Don’t Miss the Bus: Including Electric School Buses in State Implementation Plans (SIPs)

PRESENTATION FOR NACAA – CRITERIA POLLUTANTS COMMITTEE

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Overview

The next few years promise an acceleration in the conversion to clean, electric school buses in communities throughout the United States

- $5 Billion for zero emission buses in the 2021 Bipartisan Infrastructure Law
- Eligibility in the 2022 Inflation Reduction Act's $1 Billion electrification program for heavy duty commercial vehicles
- States directing VW settlement funds to school bus electrification programs
- Proposed state funding for fleets of electric school buses
- New partnerships between school districts and electric companies to reduce barriers to bus fleet electrification

Benefits of Electric School Buses

Electric school bus programs tend to focus on:

- Health benefits to children that come from riding cleaner buses
- Positive climate impacts of zero emission vehicles

But overall improvements to ambient air quality in these communities are discussed briefly, if at all

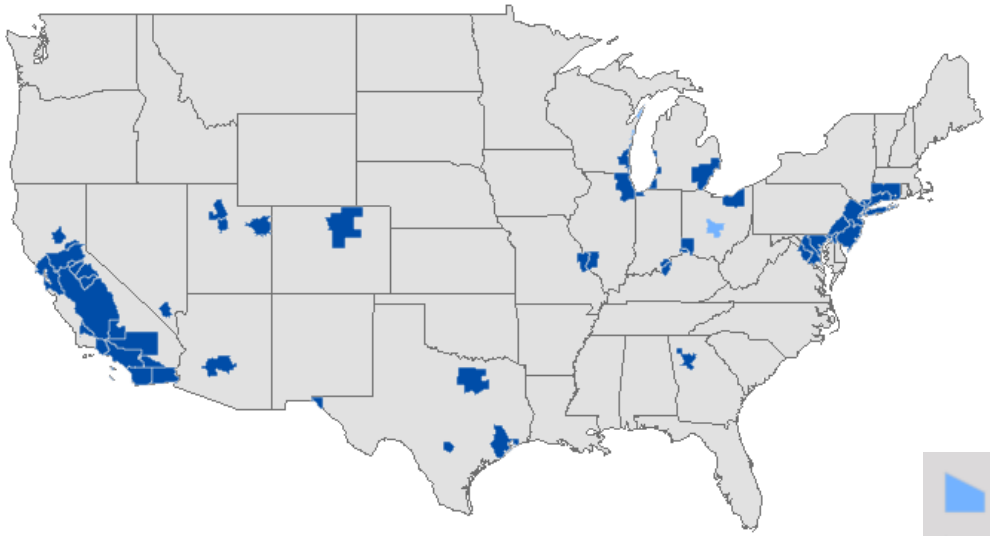
- Electric school buses can reduce overall levels of NAAQS pollutants (and their precursors), especially on a fleet wide basis
- Benefits will be greatest in nonattainment areas and in communities bearing disproportionate harms of air pollution

Air Planning – The Missed Opportunity

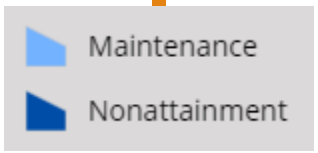
These reductions in NAAQS pollutants and their precursors from conversion to electric school buses can – and should – be harnessed to address air planning requirements under the Clean Air Act

To ensure this can be done:

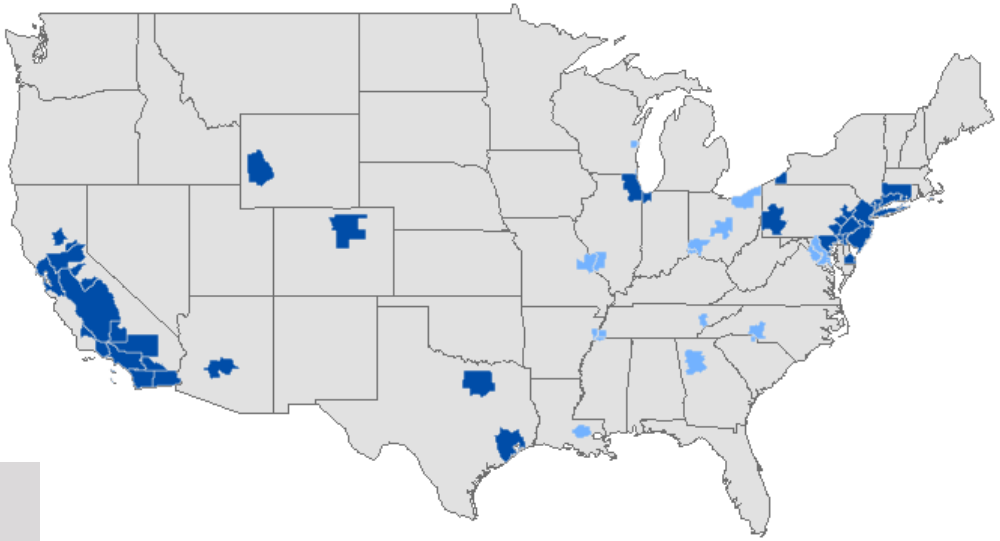
- State and local air planners should be brought into the planning process
- Parties should work together to make certain that bus programs are designed and implemented so that emission reductions can be properly quantified and credited within state and local SIPs
- Focus on ozone and PM reductions in addition to GHG benefits



