DEPARTMENT OF TRANSPORTATION

Federal Highway Administration

[FHWA Docket No. FHWA–2006–26383]

Publication of Interim Guidance on the Congestion Mitigation and Air Quality Improvement (CMAQ) Program

AGENCY: Federal Highway Administration (FHWA), DOT.

ACTION: Notice of publication of interim guidance; request for comments.

SUMMARY: The purpose of this notice is to: (1) Announce the publication of interim CMAQ guidance; and (2) solicit public comment on the contents of the interim guidance. Sections 1101, 1103 and 1808 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA–LU) (Pub. L. 109–59, Aug. 10, 2005) amended the Congestion Mitigation and Air Quality Improvement (CMAQ) Program, and authorizes $8.6 billion to support the CMAQ program in 2005–2009. The interim guidance went into effect October 31, 2006; however, we will review all comments submitted to the docket and will modify the guidance as necessary or appropriate.

DATES: Comments must be received on or before February 20, 2007.

FOR FURTHER INFORMATION CONTACT: Mike Koontz, Office of Natural and Human Environment, (202) 366–2076, *michael.koontz@dot.gov*; or Diane Liff (202) 366–6203 or Harold Aikens (202) 366–1373, Office of the Chief Counsel, Federal Highway Administration, 400 Seventh Street, SW., Washington, DC 20590. Office hours are from 7:45 a.m. to 4:15 p.m., Monday through Friday, except Federal holidays.

SUPPLEMENTARY INFORMATION:

Electronic Access

You may submit or retrieve comments online through the U.S. Department of Transportation's Document Management System (DMS) at: *http://dms.dot.gov/submit*. The DMS is available 24 hours each day, 365 days each year. Electronic submission and retrieval help and guidelines are available under the help section of the Web site.

An electronic copy of this notice may be downloaded from the Office of the Federal Register's home page at *http://www.archives.gov* and the Government Printing Office's Web site at *http://www.access.gpo.gov*.

Anyone is able to search the electronic form of all comments received into any of our dockets by the name of the individual submitting the comment (or signing the comment, if submitted on behalf of an association, business, labor union, etc.). You may review DOT's complete Privacy Act Statement in a **Federal Register** published on April 11, 2000 (70 FR 19477), or you may visit *http://dms.dot.gov.*

An electronic version of the interim CMAQ guidance may be downloaded from the FHWA Web page at: *http://www.fhwa.dot.gov/environment/cmaq06gm.htm*. It is also attached for reference below.

Background

The CMAQ program was created by the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) (Pub. L. 102–240, Dec. 18, 1991) and continued under the Transportation Equity Act for the 21st Century (TEA–21) (Pub. L. 105–178; Oct. 1998). Through 2005, the program supported nearly 16,000 transportation projects across the country. In the most recent authorization of the Federal-aid highway program, Congress amended the CMAQ program, and authorized funding to support the CMAQ program in 2005–2009 (sections 1101, 1103 and 1808 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA–LU) (Pub. L. 109–59, Aug. 10, 2005). More than $8.6 billion are authorized over the five-year program (2005–2009), with annual authorization amounts increasing each year during this period. This interim guidance updates and replaces previous program guidance issued in 1999. It focuses primarily on project eligibility provisions, and identifies the types of projects that are eligible for CMAQ support. It also provides information on how CMAQ apportionments are calculated and the geographic areas where CMAQ funds can be used, discusses the project selection process and requirements for analyzing emissions benefits from potential projects as part of the selection process, and examines Federal, State and Metropolitan Planning Organization (MPO) program administration responsibilities. The interim guidance went into effect October 31, 2006; however, we will review all comments submitted to the docket and will modify the guidance as necessary or appropriate.

This interim guidance includes comprehensive discussions and direction on a host of new or highlighted areas under SAFETEA–LU, and in particular emphasizes diesel engine retrofits and cost-effective congestion mitigation activities as priorities for CMAQ expenditures. It also provides relative cost-effectiveness data on various eligible project types to help inform the CMAQ project selection process.

We invite the public to submit comments on this interim guidance. We plan to issue a final guidance after we have evaluated all the comments received on this interim guidance.

(Authority: Sections 1101, 1103 and 1808 of Pub. L. 109–59)

Issued on: December 7, 2006.

J. Richard Capka,

Federal Highway Administrator.

The Congestion Mitigation and Air Quality (CMAQ) Improvement Program under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users; Interim Program Guidance

October 31, 2006.

The guidance contained in this document is intended to be nonbinding, except insofar as it references existing statutory requirements, and should not be construed as rules of general applicability and legal effect or notices of proposed rulemaking.

I. Introduction

The CMAQ program was created under the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991, continued under the Transportation Equity Act for the 21st Century (TEA–21), and reauthorized by the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA–LU).[1] Over $8.6 billion is authorized over the five-year program (2005–2009), with annual authorization amounts increasing each year during this period. Through 2005, the program has supported nearly 16,000 transportation projects across the country.

This guidance replaces the April 1999 version and provides information on the CMAQ program, including:

- Authorization levels and apportionment factors specific to the SAFETEA–LU
- Flexibility and transferability provisions available to States
- Geographic area eligibility for CMAQ funds
- Project eligibility information
- Project selection processes
- Program administration

Appendices 1–3 provide updated statutory language relating to the CMAQ program. Appendix 4 illustrates the comparative cost-effectiveness of potential CMAQ projects. Appendix 5 provides supplemental information on diesel retrofit projects.

[1] Pub. L. 109–59, 119 Stat. 1144 (Aug. 10, 2005).

Information on the current annual apportionment to each State and an electronic version of this guidance are available at *http://www.fhwa.dot.gov/environment/cmaqpgs/index.htm*.

II. Program Purpose

The purpose of the CMAQ program is to fund transportation projects or programs that will contribute to attainment or maintenance of the national ambient air quality standards (NAAQS) for ozone, carbon monoxide (CO), and particulate matter (PM).

The CMAQ program supports two important goals of the Department of Transportation: Improving air quality and relieving congestion. While these goals are not new elements of the program, they are strengthened in a new provision added to the CMAQ statute by SAFETEA–LU, establishing priority consideration for cost-effective emission reduction and congestion mitigation activities when using CMAQ funding.

Reducing pollution and other adverse environmental effects of transportation projects and transportation system inefficiency have been long-standing objectives of the Department of Transportation. The strategic plans for the Department of Transportation and for the Federal Highway Administration both include performance measures specifically focused on reducing air pollution from transportation facilities. The CMAQ program provides funding for a broad array of tools to accomplish these goals. By choosing to fund a CMAQ project, a State or local government can improve air quality and make progress towards achieving attainment status and ensuring compliance with the transportation conformity provisions of the Clean Air Act.

Reducing congestion is also a key objective of the Department of Transportation, and one that has gained increasing attention in the past several years. The cost of congestion, which negatively affects the U.S. economy, quality of life, and air quality, has risen dramatically in the last 25 years despite record levels of transportation investment. Some economists estimate that the overall cost of congestion to the U.S. economy approaches $200 billion a year. As a result, the Secretary of Transportation recently issued a *National Strategy to Reduce Congestion on America's Transportation Network* that aims to meaningfully reduce the economic and social costs of congestion on our nation's highways and in other transportation facilities. This strategy can be found at: *http://isddc.dot.gov/OLPFiles/OST/012988.pdf*.

Since congestion relief projects also reduce idling, the negative emissions impacts of ''stop and go'' driving, and the number of vehicles on the road, they have a corollary benefit of improving air quality. Based on their emissions reductions, these types of projects, including investments in improved system pricing and operations, are eligible for CMAQ funding. The Department believes State and local governments can simultaneously reduce the costly impacts of congestion while also improving air quality.

III. Authorization Levels Under the SAFETEA–LU

A. Authorization Levels

Table 1 shows the SAFETEA–LU CMAQ authorization levels by fiscal year. The CMAQ funds will be apportioned to States each year based upon the apportionment factors discussed in Section V.

TABLE 1.—SAFETEA–LU CMAQ AUTHORIZATION LEVELS

Fiscal year authorization	Amount authorized (dollars)
FY 2005	1,667,255,304
FY 2006	1,694,101,866
FY 2007	1,721,380,718
FY 2008	1,749,098,821
FY 2009	1,777,263,247

B. Equity Bonus

Similar to the minimum guarantee under the TEA–21, the Equity Bonus in SAFETEA–LU provides additional funding beyond the authorized levels so that each State receives a minimum percentage of its gas tax receipts back in the form of Federal-aid funds.[2]

C. Transferability of CMAQ Funds

Since transportation and environmental program priorities fluctuate, States may choose to transfer a limited portion of their CMAQ apportionment to the following Federal-aid highway programs: Surface Transportation Program (STP), National Highway System (NHS), Highway Bridge Program (HBP), Interstate Maintenance (IM), Recreational Trails Program (RTP), and the Highway Safety Improvement Program (HSIP). States may transfer CMAQ funds according to the following provision: An amount not to exceed 50 percent of the quantity of the State's annual apportionment less the amount the State would have received if the CMAQ program had been authorized at $1,350,000,000.[3] For example, if the annual national apportionment is $1.75 billion and a State receives $10 million more than it would have received if the national apportionment had been $1.35 billion, the State can transfer up to $5 million to other programs. Any transfer of such funds must still be obligated in nonattainment and maintenance areas. The amount of transferable funds will differ each year and by State, depending on overall authorization levels. Each year, the FHWA will inform States how much, if any, CMAQ funding is transferable and will track this movement of CMAQ funds.[4]

States also may transfer CMAQ funds to other Federal agencies. The SAFETEA–LU provides additional flexibility to complete such transfers when the receiving Federal agency has entered into an agreement with the State to undertake an eligible Federal-aid project.[5] These opportunities apply to projects that have met all CMAQ eligibility requirements prior to the transfer.

D. CMAQ and Innovative Finance: State Infrastructure Bank (SIB) and Section 129 Loans

Projects with dedicated repayment streams, i.e., a consistent source of revenue, may be financed with loans through DOT's innovative finance program as an alternative or supplement to CMAQ funding.

State Infrastructure Banks are State-directed programs that allow Federal-aid funds to be lent to sponsors of eligible Federal-aid projects (any project under Title 23 or 49 is eligible). SIBs may be capitalized with several Federal-aid highway apportionments including the National Highway System Program, the Surface Transportation Program, the Highway Bridge Program, and the Equity Bonus program. (**Note:** CMAQ may not be used to capitalize a SIB, but SIB funds may be used to finance CMAQ projects). State funds also may be used to capitalize the SIB. The State then receives repayments over time that can be directed toward other transportation projects. For example, New York State was successful in utilizing its SIB to implement two truck stop electrification projects along the New York State Thruway.

Section 129 loans (23 U.S.C. 129(a)(7)) allow states to use Federal-aid highway apportionments to make loans for projects with dedicated revenue streams (this is only applicable to highway,

[2] 23 U.S.C. 105 (SAFETEA–LU section 1104).

[3] 23 U.S.C. § 126.

[4] 23 U.S.C. § 110(c).

