to meet the cost-effectiveness criteria.

Table A9.1
Calculating Cost-Effectiveness

Step 1. Determine the capital-recovery factor (CRF)	
$\text{CRF} = [(1 + i)^n (i)] / [(1 + i)^n - 1]$ i = discount rate (.03) n = activity life	
Capital-recovery factor:	
Step 2. Determine the annualized cost	
Incentive amount × CRF = annualized cost	
Annualized cost ($/year):	
Step 3. Determine cost-effectiveness	
Annualized cost ($/year) / annual NO_x-emissions reduction (tons/year) = cost-effectiveness ($/ton)	
Cost-effectiveness ($/ton):	$

Table A9.2
Capital-Recovery Factors Using a Discount Rate of 0.03

Activity Life	1	2	3	4	5	6	7	8	9	10
CRF	1.00	.5226	.3535	.2690	.2184	.1846	.1605	.1425	.1284	.1172
Activity Life	11	12	13	14	15	16	17	18	19	20
CRF	.1081	.1005	.0940	.0885	.0838	.0796	.0760	.0727	.0698	.0672

To determine the cost-effectiveness: First sum all of the annualized costs for the activities included in the project. Also sum the annual emissions reductions from each activity to determine an annual emissions reduction for the project. Then divide the combined annualized costs for all activities included in the project application by the total annual reductions in NO_x emissions for the combined project activities.

total annualized costs / total annual NO_x reductions = project cost-effectiveness

Appendix 10
Use of Qualifying Fuel

This appendix outlines the criteria for project eligibility and gives the methods for calculating the reductions in NO_x emissions for a project using qualifying fuel. In order to be considered a qualifying fuel, the fuel or fuel additive must be verified by the EPA or the California Air Resources Board (CARB), or otherwise accepted by the TCEQ as resulting in lower emissions of NO_x than the baseline fuel for the vehicle or equipment in which the qualifying fuel or additive is used. The baseline fuel used for comparison normally will be either standard on-road or non-road diesel fuel, or gasoline.

The methods for calculating the reductions in NO_x emissions for a qualifying fuel project also appear in this chapter. Most of the calculations will require input of an NO_x emissions factor applicable to the engine or vehicle. The emissions standards and factors applicable to this program appear in a technical supplement, which will be made available in conjunction with these guidelines on the TERP website at <www.terpgrants.org>. Potential grant applicants should contact the TCEQ for copies of the supplement and for answers to questions about which emissions standards and factors to use.

In accordance with Texas Health and Safety Code 386.104(j) and TERP program rules, 30 TAC 114.622(g), the executive director or his or her designee has the authority to waive certain eligibility requirements, based on a finding of good cause. The executive director may identify eligibility criteria for which a waiver may be considered, based on a finding of good cause and subject to the statutory and regulatory requirements. Waiver options will be explained in the grant-application materials.

In determining good cause and deciding whether to grant a waiver, the executive director shall ensure that the emissions reductions that will be attributable to the project will still be valid and, where applicable, meet the conditions for assignment for credit to the State Implementation Plan.

Eligible Activities and Costs

The reimbursements for incremental fuel costs under this category should be made over the life of the activity, based on the actual amount of fuel purchased and the cost of that fuel. The incentive amounts included in the grant contract are not to exceed a maximum amount that may be reimbursed under the grant. The actual reimbursement will depend upon the cost differential between the baseline fuel and

the qualifying fuel at the time of the purchase. Administrative costs, in-house labor costs, and travel costs are not eligible expenses.

In some cases, the TCEQ may preapprove a reimbursement amount per unit of qualifying fuel for all activities using the fuel. Grant applicants and suppliers of qualifying fuel may consult with the TCEQ regarding alternative approaches for establishing an approved reimbursement amount.

Project Criteria

In addition to the eligibility criteria previously presented, the following list applies to projects involving qualifying fuel activities. The TCEQ may impose additional criteria, and may more narrowly define the criteria established in this guide, during a particular funding period or by geographic area, as needed to best achieve the objectives of the TERP.

- One or more eligible activities of the same project type (i.e., on-road, non-road, locomotive, etc.) that will occur in the same primary area may be included under one project application.
- Fuel used in vehicles and equipment used primarily for competition or recreation is not eligible for funding.
- When required under federal law, fuel additives must be registered by the EPA to be eligible under this program.
- When required, qualifying fuel to be used in on-road vehicles must be registered by the EPA for on-road use to be eligible under this program.
- The reductions in NO_x emissions attributable to the qualifying fuel must be verified by the EPA or the CARB, or accepted on other grounds by the TCEQ.
- Qualifying fuel technologies will be reviewed by the TCEQ's technical staff. Any questions regarding the effects of a fuel or fuel additive on health or the environment will need to be resolved before the fuel is considered eligible for funding. Manufacturers and suppliers of a qualifying fuel are encouraged to discuss their products with the TCEQ early in the process, before submitting a grant application.
- The cost-effectiveness of a project, other than a demonstration project, must not exceed any limits established by the TCEQ on the cost per ton of NO_x emissions reduced in the eligible counties for which the project is proposed.
- In the areas of the state where TxLED is required, the baseline and reduced emissions-rate calculations for diesel engine usage after September 2005 must be adjusted using a correction factor, in addition to any other calculation adjustments.
- An activity is not eligible if it is required by any state or federal law, rule, regulation, memorandum of agreement, or other legally binding document. However, this restriction does not apply to an otherwise qualified activity—regardless of the State Implementation Plan's assumption that the change

in equipment, vehicles, or operations will occur—if, on the date the grant is awarded, the change is not yet required by any state or federal law, rule, regulation, memorandum of agreement, or other legally binding document. This restriction also does not apply to a purchase of vehicles or equipment that is required only by local law or regulation, or by controlling-board policy of a public or private entity. Projects used to demonstrate a technology that may be used to comply with an emissions-reduction requirement may be funded, as long as the reductions directly attributable to the project are not used to comply with those requirements.

- An activity involving a new emissions-reduction measure that would otherwise generate marketable credits under state or federal emissions-reduction credit averaging, banking, or trading programs is not eligible for funding under this program unless:
  - the activity includes the transfer of the reductions that would otherwise be marketable credits to the State Implementation Plan, or the owner or operator, as provided under Texas Health and Safety Code 386.056; and
  - the reductions are permanently retired.
- The incremental cost of the proposed activity must be reduced by the value of any existing financial incentive that directly reduces the cost of the proposed activity, including tax credits or deductions, other grants, or any other public financial assistance.
- The use of qualifying fuel funded under this program must take place in one or more of the eligible counties.
- For most qualifying fuel activities, annual use will be measured using calculations based on the fuel use. The TCEQ may consider using either miles of operation or hours of operation using the qualifying fuel for particular applications, case by case.
- Applicants must agree to monitor the use of grant-funded vehicles, equipment, infrastructure, and fuel, and to report to the TCEQ for the life of each grant-funded activity.
- Applicants must also agree to notify the TCEQ of any changes in the following during the activity life: termination of use; change in use, sale, transfer, or accidental or intentional destruction of grant-funded vehicles or equipment; or change in use of the qualifying fuel.
- Administrative costs and other internal costs of the grant recipient—including but not limited to personnel expenses, internal salaries, indirect costs, and travel—are not eligible. This restriction also applies when the grant recipient acts as a transportation provider for delivery of the grant-funded vehicle or equipment before or after accepting it.