2015 Ozone NAAQS



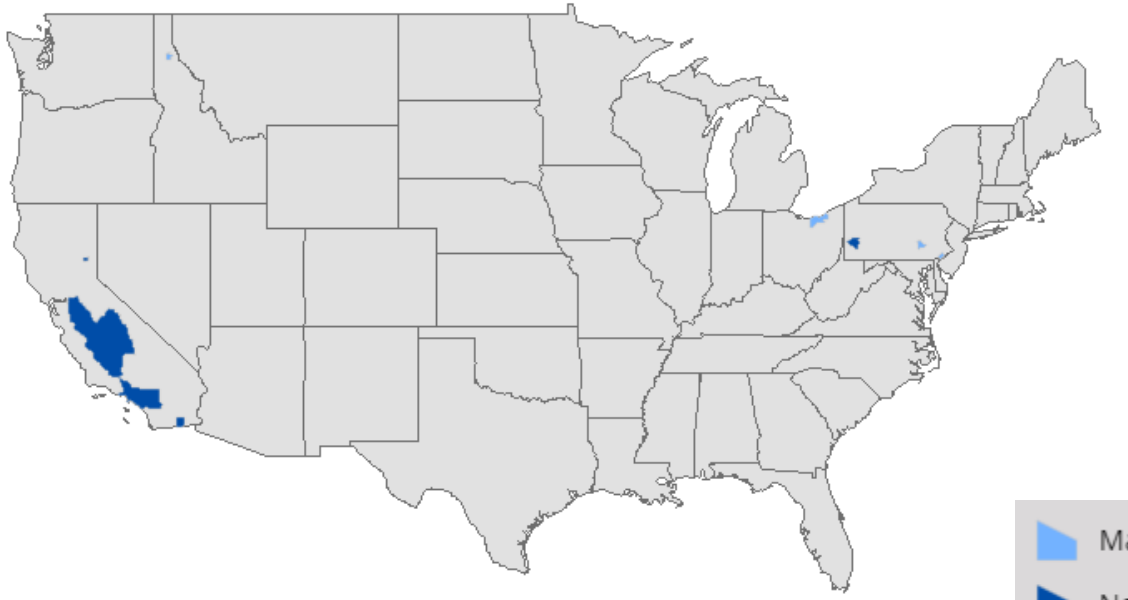
EPA Maps-Aug. 2022



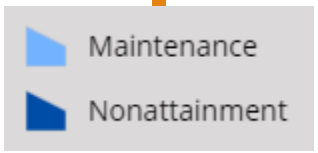
2008 Ozone NAAQS

Ozone Nonattainment & Maintenance Areas

That Could Benefit From Inclusion of School Bus Electrification



2012 PM2.5 NAAQS



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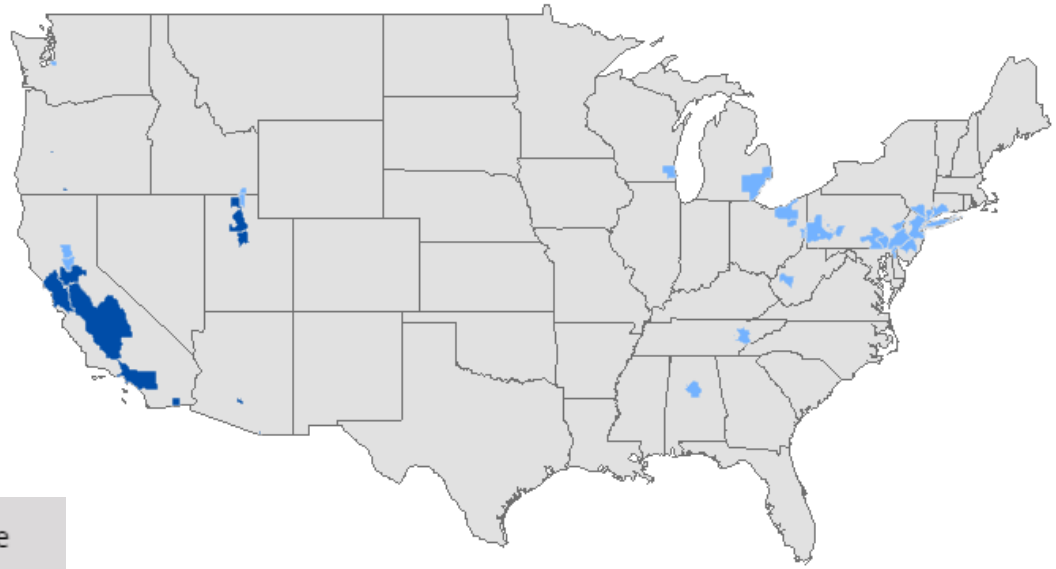


2006 PM2.5 NAAQS
+ Fairbanks, Alaska Nonattainment Area

PM2.5 Nonattainment & Maintenance Areas
That Could Benefit From Inclusion of School Bus Electrification

It's Been Done Before – Cleaner Buses in SIPs

Many different types of SIP actions that have relied, in part, on emissions reductions from cleaner school bus programs to fulfill CAA obligations

- Primarily Clean Diesel Programs
- Include Bus Replacements and/or Engine Retrofits

EPA rulemaking notices approving these SIPs, as well as the underlying SIP submittals, vary greatly in the amount of detail regarding the emission reductions attributed to the school bus programs

- Some include specific bus program emission reductions
- Others include buses in aggregated reductions from a suite of measures

Examples of EPA-Approved SIPs with School Bus Emission Reductions

2007 - School Bus Engine Retrofit Program in an **ozone maintenance plan SIP** in West Virginia

- Would require existing school bus engines retrofitted to lower emissions
- Included as part of the plan's contingency measures

2010 - Texas Clean School Bus Program in the **general SIP**

- Economic incentive program using federal, state, and local funds to retrofit 7,000+ and replace 700+ older diesel school buses, focusing on buses in and near ozone nonattainment areas
- Included as a general emission reduction measure without any specific quantification of or credit from the emission reduction

2010 - School Bus Fleets Rule in the **ozone attainment planning SIP** for San Joaquin Valley, CA

- Required replacement or retrofit of all school buses operating in the area that were manufactured before 1978
- Included as a specific NOx control with an estimated 0.6 tons of NOx reductions per year

Examples of EPA-Approved SIPs with School Bus Emission Reductions (Cont'd)

2018 - School bus retrofit program in the **PM2.5 attainment planning SIP** for Oakridge, OR

- Included in a suite of measures to fulfill the CAA's reasonably available control measure (RACM) requirement

2021 - School bus replacements in revision to the **ozone maintenance plan SIP** for Atlanta, GA