[5] 23 U.S.C. § 132(a) (SAFETEA–LU section 1119).

bridge, tunnel, ferry boat, and ferry terminal projects). A Section 129 loan may be used to construct a truck stop electrification facility if the facility is located on the Interstate right-of-way.[6]

The SAFETEA–LU establishes a new SIB program under which all States are authorized to enter into cooperative agreements with the U.S. DOT to establish infrastructure revolving-funds eligible to be capitalized with Federal transportation funds.[7] The key difference between a Section 129 loan and a SIB is that a Section 129 loan usually provides financing to an individual project and funding a SIB capitalizes a financial entity that can assist multiple projects. The two loan programs have similar maximum allowable terms established by Federal law:

- Both public and private entities are eligible to be project sponsors
- Repayments must begin within 5 years of project completion
- Maximum loan term is 30 years after project authorization (Section 129) or 30 years after first repayment (SIB)
- Interest rate may be set by State, at or below market rates
- Loans can only be made up to 80 percent of eligible project costs (Section 129). For SIBs, loans can be made up to 100 percent of eligible project costs (although when the State first creates a SIB, it is required to contribute a non-Federal match of 20 percent)

These innovative loan programs can increase the efficiency of States' transportation investments and significantly leverage Federal resources by attracting non-Federal public and private investment, and provide greater flexibility to the States by allowing other types of project assistance in addition to grant assistance. This type of financing is important for new technologies or start-up businesses that may have difficulty finding financing in the private capital markets. In addition to SIBs and section 129 loans, the FHWA also administers the Transportation Infrastructure Finance and Innovation Act (TIFIA) program, which provides Federal credit assistance to large-scale projects greater than $50 million.

The following example illustrates how a Section 129 loan could work to construct an idle-reduction facility on an Interstate right-of-way. A private party intends to build a stationary idle-reduction facility, and seeks grant funding for it from the State DOT. The idle reduction facility will eventually earn a profit by charging user fees, but since the capital costs are high, the private party needs assistance with financing the initial construction. Instead of providing an outright grant, the State could offer a loan of Federal-aid funds with flexible repayment terms. If the facility required $1 million for initial construction, the State could make a loan at five percent over fifteen years. The State could accelerate the payments if the facility were more successful than expected, and delay repayment if the facility failed to meet revenue targets. The State could also build in credits for additional emissions reductions, providing incentives for additional loans or grants to idle reduction projects. More information on the DOT's innovative finance program is available at *http://www.fhwa.dot.gov/innovativefinance/*.

IV. Priority for Use of CMAQ Funds

The SAFETEA–LU directs States and MPOs to give priority to two categories of funding. First, to diesel retrofits, particularly where necessary to facilitate contract compliance, and other cost-effective emission reduction activities, taking into consideration air quality and health effects. Second, priority is to be given to cost-effective congestion mitigation activities that provide air quality benefits.[8] Appendix 4 illustrates the comparative cost-effectiveness of several potential CMAQ projects. Other projects also may be cost-effective. The priority provisions in the statute apply to the portion of CMAQ funds derived from the application of Sections 104(b)(2)(B) and 104(b)(2)(C), i.e., the CMAQ apportionment formula. They do not apply to areas where CMAQ funding has been derived from the minimum apportionment provisions.

Though the SAFETEA–LU establishes these CMAQ investment priorities, it also retains State and local agencies' authority in project selection. The law maintains the existing roles and authorities of public agencies, and substantial shifts in local procedures are not required by the SAFETEA–LU.[9] However, project selection should reflect the positive cost-effectiveness relationships highlighted in Appendix 4. State and local transportation programs that implement a broad array of these cost-effective measures may record a more rapid rate of progress toward their clean air goals, since many of these endeavors generate immediate benefits. Local procedures that elevate the importance of these efforts in project selection—and rate them accordingly—may accelerate the drive to air quality attainment.

In addition to the SAFETEA–LU priority on cost-effectiveness, Section 176(c) of the Clean Air Act[10] (CAA) requires that the FHWA and FTA ensure timely implementation of transportation control measures (TCMs) in applicable State Implementation Plans (SIPs). These and other CMAQ-eligible projects identified in approved SIPs must receive funding priority.

The FHWA recommends that States and MPOs develop their transportation/air quality programs using complementary measures that provide alternatives to single-occupant vehicle (SOV) travel while improving traffic flow through operational strategies and balancing supply and demand through pricing, parking management, regulatory, or other means.

V. Annual Apportionments of CMAQ Funds to States

A. CMAQ Apportionments

Federal CMAQ funds are apportioned annually to each State according to the severity of its ozone and CO problem (see Appendix 2). The population of each county (based upon Census Bureau data) that is in a nonattainment or maintenance area for ozone and/or CO is weighted by multiplying by the appropriate factor listed in Table 2. PM nonattainment and maintenance areas and former 1-hour areas, except those few 1-hour maintenance areas participating in Early Action Compacts, are not included in the apportionments.

Note: CMAQ apportionments and CMAQ eligibility are two different things. Some areas in which CMAQ funds may be spent are not included in the apportionments (see Section VI.).

[6] 23 U.S.C. 111(d) (SAFETEA–LU section 1412).

[7] 23 U.S.C. 190 (SAFETEA–LU section 1602).

[8] 23 U.S.C. 149(f)(3) (SAFETEA–LU section 1808(d)).

[9] 23 U.S.C. 149(f)(3)(B) (SAFETEA–LU section 1808(d)).

[10] 42 U.S.C. 7506 Section 176(c)(2)(B).

TABLE 2.—SAFETEA–LU CMAQ APPORTIONMENT FACTORS [11]

Pollutant	Classification at the time of annual apportionment	Weighting factor
Ozone (O_3) or (CO)	Maintenance (these areas had to be previously eligible as nonattainment areas—See Section VI.).	1.0.
Ozone	Subpart 1 ("Basic")	1.0.
Ozone	Marginal	1.0.
Ozone	Moderate	1.1.
Ozone	Serious	1.2.
Ozone	Severe	1.3.
Ozone	Extreme	1.4.
CO	Nonattainment	1.0.
Ozone and CO	Ozone nonattainment or maintenance and CO nonattainment or maintenance.	1.2 × O_3 factor.
All States—minimum apportionment	½ of 1 percent total annual apportionment of CMAQ funds	N/A.

CMAQ apportionments are calculated based on the nonattainment and maintenance areas that exist at the time of apportionment. Generally, apportionments are calculated prior to the beginning of each fiscal year.

B. Area Designations: Attainment vs. Nonattainment

Each State is guaranteed a minimum apportionment of one-half percent of the year's total program funding, regardless of whether the State has any nonattainment or maintenance areas. These flexible funds or minimum apportionment funds can be used anywhere in the state for projects eligible for either CMAQ or the Surface Transportation Program (STP).[12]

The FHWA Budget Division identifies annual apportionments of CMAQ funds as either *mandatory* or *flexible*. All funding is considered mandatory for states with weighted populations yielding one-half percent or more of the authorized funds (based on the table above). Annual CMAQ funding apportioned through the application of Sections 104(b)(2)(B) and 104(b)(2)(C) must be used for projects in nonattainment/maintenance areas.

States with weighted populations yielding at least some apportioned value but less than one-half percent of the authorized funds receive both mandatory and flexible funds to reach the minimum apportionment. For example, if a State's weighted population yields two tenths of one percent of the authorized funds, it would receive two tenths of one percent of the national funds as mandatory funds, and three tenths of one percent as flexible funds. Thus, 40 percent of the State's funds would be mandatory and 60 percent would be flexible.

For States with no areas applicable to the apportionment table, their minimum apportionment, one-half percent, is all flexible funding. The FHWA reports the breakdown of mandatory and flexible funds by State in its fiscal year apportionment tables.

C. Apportionments and State Allocation

Notwithstanding the statutory formula for determining the apportionment amount, the State may use its CMAQ funds in any ozone, CO, or PM nonattainment or maintenance area. A State is under no statutory obligation to allocate CMAQ funds in the same way they are apportioned. States are encouraged to consult affected MPOs to determine regional and local CMAQ priorities and work with them to allocate funds accordingly.

D. Federal Share and State/Local Match Requirements

The Federal share for most eligible projects is generally 80 percent (90 percent for projects on the Interstate System). Activities identified in 23 U.S.C. 120(c) (See Appendix 3), including traffic control signalization, commuter carpooling and vanpooling, and signalization projects to provide priority for transit vehicles, may be funded at up to 100 percent Federal share if they meet the conditions of that section.

Although not required for public-private partnerships (PPP) under the CMAQ program, State and local officials have the discretion to request a higher local match from the private sector partner. For example, project sponsors may find that a CMAQ PPP requiring a 50 percent local match contribution is more appropriate than the standard 20 percent required under Federal law. In addition, higher local matches for these efforts can leverage CMAQ funding and extend the program to a greater pool of projects.

VI. Geographic Areas That Are Eligible To Use CMAQ Funds

A. Eligible Areas

CMAQ funds may be invested in all 8-hour ozone, CO, and PM nonattainment and maintenance areas. Funds also may be spent in the few remaining1-hour ozone maintenance areas (these counties also have Early Action Compacts in place), since the 1-hour standard remains in effect for these areas.

Funds also may be used for projects in proximity to nonattainment and maintenance areas if the benefits will be realized primarily within the nonattainment or maintenance area. The delineation of an area considered "in proximity" should be discussed with the FHWA and FTA field offices and elevated to headquarters if necessary.

B. Maintenance Areas

CMAQ funds may be invested in maintenance areas that have approved maintenance plans under CAA section 175A. In States with ozone or CO maintenance areas but no nonattainment areas, mandatory CMAQ funds must be used in the maintenance areas.

C. Maintenance Plan Requirement, SAFETEA–LU

CMAQ funds may be invested in former 1-hour ozone areas that were not designated under the 8-hour standard but where the 1-hour standard has been revoked. Since these areas are required to file maintenance plans, they are considered eligible for CMAQ funding under provisions of the SAFETEA–LU.[13]

D. Flexible Funds in PM Areas

While States may use flexible CMAQ funding anywhere and for any CMAQ- or STP-eligible project (see V.B. on

[11] 23 U.S.C. 104(b)(2) (SAFETEA–LU section 1103(d)).

[12] 23 U.S.C. 149(c).

[13] 23 U.S.C. 149(b) (SAFETEA–LU section 1808(a)).

minimum apportionment), the FHWA encourages States and MPOs to evaluate the cost-effectiveness and benefits to public health of targeting flexible CMAQ funding to projects that reduce PM. Examples of such projects include implementing a diesel retrofit or idle reduction program, constructing freight/intermodal transfer facilities, traffic signalization, or ITS projects that reduce congestion; paving dirt roads, and purchasing street sweeping equipment. See Appendix 4 for further cost-effectiveness comparisons.

VII. Project Eligibility Provisions

A. Project Eligibility: General Conditions

To be eligible for CMAQ funds, a project must be included in the MPO's current transportation plan and TIP (or the current STIP in areas without an MPO). In nonattainment and maintenance areas, the project also must meet the conformity provisions contained in Section 176(c) of the Clean Air Act and the transportation conformity rule.[14] In addition, all CMAQ-funded projects need to complete National Environmental Policy Act (NEPA) requirements and meet basic eligibility requirements for funding under titles 23 and 49 of the United States Code.

The following should guide CMAQ eligibility decisions:

1. Capital Investment

CMAQ funds may be used to establish new or expanded transportation projects or programs that reduce emissions, including capital investments in transportation infrastructure, congestion relief efforts, diesel engine retrofits, or other capital projects.

