South Coast AQMD

2022 AIR QUALITY MANAGEMENT PLAN

Draft Policy Brief

Federal Approach

INTRODUCTION

This is one of five briefing papers intended to provide policy background information supporting adoption and implementation of the 2022 AQMP. This paper specifically addresses the significance and challenge associated with primarily federally regulated emission sources in 2037. Federal preemption prohibits South Coast AQMD and CARB from regulating certain emission sources including interstate trucks, ships, locomotives, aircraft, and some off-road equipment. The latter refers to farming and construction equipment under 175 horsepower because only the U.S. EPA has the authority to set emission standards for this equipment under the Clean Air Act. Collectively, primarily federally regulated emission sources contribute a significant amount of emissions in our region and their contribution is only expected to grow, making the daunting challenge of attainment insurmountable without significant federal action.

NEED FOR EMISSION REDUCTIONS

The South Coast Air Basin faces an enormous challenge to meet the 2015 8-hour ozone standard by 2037. The 2022 AQMP demonstrates that reducing emissions of Nitrogen Oxides (NOx) will be critical to attain the standard by 2037. The total NOx emissions in the entire Basin projected for 2037 reflecting already adopted regulations and programs – referred as 2037 baseline – is 220 tons per day. However, the amount of NOx emissions that can be emitted into the atmosphere and still achieve attainment – referred to as the "carrying capacity" – is 63 tons per day for the entire Basin. Even though 2037 baseline emissions are already 36 percent below the 2018 emissions (347 tons per day), existing regulations and programs (i.e., "baseline" conditions) are not enough to meet the standard, and an additional 71 percent reduction in NOx beyond the 2037 baseline levels are needed. This is about 82 percent below 2018 levels. The NOx baseline inventory and reductions required for attainment are depicted in Figure 1, illustrating the need for all sectors to reduce emissions substantially and for the adoption of all feasible measures.