Figure A10.1
Correction Factor for TxLED

The TCEQ adopted rules (30 TAC 114.312–19) requiring that diesel fuel sold or supplied for use in compression-ignition engines in certain counties in Texas must meet low-emission-diesel standards.

The counties affected by the TxLED requirements currently include all those eligible for TERP incentive funding, as listed in Table 3.1, except for El Paso County.

The requirements set a maximum for content of aromatic hydrocarbons of 10% by volume. The requirements also set a minimum cetane number for TxLED of 48.

The TxLED requirements are intended to result in reductions in NO_x emissions from diesel engines. Currently, reduction factors of **5.7%** (0.057) for on-road use and **7.0%** (0.07) for non-road use have been accepted as estimates for use of TxLED. However, these estimates are subject to change, based on the standards accepted by the EPA for use in the Texas State Implementation Plan. The TCEQ will identify the appropriate reduction factors to use in the technical supplement prepared to support these guidelines.

For activities in the applicable counties, a correction factor will need to be applied when calculating the baseline or reduced emissions for diesel engines.

On-road:
TxLED correction factor = 1 – 0.057 = ***0.943***

Non-road:
TxLED correction factor = 1 – 0.070 = ***0.93***

- Consultant fees for the preparation of a grant application, either directly or as an addition to the cost basis of the grant-funded vehicle, equipment, or engine, are not eligible.
- Fees for a third-party consultant hired by the grant recipient to manage and administer the grant-funded activities, including coordination of the work and submission of reports and paperwork to the TCEQ for the grant recipient, are not eligible. This restriction is not intended to limit the ability of the vehicle or equipment supplier or installer to include reasonable and necessary costs for managing the work to be performed in the price of the vehicle, equipment, or installation. The costs for professional services, including engineering and technical work, required for completion of the activity may be included, subject to the restrictions pertaining to that type of project. Per the Uniform Grant Management Standards, the "cost plus a percentage of cost" method of contracting for professional services must not be used.
- The TCEQ may impose additional criteria for certain projects and funding periods, consistent with these guidelines.

NO_x Emissions Factors

The baseline NO_x emissions factors for this program should be the federal standards for NO_x emissions applicable to the type of engine and model year of vehicle. The

federal NO_x emissions standards for engines are listed in a technical supplement available from the TCEQ. Potential grant applicants should consult with the TCEQ to ensure they use the appropriate baseline standards.

Calculating Reductions in NO_x Emissions

The NO_x-emissions reductions for a qualifying-fuel activity will be based on the types of vehicles and equipment using the fuel. Grant applicants should refer to the chapter or chapters of these guidelines applicable to the vehicles and equipment being fueled, to determine how the emissions reductions will be calculated.

In most cases, reductions in NO_x emissions should be based on the difference between the NO_x emissions using the baseline fuel and the NO_x emissions using the qualifying fuel. The grant applicant will be required to list the vehicles and equipment that will be fueled using the qualifying fuel.

For many types of qualifying fuel, the TCEQ may allow applicants to list the vehicles and equipment by category, rather than listing each individual vehicle or piece of equipment. The technical supplement to these guidelines will include information on the categories that may be used.

Calculating Cost-Effectiveness

Only the amount of incentive funds requested under the program should be used in calculating cost-effectiveness. The incremental costs for each activity must be reduced by the value of any existing financial incentive that directly reduces the cost of the proposed activity, including tax credits or deductions, other grants, or any other public financial assistance.

The cost-effectiveness of qualifying fuel activities should be determined somewhat differently than for other activities. Whereas the incentive amount for other types of activities must be amortized over the activity life, using a 3% discount rate, the incentive amount for qualifying fuel activities does not need to be amortized. Cost-effectiveness calculations appear in Table A10.1.

For projects that include more than one activity, the total project incentive amount should be used to determine cost-effectiveness. The applicant may request an incentive amount that is less than the full incremental costs, in order to meet the cost-effectiveness criteria.

Table A10.1
Calculating Cost-Effectiveness for Qualifying Fuel Activities

total cost ($) / total NO_x-emissions reduction (tons) = cost-effectiveness ($/ton)	
Cost-effectiveness ($/ton):	$

To determine the cost-effectiveness: First sum all of the annualized costs for the activities included in the project. For purposes of calculating the cost-effectiveness of a project that includes other types of activities, the annualized cost for the qualifying fuel activity should be the total activity cost. Also sum the annual emissions reductions from each activity to determine an annual emissions reduction for those activities. Again, the total emissions reductions for the qualifying fuel activity should be added to the annualized emissions reductions from the other activities. Then divide the combined annualized costs for all activities included in the project application by the total annual reductions in NO_x emissions for the combined project activities.

total annualized costs / total annual NO_x reductions = project cost-effectiveness

Appendix 11
Demonstration of New Technology

This appendix contains the eligibility criteria for projects demonstrating new technology. A project of this type must be applied for separately from other eligible activities.

Eligible Activities and Costs

In general, the emissions reductions attributable to the technologies demonstrated under this program should already be proven—for example, through certification or verification by the EPA or the California Air Resources Board. This program can then help encourage the implementation and use of the technology in the areas of the state where the emissions reductions are needed.

However, the TCEQ may also consider technologies that are still in the testing or verification stage of development. Funding decisions may be based on the likelihood that the emissions reductions will be proven and accepted.

The grant recipient may be eligible for reimbursement of all expenses attributable to the project. No cost-effectiveness requirements will be applied to a demonstration project, but the applicant will need to show that the technology is viable and can be expected to achieve significant reductions in NO_x emissions. Administrative costs, in-house labor costs, and travel costs are not eligible expenses.

In accordance with Texas Health and Safety Code 386.104(j) and TERP program rules, 30 TAC 114.622(g), the executive director has the authority to waive certain eligibility requirements, based on a finding of good cause. The executive director may identify eligibility criteria for which a waiver may be considered, based on a finding of good cause and subject to the statutory and regulatory requirements. Waiver options will be explained in the grant-application materials.

The granting of a waiver to the eligibility requirements is at the discretion of the executive director or the executive director's designee. In determining good cause and deciding whether to grant a waiver, the executive director shall ensure that the emissions reductions that will be attributable to the project will still be valid and, where applicable, meet the conditions for assignment for credit to the State Implementation Plan.