2. Operating Assistance

There are several general conditions that must be met for operating assistance to be eligible under the CMAQ program.

a. Operating assistance is limited to new transit services, intermodal facilities, and travel demand management strategies (including traffic operation centers); and the incremental cost of expanding existing transit services.

b. In using CMAQ funds for operating assistance, the intent is to help start up viable new transportation services that can demonstrate air quality benefits and eventually cover their costs as much as possible. Other funding sources should supplement and ultimately replace CMAQ funds for operating assistance, as these projects no longer represent additional, net air quality benefits but have become part of the baseline transportation network.

c. Operating assistance includes all costs of providing new transportation services, including, but not limited to, labor, fuel, administrative costs, and maintenance.

d. When CMAQ funds are used for operating assistance, non-Federal share requirements still apply.

e. With the focus on start-up costs only, operating assistance under the CMAQ program is limited to three years. The provisions in 23 U.S.C. § 116 place responsibilities for maintenance on States.[15] Since facility maintenance is akin to operations, three years of CMAQ assistance provides adequate incentive and flexibility while not creating a pattern of excessive or even perpetual support. Exceptions are listed below under VII.D.7 Travel Demand Management, VII.D.8 Public Education, and VII.D.10 Carpooling and Vanpooling.

3. Emission Reduction

Air quality improvement is defined by several distinct terms in 23 U.S.C. § 149. These terms include contribution to attainment, reduction in pollution, air quality benefits, and others. For purposes of this guidance, the FHWA uses *emission reduction* to represent this group of terms. CMAQ-invested projects or programs must reduce CO, ozone precursor (NO_X and VOCs), PM, or PM precursor (e.g., NO_X) emissions from transportation. These reductions must contribute to the area's overall clean air strategy and can be demonstrated by the assessment that is required under this guidance. States and MPOs also may consider the ancillary benefits of eligible projects, including greenhouse gas reductions, congestion relief, safety, or other elements, when programming CMAQ funds, though such benefits do not alone establish eligibility.

4. Planning and Project Development

Activities in support of eligible projects also may be appropriate for CMAQ investments. Studies that are part of the project development pipeline (*e.g.*, preliminary engineering) under the National Environmental Policy Act (NEPA) are eligible for CMAQ support, as are FTA's Alternatives Analyses. General studies that fall outside specific project development do not qualify for CMAQ funding. Examples of such efforts include major investment studies, commuter preference studies, modal market polls or surveys, transit master plans, and others. These activities are eligible for Federal planning funds.

B. Projects Ineligible for CMAQ Funding

The following projects are ineligible for CMAQ funding:

1. Light-duty vehicle scrappage programs.[16]

2. Projects that add new capacity for SOVs are ineligible for CMAQ funding unless construction is limited to high-occupancy vehicle (HOV) lanes.

3. Routine maintenance and rehabilitation projects (e.g., replacement-in-kind of track or other equipment, reconstruction of bridges, stations, and other facilities, and repaving or repairing roads) are ineligible for CMAQ funding as they only maintain existing levels of highway and transit service, and therefore do not reduce emissions. Other funding sources, such as STP and FTA's Section 5307 program, are available for such activities.

4. Administrative costs of the CMAQ program may not be defrayed with program funds, e.g., support for a State's ''CMAQ Project Management Office'' is not eligible.

5. Projects that do not meet the specific eligibility requirements of titles 23 and 49 U.S.C. are ineligible for CMAQ funds.

6. Stand-alone projects to purchase fuel. One exception is listed below in Section VII.D.3.

C. Public-Private Partnerships (PPPs)

In a PPP, a private or non-profit entity's resources replace or supplement State or local funds and possibly a portion of the Federal-aid in a selected project. The PPP elements of the program have been refined over the last two transportation reauthorizations, and these partnerships have become a critical part of CMAQ.[17]

Partnerships must have a legal, written agreement in place between the public agency and the private or non-profit entity before a CMAQ-funded project may be implemented. These agreements should be developed under relevant State contract law and should specify the intended use for CMAQ funding; the roles and responsibilities of the participating entities; and how the disposition of land, facilities, and equipment will be carried out should the original terms of the agreement be altered (e.g., due to insolvency, change in ownership, or other changes in the structure of the PPP).

Public funds should not be invested where a strong public benefit cannot be

[14] 40 CFR parts 51 and 93.

[15] 23 U.S.C. 116.

[16] 23 U.S.C. 149(b).

[17] 23 U.S.C. 149(e).

demonstrated. Consequently, CMAQ funds must be devoted only to PPPs that benefit the general public by clearly reducing emissions, not for financing marginal projects. Consistent with the planning and project selection provisions of the Federal-aid highway program, the FHWA considers it essential that all interested parties have full, open, and timely access to the project selection process.

There are several other statutory restrictions and special provisions on the use of CMAQ funds in PPPs. Eligible costs under this section may not include costs to fund an obligation imposed on private sector or non-profit entities under the CAA or any other Federal law. However, if the private or non-profit entity is clearly exceeding its obligations under Federal law, CMAQ funds may be used for that incremental portion of the project.

Eligible non-monetary activities that satisfy the non-Federal match requirements under the partnership provisions include the following:

- Ownership or operation of land, facilities, or other physical assets.
- Construction or project management.
- Other forms of participation approved by the U.S. DOT.

Sharing of total project costs, both capital and operating, is a critical element of a successful public-private venture, particularly if the private entity is expected to realize profits as part of the joint venture. State and local officials are urged to consider a full range of cost-sharing options when developing a PPP, including a larger State/local match than the usual 20 percent required under Federal law. For detailed information on cost principles beyond the scope of this guidance, please consult *OMB Circular A–87,* which focuses on determining allowable costs for State, local, and tribal governments; and 49 CFR Part 18, which provides direction on administering Federal grants to State and local governments.

D. Eligible Projects and Programs

Eligibility information is provided below. Not all possible requests for CMAQ funding are covered—this section provides examples of activities eligible for CMAQ funds.

1. Transportation Control Measures (TCMs)

Most of the TCMs included in Section 108 of the CAA, listed below, are eligible for CMAQ funding. One CAA TCM, programs to encourage removal of pre-1980 light-duty vehicles, is specifically excluded from CMAQ eligibility.[18]

i. Programs for improved public transit;

ii. Restriction of certain roads or lanes to, or construction of such roads or lanes for use by, passenger buses or HOV;

iii. Employer-based transportation management plans, including incentives;

iv. Trip-reduction ordinances;

v. Traffic flow improvement programs that reduce emissions; ii.fringe and transportation corridor parking facilities serving multiple-occupancy vehicle programs or transit service;

vii. Programs to limit or restrict vehicle use in downtown areas or other areas of emission concentration particularly during periods of peak use;

viii. Programs for the provision of all forms of high-occupancy, shared-ride services;

ix. Programs to limit portions of road surfaces or certain sections of the metropolitan area to the use of non-motorized vehicles or pedestrian use, both as to time and place;

x. Programs for secure bicycle storage facilities and other facilities, including bicycle lanes, for the convenience and protection of bicyclists, in both public and private areas;

xi. Programs to control extended idling of vehicles;

xii. Reducing emissions from extreme cold-start conditions;

xiii. Employer-sponsored programs to permit flexible work schedules;

xiv. Programs and ordinances to facilitate non-automobile travel, provision and utilization of mass transit, and to generally reduce the need for SOV travel, as part of transportation planning and development efforts of a locality, including programs and ordinances applicable to new shopping centers, special events, and other centers of vehicle activity; and

xv. Programs for new construction and major reconstructions of paths, tracks, or areas solely for the use by pedestrian or other non-motorized means of transportation when economically feasible and in the public interest.

2. Extreme Low-Temperature Cold Start Programs

Projects intended to reduce emissions from extreme cold-start conditions are eligible for CMAQ funding. Such projects include retrofitting vehicles and fleets with water and oil heaters and installing electrical outlets and equipment in publicly-owned garages or fleet storage facilities (See Section VII.C. for a possible expansion to privately-owned equipment and facilities).

3. Alternative Fuels and Vehicles

Fuel

With the exception of Missouri, Iowa, Minnesota, Wisconsin, Illinois, Indiana, and Ohio, fuel costs are not an eligible expense as a stand-alone project. Only these seven states may use CMAQ funds to purchase alternative fuels as defined in section 301 of the 1992 Energy Policy Act (natural gas, ethanol, etc.) or biodiesel, assuming such projects meet other applicable eligibility requirements noted in Section VII.B. above.

Establishing publicly-owned fueling facilities and other infrastructure needed to fuel alternative-fuel vehicles is an eligible expense, unless privately-owned fueling stations are in place and reasonably accessible. Additionally, CMAQ funds may support converting a private fueling facility to support alternative fuels through a public-private partnership agreement (See Section VII.C.).

Non-transit Vehicles

CMAQ funds may be used to purchase publicly-owned alternative fuel vehicles, including passenger vehicles, refuse trucks, street cleaners, and others. Costs associated with converting fleets to run on alternative fuels are also eligible. When private vehicles are purchased, only the cost difference between the alternative fuel vehicles and comparable conventional fuel vehicles is eligible. Such vehicles should be fueled by one of the alternative fuels identified in section 301 of the 1992 Energy Policy Act or biodiesel.

Hybrid Vehicles

Although not defined by the Energy Policy Act of 1992 as alternative fuel vehicles, certain hybrid vehicles that have lower emissions rates than their non-hybrid counterparts may be eligible for CMAQ investment. Hybrid passenger vehicles must meet EPA's low emissions and energy efficiency requirements for certification under the HOV exception provisions of the SAFETEA–LU to be eligible for CMAQ funding.[19]

Projects involving heavier vehicles, including refuse haulers and delivery trucks, also may be appropriate for program support. Eligibility should be based on a comparison of the emissions

[18] 23 U.S.C. 149(1)(A).

[19] 23 U.S.C. 166(e) (SAFETEA–LU section 1121(a)). The required rulemaking is under development by EPA and is expected to list Tier 2/Bin 5—the average of the Tier 2 tailpipe emission standards—as the minimum level for low-emission certification under the HOV exception.

projections of these larger candidate vehicles and other comparable models.

4. Congestion Reduction & Traffic Flow Improvements

Traffic flow improvements may include the following:

a. Traditional Improvements

Traditional traffic flow improvements, such as the construction of roundabouts, HOV lanes, left-turn or other managed lanes, are eligible for CMAQ funding provided they demonstrate net emissions benefits.

b. Intelligent Transportation Systems

Intelligent Transportation Systems (ITS) projects, such as traffic signal synchronization projects, traffic management projects, and traveler information systems, can be effective in relieving traffic congestion, enhancing transit bus performance, and improving air quality. The following have the greatest potential for improving air quality:

- Regional multi-modal traveler information systems
- Traffic signal control systems
- Freeway management systems
- Electronic toll-collection systems
- Transit management systems
- Incident management programs

A lengthier discussion of the benefits associated with various operational improvements can be found at: *http://ops.fhwa.dot.gov/program_areas/programareas.htm*

c. Value/Congestion Pricing

As part of its *National Strategy* referenced above, the Department broadly promotes highway congestion pricing and is also seeking an area-wide demonstration of the effectiveness of congestion pricing (along with other elements). Congestion pricing is a market-based mechanism that allows tolls to rise and fall depending on available capacity and demand. It has gained increasing attention and popularity in recent years following several highly successful facility demonstrations in the U.S. and several network wide demonstrations abroad. Tolls can be charged electronically, thereby eliminating the need for tollbooths. In addition to the benefits associated with reducing congestion, revenue is generated that can be used to pay for a wide range of transportation improvements, including Title 23-eligible transit services in the newly tolled corridor.

Parking pricing can include time-of-day parking charges that reflect congested conditions. These strategies should be designed to influence trip-making behavior and may include charges for using a parking facility at peak periods, or a range of employer-based parking cash-out policies that provide financial incentives to avoid parking or driving alone. Parking pricing integrated with other pricing strategies is encouraged.

