

Technical Highlights

EPA's Diesel Retrofit SIP and Conformity Guidance

The U.S. Environmental Protection Agency (EPA) has issued a guidance document on how to incorporate emission reductions from diesel retrofits into state implementation plans (SIPs) and conformity.

What is the purpose of this guidance?

This guidance document will help state and local air quality and transportation planners:

- Quantify the emission reductions from retrofitting diesel vehicles, engines, and equipment.
- Appropriately include the emission reductions from diesel retrofits in a state implementation plan (SIP), to help demonstrate progress toward, attainment of, or maintenance of national ambient air quality standards.
- Appropriately include emission reductions from diesel retrofits in transportation conformity or general conformity.

Why is EPA issuing this guidance?

- Technology is available today to reduce diesel vehicle and engine emissions in a cost-effective way. Many diesel retrofit projects are being successfully implemented around the country. Clean diesel projects already initiated are expected to result in approximately

20,000 tons of particulate matter reduced over the life of the projects, with estimated public health benefits of about \$5 billion.

- Diesel retrofit technologies reduce pollution from the existing diesel engine fleet by up to 90% for particulate matter (PM), up to 50% for nitrogen oxides, and up to 90% for volatile organic compounds.
- The ability to use diesel emission reductions for SIP and conformity purposes gives states and localities additional incentive to implement diesel retrofit projects.
- Retrofit projects provide a unique and cost-effective opportunity for state and local governments to reduce pollution from highway and nonroad diesel vehicle and equipment fleets, and as a result, could assist areas in attaining the 8-hour ozone and PM_{2.5} national ambient air quality standards.
- Funding for diesel retrofits is available in the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users, or SAFETEA-LU. SAFETEA-LU continues to provide federal funding for retrofit of highway diesel vehicles and engines under the existing Congestion Mitigation and Air Quality Improvement Program (CMAQ), and expands CMAQ eligibility to include the retrofit of nonroad diesel vehicles, engines, and equipment. SAFETEA-LU also placed a priority on distributing CMAQ funds to diesel retrofits and other cost-effective emission reduction activities while maintaining the role of states and MPOs in selecting projects.
- This guidance also fulfills EPA's requirement to develop guidance for states to include emission reductions from diesel retrofits, required by section 795(c) of the Energy Policy Act of 2005.

What does it mean to “retrofit” diesel vehicles and engines?

The term “retrofit” is broadly defined to include any technology, device, fuel or system that, when applied to an existing diesel vehicle or engine, achieves emission reductions beyond that required by EPA regulations at the time of a vehicle or engine's certification. Retrofit technologies may include EPA verified emission control technologies and fuels and CARB-verified emission control technologies. Note that diesel technologies are verified for specific types of vehicles or engines, defined in the “applicability” sections of the EPA and CARB verified technology lists.

(These lists can be accessed from: www.epa.gov/otaq/retrofit/retroverifiedlist.htm)

What type of diesel vehicles and engines can be retrofitted?

This guidance applies to both highway and nonroad diesel vehicles, engines, and equipment.

- **Highway:** includes vehicles used on roads for transportation and freight, such as diesel buses and trucks.
- **Nonroad:** includes vehicles, engines and equipment used for purposes such as construction, agriculture, industrial operations, and nonroad transportation.

Does the guidance cover replacement of vehicles, engines, or equipment?

Yes, this guidance applies to the use of EPA certified engines as engine replacements, or the early replacement of older vehicles or equipment with cleaner vehicles or equipment. Emission reductions that result from replacements that would have occurred through normal attrition are considered to be the result of normal fleet turnover and are not addressed by this guidance.

How can emission reductions from diesel retrofits be quantified for SIPs and conformity?

For states other than California, EPA recommends that the National Mobile Inventory Model (NMIM) be used for quantifying emission reductions from retrofits for SIP and conformity purposes. NMIM is a graphical user interface that contains the MOBILE6.2 and NONROAD2005 models and a database of county-level input information. Chapter 2 of the guidance provides details on how NMIM can be used for SIP and conformity purposes, including a summary of key inputs that are necessary (for example, information about the fleet such as vehicle miles traveled or hours of use) and issues that users may face when developing input data. Before using NMIM, state and local air quality and transportation agencies should work together with EPA and the U.S. Department of Transportation (DOT) to determine whether NMIM is appropriate given local conditions and modeling methods and to determine what modifications are needed to NMIM's database.

EPA also acknowledges that alternative methods are available and others may be developed. EPA will review any alternative methods for use in SIPs and conformity on a case-by-case basis.

This guidance does not apply to the quantification of emission reductions from retrofit projects in California. State and local agencies developing SIPs and conformity analyses for California should consult with EPA Region 9 for information on the current version of EMFAC approved for use in California and for information on how to quantify emission reductions from retrofit projects.

What if I need to quantify emission reductions from diesel retrofits for another purpose, like a grant application?

