

Appendix 9

Rail Relocation and Improvements

This appendix contains the project criteria for rail-relocation and rail-improvement projects that assist in reducing air pollution and engine idling. 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.

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 result in the reduction of 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;
- 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 by the TCEQ.

Project Criteria

In addition to the eligibility criteria previously presented, the following list of criteria 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.
- Infrastructure activities—including infrastructure costs that are part of a broader repower, retrofit, replacement, or add-on project—are excluded from the statutory cost-effectiveness limit of \$15,000 per ton. However, the TCEQ may limit the cost-effectiveness for each grant round.
- 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 the purchase of vehicles or equipment that is required only by local law or regulation, or by corporate or controlling board policy of a public or private entity. Demonstration 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 demonstration 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 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 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 of the cost basis of the grant-funded vehicle, equipment, or engine, are not eligible for reimbursement by the TCEQ.
- 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 services. 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 methods of contracting for professional services shall not be used.

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

NO_x Emissions Standards

The baseline NO_x emissions standards will be based on the federal standards for NO_x emissions 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. 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 may be considered by the TCEQ.

Calculating NO_x Emissions Reductions

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.

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 of the counties eligible for TERP incentive funding, as listed in Table 3.1, except for El Paso County.	
TxLED correction factor for non-road: <i>1 - 0.07</i>	0.93

Calculate the NO_x Idling Emissions Reduction

NO _x idling emissions factor (g/hr)	
× TxLED correction factor <i>(diesel engines only)</i>	
= grams per hour (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)	

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.

It is recommended that interested parties meet with TCEQ staff 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 cost-effectiveness calculations. 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 percent.

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

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

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

The discount rate of 3 percent 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.

$$\text{Incremental cost} \times \text{CRF} = \text{annualized cost}$$

The cost-effectiveness calculations are presented in Table A9.1. Capital-recovery factors for up to 20 years are presented 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)	
$\text{CRF} = \frac{[(1 + i)^n (i)]}{[(1 + i)^n - 1]}$ $i = \text{discount rate (.03)}$ $n = \text{activity life}$	
Capital-recovery factor:	
Step 2. Determine the annualized cost	
$\text{Incentive amount} \times \text{CRF} = \text{annualized cost}$	
Annualized cost (\$/year):	
Step 3. Determine cost-effectiveness	
$\frac{\text{Annualized cost (\$/year)}}{\text{annual NO}_x \text{ emissions reduction (tons/year)}} = \text{cost-effectiveness (\$/ton)}$	
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 of each activity should also be added together 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.

$$\text{Total annualized costs} / \text{total annual NO}_x \text{ reductions} = \text{project cost-effectiveness}$$