Pricing encompasses a variety of market-based approaches such as:

- HOT lanes, or High Occupancy Toll lanes, on which variable tolls are charged to drivers of low-occupancy vehicles using High-Occupancy Vehicle (HOV) lanes, such as the ''FasTrak'' Lanes on I–15 in San Diego and the recently converted I–394 in Minneapolis in which prices vary dynamically every two minutes based on traffic conditions.
- New variably tolled express lanes on existing toll-free facilities, such as the ''91 Express Lanes'' on State Route 91 in Orange County, CA.
- Variable tolls on existing or new toll roads, such as on the bridges and tunnels operated by the Port Authority of New York and New Jersey.
- Network-wide or cordon pricing, such as implemented in Stockholm, London and Singapore.
- Usage-based vehicle pricing, such as mileage-based vehicle taxation being explored by the State of Oregon, or pay-per-mile car insurance.

As with any eligible CMAQ project, value pricing must generate an emissions reduction. Marketing and outreach efforts to expand and encourage the use of eligible pricing measures may be funded indefinitely. Eligible expenses for reimbursement include, but are not limited to: Tolling infrastructure, such as transponders and other electronic toll or fare payment systems; small roadway modifications to enable tolling, marketing, public outreach, and support services, such as transit in a newly tolled corridor. Innovative pricing approaches yet to be deployed in the U.S. also may be supported through the Value Pricing Pilot Program. A more complete discussion of projects currently underway in the U.S. can be found at: *http://ops.fhwa.dot.gov/tolling_pricing/value_pricing/index.htm.*

Operating expenses for traffic flow improvements are eligible for CMAQ funding for a period not to exceed three years if they can be shown to produce air quality benefits, if the expenses are incurred from new or additional services, and if previous funding mechanisms, such as fares or fees for services, are not displaced.

Projects or programs that involve the purchase of integrated, interoperable emergency communications equipment are eligible for CMAQ funding.[20]

[20] 23 U.S.C. 149(b)(6) (SAFETEA–LU section 1808(b)(4)).

5. Transit Improvements

Many transit projects are eligible for CMAQ funds. The general guideline for determining eligibility is whether the project increases capacity and would likely result in an increase in transit ridership and a potential reduction in congestion. As with other types of CMAQ projects, there should be a quantified estimate of the project's emissions benefits accompanying the proposal.

The FTA administers most transit projects. Once the FTA determines a project eligible, CMAQ funds will be transferred from the FHWA to the FTA, and the project will be administered according to the requirements of the FTA's Urbanized Area Formula Grant Program.[21] Certain types of transit projects for which the FTA lacks statutory authority, such as diesel retrofit equipment for public school bus fleets, are administered by the FHWA.

a. Facilities

New transit facilities (e.g., lines, stations, terminals, transfer facilities) are eligible if they are associated with new or enhanced mass transit service. Routine maintenance or rehabilitation of existing facilities is not eligible, as it does not reduce emissions. However, rehabilitation of a facility may be eligible if the vast majority of the project involves physical improvements that will increase capacity. In such cases there should be supporting documentation showing an increase in transit ridership that is more than minimal. If the vast majority of the project involves capacity enhancements, other elements involving refurbishment and replacement-in-kind also are eligible.

b. Vehicles and Equipment

New transit vehicles (bus, rail, or van) to expand the fleet or replace existing vehicles are eligible. Transit agencies are encouraged to purchase vehicles that are most cost-effective in reducing emissions. Diesel engine retrofits, such as replacement engines and exhaust after-treatment devices, are eligible if certified or verified by the EPA or California Air Resources Board (CARB). Routine preventive maintenance for vehicles is not eligible as it only returns the vehicles to baseline conditions. Besides diesel engine retrofits, other transit equipment may be eligible if it represents a major system-wide upgrade that will significantly improve speed or reliability of transit service, such as advanced signal and communications systems.

[21] 49 U.S.C. 5307.

c. Fuel

Fuel, whether conventional or alternative fuel, is an eligible expense only as part of a project providing operating assistance for new or expanded transit service under the CMAQ program. This includes fuels and fuel additives considered diesel retrofit technologies by the EPA or CARB. See Section VII.D.3 for statutory exceptions for certain states regarding the purchase of alternative fuel with CMAQ funds.

d. Operating Assistance

Operating assistance to introduce new transit service or expand existing service is eligible. It may be a new type of service, service to a new geographic area, or an expansion of existing service providing additional hours of service or reduced headways. For a service expansion, only the operating costs of the new increment of service are eligible. Eligible operating costs include labor, fuel, maintenance, and related expenses. Operating assistance may be CMAQ-funded for a maximum of three years. The intent is to support the demonstration of new services that may prove successful enough to sustain with other funding sources, and to free up CMAQ funds to generate new air quality benefits.

It is not appropriate to use CMAQ funds for operating assistance for New Start projects because these projects require dedicated, stable sources of funding for their operation. Relying on CMAQ funds for the initial operating costs of these projects is contrary to the need to establish permanent State and local funding sources to cover operating and maintenance costs.

e. Transit Fare Subsidies

CMAQ funds may be used to subsidize regular transit fares in an effort to prevent the NAAQS from being exceeded, but only under the following conditions: The reduced or free fare must be part of a comprehensive area-wide program to prevent the NAAQS from being exceeded. ''Ozone Action'' programs vary in scope around the country, but they generally include actions that individuals and employers can take and they are aimed at all major sources of air pollution, not just transportation. The subsidized fare must be available to the general public and may not be limited to specific groups. It may only be offered during periods of elevated pollution when the threat of exceeding the NAAQS is greatest; it is not intended for the entire high-ozone season. Finally, the fare subsidy proposal must demonstrate that the responsible local agencies will combine the reduced or free fare with a robust marketing program to inform SOV drivers of other transportation options. The subsidy is not subject to the three-year limit for operating assistance.

6. Bicycle and Pedestrian Facilities and Programs

Bicycle and pedestrian facilities and programs are included as a TCM in section 108(f)(1)(A) of the CAA. The following are eligible projects:

- Constructing bicycle and pedestrian facilities (paths, bike racks, support facilities, etc.) that are not exclusively recreational and reduce vehicle trips.
- Non-construction outreach related to safe bicycle use.
- Establishing and funding State bicycle/pedestrian coordinator positions for promoting and facilitating nonmotorized transportation modes through public education, safety programs, etc. (Limited to one full-time position per State).[22]

7. Travel Demand Management

Travel demand management (TDM) encompasses a diverse set of activities that focus on physical assets and services that provide real-time information on network performance and support better decision-making for travelers choosing modes, times, routes, and locations. Such projects can help ease congestion and reduce SOV use—contributing to mobility, while enhancing air quality and saving energy resources. Similar to ITS and Value Pricing, today's TDM programs seek to optimize the performance of local and regional transportation networks. The following activities are eligible if they are explicitly aimed at reducing SOV travel and associated emissions:

- Fringe parking
- Traveler information services
- Shuttle services
- Guaranteed ride home programs
- Market research and planning in support of TDM implementation
- Carpools, vanpools (see item 10 below)
- Traffic calming measures
- Parking pricing
- Variable road pricing
- Telecommuting
- Employer-based commuter choice programs

CMAQ funds may support capital expenses and up to three years of operating assistance to administer and manage new or expanded TDM programs.

Marketing and outreach efforts to expand use of TDM measures may be funded indefinitely, but only if they are broken out as distinct line items (See Section VII.D.8. below).

Eligible telecommuting activities include planning, preparing technical and feasibility studies, and training. Construction of telecommuting centers and computer and office equipment purchases are not eligible for CMAQ funds.

8. Public Education and Outreach Activities

The goal of CMAQ-funded public education and outreach activities is to educate the public, community leaders, and potential project sponsors about connections among trip making and transportation mode choices, traffic congestion, and air quality. Public education and outreach can help communities reduce emissions and congestion by inducing drivers to change their transportation choices. More important, an informed public is likely to support larger regional measures necessary to reduce congestion and meet CAA requirements.

A wide range of public education and outreach activities is eligible for CMAQ funding, including activities that promote new or existing transportation services, developing messages and advertising materials (including market research, focus groups, and creative), placing messages and materials, evaluating message and material dissemination and public awareness, technical assistance, programs that promote the Tax Code provision related to commute benefits,[23] transit ''store'' operations, and any other activities that help forward less-polluting transportation options.

Using CMAQ funds, communities have disseminated many transportation and air quality public education messages, including maintain your vehicle; curb SOV travel by trip chaining, telecommuting and using alternate modes; fuel properly; observe speed limits; don't idle your vehicle for long durations; eliminate ''jack-rabbit'' starts and stops, and others.

The *It All Adds Up to Cleaner Air* public education messages and materials (regarding vehicle maintenance, proper fueling, trip

[22] 23 U.S.C. 217(d).

[23] Section 132(f) of the Internal Revenue Code allows employers to pay their employees, in 2006, up to $105 per month for transit and vanpool expenses and up to $205 per month for qualified parking. 26 U.S.C. 132(f). Each of these benefits is subject to annual increases based on changes to the Consumer Price Index. 26 U.S.C. 1(f)(3). Alternately, employers may allow employees to use their pre-tax income to purchase these commuter benefits. Employers may also provide a combination of these employer-paid and employee paid tax-free benefits. For more information, please visit *http://www.commuterchoice.com/*.

chaining, and alternate modes) have been successful in raising awareness, garnering funds and in-kind support, and building coalitions of diverse groups across the country. These commercial-quality materials, which were developed in response to requests by state and local transportation and air agencies, are free and communities are encouraged to use and build on them. More information is available at *http://www.italladdsup.gov/.*

The Best Workplaces for CommutersSM program provides national recognition to employers offering commuter benefits that meet the EPA's National Standard of Excellence. Development of materials and public education messages promoting Best Workplaces for CommutersSM and employer provided commuter benefits may be eligible for funding. More information is available at *http://www.bwc.gov/.*

Long-term public education and outreach can be effective in raising awareness that can lead to changes in travel behavior and ongoing emissions reductions; therefore, these activities may be funded indefinitely.

9. Transportation Management Associations

Transportation Management Associations (TMAs) are groups of citizens, firms, or employers that organize to address the transportation issues in their immediate locale by promoting rideshare programs, transit, shuttles, or other measures. TMAs can play a useful role in brokering transportation services to private employers.

CMAQ funds may be used to establish TMAs provided that they reduce emissions. Eligible expenses include TMA start-up costs and up to three years of operating assistance. Eligibility of specific TMA activities is addressed throughout this guidance.

10. Carpooling and Vanpooling

Eligible activities can be divided into two types of costs: *Marketing* (which applies to both carpools and vanpools) and *vehicle* (which applies to vanpools only).

a. Carpool/vanpool marketing covers existing, expanded, and new activities designed to increase the use of carpools and vanpools, and includes purchase and use of computerized matching software and outreach to employers. Guaranteed ride home programs are also considered marketing tools. Marketing costs may be funded indefinitely.

b. Vanpool vehicle capital costs include purchasing or leasing vans for use in vanpools. Eligible operating costs, limited to three years, include empty-seat subsidies, maintenance, insurance, administration, and other related expenses.

CMAQ funds should not be used to buy or lease vans that would directly compete with or impede private sector initiatives. States and MPOs should consult with the private sector prior to using CMAQ funds to purchase vans, and if private firms have definite plans to provide adequate vanpool service, CMAQ funds should not be used to supplant that service.

Carpooling and vanpooling activities may be funded with up to 100% federal funding, with certain limitations.[24]

11. Freight/Intermodal

Projects and programs targeting freight capital costs—rolling stock or ground infrastructure—are eligible provided that air quality benefits can be demonstrated. Freight projects that reduce emissions fall generally into two categories: Primary efforts that target emissions directly or secondary projects that reduce net emissions.