NMIM could also be used to evaluate retrofit projects for other purposes, such as the development of proposals for retrofit projects. For these purposes, NMIM users could rely more on default data in NMIM or other more simplified methods for using NMIM. Other, more simplified approaches that do not rely on NMIM may also be appropriate for non-SIP or conformity uses. Note that simplified approaches may result in estimates that are not completely consistent with estimates using more rigorous methods. Consultation between organizations developing project proposals and state and local air quality and transportation agencies about appropriate methods and interpretation of result is important to ensure that retrofit projects are properly evaluated.

What are the basic requirements for using emission reductions from diesel retrofits in SIPs?

Chapter 3 of the guidance explains how the basic requirements that all control measures must meet in order to be included in a SIP – that emission reductions are quantifiable, surplus, enforceable, permanent, and adequately supported – can be met with diesel retrofits.

Can diesel retrofits be included in a SIP under the Voluntary Measures guidance (VMEP)?

Yes. If your retrofit control measure is approved under EPA's VMEP guidance, the state is responsible for assuring that the reductions credited in the SIP occur. The state would need to make an enforceable SIP commitment to monitor, assess and report on the emission reductions resulting from the voluntary measure and to remedy any shortfalls from

forecasted emission reductions in a timely manner. See Chapter 3 for more information.

How can highway diesel retrofits be included in transportation conformity?

Chapter 4 of the guidance covers this question in detail. Retrofits of highway vehicles (such as buses and trucks) can be included in transportation conformity determinations without a SIP revision, by meeting the requirements in the conformity regulation at 93.122(a).

Can emission reductions from nonroad diesel retrofits be included in transportation conformity?

Yes, and there are two options that may be used to reflect reductions from nonroad retrofit projects in transportation conformity determinations:

- Apply nonroad retrofit emission reductions as a "safety margin" to the on-road motor vehicle emissions budgets through a SIP; or
- Establish a trading mechanism in the SIP to allow emissions to be traded from one emissions sector to another.

Both of these options are allowed by the current transportation conformity rule and are completed through the SIP process with consultation among federal, state, and local air quality and transportation agencies. An area may decide to pursue one of these options if it is anticipated that emission reductions from nonroad retrofit projects may be needed to assure future transportation conformity determinations. Please see Chapter 4 for additional information.

How is EPA streamlining the processes for using the emission reductions from nonroad retrofit projects in conformity?

EPA recognizes the importance of nonroad retrofit projects in reducing emissions and wants to assist interested state and local air and transportation agencies. Chapter 4 and Appendices A through C of the guidance include additional information for crediting nonroad retrofit projects in the transportation conformity process using the two methods identified.

Safety Margins

EPA has provided:

- Questions and answers about safety margins, beginning with Question 4.6.
- Step-by-step process instructions, including a flow chart, for adopting a safety margin – see Appendix A.
- An example of how a safety margin is applied – see Appendix A.
- A list of areas that have adopted safety margins in the past – see Question 4.11.

Trading Mechanisms

EPA has provided:

- Questions and answers about trading mechanisms, beginning with Question 4.12.
- Step-by-step process instructions, including a flow chart, for adopting a trading mechanism – see Appendix B.
- An example of how a trading mechanism would work – see Appendix B.
- A model rule that establishes a trading mechanism that interested states could adopt through the SIP—see Appendix C. States that are interested in establishing a trading mechanism merely need to copy the model rule and fill in the blanks as appropriate (e.g., the appropriate names of state air quality agencies and MPOs must be inserted), and can adopt it into their SIPs. EPA developed this model rule in consultation with DOT and state and local air quality and transportation organizations; therefore, states that adopt the model rule can expect a streamlined SIP approval.

Could emission reductions from nonroad diesel retrofits be used in general conformity determinations?

Yes, emission reductions from nonroad diesel retrofits could be used in a number of ways in general conformity determinations. See Chapter 5 of the guidance for more information.

Who can I contact for further information?

- You can access the guidance document, "Diesel Retrofits: Quantifying and Using Their Benefits in SIPs and Conformity - Guidance for State and Local Air and Transportation Agencies" (EPA420-B-06-005, June 2006), on EPA's Office of Transportation and Air Quality Web site at: www.epa.gov/otaq/stateresources/transconf/policy.htm
- General questions regarding retrofit projects or the application of verified retrofit technologies for the existing fleet of highway and nonroad vehicles can be directed to the National Clean Diesel Campaign at cleandiesel@epa.gov.
- Technical questions regarding the use of NMIM for calculating emission reductions from retrofit projects can be directed to mobile@epa.gov.
- General questions concerning the use of emission reductions from retrofit projects in SIPs or in transportation conformity can be directed to Meg Patulski at (734) 214-4842, patulski.meg@epa.gov or Gary Dolce at (734) 214-4414, dolce.gary@epa.gov.
- Questions concerning the use of emission reductions from retrofit projects in general conformity can be directed to Tom Coda at (919) 541-3037, coda.tom@epa.gov.