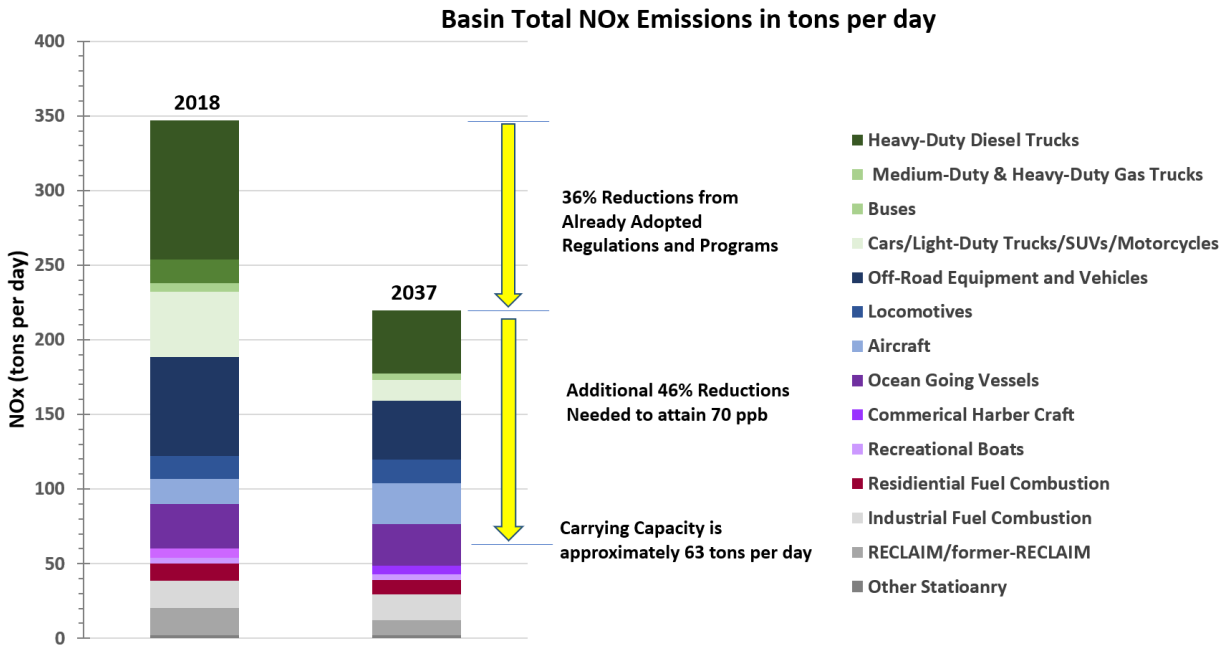


FIGURE 1
BASELINE NOx EMISSIONS INVENTORIES AND ADDITIONAL REDUCTIONS REQUIRED TO ATTAIN THE 2015 8-HOUR OZONE STANDARD

RESPONSIBILITY FOR EMISSION REDUCTIONS

NOx emissions within the Basin are regulated by the U.S. EPA, CARB, or South Coast AQMD depending on the emission source category. Each agency's share of the total 2018 and 2037 baseline NOx emissions inventory is depicted in Figure 2. South Coast AQMD's primary regulatory authority to control emissions is for stationary sources with only limited authority to control mobile sources. This presents a challenge since mobile sources – namely heavy-duty trucks, ships, airplanes, locomotives and construction equipment – account for over 80 percent of NOx emissions. Meanwhile, stationary sources – such as power plants, refineries, and factories – are responsible for the remaining 19 percent in 2037.

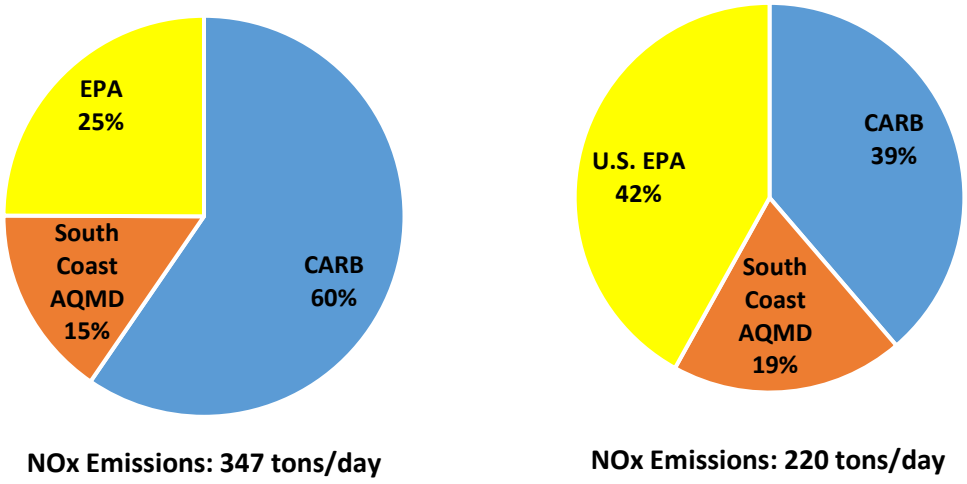


FIGURE 2
2018 (LEFT) AND 2037 (RIGHT) BASELINE EMISSIONS INVENTORY AGENCY RESPONSIBILITY

The emission sources subject to the U.S. EPA's regulatory authority are significant and growing. In 2018, these sources only accounted for 25 percent of the NOx emissions, yet their contribution is expected to increase to 42 percent by 2037. The growing contribution of federal sources reflects aggressive action by CARB and South Coast AQMD, while only modest actions have been taken by the U.S. EPA. Figure 3 highlights that the pace of emission reductions from federal sources has lagged far behind that of South Coast AQMD and CARB regulated sources. On a statewide basis, mobile source emissions regulated by the U.S. EPA surpassed those regulated at the State and local level in 2020. If the U.S. EPA continues to fail in taking regulatory action over the sources for which it has sole authority, then the South Coast AQMD could be forced to make up for the shortfall in emission reductions, and as a result, the burden for emission reductions will be unfairly placed on already highly regulated sources.