Successful primary projects could include new diesel engine technology or retrofits of vehicles or engines. Eligibility is not confined to highway projects, but also applies to nonroad mobile freight projects, such as rail.[25] See Section VII.D.12. below on diesel retrofit technology—examples of primary freight projects—and for information on EPA's guidance and model rule for emissions reduction credit in the SIP and conformity processes.

Secondary projects reduce emissions through shifts in or additions to infrastructure. Support for an intermodal container transfer facility may be eligible if the project demonstrates reduced diesel engine emissions when balancing the drop in truck VMT against the increase in locomotive or other non-highway activity. Intermodal facilities, such as inland transshipment ports or on-dock rail, may generate substantial emissions reductions through the decrease in miles traveled for pre-1986 heavy-duty diesel trucks. This secondary, indirect effect on truck traffic and the ensuing drop in diesel emissions help demonstrate eligibility.

The transportation function of these freight/intermodal projects should be emphasized. Marginal projects that support freight operations in a very tangential manner are not eligible for CMAQ funding. Warehouse handling equipment, for example, is not an eligible investment of program funds. However, equipment that provides a transportation function or directly supports this function is eligible, such as railyard switch locomotives or shunters.

12. Diesel Engine Retrofits & Other Advanced Truck Technologies

The SAFETEA–LU places a new emphasis on diesel engine retrofits and the various types of projects that fall under this broad category.[26] These efforts are defined as vehicle replacement, repowering (replacing an engine with a cleaner engine), rebuilding an engine, or other technologies determined by the EPA as appropriate for reducing emissions from diesel engines.[27] This latter point, highlighting developing technologies, establishes a degree of flexibility and a need for periodic adjustment in the definition by the EPA. The legislation defines retrofit projects as applicable to both on-road motor vehicles and nonroad construction equipment; the latter must be used in Title 23 projects based in nonattainment or maintenance areas for either PM or ozone.

There are a number of project types in the diesel retrofit area for which CMAQ funds are eligible. Assuming all other CMAQ criteria are met, eligible projects include diesel engine replacement; full engine rebuilding and reconditioning; and purchase and installation of after-treatment hardware, including particulate matter traps and oxidation catalysts, and other technologies; and support for heavy-duty vehicle retirement programs. Project agreements involving replacements of either engine or full vehicle should include a provision for disposal of the engine block and a process to verify the retirement of this equipment.[28]

CMAQ funds may be used to purchase and install emission control equipment on school buses. (Such projects, generally, should be administered by FHWA; see VII.D.5, Transit Improvements, above.)

Refueling is not eligible as a stand-alone project, and is eligible only if it is required to support the installation of emissions control equipment, repowering, rebuilding, or other retrofits of non-road engines. For example, ultra-low sulfur diesel (ULSD) may be purchased as part of a project to install diesel particulate filters on nonroad

[24] 23 U.S.C. 120(c)

[25] 23 U.S.C. 149(b)(3)

[26] 23 U.S.C. 149(b)(f) (SAFETEA–LU section 1808(d)).

[27] 23 U.S.C. 149(f)(2) (SAFETEA–LU section 1808(d)).

[28] Reimbursement of costs for full-vehicle replacement may be limited to those elements that lead to emission reductions.

construction equipment because these devices need ULSD to function properly. Costs associated with ULSD are eligible for CMAQ funding only until the standards are effective and the fuel becomes commonly available through the regional supply and logistics chain, effectively rendering ULSD the only diesel fuel distributed. Eligible costs are limited to the difference between standard nonroad diesel fuel and ULSD.

In addition to equipment and technology, outreach activities that provide information exchange and technical assistance to diesel owners and operators on retrofit options are eligible investments. Please see Appendix 5 for more detail on diesel retrofits and the various strategies available in this developing air quality field.

The FHWA acknowledges that diesel retrofit projects may include nonroad mobile source endeavors, which traditionally have been outside the Federal-aid process. However, the SAFETEA–LU clarifies CMAQ eligibility for nonroad diesel retrofit projects. Areas that fund these projects are not required to take credit for the projects in the transportation conformity process. For areas that want to take credit, the EPA developed guidance for estimating diesel retrofit emission reductions and for applying the credit in the SIP and transportation conformity processes. The guidance can be found at *http://www.epa.gov/otaq/stateresources/transconf/policy.htm#retrofit.*

In addition to retrofit projects, upgrading long-haul heavy-duty diesel trucks with advanced technologies, such as idle reduction devices, cab and trailer aerodynamic fixtures, and single-wide or other efficient tires, has been demonstrated by the EPA's *Smart Way Transport Partnership Program* to reduce NO_X emissions and save fuel. These strategies also are eligible for CMAQ support. Such projects funded directly by CMAQ that involve the private sector must be part of a Public-Private Partnership, as discussed in Section VII.C.

13. Idle Reduction

Idle reduction projects that reduce emissions and are located within, or in proximity to and primarily benefiting, a nonattainment or maintenance area are eligible for CMAQ investment (The geographic requirement mainly applies to off-board projects, i.e. truck stop electrification (TSE) efforts). However, if CMAQ funding is used for an on-board project (i.e., auxiliary power units, direct fired heaters, etc.) the vehicle—usually a heavy-duty truck—must travel within, or in proximity to and primarily benefiting, a nonattainment or maintenance area.

There have been several instances where operating assistance funds have been requested for TSE services. CMAQ funding to date for TSE projects has been limited to capital costs (i.e., deployment of TSE infrastructure). Operating assistance for TSE projects is not an eligible activity under the CMAQ program because TSE projects generate their own revenue stream and therefore should be able to cover all operating expenses from the accumulated revenue. See Section III.D for information on innovative financing opportunities available for these efforts.

The SAFETEA–LU also permits electrification or other idling reduction facilities and equipment to be constructed or located on rights-of-way of the Interstate system.[29] Prior to the enactment of the SAFETEA–LU, this activity was prohibited.

The EPA issued guidance in January 2004 on methods for calculating emissions reduction credits in SIPs and in the transportation conformity process for long-haul truck idle reduction projects. The guidance can be found at *http://www.epa.gov/smartway/idlingimpacts.htm.*

14. Training

The SAFETEA–LU provides that States and MPOs may use Federal-aid funds to support training and educational development for the transportation workforce.[30] The FHWA encourages State and local officials to weigh the air quality benefits of such training against other cost-effective strategies detailed elsewhere in this guidance before using CMAQ funds for this purpose. Training funded with CMAQ dollars must be directly related to implementing air quality improvements and be approved in advance by the FHWA Division office.

15. Inspection/Maintenance (I/M) Programs

Funds under the CMAQ program may be used to establish either publicly or privately owned I/M facilities. Eligible activities include construction of facilities, purchase of equipment, I/M program development, and one-time start-up activities, such as updating quality assurance software or developing a mechanic training curriculum. The I/M program must constitute new or additional efforts, existing funding (including inspection fees) should not be displaced, and operating expenses are eligible for a maximum of three years.

Privately Owned I/M Facilities

In States that rely on privately owned I/M facilities, State or local I/M program-related administrative costs may be funded under the CMAQ program as in States that use public I/M facilities. However, CMAQ support to establish I/M facilities at privately owned stations, such as service stations that own the equipment and conduct emission test-and-repair services, requires a public-private partnership (See Section VII.C.).

The establishment of ''portable'' I/M programs, including remote sensing, is also eligible under the CMAQ program, provided that they are public services, reduce emissions, and do not conflict with statutory I/M requirements or EPA regulations.

16. Experimental Pilot Projects

State and local organizations traditionally have experimented with various types of transportation services to better meet the travel needs of their constituents. These ''experimental'' projects may show promise in reducing emissions, but do not yet have supporting data. The FHWA has supported and funded some of these projects as demonstrations to determine their benefits and costs. These experimental pilots are not intended to bypass the definition of basic project eligibility but seek to better define the projects' future role in strategies to reduce emissions.

For a project or program to qualify as an experimental pilot, it must be defined as a transportation project and be expected to reduce emissions by decreasing vehicle miles traveled (VMT), fuel consumption, congestion, or by other factors. The FHWA encourages States and MPOs to creatively address their air quality problems and to experiment with new services, innovative financing arrangements, public-private partnerships, and complementary approaches that use transportation strategies to reach clean air goals. The CMAQ program may be used to support a well-conceived project even if the proposal may not fully meet the eligibility criteria of this guidance.

Given the untried nature of these pilot projects, before-and-after studies are required to determine actual project impacts on air quality as measured by net emissions reduced. These assessments should document the project's immediate impacts in addition to long-term benefits. A schedule for completing the study must be a part of

[29] 23 U.S.C. 111(d) (SAFETEA–LU section 1412).

[30] 23 U.S.C. 504(e) (SAFETEA–LU section 5204(e)).

the project agreement. Completed studies must be submitted to the FHWA Division office within three years of implementation of the project or one year after the project's completion, whichever is sooner.

VIII. Project Selection Process—General Conditions

Proposals for CMAQ funding should include a precise description of the project, providing information on its size, scope, location, and timetable. Also, an assessment of the project's expected emission reduction benefits is required prior to project selection to better inform the selection of CMAQ projects (See Below).

A. Air Quality Analysis

1. Quantitative Analyses

Quantified emissions benefits (i.e., emissions reductions) and disbenefits (i.e., emissions increases) should be included in all project proposals, except where it is not possible to quantify emissions benefits (see Qualitative Assessment, below). Benefits and disbenefits should be included for all pollutants for which the area is in nonattainment or maintenance status. Benefits should be listed in a consistent fashion (i.e., kg/day) across projects to allow accurate comparison during the project selection process.

State and local transportation and air quality agencies conduct CMAQ-project air quality analyses with different approaches, analytical capabilities, and technical expertise. The SAFETEA–LU encourages State DOTs and MPOs to consult with State and local air quality agencies about the estimated emission reductions from CMAQ proposals.[31] However, while no single method is specified, every effort must be taken to ensure that determinations of air quality benefits are credible and based on a reproducible and logical analytical procedure.

2. Qualitative Assessment

Although quantitative analysis of air quality impacts is required for almost all project types, an exception to this requirement will be made when it is not possible to accurately quantify emissions benefits. In these cases, a qualitative assessment based on a reasoned and logical determination that the project or program will decrease emissions and contribute to attainment or maintenance of a NAAQS is acceptable.

Public education, marketing, and other outreach efforts, which can include advertising alternatives to SOV travel, employer outreach, and public education campaigns, may fall into this category. The primary benefit of these activities is enhanced communication and outreach that is expected to influence travel behavior, and thus air quality.

3. Analyzing Groups of Projects

In some situations, it may be more appropriate to examine the impacts of comprehensive strategies to improve air quality by grouping projects. For example, transit improvements coupled with demand management to reduce SOV use in a corridor might best be analyzed together. Other examples include linked signalization projects, transit improvements, marketing and outreach programs, and ridesharing programs that affect an entire region or corridor.

4. Tradeoffs

As noted above, emissions benefits should be calculated for all pollutants for which an area is in nonattainment or maintenance status. Some potential projects may lead to benefits for one pollutant and increased emissions for another, especially when the balance involves precursors such as NO_X and VOC. States and MPOs should consult with relevant air agencies to weigh the net benefits of the project.

IX. Program Administration

A. Project Selection—MPO and State Responsibilities

CMAQ projects are selected by the State or the MPO. MPOs, State DOTs, and transit agencies should develop CMAQ project selection processes in accordance with the metropolitan and/or statewide planning process. The selection process should involve State and/or local transportation and air quality agencies.