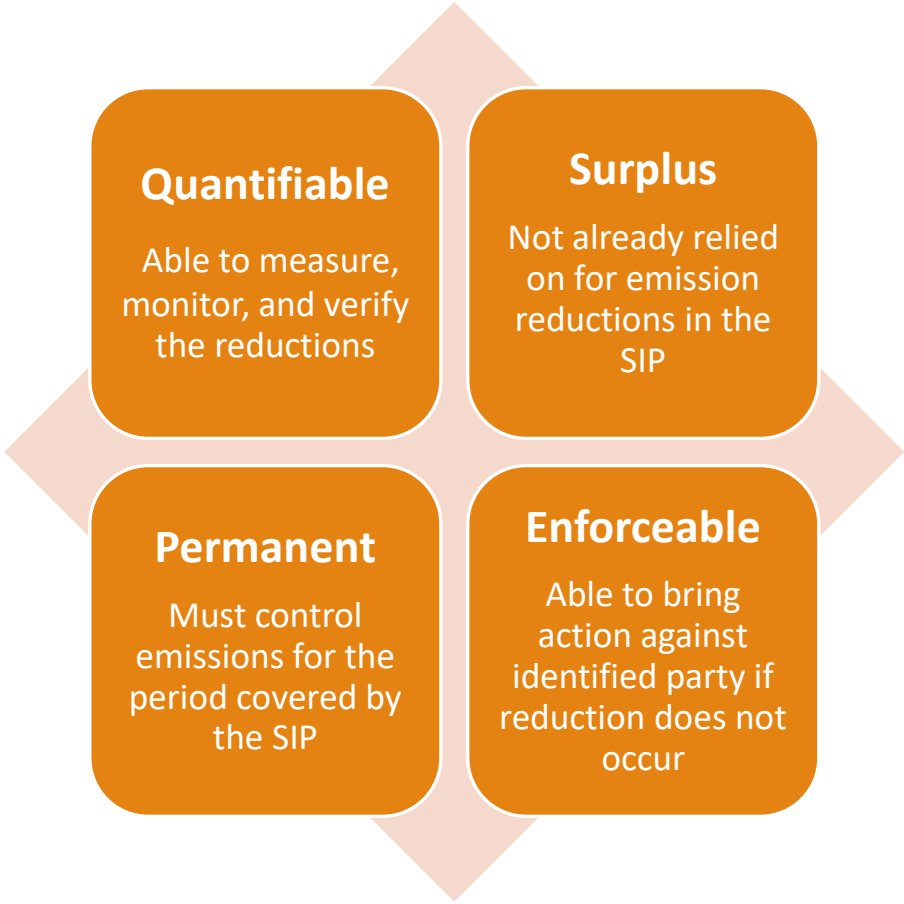
- Replaced 85 older school buses with 2018 models
- Provided almost 13 TPY of emissions reductions that were combined with emission reductions from a locomotive replacement program to offset the removal of many of the plan's existing transportation control measures

EPA has also approved emission reductions from public transit and other buses

Other SIP and/or transportation planning actions may exist that could not be identified based on failure to identify school bus emission reductions in a Federal Register notice

Including Bus Emission Reductions in SIPs

Creditable emission reductions in SIPs must meet 4 requirements:



Designing an electric school bus program to address these 4 requirements should ease SIP inclusion & approval

Developing Programs with SIP-Creditable Reductions

Past actions regarding diesel bus emission reductions can provide a helpful template

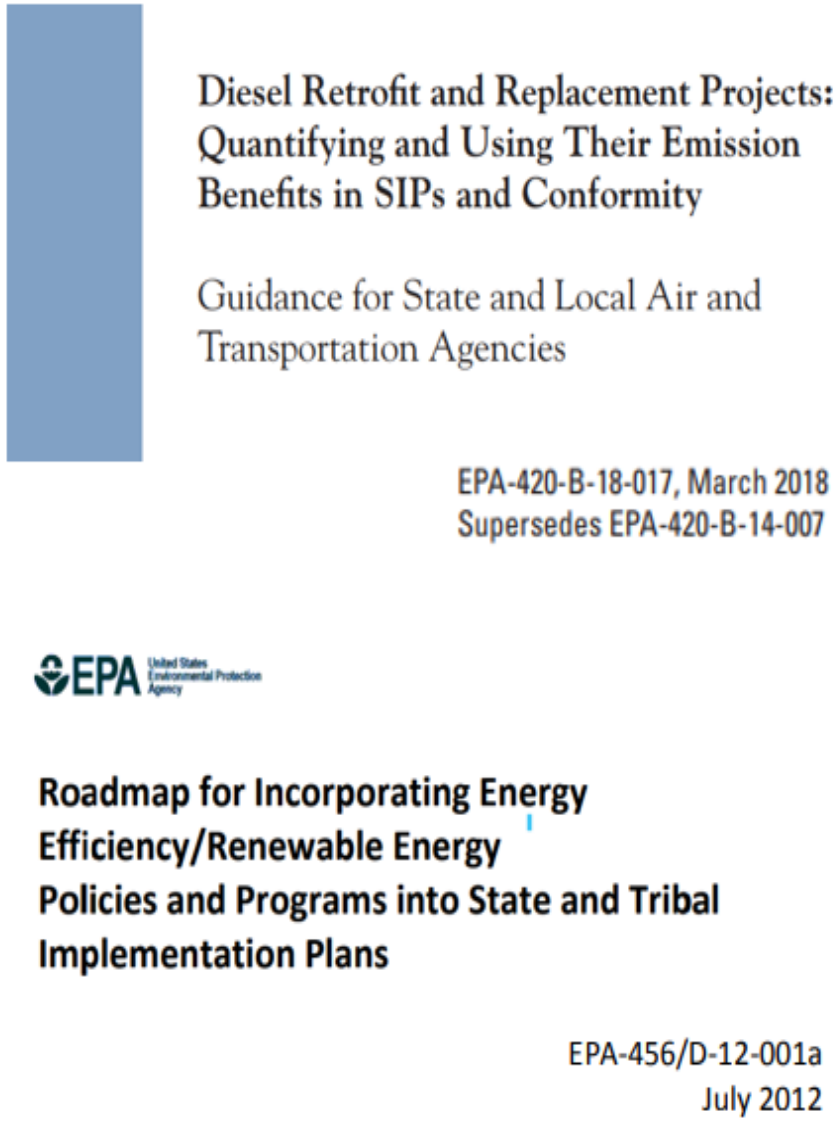
OTAQ guidance on quantifying and including diesel replacement projects in SIPs