Project Criteria

In addition to the eligibility criteria previously presented, the following list applies to projects involving demonstration of new-technology activities. The TCEQ may impose additional criteria, and may more narrowly define the criteria established in this guide, during a particular funding round or by geographic area, as needed to best achieve the objectives of the TERP.

- The TCEQ will select demonstration projects case by case, based on a full review of the project proposal and a determination that the project can lead to broader use of the technology.
- In general, a demonstration project should involve a limited number of vehicles or equipment (for example, one to five), so that the project can be considered a demonstration and not implementation of the technology.
- The demonstration project must take place within an eligible county. However, testing and other work required for completing the project may take place outside the eligible counties, subject to approval by the TCEQ.
- Unless otherwise authorized by the TCEQ, the technology must be demonstrated on vehicles or equipment actually being used for intended purposes. Again, projects under this category normally should be for demonstrated technologies in real-world applications.
- Demonstration projects will normally last one year, but the TCEQ will consider a different period. However, due to contracting and financial management requirements, projects may not extend beyond 18 months after the end of the state fiscal year of the grant award. The state fiscal year extends from September 1 through August 31.
- The grant recipient must monitor the use and effectiveness of the technology, including associated costs. At the end of the project, the recipient must prepare a project report with information and conclusions regarding the effectiveness and efficacy of using the technology in the application demonstrated. The TCEQ must accept the project report before it will consider the project completed.
- An activity is not eligible if it is required by any state or federal law, rule, regulation, memorandum of agreement, or other legally binding document. However, this restriction does not apply to an otherwise qualified activity—regardless of the State Implementation Plan's assumption that the change in equipment, vehicles, or operations will occur—if, on the date the grant is awarded, the change is not yet required by any state or federal law, rule, regulation, memorandum of agreement, or other legally binding document. This restriction also does not apply to a purchase of vehicles or equipment that is required only by local law or regulation, or by controlling-board policy of a public or private entity. Projects used to demonstrate a technology that may be used to comply with an emissions-reduction requirement may be funded, as long as the reductions directly attributable to the project are not used to comply with those requirements.

- An activity involving a new emissions-reduction measure that would otherwise generate marketable credits under state or federal emissions-reduction credit averaging, banking, or trading programs is not eligible for funding under this program unless:
    - the activity includes the transfer of the reductions that would otherwise be marketable credits to the State Implementation Plan or the owner or operator as provided under Texas Health and Safety Code 386.056, and
    - the reductions are permanently retired.
- Administrative costs and other internal costs of the grant recipient—including but not limited to personnel expenses, internal salaries, indirect costs, and travel—are not eligible. This restriction also applies when the grant recipient acts as a transportation provider for delivery of the grant-funded vehicle or equipment before or after accepting it.
- Consultant fees for the preparation of a grant application, either directly or as an addition to the cost basis of the grant-funded vehicle, equipment, or engine, are not eligible.
- Fees for a third-party consultant hired by the grant recipient to manage and administer the grant-funded activities, including coordination of the work and submission of reports and paperwork to the TCEQ for the grant recipient, are not eligible. This restriction is not intended to limit the ability of the vehicle or equipment supplier or installer to include reasonable and necessary costs for managing the work to be performed in the price of the vehicle, equipment, or installation. The costs for professional services, including engineering and technical work, required for completion of the activity may be included, subject to the restrictions pertaining to that type of project. Per the Uniform Grant Management Standards, the "cost plus a percentage of cost" method of contracting for professional services must not be used.
- The TCEQ may impose additional criteria for certain projects and funding periods, consistent with these guidelines.

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Draft for Commission Agenda
August 3, 2016
Proposed changes are highlighted

Texas Emissions Reduction Plan: Guidelines for the Drayage Truck Incentive Program

Air Quality Division

printed on
recycled paper

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Texas Emissions Reduction Plan: Guidelines for the Drayage Truck Incentive Program

Prepared by
Air Quality Division

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August 3, 2016

Page to be added in final publication

Contents

Chapter 1
Summary

These guidelines contain the criteria for grants under the Texas Emissions Reduction Plan (TERP) Drayage Truck Incentive Program (DTIP), administered by the Texas Commission on Environmental Quality.

Purpose

The TERP was established by the Texas Legislature in 2001 to create monetary incentives for projects to improve air quality in the state's nonattainment areas and other areas of the state with air quality concerns. The nonattainment areas have been determined to not meet certain federal National Ambient Air Quality Standards established by the United States Environmental Protection Agency (EPA).

The DTIP was established to provide incentives for replacement of vehicles operating at seaports and rail yards in nonattainment areas. As a program under the TERP, the TCEQ has determined that a primary purpose of the DTIP should be to reduce emissions of nitrogen oxides (NO_x) and other pollutants, including particulate matter (PM), at these facilities and in the nonattainment areas in general.

NO_x is usually a by-product of high-temperature combustion. Everyday functions like driving a motor vehicle contribute to the creation of NO_x. It can react with volatile organic compounds in the presence of sunlight to form ground-level ozone —a lung irritant that may cause health problems.

Large diesel engines, such as those installed on drayage vehicles, also emit PM consisting of a mixture of solid particles and liquid droplets found in the air. PM can also form in complicated reactions of atmospheric chemicals such as sulfur dioxide and NO_x that are emitted from vehicle engines and other sources. PM that is 2.5 microns in aerodynamic diameter or smaller can get deep into the lungs and is capable of causing health problems.

In many cases, vehicles used for drayage are older, higher-polluting vehicles that are no longer used for longer-haul operations. The concentration of these vehicles operating at seaports and rail yards warranted the establishment of this separate program specifically for replacement of older drayage vehicles with newer, less-polluting models.

As required under the statute, these guidelines establish the standards and criteria for grants issued under the DTIP. Along with the statutory and

regulatory provisions applicable to this program, recipients of incentive funding must adhere to the criteria herein.

In addition, the TCEQ may establish more specific criteria, through contracts or other funding mechanisms, consistent with these guidelines.

Legislative and Regulatory Standards

The DTIP is established under Chapter 386, Subchapter D-1, of the Texas Health and Safety Code (THSC). Rules for the program have been adopted by the commission in Title 30 Texas Administrative Code, Chapter 114 (30 TAC 114), Subchapter K, Division 8.

These guidelines were established and adopted in accordance with THSC 386.182. As authorized under THSC 386.183(2)(f), and 30 TAC 114.682(d), these guidelines may modify, further define, or otherwise limit the criteria in the statute and rules.

Other state law and regulations also apply to the DTIP. The applicable standards will be listed in the grant-solicitation documents and the grant contract.

Funding

The DTIP is funded through revenue deposited into the Texas Emissions Reduction Plan Fund. That revenue consists of fees and surcharges established by the Texas Legislature.

The amount of funds available for grants during each year varies depending on the legislative appropriations to the program. The TCEQ will periodically issue notices and information regarding the grant programs, including information on the amount of funds available.