The CMAQ project selection process should be transparent, in writing, and publicly available. The process should identify the agencies involved in rating proposed projects, clarify how projects are rated, and name the committee or group responsible for making the final recommendation to the MPO board or other approving body. The selection process should also clearly identify the basis for rating projects, including emissions benefits, cost effectiveness, and any other ancillary selection factors such as congestion relief, greenhouse gas reductions, safety, system preservation, access to opportunity, sustainable development and freight, reduced SOV reliance, multi-modal benefits, and others. At a minimum, projects must be identified by year and proposed funding source.

Close coordination is necessary between the State and MPO to ensure that CMAQ funds are used appropriately and to maximize their effectiveness in meeting the CAA requirements.

States and MPOs must fulfill this responsibility so that nonattainment and maintenance areas are able to make good-faith efforts to attain and maintain the NAAQS by the prescribed deadlines. State DOTs and MPOs should consult with State and local air quality agencies to develop an appropriate project list of CMAQ programming priorities that will have the greatest impact on air quality. In developing this list, MPOs and States should evaluate the cost-effectiveness of the projects and give priority consideration to those that will create the greatest emissions reductions for the least cost. The SAFETEA–LU calls out diesel retrofits as one type of cost-effective project to which priority consideration shall be given. The EPA has conducted an extensive study on the cost-effectiveness of diesel retrofits in reducing PM emissions.[32] The National Academy of Science's Transportation Research Board has evaluated the cost-effectiveness of other CMAQ eligible projects, with a focus on NO_X and HC reductions. Information on the cost-effectiveness of CMAQ-eligible projects is presented in Appendix 4, which can be used as a guidepost in evaluating the cost-effectiveness of different types of projects under consideration by an MPO or State. However, cost-effectiveness ultimately will depend on local conditions and project specific factors that affect emission reductions and costs.

B. Federal Agency Responsibilities and Coordination

1. Program Administration

The FHWA Division offices and the FTA Regional offices are responsible for administering the CMAQ program. The FHWA transfers funds to the FTA to administer CMAQ-funded transit projects. In cases where the FTA lacks statutory authority, (e.g., school bus fleets) the FHWA will administer the transit project. For projects that involve transit and non-transit elements, such as park-and-ride lots and intermodal passenger projects, the administering agency is decided on a case-by-case basis. All other projects are administered by the FHWA.

[31] 23 U.S.C. 149(e) (SAFETEA–LU section 1808(e)).

[32] More information is available at *http://www.epa.gov/cleandiesel/publications.htm.*

2. Eligibility Determinations

The administering agency makes the final determination on CMAQ eligibility. The FHWA, FTA, and EPA field offices should establish and maintain a consultation and coordination process to review CMAQ funding proposals as needed. The consultation process should provide for timely review and handling of CMAQ funding proposals. The FHWA and FTA headquarters offices are available to consult with their field offices on eligibility determinations as needed.

3. Tracking Mandatory/Flexible Funds

The FHWA Division office is responsible for tracking obligation of mandatory and flexible CMAQ funds in appropriate areas (See Section V.B.).

C. Annual Reports

States are required to prepare annual reports detailing how CMAQ funds have been invested.[33] CMAQ reporting is not only useful for the FHWA, the FTA, and the general public, but maintenance of a cumulative database of all CMAQ projects is required by the SAFETEA–LU. In addition, the annual reports will be key in developing the CMAQ Evaluation and Assessment, a major research effort designed to gauge the impact of the program, and also required by the statute.[34]

CMAQ annual reports must be submitted through the web-based CMAQ Tracking System. More information on the CMAQ system is available at *http://www.fhwa.dot.gov/environment/cmaqpgs/usersguidemail.htm.*

The FHWA Division offices, State DOTs, and MPOs should develop a process for entering and approving the data in a timely manner. This report should be approved by the FHWA Division office by the first day of March following the end of the previous Federal fiscal year (September 30) and cover all CMAQ obligations for that fiscal year. Thus, State DOTs and MPOs need to report the data early enough that the Division office has time to review and comment on the report. The report as entered into the CMAQ Tracking System should include:

1. A list of projects funded under CMAQ, in seven main project categories:

- *Transit:* facilities, vehicles, and equipment, operating assistance for new transit service, etc. Include all transit projects whether administered by the FTA or the FHWA.
- *Shared Ride:* vanpool and carpool programs and parking for shared-ride services.
- *Traffic Flow Improvements:* traffic management and control services, signalization projects, ITS projects, intersection improvements, and construction or dedication of HOV lanes.
- *Demand Management:* trip reduction programs, transportation management plans, flexible work schedule programs, vehicle restriction programs.
- *Pedestrian/Bicycle:* bikeways, storage facilities, promotional activities.
- *I/M and other TCMs:* projects not covered by the above categories.
- *STP/CMAQ:* projects funded with flexible funds.

For reporting purposes, obligations for all CMAQ-eligible phases (beginning with the NEPA process) should be reported for the project they support.

2. The amount of CMAQ funds obligated or deobligated for each project during the federal fiscal year. Enter deobligations as a negative number. (Do not include Advance Construct funds, as these are not obligations of federal CMAQ funds. Such projects should be reported later when converted to CMAQ funds.)

3. Emissions benefits (and disbenefits) for each project developed from project-level analyses. Report projected emissions benefits expected to occur in the first year that a project is fully operational, in kilograms reduced per day. Benefits should be reported the first time a project is entered into the system, and only then to avoid double counting of benefits. (Because funds may be obligated for a project over several years, an individual CMAQ project may show up in reports for multiple years.) Additionally, address all pollutants for which the area is in nonattainment or maintenance status. Do not enter emissions benefits for deobligations or projects funded with flexible funds (STP/CMAQ).

4. Public-private partnerships and experimental pilot projects should be identified in the system. Transmit electronic versions of completed before-and-after studies for experimental pilot projects to the Division offices (See Section VII.D.16., Experimental Pilot Projects).

5. *Other required information:* MPO, nonattainment/maintenance area, project description.

6. *Optional information:* TIP, State and/or FMIS project numbers—highly recommended. Other optional information includes: greenhouse gas emission reductions, safety, congestion relief, and other ancillary benefits.

Appendix 1: 23 U.S.C. 149

SAFETEA–LU Changes in Underlined Italics

§ 149. Congestion mitigation and air quality improvement program

(a) Establishment.—The Secretary shall establish and implement a congestion mitigation and air quality improvement program in accordance with this section.

(b) Eligible Projects.—Except as provided in subsection (c), a State may obligate funds apportioned to it under section 104 (b)(2) for the congestion mitigation and air quality improvement program only for a transportation project or program if the project or program is for an area in the State that is or was designated as a nonattainment area for ozone, carbon monoxide, or particulate matter under section 107(d) of the Clean Air Act (42 U.S.C. 7407 (d)) and classified pursuant to section 181(a), 186(a), 188(a), or 188(b) of the Clean Air Act (42 U.S.C. 7511 (a), 7512 (a), 7513 (a), or 7513 (b)) or is or was designated as a nonattainment area under such section 107 (d) after December 31, 1997, *or is required to prepare, and file with the Administrator of the Environmental Protection Agency, maintenance plans under the Clean Air Act (42 U.S.C. 7401 et seq.)* and—

(1)(A)(i) if the Secretary, after consultation with the Administrator determines, on the basis of information published by the Environmental Protection Agency pursuant to section 108(f)(1)(A) of the Clean Air Act (other than clause (xvi)) that the project or program is likely to contribute to—

(I) the attainment of a national ambient air quality standard; or

(II) the maintenance of a national ambient air quality standard in a maintenance area; and

(ii) a high level of effectiveness in reducing air pollution, in cases of projects or programs where sufficient information is available in the database established pursuant to subsection (h) to determine the relative effectiveness of such projects or programs; or,

(B) in any case in which such information is not available, if the Secretary, after such consultation, determines that the project or program is part of a program, method, or strategy described in such section 108(f)(1)(A);

(2) if the project or program is included in a State implementation plan that has been approved pursuant to the Clean Air Act and the project will have air quality benefits;

[33] The FHWA is in the process of acquiring the required clearance pursuant to the Paperwork Reduction Act from the Office of Management and Budget to collect this data.

[34] 23 U.S.C. 149(h) (SAFETEA–LU section 1808(f)).

(3) the Secretary, after consultation with the Administrator of the Environmental Protection Agency, determines that the project or program is likely to contribute to the attainment of a national ambient air quality standard, whether through reductions in vehicle miles traveled, fuel consumption, or through other factors;

(4) to establish or operate a traffic monitoring, management, and control facility or program if the Secretary, after consultation with the Administrator of the Environmental Protection Agency, determines that the facility or program, *including advanced truck stop electrification systems,* is likely to contribute to the attainment of a national ambient air quality standard; (removed ''or'')

(5) if the program or project improves traffic flow, including projects to improve signalization, construct high occupancy vehicle lanes, improve intersections, *improve transportation systems management and operations that mitigate congestion and improve air quality,* and implement intelligent transportation system strategies and such other projects that are eligible for assistance under this section on the day before the date of enactment of this paragraph;

(6) if the project or program involves the purchase of integrated, interoperable emergency communications equipment; or

(7) if the project or program is for—

(A) the purchase of diesel retrofits that are—

(i) for motor vehicles (as defined in section 216 of the Clean Air Act (42 U.S.C. 7550)); or

(ii) published in the list under subsection (f)(2) for non-road vehicles and non-road engines (as defined in section 216 of the Clean Air Act (42 U.S.C. 7550)) that are used in construction projects that are—

(I) located in nonattainment or maintenance areas for ozone, PM_{10}, or $PM_{2.5}$ (as defined under the Clean Air Act (42 U.S.C. 7401 et seq.)); and

(II) funded, in whole or in part, under this title; or

(B) the conduct of outreach activities that are designed to provide information and technical assistance to the owners and operators of diesel equipment and vehicles regarding the purchase and installation of diesel retrofits.

No funds may be provided under this section for a project which will result in the construction of new capacity available to single occupant vehicles unless the project consists of a high occupancy vehicle facility available to single occupant vehicles only at other than peak travel times. In areas of a State which are nonattainment for ozone or carbon monoxide, or both, and for PM–10 resulting from transportation activities, the State may obligate such funds for any project or program under paragraph (1) or (2) without regard to any limitation of the Department of Transportation relating to the type of ambient air quality standard such project or program addresses.

(c) States Receiving Minimum Apportionment.—

(1) States without a nonattainment area.—If a State does not have, and never has had, a nonattainment area designated under the Clean Air Act (42 U.S.C. 7401 et seq.), the State may use funds apportioned to the State under section 104 (b)(2) *for any project in the State that—*

(A) would otherwise be eligible under this section as if the project were carried out in a nonattainment or maintenance area; or

(B) is eligible under the surface transportation program under section 133.

(2) States with a nonattainment area.—If a State has a nonattainment area or maintenance area and receives funds under section 104 (b)(2)(D) above the amount of funds that the State would have received based on its nonattainment and maintenance area population under subparagraphs (B) and (C) of section 104 (b)(2), the State may use that portion of the funds not based on its nonattainment and maintenance area population under subparagraphs (B) and (C) of section 104 (b)(2) *for any project in the State that—*

(A) would otherwise be eligible under this section as if the project were carried out in a nonattainment or maintenance area; or

(B) is eligible under the surface transportation program under section 133.

(d) Applicability of Planning Requirements.—Programming and expenditure of funds for projects under this section shall be consistent with the requirements of sections 134 and 135 of this title.