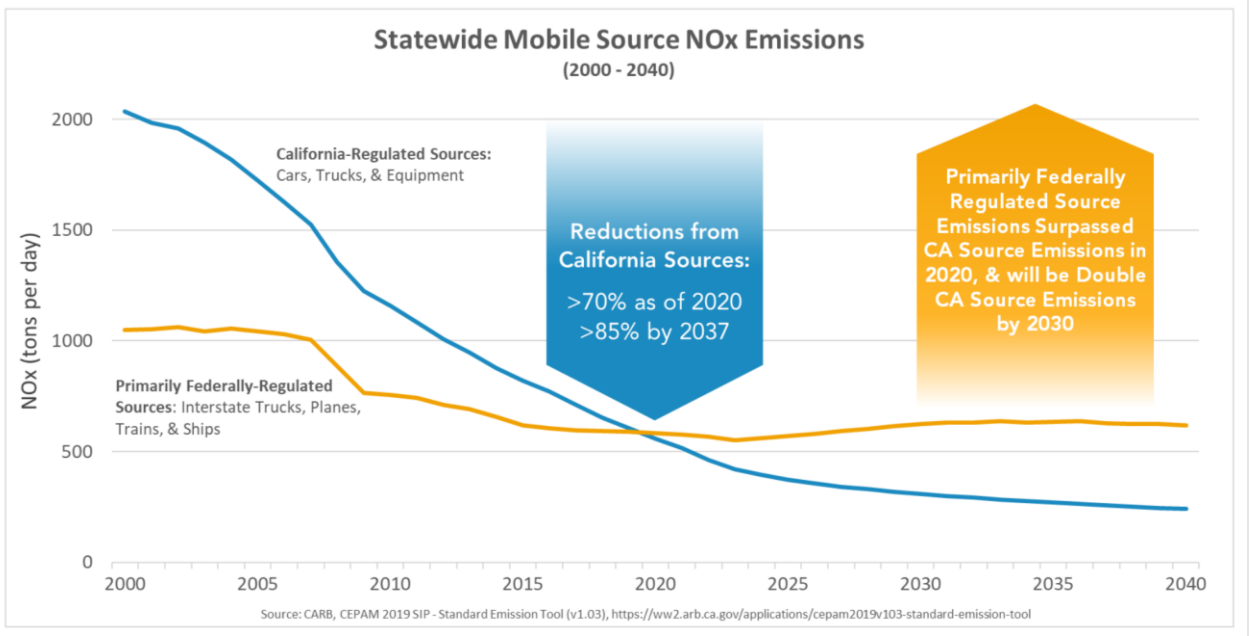


FIGURE 3
STATEWIDE MOBILE SOURCE EMISSIONS[1]

As shown in Figure 4, the total NOx emissions under U.S. EPA authority are estimated to be 92 tons per day in 2037, with ocean going vessel and aircraft emissions accounting for the majority of emissions. Even if all sources subject to CARB and South Coast AQMD control were zero emission, federal sources alone would emit substantially more than the 63 tons per day carrying capacity. It is imperative that the federal government act to reduce emissions from sources of air pollution within their authority, such as interstate trucks, ships, locomotives, aircraft, and certain categories of off-road equipment.

[1] Reproduced from CARB's 2022 State SIP Strategy. Available online at: https://ww2.arb.ca.gov/sites/default/files/2022-01/Draft_2022_State_SIP_Strategy.pdf

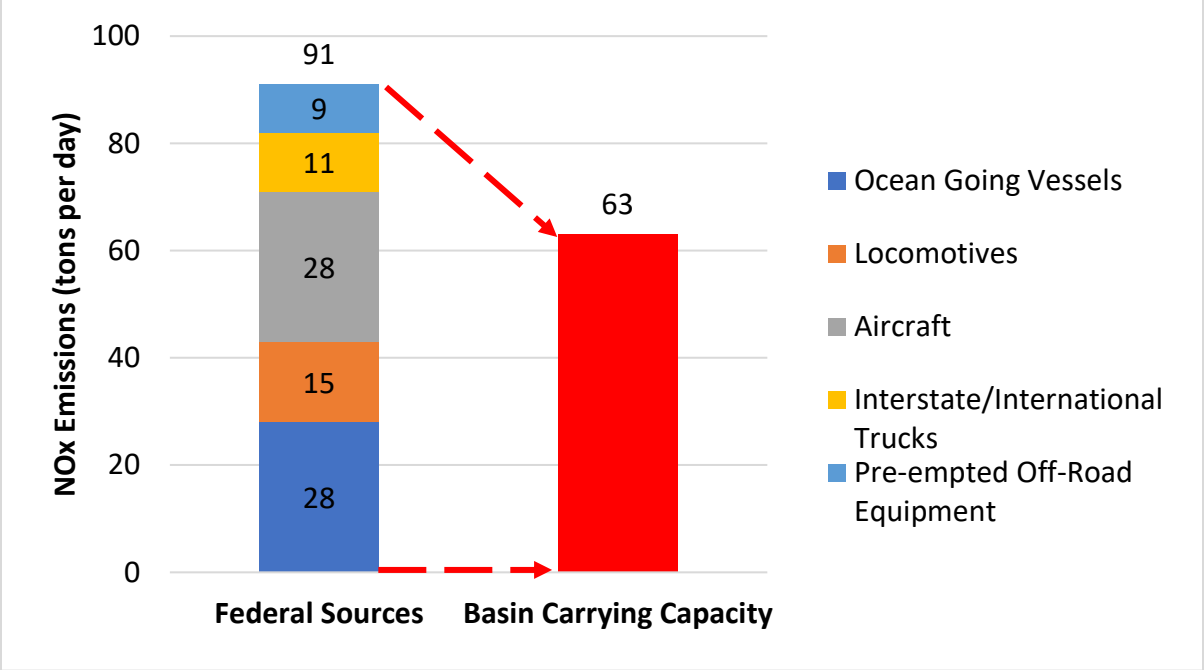
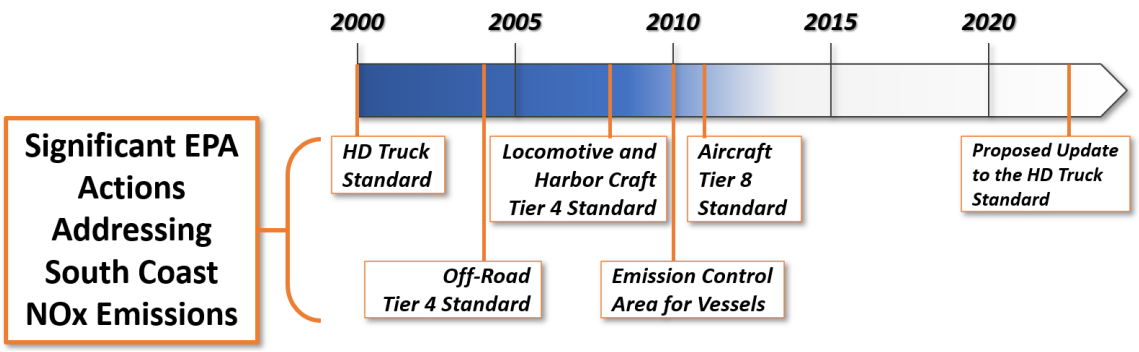