How to Contact Us

For information about this and other TERP grant programs, interested parties should check the TERP website at <www.terpgrants.org>. Also linked from that page are electronic versions of this document, grant-application forms, and other documents, as well as other information that may be helpful to a potential applicant.

TCEQ personnel are available to answer questions and offer assistance with the grant programs. If you are unclear about whether a proposed project would qualify for a grant, please feel free to contact TCEQ personnel to discuss the project.

Program staffers may be reached by calling 800-919-TERP (8377) from 8 a.m. to 5 p.m., Monday–Friday during days the TCEQ is open, by e-mail at <terp@tceq.texas.gov>, or by mail at:

Implementation Grants Section, MC 204
Air Quality Division
Texas Commission on Environmental Quality
PO Box 13087
Austin TX 78711-3087

Chapter 2
Glossary

Terms as they are defined in Texas Health and Safety Code, Chapter 386, and the TCEQ rules (30 TAC 114.620) apply to this program, except as such terms are further defined and have the meanings as explained below.

activity. Each individual replacement of a drayage truck.

activity life. The period over which the grant recipient commits to use the grant-funded vehicle or equipment in accordance with the terms of the grant contract. The standard minimum activity life is five years, although a different minimum activity life may be established by the TCEQ for a particular grant application period. The TCEQ will establish a start date for each activity, which will usually be as soon as the TCEQ has verified that the vehicle being replaced has been properly disposed of.

cargo handling equipment. Any heavy-duty non-road, self-propelled vehicle or equipment used at a seaport or rail yard to lift or move cargo, such as containerized, bulk, or break-bulk goods. Equipment includes, but is not limited to, rubber-tired gantry cranes, yard trucks, top handlers, side handlers, reach stackers, forklifts, loaders, and aerial lifts.

cost-effectiveness. The total dollar amount expended divided by the total number of tons of reduced emissions of nitrogen oxides, particulate matter, and other pollutants (alone or in combination) attributable to that expenditure, as may be determined by the TCEQ.

~~[**day cab.** A drayage truck cab that does not have a compartment behind the driver's seat intended to be used by the driver for sleeping.]~~

drayage activities. The transport of cargo, such as containerized, bulk, or break-bulk goods.

drayage truck. A heavy-duty on-road or non-road vehicle used for drayage activities and that operates on or transgresses (i.e., passes) through a seaport or rail yard for the purpose of loading, unloading, or transporting cargo, including transporting empty containers and chassis. This term includes heavy-duty non-road, self-propelled vehicles or equipment meeting the definition of cargo handling equipment.

motor vehicle. A self-propelled device designed for transporting persons or property on a public highway that is required to be registered under Chapter 502, Texas Transportation Code.

non-road equipment. A piece of equipment, excluding a motor vehicle or on-road heavy-duty vehicle, that is powered by a non-road engine, including non-road and non-recreational equipment and vehicles; construction equipment; industrial

equipment; mining equipment; locomotives; marine vessels; and other categories of equipment with high-emitting engines.

non-road engine. An internal combustion engine that is in or on a piece of equipment that is self-propelled and performs another function, excluding:

- a vehicle that is used solely for competition,
- a piece of equipment that is intended to be propelled while performing its function, or
- a piece of equipment designed to be capable of being carried or moved from one location or another.

non-road yard truck. A non-road mobile utility vehicle (piece of non-road equipment) used to transport cargo containers with or without chassis; also known as a utility tractor rig, yard tractor, or terminal tractor.

on-road heavy-duty vehicle. An on-road motor vehicle that has a gross vehicle weight rating of 8,500 pounds or more. This definition does not include a vehicle over 8,500 pounds that is classified by the EPA as a medium-duty passenger vehicle subject to the federal emission standards for light-duty on-road vehicles.

on-road yard truck. An on-road heavy-duty vehicle similar in configuration and use to a non-road yard truck, but with an on-road engine and meeting regulatory standards for limited on-road use.

person. An individual, corporation, organization, government or governmental subdivision or agency, business trust, partnership, association, or any other legal entity. This may include a corporation headquartered outside Texas that operates equipment or vehicles primarily in an eligible county in Texas.

project. One or more activities approved by the TCEQ under one grant contract.

rail yard. A rail facility where cargo is routinely transferred from drayage truck to train or vice versa, including structures that are devoted to receiving, handling, holding, consolidating, and loading or delivery of rail-borne cargo.

seaport. Publically or privately owned property associated with the primary movement of cargo or materials from oceangoing vessels or barges to shore or vice-versa, including structures and property devoted to receiving, handling, holding, consolidating, and loading or delivery of waterborne shipments. A seaport also includes publically or privately owned property within a ship channel security district established under Texas Water Code, Chapter 68.

Uniform Grant Management Standards. Standards issued by the Texas comptroller of public accounts for use by state agencies in issuing and administering grants under the authority of the Uniform Grant and Contract Management Act, Texas Government Code, Chapter 783.

Chapter 3
Eligible Seaports and Rail Yards

Vehicles funded under this program must operate at eligible seaports and rail yards located within the nonattainment areas in Texas designated under the Federal Clean Air Act, Section 107(d). The counties entirely or partially within a nonattainment area are listed in Table 3.1 (see also map, Figure 3.1). While this list is accurate at the time of publication, the boundaries of nonattainment areas may be subject to change and those changes will be considered in effect for this program regardless of whether the change is incorporated into these guidelines.

Table 3.1
Counties Eligible for Location of Seaports and Rail Yards under the DTIP

Brazoria	Ellis	Johnson	Rockwall
Chambers	El Paso	Kaufman	Tarrant
Collin	Fort Bend	Liberty	Waller
Dallas	Galveston	Montgomery	Wise
Denton	Harris	Parker	

The TCEQ may limit funding under a grant period to projects operating at seaports and rail yards in only some of the counties based on decisions about allocating funds for that grant period.

Seaports eligible under this program include facilities involved in the transfer of cargo from vessel to drayage truck or vice versa, or a combination of drayage truck and rail transfers. This may include the on-site storage of cargo delivered by vessel or drayage truck, before the transfer to a drayage truck or vessel. Eligible seaports also include facilities that are included in a ship channel security district established under Texas Water Code, Chapter 68.

Rail yards eligible under this program include facilities involved in the transfer of cargo from rail to drayage truck or vice versa, or a combination of drayage truck and vessel transfers. This may include the on-site storage of cargo delivered by rail or drayage truck, before the transfer to a drayage truck or to rail.