- In-depth MOVES modeling

OAQPS guidance for quantifying and including energy efficiency and renewable energy programs in SIPs

- Tools for comparing options under consideration

Both emphasize designing programs to meet the four (4) SIP creditability requirements



Diesel Retrofit and Replacement Projects: Quantifying and Using Their Emission Benefits in SIPs and Conformity

Guidance for State and Local Air and Transportation Agencies

EPA-420-B-18-017, March 2018
Supersedes EPA-420-B-14-007

EPA United States Environmental Protection Agency

Roadmap for Incorporating Energy Efficiency/Renewable Energy Policies and Programs into State and Tribal Implementation Plans

EPA-456/D-12-001a
July 2012

But Electric Buses Are Different …

Differences between electric and diesel replacements will need to be addressed

- OTAQ's diesel retrofit & replacement guidance specifies that states may only take credit for emission reductions occurring between bus replacement and its remaining useful life
  - MOVES model assumes normal fleet turnover at end of useful life
- But electric school buses will have lower emissions than both the existing diesel bus and its assumed new diesel replacement

Different charging and funding scenarios – such as vehicle-to-grid programs – may also require adjustments to the analysis that has typically been undertaken for diesel bus replacement

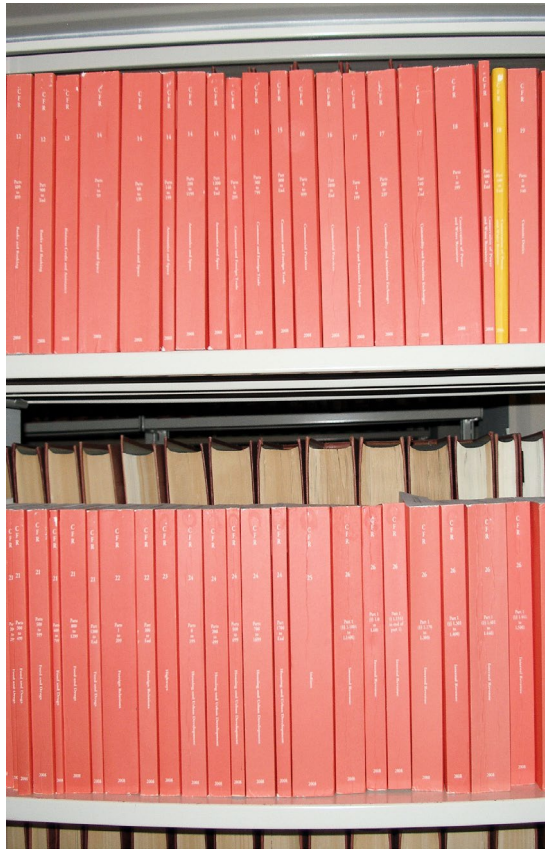
SIP Inclusion Is A Real Commitment

Enforceability means that any electric school bus program included in a SIP must be implemented

- Adequate funding
- Timely bus replacement
- Responsible parties

Failure to carry out the included program could result in the need to revise the SIP with substitute emission reductions from other sources

- For example, in 1983, EPA approved a Clean Bus Acquisition Program in the Colorado Springs SIP, but the state did not receive the federal funding for new buses
- So in 2019, EPA approved a SIP revision substituting other emissions reductions for the bus program



Next Steps

Reach out to the groups designing electrification programs in your area, especially those applying for and/or receiving EPA electrification funds

- Explain the potential Clean Air Act benefits of electrification and ask to be involved
- School districts should be able to provide realistic implementation & utilization information

Coordinate with EPA Regional & Headquarters Offices to determine the necessary analysis and best program design for successful SIP inclusion

- School bus electrification presents unique issues that could benefit from early EPA engagement

Involve Other Stakeholders

- Support from local governments, community groups, and environmental organizations could ease program adoption and SIP approval
- EEI and its members may be able to provide analytic and other support

For Additional Information

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