FIGURE 4
NOx EMISSIONS IN 2037 FROM SOURCES UNDER FEDERAL JURISDICTION. FOR COMPARISON, THE CARRYING CAPACITY IS 63 TONS PER DAY.

FEDERAL ACTION

Over the last 10-15 years, the federal government has increasingly turned its attention to developing strong national stationary source regulations, especially regulations focused on addressing greenhouse gases, air toxics, and criteria pollutants from power plants. These actions are important measures to address overall air pollution burden from the power sector, particularly from coal-fired power plants.[2] However, during this same period, regulations on mobile sources have lagged. For example, emission standards for heavy-duty trucks – currently the top source of NOx in the Basin – have not been revised in over 20 years. In March 2022, the U.S. EPA published a proposed rule that would set new, more stringent standards to reduce emissions from heavy-duty vehicles and engines starting in model year 2027. The U.S. EPA is currently reviewing comments and the rule is anticipated to be finalized by the end of 2022. Emission standards for locomotives were last revised in 2008. The last action focused on Ocean-Going Vessels (OGVs) – the third highest source of NOx in the Basin - was the implementation of the North American Emission Control Area in 2010, and NOx from commercial aircraft was last reviewed in 2012. To the extent there have been more recent actions for mobile sources, these have focused exclusively on GHG emission standards, including the Phase 2 truck rule and the most recent aircraft rule.

[2] https://www.epa.gov/mats/cleaner-power-plants



The lack of regulatory action to address NOx from mobile sources is troubling given the amount of NOx emissions associated with these sources, their projected growth over time, and the limited authority to address these sources at a local level. This is not just an issue for the South Coast AQMD; other regions in the country are starting to struggle with increasing ozone levels, and several major metropolitan areas outside California are currently facing an unprecedented "bump-up" in nonattainment classification to "severe" - the second highest classification after "extreme." These areas include the NY/NJ/CT area, the greater Chicago region, and Denver.[3] Further, approximately 150 areas are facing a "bump-up" from "moderate" ozone nonattainment to "serious."[4] All these regions suffer from the impacts of increasing NOx from mobile sources. While there are on-going efforts between South Coast AQMD and the U.S. EPA to work on the sources under the U.S. EPA's authority, the Basin will be unable to meet ozone standards and other regions will ultimately face the same fate in the future without significant federal actions to address NOx from these sources.

To address NOx from federal sources, we believe that the U.S. EPA needs to take action in the following areas:

Heavy-Duty Trucks: The NOx emission standard for heavy-duty trucks was last revised in 2001. South Coast AQMD petitioned the U.S. EPA in 2016 to adopt an ultra-low NOx rule for heavy-duty trucks. In response to that petition, U.S. EPA initiated rulemaking in this area and issued a proposed rule in March 2022.[5] We urged U.S. EPA to finalize the most stringent regulatory option possible and to also ensure finalization of the rule by the end of 2022 to ensure that model year 2027 trucks and beyond are covered. Additional details of our comments regarding U.S. EPA's proposed truck rule can be found in our comment letter in U.S. EPA's rulemaking docket.[6]