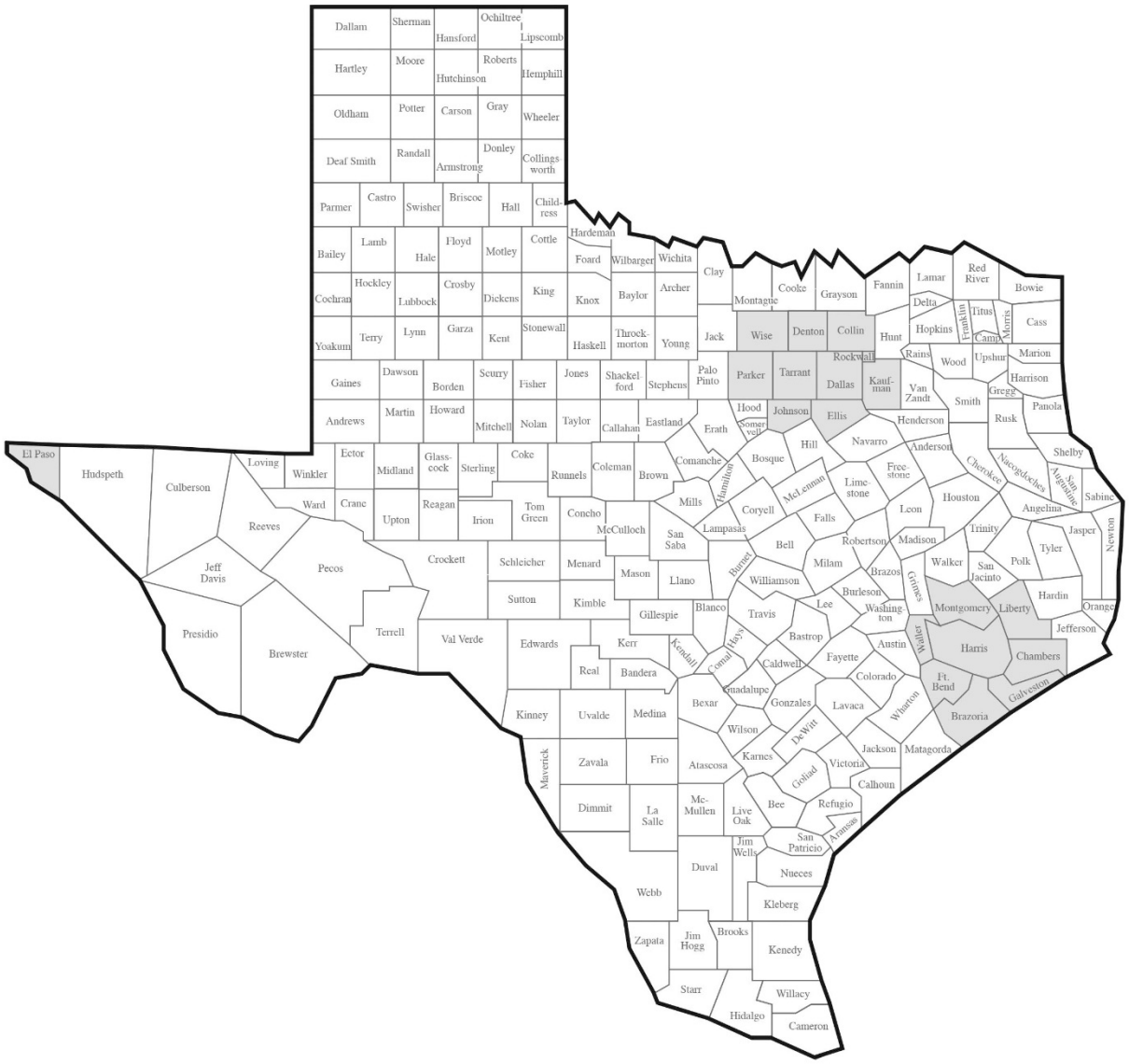
In general, major rail yards are operated by Class I railroad companies. Under Title 49, Code of Federal Regulations, Chapter 1201, a Class I railroad carrier is one with $250 million or more in annual operating revenues. The TCEQ may also include rail yards operated by Class II or III railroad companies, case by case, if it determines that those facilities include significant cargo transfer operations at the rail yard. This determination may include consideration of the frequency of average daily drayage-truck visits for transfer of cargo within a calendar month.

The TCEQ may periodically compile a list of seaports and rail yards that meet the definitions and criteria for this program and may require that a facility be

included on the approved list before it considers a drayage truck operating at that facility for funding. This list may be made available on the TERP website at <www.terpgrants.org> and included with the grant solicitation. The TCEQ will have the final authority to determine if a seaport or rail yard is eligible.

Also, the TCEQ may limit funding under a grant period to projects operating at only some of the seaports or rail yards that meet the criteria based on decisions made for that grant period.

Figure 3.1
Counties Eligible for Location of Seaports and Rail Yards under the DTIP
(subject to change)



Chapter 4
Eligibility Criteria

This chapter outlines the criteria for project eligibility. The TCEQ may further define or limit the eligibility criteria and establish additional criteria in the solicitation materials and other grant documents.

Eligible Activities

Activities eligible for funding under this program involve the replacement of a drayage truck with another drayage truck that is eligible for purchase.

Eligible Applicants

A person is potentially eligible for incentive funding if, for at least the preceding two years, they have:

1. owned or leased a drayage truck eligible to be replaced under the program; and
2. operated the truck in one or more of the designated seaports or rail yards for a minimum average number of visits per year for the preceding two years as established by the TCEQ in the grant-solicitation documents.

For particular funding periods, the TCEQ may limit eligibility to certain types of applicants.

Drayage Trucks Eligible for Replacement

Models of drayage trucks eligible for replacement under this program include:

1. a heavy-duty on-road vehicle with a gross vehicle weight rating (GVWR) over 26,000 pounds; [~~and~~]
2. a non-road yard truck [~~with an engine rated at greater than 125 horsepower (hp)~~]; and
3. other cargo handling equipment.

A drayage truck being replaced must have an engine model year 2006 or earlier.

An applicant must have continuously owned or leased the drayage truck for at least two years preceding the submission of an application and must have

operated the truck at one or more of the eligible seaports or rail yards over that two-year period for at least an average number of visits per 12-month period over the two years as established by the TCEQ in the grant-solicitation documents. Each combined entry and exit to and from the seaport or rail yard will be considered a visit. For drayage trucks operating permanently at a seaport or rail yard, each day of operation at the facility will be considered a visit.

The applicant must also have the authority to dispose of the vehicle and engine being replaced.

To document the ownership or lease of the truck, all of the following apply:

- For an on-road vehicle, the applicant must be named as the owner on the front of the vehicle title or lessee on the lease documents. The TCEQ may also require documentation that the applicant was listed on the title or lease documents for the previous two years.
- For a non-road yard truck and other cargo handling equipment, the TCEQ may require documentation of ownership or leasing [~~of the truck~~] for the previous two years.
- For on-road vehicles, non-road yard trucks, and other cargo handling equipment [~~For both on-road vehicles and non-road yard trucks~~], the TCEQ may require other documentation, as determined by the TCEQ, that the applicant has authority to dispose of the vehicle and engine being replaced.
- An on-road vehicle used for on-road purposes must currently be registered for operation in Texas in the applicant's name and must have been continuously registered and operated for the majority of use in Texas for the previous two years. An apportioned registration for operation in several states will not normally be accepted as proof of continuous registration and operation in Texas, unless the applicant can document that the majority of the vehicle operation occurred in Texas over the previous two years. A non-road yard truck must also have been operated for the majority of use in Texas for the previous two years.
- An on-road vehicle used for on-road purposes must have a current safety inspection (if a safety inspection is required for that vehicle and use) and must have continuously had an up-to-date safety inspection over the preceding two years.
- An on-road vehicle used for non-road purposes may be considered, case by case, if it was solely used at an eligible seaport or rail yard for cargo handling for the previous two years.