(e) Partnerships With Nongovernmental Entities.—

(1) In general.—Notwithstanding any other provision of this title and in accordance with this subsection, a metropolitan planning organization, State transportation department, or other project sponsor may enter into an agreement with any public, private, or nonprofit entity to cooperatively implement any project carried out under this section.

(2) Forms of participation by entities.—Participation by an entity under paragraph (1) may consist of—

(A) ownership or operation of any land, facility, vehicle, or other physical asset associated with the project;

(B) cost sharing of any project expense;

(C) carrying out of administration, construction management, project management, project operation, or any other management or operational duty associated with the project; and

(D) any other form of participation approved by the Secretary.

(3) Allocation to entities.—A State may allocate funds apportioned under section 104 (b)(2) to an entity described in paragraph (1).

(4) Alternative fuel projects.—In the case of a project that will provide for the use of alternative fuels by privately owned vehicles or vehicle fleets, activities eligible for funding under this subsection—

(A) may include the costs of vehicle refueling infrastructure, including infrastructure that would support the development, production, and use of emerging technologies that reduce emissions of air pollutants from motor vehicles, and other capital investments associated with the project;

(B) shall include only the incremental cost of an alternative fueled vehicle, as compared to a conventionally fueled vehicle, that would otherwise be borne by a private party; and

(C) shall apply other governmental financial purchase contributions in the calculation of net incremental cost.

(5) Prohibition on federal participation with respect to required activities.—A Federal participation payment under this subsection may not be made to an entity to fund an obligation imposed under the Clean Air Act (42 U.S.C. 7401 et seq.) or any other Federal law.

(f) Cost-Effective Emission Reduction Guidance.—

(1) Definitions.—In this subsection, the following definitions apply:

(A) Administrator.—The term 'Administrator' means the Administrator of the Environmental Protection Agency.

(B) Diesel retrofit.—The term 'diesel retrofit' means a replacement, repowering, rebuilding, after treatment, or other technology, as determined by the Administrator.

(2) Emission reduction guidance.—The Administrator, in consultation with the Secretary, shall publish a list of diesel retrofit technologies and supporting technical information for—

(A) diesel emission reduction technologies certified or verified by the

Administrator, the California Air Resources Board, or any other entity recognized by the Administrator for the same purpose;

(B) diesel emission reduction technologies identified by the Administrator as having an application and approvable test plan for verification by the Administrator or the California Air Resources Board that is submitted not later that 18 months of the date of enactment of this subsection;

(C) available information regarding the emission reduction effectiveness and cost effectiveness of technologies identified in this paragraph, taking into consideration air quality and health effects.

(3) Priority.—

(A) In general.—States and metropolitan planning organizations shall give priority in distributing funds received for congestion mitigation and air quality projects and programs from apportionments derived from application of sections 104(b)(2)(B) and 104(b)(2)(C) to—

(i) diesel retrofits, particularly where necessary to facilitate contract compliance, and other cost-effective emission reduction activities, taking into consideration air quality and health effects; and

(ii) cost-effective congestion mitigation activities that provide air quality benefits.

(B) Savings.—This paragraph is not intended to disturb the existing authorities and roles of governmental agencies in making final project selections.

(4) No effect on authority or restrictions.—Nothing in this subsection modifies or otherwise affects any authority or restriction established under the Clean Air Act (42 U.S.C. 7401 et seq.) or any other law (other than provisions of this title relating to congestion mitigation and air quality).

(g) Interagency Consultation.—The Secretary shall encourage States and metropolitan planning organizations to consult with State and local air quality agencies in nonattainment and maintenance areas on the estimated emission reductions from proposed congestion mitigation and air quality improvement programs and projects.

(h) Evaluation and Assessment of Projects.—

(1) In general.—The Secretary, in consultation with the Administrator of the Environmental Protection Agency, shall evaluate and assess a representative sample of projects funded under the congestion mitigation and air quality program to—

(A) determine the direct and indirect impact of the projects on air quality and congestion levels; and

(B) ensure the effective implementation of the program.

(2) Database.—Using appropriate assessments of projects funded under the congestion mitigation and air quality program and results from other research, the Secretary shall maintain and disseminate a cumulative database describing the impacts of the projects.

(3) Consideration.—The Secretary, in consultation with the Administrator, shall consider the recommendations and findings of the report submitted to Congress under section 1110(e) of the Transportation Equity Act for the 21st Century (112 Stat. 144), including recommendations and findings that would improve the operation and evaluation of the congestion mitigation and air quality improvement program.

SAFETEA–LU Section 1808: Additional Provisions

The following provisions were included in the SAFETEA–LU Section 1808. These provisions do not amend 23 U.S.C. and therefore sunset when the SAFETEA–LU expires. To avoid confusion, they are presented here separate from the rest of the statutory text.

(g) Flexibility in the State of Montana.—The State of Montana may use funds apportioned under section 104(b)(2) of title 23, United States Code, for the operation of public transit activities that serve a nonattainment or maintenance area.

(h) Availability of Funds for State of Michigan.—The State of Michigan may use funds apportioned under section 104(b)(2) of such title for the operation and maintenance of intelligent transportation system strategies that serve a nonattainment or maintenance area.

(i) Availability of Funds for the State of Maine.—The State of Maine may use funds apportioned under section 104(b)(2) of such title to support, through September 30, 2009, the operation of passenger rail service between Boston, Massachusetts, and Portland, Maine.

(j) Availability of Funds for Oregon.—The State of Oregon may use funds apportioned on or before September 30, 2009, under section 104(b)(2) of such title to support the operation of additional passenger rail service between Eugene and Portland.

(k) Availability of Funds for Certain Other States.7mdash;The States of Missouri, Iowa, Minnesota, Wisconsin, Illinois, Indiana, and Ohio may use funds apportioned under section 104(b)(2) of such title to purchase alternative fuel (as defined in section 301 of the Energy Policy Act of 1992 (42 U.S.C. 13211)) or biodiesel.

APPENDIX 2: 23 U.S.C. 104(b)(2) APPORTIONMENT

[DRAFT VERSION—NOT CODIFIED YET]

(2) Congestion mitigation and air quality improvement program.—

(A) In general.—For the congestion mitigation and air quality improvement program, in the ratio that—

(i) the total of all weighted nonattainment and maintenance area populations in each State; bears to

(ii) the total of all weighted nonattainment and maintenance area populations in all States.

(B) Calculation of weighted nonattainment and maintenance area population.—Subject to subparagraph (C), for the purpose of subparagraph (A), the weighted nonattainment and maintenance area population shall be calculated by multiplying the population of each area in a State that was a nonattainment area or maintenance area as described in section 149(b) for ozone or carbon monoxide by a factor of—

(i) 1.0 if, at the time of apportionment, the area is a maintenance area;

(ii) 1.0 if, at the time of the apportionment, the area is classified as a marginal ozone nonattainment area under subpart 2 of part D of title I of the Clean Air Act (42 U.S.C. 7511 et seq.);

(iii) 1.1 if, at the time of the apportionment, the area is classified as a moderate ozone nonattainment area under such subpart;

(iv) 1.2 if, at the time of the apportionment, the area is classified as a serious ozone nonattainment area under such subpart;

(v) 1.3 if, at the time of the apportionment, the area is classified as a severe ozone nonattainment area under such subpart;

(vi) 1.4 if, at the time of the apportionment, the area is classified as an extreme ozone nonattainment area under such subpart;

(vii) 1.0 if, at the time of the apportionment, the area is not a nonattainment or maintenance area as described in section 149(b) for ozone, but is classified under subpart 3 of part D of title I of such Act (42 U.S.C. 7512 et seq. as a nonattainment area described in section 149(b) for carbon monoxide*; or*

(viii) 1.0 if, at the time of apportionment, an area is designated as nonattainment for ozone under subpart

1 of part D of title I of such Act (42 U.S.C. 7512 et seq.).

(C) Additional Adjustment for Carbon Monoxide Areas.—If, in addition to being designated as a nonattainment or maintenance are for ozone as described in section 149(b), any county within the area was also classified under subpart 3 of part D of title I of the Clean Air Act (42 U.S.C. 7512 et seq.) as a nonattainment or maintenance area described in section 149(b) for carbon monoxide, the weighted nonattainment or maintenance area population of the county, as determined under clauses (i) through (vi) or clause (viii) of subparagraph (B), shall be further multiplied by a factor of 1.2.

(D) Minimum apportionment.—Notwithstanding any other provision of this paragraph, each State shall receive a minimum of ½ of 1 percent of the funds apportioned under this paragraph.

(E) Determinations of population.—In determining population figures for the purposes of this paragraph, the Secretary shall use the latest available annual estimates prepared by the Secretary of Commerce.

APPENDIX 3: 23 U.S.C. § 120 FEDERAL SHARE PAYABLE

(c) INCREASED FEDERAL SHARE FOR CERTAIN SAFETY PROJECTS. [excerpt]

The Federal share payable on account of any project for traffic control signalization, traffic circles (also known as 'roundabouts'), safety rest areas, pavement marking, commuter carpooling and vanpooling, rail-highway crossing closure, or installation of traffic signs, traffic lights, guardrails, impact attenuators, concrete barrier endtreatments, breakaway utility poles, or priority control systems for emergency vehicles or transit vehicles at signalized intersections may amount to 100 percent of the cost of construction of such projects; except that not more than 10 percent of all sums apportioned for all the Federal-aid systems for any fiscal year in accordance with section 104 of this title shall be used under this subsection.

APPENDIX 4: COMPARATIVE COST-EFFECTIVENESS OF POTENTIAL CMAQ FUNDED PROJECTS

While the SAFETEA–LU maintains the existing roles and authorities of public agencies in project selection, the law also indicates that priority for CMAQ funding should be given to cost-effective emission reduction and congestion mitigation measures.[35] The SAFETEA–LU specifically highlights diesel retrofits as a priority cost-effective measure.

In 2002, the National Academy of Sciences' (NAS) Transportation Research Board (TRB) published a study, in response to a congressional request that assessed the cost-effectiveness of various CMAQ-eligible strategies to reduce congestion and emissions. The study measured the cost-effectiveness of projects based on cost per ton of emissions (HC and NO_X) reduced. In preparing the assessment, TRB gave NO_X reductions four times the weight of HC reductions. The findings, shown in Figures A and D, are reported as the median values for each category analyzed. The cost information has been adjusted to 2005 dollars to account for inflation.

It is important to note that while the NAS study reflects the best available data at the time of its completion, there are limitations inherent in such an assessment. The data presented are based on a select sampling of projects that may not completely capture the potential cost effectiveness of other techniques of implementing particular strategies. Therefore, the median cost should be coupled with the cost range to better portray a project's potential cost-effectiveness.

The NAS study did not consider advanced truck stop electrification (TSE) projects or diesel engine retrofit projects. Cost-effectiveness data for TSE projects were obtained from the EPA Office of Transportation and Air Quality. The cost-effectiveness of various diesel engine retrofit technologies, highlighted in the SAFETEA–LU as a priority CMAQ funding item, are illustrated in Figures B and C and are based on the cost (estimated 2007 dollars) per ton of PM reduced.

While most of the technologies are presented in terms of tons of NO_X reduced, diesel engine retrofits are presented in terms of tons of PM reduced. A direct comparison is therefore not appropriate, as the health effects and emissions inventories differ between the two pollutants. It costs more to reduce a ton of PM than it does to reduce a ton of NO_X. However, the health benefits of reducing a ton of PM are significantly greater than the benefits of reducing an equal amount of NO_X.