Locomotives: In 2017, CARB petitioned U.S. EPA to promulgate a Tier 5 standard. The proposed standard would include the first-ever zero-emission capability using on-board batteries to support zero-emission rail operation in sensitive areas, as well as cut fuel consumption and GHG emissions. To date, U.S. EPA has failed to respond to that petition, and there is currently no mention of revising locomotive emission

[3] 87 FR 21842
[4] 86 FR 29522, 86 FR 59648, 87 FR 21842
[5] 87 FR 17414
[6] Comment submitted by South Coast Air Quality Management District. May 12, 2022 (https://www.regulations.gov/comment/EPA-HQ-OAR-2019-0055-1201)

standards on U.S. EPA's regulatory agenda. In September 2020, Governor Newsom signed Executive Order N-79-20 which directs CARB to adopt regulations to transition the State's transportation fleet to ZEV. This includes transitioning the state's off-road fleet (including locomotives) to ZEVs by 2035 where feasible. CARB's proposed actions include an In-Use Locomotive Regulation that would ban 23-year-old or older locomotives starting in 2030, and would require new locomotives to be zero-emission starting in 2030 for Passenger, Switch and Industrial locomotives, and in 2035 for Line Haul locomotives.

Ocean-Going Vessels: Emissions standards for OGVs are largely determined on an international level by the International Maritime Organization (IMO), whose primary focus is reducing NOx and GHG emissions from OGVs. Currently, very few vessels with the cleanest Tier 3 engines visit California, even though Tier 3 applies to marine engines beginning in 2016. As a result, there is a need for accelerating the phase-out of older tiers and the adoption of cleaner vessels. As part of rulemaking associated with the Marine Ports Indirect Source Rule, South Coast AQMD will assess the extent to which emission reductions can be achieved from OGVs through any available means. CARB makes similar commitments in the Draft 2022 State SIP Strategy to examine its regulatory authority over OGVs and to collaborate with local air districts, U.S. EPA, and industry stakeholders to achieve emission reductions. Potential actions include petitioning U.S. EPA and IMO for new marine engine standards such as Tier 4 standards that are comparable to engines in other diesel equipment sectors. For older vessels with Tier 2 engines, technologies including water-in-fuel emulsion, exhaust gas recirculation (EGR) and selective catalytic reduction (SCR) will be needed. Finally, OGVs that operate on clean fuels including biofuels, renewable hydrogen, methanol, ammonia, batteries, and fuel cells will need to be developed. While new standards are helpful, an incentive or other approach will ultimately be needed to attract the cleanest vessels to our ports.

Aircraft: Emissions from aircraft are a substantial and growing portion of the Basin's NOx emissions. Aircraft emissions alone will account for 45% of the carrying capacity in 2037. Unfortunately, the U.S. EPA has not revised commercial aircraft NOx emission standards since 2012.[7] As a result, there are no new regulations applicable to aircraft to reduce NOx emissions between now and 2037. In fact, some newer aircraft emit NOx at a higher rate compared to previous generation aircraft. This is due to more stringent Greenhouse Gas (GHG) emission standards,[8] which have led to the production of more fuel-efficient aircraft that simultaneously emit more NOx. South Coast AQMD has therefore recommended that the U.S. EPA consider a multipollutant approach to aircraft emission standards that avoids inadvertent increases in criteria pollutant emissions.

Off-Road Equipment: Off-road equipment regulated at the federal level also contributes significant NOx emissions in California. CARB is promulgating a new Tier 5 standard to reduce NOx and PM emissions from State-regulated off-road equipment and addresses the need for U.S. EPA to promulgate similar standards for preempted engines.[9] In addition, U.S. EPA should consider zero emission standards for off-road equipment where the technology is feasible.

[7] 40 CFR Parts 87 and 1068, (https://www.govinfo.gov/content/pkg/FR-2012-06-18/pdf/2012-13828.pdf)
[8] 40 CFR Parts 87 and 1030, (https://www.govinfo.gov/content/pkg/FR-2021-01-11/pdf/2020-28882.pdf)
[9] CARB 2022 State SIP Strategy. Available online at: https://ww2.arb.ca.gov/sites/default/files/2022-01/Draft_2022_State_SIP_Strategy.pdf

SUMMARY

Due to the substantial emissions from federal sources in 2037, South Coast AQMD and CARB alone will not be able to sufficiently reduce emissions to attain the 2015 8-hour ozone standard. Thus, it is necessary for the U.S. EPA to work with other federal agencies and international authorities to achieve significant reductions from the emission sources subject to their control. The U.S. EPA must take aggressive action and work with South Coast AQMD to ensure that the 17 million residents in our region breathe clean air, and that the rest of the country is on a similar track.