The TCEQ may waive the two-year ownership or lease requirement, case by case, where the ownership of the company has changed, the assets of the company have been purchased by another company, or the company has changed its name or incorporation status.

The drayage truck must be in good operating condition and capable of performing its primary function.

To document that the drayage truck has been used at one or more eligible seaports or rail yards for the two years before submission of the application, the applicant must certify in the application the average number of visits to the eligible facilities over those two years. The average historical operation at the eligible facilities may be used by the TCEQ to determine eligibility for the program as well as the eligible grant amount and the usage commitment over the activity life for the drayage truck being purchased.

The TCEQ may require the applicant to provide records and other documentation of use of the drayage truck at the eligible facilities.

Drayage Trucks Eligible for Purchase

Models of drayage trucks eligible for purchase to replace an existing drayage truck under the program include:

1. a heavy-duty on-road vehicle with a GVWR over 26,000 pounds; [~~and having a day-cab only~~]
2. a non-road yard truck [~~with an engine rated at greater than 125 hp~~]; and
3. other cargo handling equipment.

A drayage truck to be purchased must have an engine model year of 2010 or later. In addition, [~~the~~] a diesel engine on a non-road yard truck or other cargo handling equipment must be certified under an EPA certificate of conformity to meet the final Tier 4 non-road engine emission standards for both NO_x and PM. The Tier 4 standards for non-road engines were phased in from 2012 through 2014 for engines 75 to 174 hp and from 2011 through 2014 for engines 175 to 750 hp. Therefore, the eligibility of non-road yard trucks and other cargo handling equipment for purchase will need to be considered case by case.

For both on-road and non-road engines, the engine on the drayage truck being purchased must be certified by the EPA to lower NO_x and PM emission standards or family emission limits (FELs) than the emission standards or FELs to which the engine on the drayage truck being replaced is certified.

In general, the replacement drayage truck must be of the same type, weight category, and body and axle configuration as the drayage truck being replaced. The TCEQ may accept, in particular cases, vehicles of a different type, weight category, or body and axle configuration to account for the latest technology used for specific drayage purposes.

Some, but not all, of the situations the TCEQ may consider include:

- replacement of an on-road heavy-duty vehicle used solely for moving cargo in an eligible facility with a non-road yard truck,
- replacement of an on-road heavy-duty vehicle configured for long-haul transport with an on-road heavy-duty vehicle manufactured and configured as an on-road yard truck, and

- replacement of a non-road yard truck with an on-road heavy-duty vehicle manufactured and configured as an on-road yard truck.

Eligible Costs

The grant recipient may be eligible for reimbursement of up to 80 percent of the purchase price of the replacement drayage truck, subject to the grant-amount limits established by the TCEQ. A finance lease, with a binding commitment to buy and retain ownership of the drayage truck at the end of the lease, may be considered a purchase, subject to approval by the TCEQ. Other types of leases are not eligible.

The purchase price may include the invoice price, including taxes and delivery charges included in the price of the replacement drayage truck. The cost to purchase and install a TCEQ-approved global positioning system may also be considered part of the purchase price.

In determining the purchase price, the TCEQ may require that the salvage value of the drayage truck being replaced be subtracted from the invoice price. Unless an alternative approach is used for a particular grant round, the TCEQ may establish and use a default salvage value of $1,000 for the drayage truck being replaced.

The TCEQ may further limit what is considered an eligible cost for purposes of a particular grant round.

To the extent applicable, as determined by the TCEQ, the cost principles of the Uniform Grant and Contract Management Standards will apply to the determination of eligible costs.

Eligible Grant Amounts

The TCEQ may consider applications for the full 80 percent of the eligible costs of the purchase of the new drayage truck or may limit the grant amounts to a lower percentage of eligible costs.

The TCEQ may also establish maximum limits on the eligible costs, based on average marketplace purchase prices or manufacturers' suggested retail prices for different weight categories, model years, and types of vehicles, or on other factors determined by the TCEQ to help meet the goals of the program and the TERP.

In establishing the criteria for a particular grant round, the TCEQ may set limits on the cost-effectiveness of a project, based on the emissions reductions projected to be achieved in and near the seaports or rail yards.

In addition, the TCEQ may establish and list in the solicitation documents standardized maximum eligible grant amounts based on predetermined default

prices, the percentage of costs eligible for reimbursement, cost-effectiveness limits, or a combination of these and other factors.

Chapter 5
Program Procedures

This chapter contains the general procedures that will be used for applying for, awarding, and administering grants under this program. The TCEQ may adjust these procedures and develop more detailed ones, as needed, to ensure the effectiveness of the program.

Project Solicitation

Grant projects will be solicited through periodic or open-ended Requests for Grant Applications (RFGAs) and through other mechanisms to solicit grant applications. Copies of the RFGAs and the necessary application forms are made available at the TERP website <www.terpgrants.org> and directly from the TCEQ by calling toll free at 800-919-TERP (8377) during regular working hours (8 a.m. to 5 p.m., Monday through Friday), excluding holidays.

Application Review and Selection

The TCEQ will establish criteria for how grants will be selected for each grant round and will make the criteria available in the grant-solicitation documents. The TCEQ will review and evaluate grant applications according to the established criteria.

The TCEQ may either select and award grants based on the order of submission or may use competitive grant selection, including consideration of the comparative cost-effectiveness of the projects. Even when it uses the order of submission as a determinant of grant selection, the TCEQ may establish a priority order where applications meeting certain criteria may be selected and awarded first.

The determination of emissions reductions and calculation of the cost-effectiveness of a project may make use of default annual usage rates (mileage or hours of operation) established by the TCEQ or actual historical usage rates for the two years preceding the application. In addition, the TCEQ may place a priority on funding projects in specific areas or at specific facilities.

The TCEQ may limit the number of grants awarded to one applicant, one area, or projects at one facility, to ensure that a broad range of projects are funded. The TCEQ may also prioritize the selection and grant awards based on the average number of annual visits to an eligible seaport or rail yard.

Application-Verification Visits

Upon receipt of a grant application, the TCEQ may check the vehicle and equipment for condition, engine identification, and vehicle identification.