FIGURE A: NO_X/HC COST-EFFECTIVENESS OF VARIOUS PROJECT TYPES

Strategy	Median cost (2005 dollars)/ton of NO_X/HC reduced	Cost range (2005 dollars)/ton of NO_X/HC reduced
I/M	2,155	2,041–6,577
Regional Rideshare	8,392	1,361–18,144
Charges and Fees	11,680	907–56,020
Vanpool Programs	11,907	5,897–100,926
Misc. TDM	14,175	2,608–37,649
Conventional Fuel Bus Replacements	18,257	12,474–45,247
Alternative-Fuel Vehicles	20,185	4,536–35,834
Traffic Signalization	22,793	6,804–145,152
Employer Trip Reduction	25,742	6,464–199,017
Conventional Service Upgrades	27,896	4,309–136,193
Park-and-Ride Lots	48,762	9,752–80,174
Modal Subsidies and Vouchers	52,844	907–534,114
New Transit Capital Systems/Vehicles	75,298	9,639–533,887
Bike/Pedestrian	95,369	4,763–390,890
Shuttles, Feeder, Paratransit	99,225	13,948–223,398
Freeway Management	116,122	2,608–616,783
Alternative-Fuel Buses	143,338	7,598–644,772
HOV Lanes	199,811	6,464–381,931

[35] 23 U.S.C. 149(f).

FIGURE A: NO_X/HC COST-EFFECTIVENESS OF VARIOUS PROJECT TYPES—Continued

Strategy	Median cost (2005 dollars)/ton of NO_X/HC reduced	Cost range (2005 dollars)/ton of NO_X/HC reduced
Telework	285,541	15,082–9,329,418
Source: TRB Special Report 264—The Congestion Mitigation and Air Quality Improvement Program: Assessing 10 Years of Experience, Chapter 4, 2002.		
Advanced Truck Stop Electrification	1,696	1,416-1,976
Source: Environmental Protection Agency, Office of Transportation & Air Quality (Measured in dollars/ton of NO_X reduced), 2006.		

In March, 2006, the EPA released a report, Diesel Retrofit Technology: An Analysis of the Cost-Effectiveness of Reducing Particulate Matter Emissions from Heavy-Duty Diesel Engines Through Retrofits, that analyzed diesel oxidation catalysts (DOC) and catalyzed diesel particulate filters (CDPF). These technologies are assessed in dollars per ton of PM reduced, unlike the information in Figure A and D, which is measured in tons of NO_X/HC reduced. The EPA did not provide median values, instead providing a cost-effectiveness range.

FIGURE B: PM COST-EFFECTIVENESS IN DIESEL RETROFIT APPLICATIONS

Vehicle	Retrofit technology	Range of $/ton of PM reduced (Estimated 2007 dollars)*
School Bus	DOC	12,000–49,100
	CDPF	12,400–50,500
Class 6 & 7 Truck	DOC	27,600–67,900
	CDPF	28,400–69,900
Class 8b Truck	DOC	11,100–40,600
	CDPF	12,100–44,100

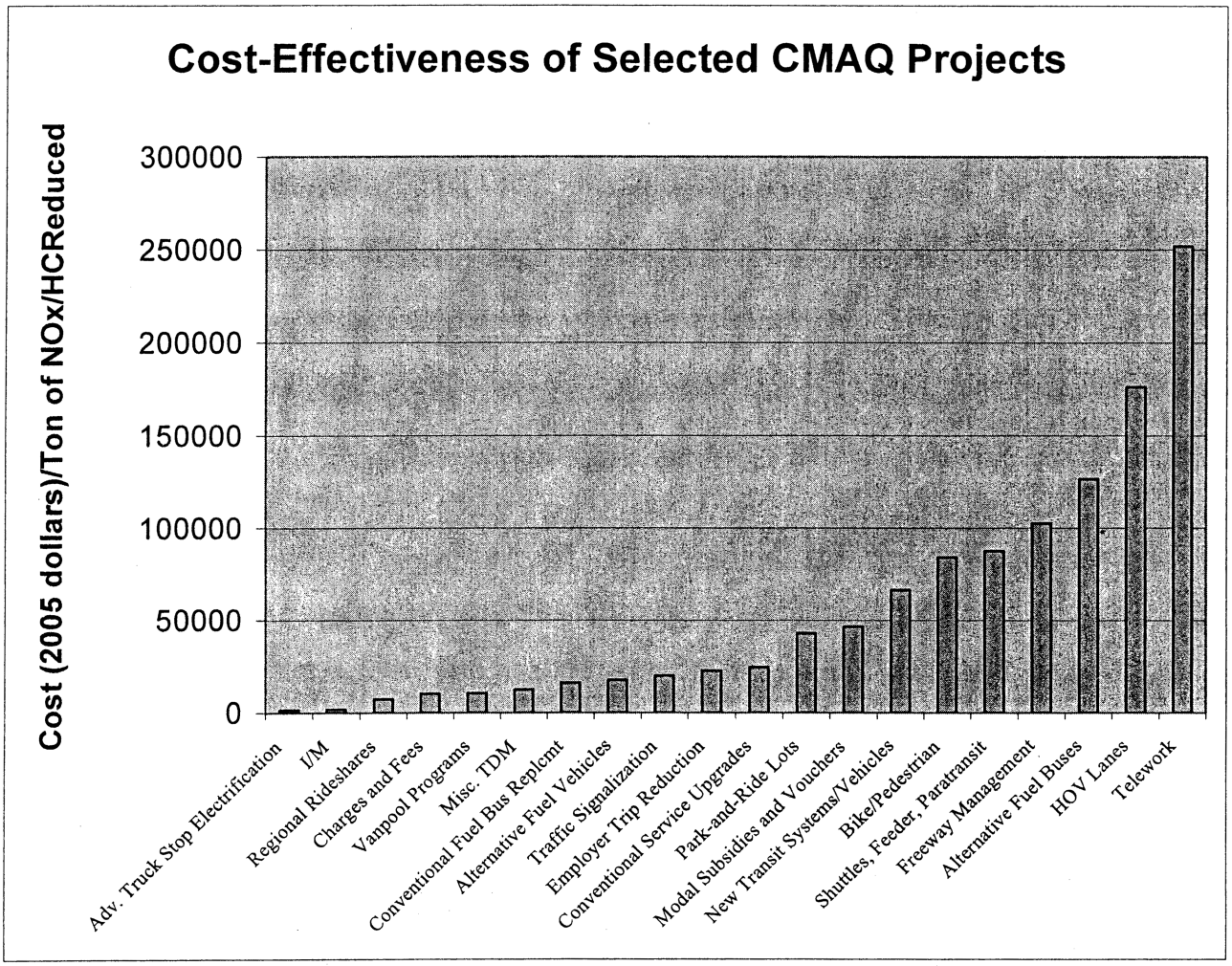
* The cost per ton of PM reduced will depend on a variety of factors including the age and activity levels of the vehicles or equipment.

FIGURE C: PM COST-EFFECTIVENESS IN NONROAD RETROFIT APPLICATIONS

Equipment	Retrofit technology	Range of $/ton of PM reduced (Estimated 2007 dollars)*
Off-highway trucks	DOC	17,200–43,500
	CDPF	14,300–36,300
Loaders/Backhoes/Tractors	DOC	13,800–25,100
	CDPF	11,500–20,900
Excavators	DOC	17,800–49,600
	CDPF	14,800–41,300
Skid Steer Loaders	DOC	11,600–25,900
	CDPF	9,700–21,600
Generator Sets	DOC	15,500–36,900
	CDPF	12,900–30,800
250 hp Bulldozer	DOC	18,100–49,700
	CDPF	N/A

* The cost per ton of PM reduced will depend on a variety of factors including the age and activity levels of the vehicles or equipment.

FIGURE D



Source: TRB Special Report 264—The Congestion Mitigation and Air Quality Improvement Program: Assessing 10 Years of Experience, Chapter 4.

States and MPOs are encouraged to consider the information presented in this Appendix during their CMAQ project selection and prioritization process.

Those seeking further information on the cost-effectiveness of CMAQ projects should consult TRB Special Report 264—The Congestion Mitigation and Air Quality Improvement Program: Assessing 10 Years of Experience, Chapter 4.

APPENDIX 5: CONSIDERATIONS FOR DIESEL RETROFIT PROJECTS

The term diesel retrofit includes any technology or system that achieves emission reductions beyond that required by the EPA regulations at the time of engine certification. Assuming all other criteria are met, eligible diesel retrofit projects include the replacement of high-emitting vehicles/equipment with cleaner vehicles/equipment (including hybrid or alternative fuel models), repowering or engine replacement, rebuilding the engine to a cleaner standard, the purchase and installation of advanced emissions control technologies (such as particulate matter traps or oxidation catalysts) or the use of a cleaner fuel to support eligible nonroad devices. The legislation defines retrofit projects as applicable to both on-road motor vehicles and nonroad construction equipment. Retrofit strategies include:

Emissions Control Technologies

The EPA and the California Air Resources Board (CARB) have retrofit technology verification programs that evaluate the performance of advanced emissions control technologies and engine rebuild kits. CMAQ-funded diesel retrofit projects must use retrofit technologies that are verified under the EPA's Voluntary Diesel Retrofit Program or CARB. A list of EPA-verified technologies is available at *http://www.epa.gov/otaq/retrofit/retroverifiedlist.htm*. CARB's verification program can be found at *http://www.arb.ca.gov/diesel/verdev/home/home.htm.*

Refueling

Refueling is eligible only when combined with an overall diesel retrofit project for which the cleaner fuel is required. For example, ultra-low sulfur diesel (ULSD) may be purchased as part of a project to install diesel particulate filters on highway construction equipment only because these devices require ULSD to function properly.

Fuel-related technologies identified in EPA's list of retrofit strategies are eligible only until standards for such

clean fuel are effective. For example, ULSD is eligible for CMAQ only until the standard is effective. For on-road use, ULSD is mandated for use in October 2006. According to EPA's regulatory development calendar, low sulfur diesel (500 ppm of sulfur) will be required for nonroad use in 2007, while ULSD (15 ppm of sulfur) will be required for nonroad use in 2010.

Vehicle/Equipment Replacement Projects

Replacement projects occur when older vehicles/equipment are replaced with cleaner vehicles/equipment before they would have been removed through normal fleet turnover or attrition. The vehicle or equipment being replaced should be scrapped or the engine remanufactured to a cleaner standard. For areas that want to take credit in the SIP and transportation conformity processes for these projects, see the EPA's retrofit guidance at: *http://www.epa.gov/otaq/stateresources/transconf/policy.htm#retrofit.*

Generally, the replacement vehicle or equipment would perform the same function as the vehicle or equipment that is being replaced (e.g., an excavator used to dig pipelines or utility trenches would be replaced by an excavator that continues these duties).

In addition, the vehicle or equipment being replaced would be in good working order and able to perform the duties of the new vehicle or equipment. Removing vehicles that no longer function or are at the end or their useful life will not lead to an emissions reduction.

Repower or Engine Replacement Projects

Engine replacement projects involve the replacement of an older, higher emitting engine with a newer, cleaner engine. Engine replacements can also be combined with emission control technologies. The engines being replaced should be scrapped or remanufactured to a cleaner standard. As noted above, for areas that want to take credit in the SIP and transportation conformity processes for these projects, see EPA's retrofit guidance at: *http://www.epa.gov/otaq/stateresources/transconf/policy.htm#retrofit.*

New engines also must be EPA-certified. For a complete list of all EPA certified large highway and nonroad engines, please consult the list at *http://www.epa.gov/otaq/certdata.htm.*

For more information on diesel retrofits, please see the EPA's National Clean Diesel Campaign Web site at *http://www.epa.gov/cleandiesel/.*

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