Awarding of Grants and Contracting

Projects selected for funding will be awarded a grant through the development and execution of a grant contract that is signed by the recipient and by an official of the TCEQ. Grant contracts may contain additional and more specific requirements than those contained in these guidelines. Grant recipients should review the contract's language carefully before accepting and signing it.

Each grant award and contract will be contingent upon the availability of funds to cover the grant. Grant contracts may be issued on a contingency basis, subject to the TCEQ's issuance of a follow-up Notice to Proceed, once sufficient funds are available.

Reimbursement

Grant payments will be reimbursements, meaning that the agency will remit payment **after** the eligible expense has been incurred by the recipient, including the vehicle having been delivered and the expense paid. Recipients will also have the option to assign their grant payments directly to the dealer or finance company. The TCEQ will supply reimbursement request and reporting forms for use by the recipient. The grant contract and instructions accompanying the reimbursement forms will include more specific criteria for requesting and receiving payment.

Upon completion of all grant-funded purchases, the grant recipient will need to submit a final request for reimbursement of all remaining expenses. The final request must include a completed and signed release of claims.

The grant recipient must also agree to place a label or sticker on the grant-funded vehicles and equipment, as the TCEQ may supply.

Verification of Vehicle, Equipment, and Engine Disposition

The applicant must agree to destroy the old vehicle or equipment—including the engine—replaced under this program no later than 90 days after receiving reimbursement by the TCEQ.

Unless the TCEQ agrees to an alternative method, the destruction must be carried out by complete crushing or other complete destruction of the vehicle,

equipment, or engine, or by making a hole in the engine block on both sides large enough to prevent repairs (usually at least 3 inches) and permanently destroying the frame by cutting the frame rails or main structural components of the vehicle or equipment.

~~[In lieu of crushing an engine block or cutting a hole in it, the TCEQ may also allow the engine to be sent to a remanufacture facility operated or authorized by the original engine manufacturer. The remanufacture of the engine must include removing all parts and using the old block to build a remanufactured engine with a new serial number.]~~

The applicant must certify the appropriate disposition of the vehicle or equipment, including the engine, using forms supplied by the TCEQ. The TCEQ may require a certified or duplicate Texas Nonrepairable Vehicle Title as evidence that an on-road vehicle has been rendered permanently inoperable. Grantees may be required to return grant funds if they fail to meet the disposition requirements, including if the vehicle, equipment, or engine is later returned to operation.

Monitoring and Reporting

The grant recipient must agree to monitor and track the use of the grant-funded drayage truck for the activity life designated in the grant contract.

The grant recipient will be required to submit monitoring reports to the TCEQ twice a year, unless the TCEQ authorizes an alternative reporting schedule.

The TCEQ may authorize grant recipients to use global positioning system units to monitor the grant-funded drayage truck in lieu of filing reports on the location and use of the equipment. The TCEQ may also require the installation and use of a global positioning system (GPS) for all projects under a particular grant round or for specific projects, based on the risks associated with that project. With use of GPS, grant recipients must verify the accuracy of the GPS data on forms provided by the TCEQ on a schedule it has established. All applicants monitoring via GPS will be required to use a vendor the TCEQ selects.

The usage reports or GPS monitoring reports submitted by the grant recipient will document:

- the usage amount,
- the number of visits to, and use at, the eligible facilities, and
- the percentage of use in the eligible areas over the required reporting period.

The TCEQ may, at its sole discretion, authorize an annual or longer reporting schedule, including suspending the reporting requirements, if a grant recipient is meeting the requirements and is otherwise complying with all program requirements.

Commitments

The intent of this program is to achieve reductions in emissions of NO_x and other pollutants at seaports and rail yards, as well as in the nonattainment areas and counties identified as "affected counties" in THSC 386.001(2) and TCEQ rules (30 TAC 114.629). Over the activity life of each grant-funded activity, the grant recipient commits the resulting emissions reductions to the TCEQ.

The recipient is responsible for performing the activities, as defined in the contract, necessary to achieve the emissions reductions at the designated seaports and rail yards and within the eligible geographic areas.

Unless the TCEQ has determined that the intent of the program has been met, recipients will be required to return all or a pro rata share of the grant funds to the TCEQ if the emissions reductions in the eligible geographic areas and at the seaports and rail yards over the activity life are not achieved.

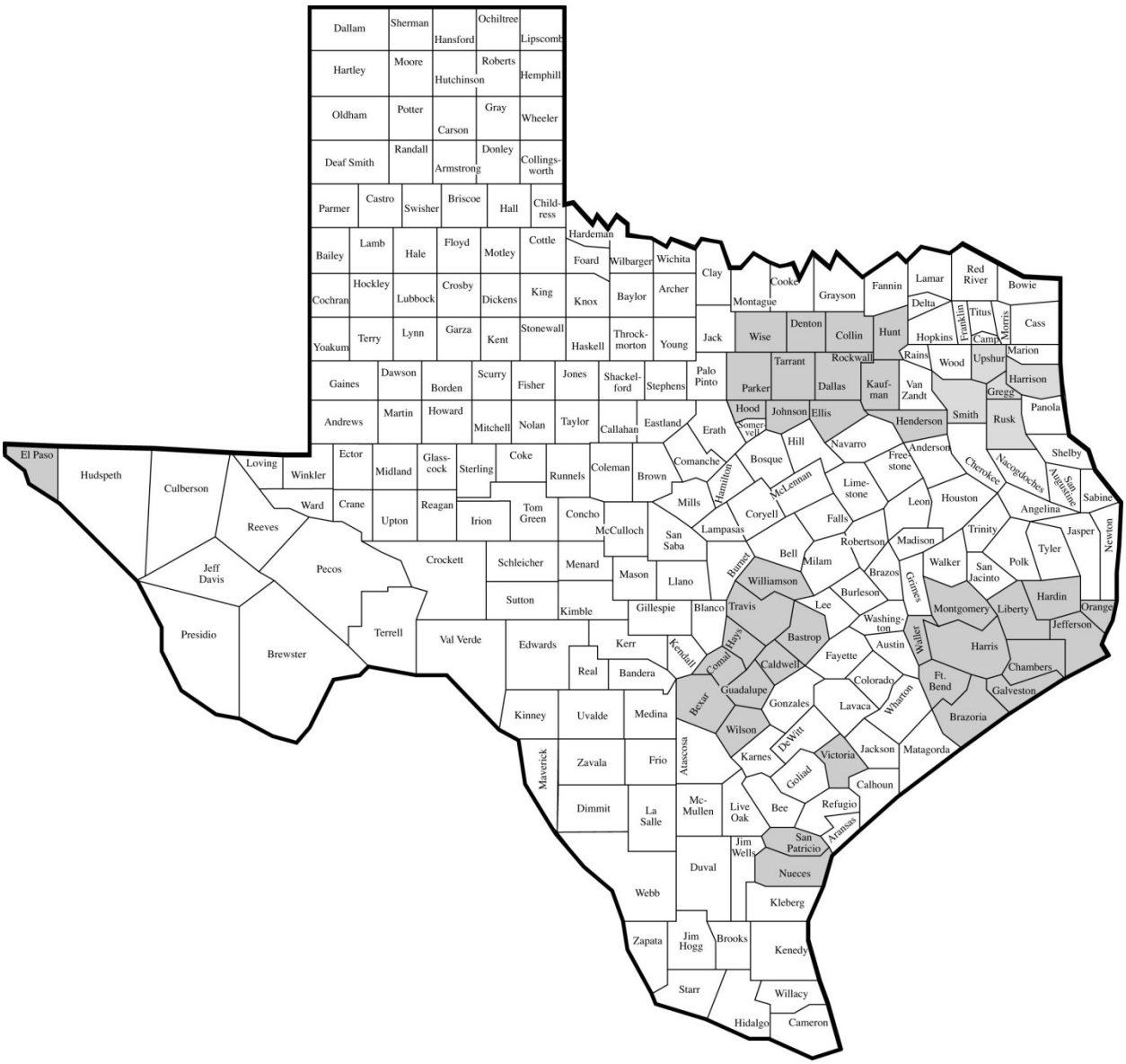
To achieve the emissions reductions at seaports and rail yards, the grant recipient must agree to operate the grant-funded drayage truck at any eligible seaports and rail yards identified in accordance with the provisions in Chapter 3 for a minimum number of visits per 12-month period as determined by the TCEQ based on the priorities established for grant selection and award for that grant-solicitation period and included in the grant contract. Each combined entry and exit to and from the seaport or rail yard is considered a visit. For drayage trucks operating permanently at a seaport or rail yard, each day of operation at the facility is considered a visit.

To achieve the emissions reductions in the nonattainment areas and affected counties, the grant recipient must agree to operate the grant-funded vehicle or equipment for at least 50 percent of the annual and total usage over the activity life in those counties. The 42 counties currently located within a nonattainment area or designated as an affected county are listed in Table 5.1 (see also map, Figure 5.1). While this list is accurate at the time of publication, affected counties and the boundaries of nonattainment areas are subject to change.

Table 5.1
Counties in Nonattainment Areas or Otherwise Designated as "Affected Counties" (subject to change)

Bastrop	Ellis	Hays	Nueces	Upshur
Bexar	El Paso	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	

Figure 5.1
Counties in Nonattainment Areas or Otherwise Designated as "Affected Counties" (subject to change)



The TCEQ may more narrowly limit the areas of use for a particular grant solicitation period to help best achieve the goals of the program and the TERP in general. The designated counties will be listed in the grant-solicitation documents and the grant contract.

The TCEQ may also allow a grant applicant to commit to a greater percentage of use in the eligible counties in order to qualify for a higher grant amount. The percentage-of-use commitment will be listed in the grant contract.

The calculation of emissions reductions in the designated counties will be based on a *usage amount* (miles for on-road vehicles or hours for non-road yard trucks) over the activity life in the eligible counties as established by the TCEQ for a particular grant-solicitation period. The TCEQ may establish default usage rates according to type of vehicle or equipment, or the TCEQ may base the calculations on actual historical usage rates and require a usage commitment based on actual miles or hours of operation.

The TCEQ may work with the grantee to implement other options for ensuring that the usage commitments will be met before it requires the return of grant funds. If the TCEQ requires the return of a pro rata share of the grant funds for underachievement of the annual commitment, the TCEQ may revise the commitment over the remaining activity life to a lower amount, corresponding to the lower grant amount.

Texas Commission on Environmental Quality

ORDER ADOPTING GUIDELINES REVISIONS

Docket No. 2015-1819-MIS

Non-Rule Project No. 2016-011-OTH-NR

On August 3, 2016, the Texas Commission on Environmental Quality (Commission) adopted revisions to *Texas Emissions Reduction Plan: Guidelines for Emissions Reduction Incentive Grants* and *Texas Emissions Reduction Plan: Guidelines for the Drayage Truck Incentive Program* (guidelines).

Under Tex. Health & Safety Code Ann. §§ 382.011, 382.012, and 382.023 (Vernon 2011), the Commission has the authority to control the quality of the state's air and to issue orders consistent with the policies and purposes of the Texas Clean Air Act, Chapter 382 of the Tex. Health & Safety Code. Additionally, the Commission has authority under Chapter 386 of the Tex. Health & Safety Code to provide grants and other funding for projects to improve air quality in the state's nonattainment areas and other areas of the state with air quality concerns. Under Tex. Health & Safety Code Ann. § 386.053, the Commission is to adopt guidelines and criteria consistent with Chapter 386 of the Tex. Health & Safety Code and may revise the guidelines and criteria as necessary to improve the ability of the Texas Emissions Reduction Plan (TERP) to achieve its goals.

The proposed revisions to the guidelines were made available for public comment in accordance with the provisions of Tex. Health & Safety Code, § 386.053. Notice of the proposed revisions was published in the April 18, 2016, issue of the *Texas Register* (41 TexReg 2217), published in nine major newspapers and one Spanish-language publication within the TERP eligible counties, posted on the TERP website, sent by electronic mail to the TERP listserv, mailed to the TERP Advisory Board, and mailed to the United States Environmental Protection Agency Region 6.

Public hearings on the proposed revisions to the guidelines were held on April 12, 2016, in Austin, Texas and April 14, 2016, in Houston, Texas. The public was invited to submit data, views, and recommendations on the proposed guidelines, either orally or in writing, at the public hearings or during the comment period. Prior to the scheduled public hearings, copies of the proposed guidelines

were available for public inspection at the Commission's central office and on the Commission's website.

The Commission received comments during the public comment period on the proposed guidelines and those comments have been considered and responded to in the Response to Comments, which have been approved by the Commission and incorporated by reference in this Order as if set forth at length verbatim in this Order. The Commission finds that the Response to Comments includes the names of all interested individuals, groups or associations offering comment on the proposed guidelines and their position concerning the same.

IT IS THEREFORE ORDERED BY THE COMMISSION that the revisions to the guidelines and the Response to Comments incorporated by reference into this Order are hereby adopted. The Commission further authorizes staff to make any non-substantive revisions to the guidelines necessary for final publication. The adopted revisions to the guidelines and responses to comment are incorporated by reference in this Order as if set forth at length verbatim in this Order.

The provisions of Tex. Health & Safety Code, § 386.053, exempt revisions to the guidelines from rule-making requirements of Chapter 2001, Government Code. This Order constitutes the Order of the Commission required by the Administrative Procedure Act, Government Code, § 2001.033.

If any portion of this Order is for any reason held to be invalid by a court of competent jurisdiction, the invalidity of any portion shall not affect the validity of the remaining portions.

TEXAS COMMISSION ON
ENVIRONMENTAL QUALITY

_____

Bryan W. Shaw, Ph.D., P.E., Chairman

_____

Date Signed