BEFORE THE
CALIFORNIA AIR RESOURCES BOARD

COMMENTS ON CALIFORNIA'S DRAFT ENVIRONMENTAL ANALYSIS FOR ITS PROPOSED 2022 STATE STRATEGY FOR THE STATE IMPLEMENTATION PLAN

COMMENTS OF THE ASSOCIATION OF AMERICAN RAILROADS

The Association of American Railroads ("AAR"), on behalf of itself and its member railroads, respectfully submits the following comments on California's Draft Environmental Analysis for its Proposed 2022 State Strategy for the State Implementation Plan ("Draft EA"). AAR also incorporates by reference its previous comments on the In-Use Locomotive regulation submitted to CARB on September 10, 2020; February 11, 2021; April 23, 2021; and June 4, 2021, and its Comments on Draft State Strategy for the State Implementation Plan submitted to CARB on March 4, 2022.

AAR is a non-profit industry association whose membership includes freight railroads that operate 83 percent of the line haul mileage, employ 95 percent of the workers, and account for 97 percent of the freight revenues of all railroads in the United States. AAR also represents passenger railroads that operate intercity passenger trains and provide commuter rail service. AAR's members own (or lease) and operate locomotives within the state of California and are part of the national freight rail network. AAR and its members therefore have a significant interest in this proceeding.

These comments are preliminary and based on the information released to date related to the In-Use Locomotive regulation, the Draft SIP, and the Draft EA. AAR reserves the right to supplement its comments as more information on CARB's intent, analysis, and data with respect to its State Implementation Plan are provided to AAR and the public.

I. INTRODUCTION

Rail is already the most efficient way to move people and freight over land. One train can carry the freight of hundreds of trucks, making freight railroads 3–4 times more fuel efficient on average than trucks. Further, although railroads account for 40% of U.S. freight transportation, they contribute only 1.9% of the U.S. transportation-related greenhouse gas emissions.

Railroads have demonstrated their commitment to partnering with federal and state regulators, including CARB, to improve air quality. For decades, railroads have undertaken initiatives to address air quality in California—both on their own initiative and through collaborations with CARB and local air districts. Railroads have pursued pioneering technology investments, changed railyard operations to limit emissions impacts, and voluntarily entered into two enforceable agreements with CARB to reduce emissions from locomotives in the South Coast Air Basin and to reduce particulate emissions from California railyards.[1] As CARB has verified, the railroads have fully complied with both agreements resulting in a dramatic decrease in particulate emissions, NO_x emissions, and health risks since 2005.

[1] *Memorandum of Mutual Understandings and Agreements: South Coast Locomotive Fleet Average Emissions Program*, July 2, 1998 ("1998 MOU" or "Fleet Average Agreement"); *ARB/Railroad Statewide Agreement: Particulate Emissions Reduction Program at California Rail Yards*, June 2005 ("2005 MOU" or "Railyard MOU").

Railroad initiatives to address air quality continue today. For example, BNSF partnered with Wabtec (a major locomotive manufacturer) and the San Joaquin Valley Air Pollution Control District, in coordination with CARB, to test a battery-powered line-haul locomotive between Barstow and Stockton, CA and is currently partnering with Chevron and Progress Rail to test a hydrogen fuel cell line-haul locomotive between Richmond and Barstow.[2] Union Pacific has placed an order for 20 battery-electric locomotives, 10 of which will be performing switching duties in California, at a cost of more than $100 million.[3] In addition, Pacific Harbor Lines and Progress Rail have undertaken demonstration projects for battery-powered switch locomotives at the Ports of Los Angeles and Long Beach.[4]

On a broader scale, the rail industry is exploring the feasibility and commercial viability of low- and zero-emission locomotives. Canadian Pacific has launched a Hydrogen Locomotive Program to test a line-haul locomotive powered by hydrogen fuel cells and batteries.[5] Similarly, Sierra Northern Railway has launched a program to build and test a hydrogen-powered switcher locomotive.[6] On the East Coast, Norfolk Southern is working with Wabtec (one of two locomotive original equipment manufacturers) to modernize 330 locomotives in order to

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[2] https://www.railwayage.com/news/bnsf-wabtec-bel-pilot-the-results-are-in/.

[3] https://www.up.com/media/releases/battery-electric-locomotive-nr-220128.htm.

[4] https://www.progressrail.com/en/Company/News/PressReleases/ProgressRailAndPacificHarborLineSignAgreementForBatteryLocomotive.html.

[5] https://www.cpr.ca/en/media/canadian-pacific-expands-hydrogen-locomotive-program-to-include-additional-locomotives-fueling-stations-with-emissions-red.

[6] http://sierranorthern.com/news/articles/california-energy-commission-awards-sierra-northern-railway-team-nearly-4-000-000-to-build-and-test-hydrogen-switcher-locomotive/.

improve fuel efficiency and reduce emissions.[7] Notably, however, technologies like battery or hydrogen fuel cell locomotives are still in development and will not reach commercial readiness in the near term.

Railroads have also devoted resources to significantly reducing emissions in railyards. Based on recently updated emission inventories for major yards in California that were provided to CARB, since 2005 railyard emissions of criteria pollutants have been reduced more than 70% and toxic pollutants and corresponding health risks (mostly for environmental justice communities) have been reduced by at least that much. Union Pacific has coordinated with CARB to partner with two air districts to bring Tier 4 switcher locomotives into operation in California. And Pacific Harbor Lines operates an entirely Tier 3 or Tier 4 fleet that was purchased in partnership with the South Coast Air Quality Management District ("SCAQMD") through Carl Moyer Grants. BNSF has introduced hybrid cranes in California, with an 84% reduction in NO_x, compared to a diesel-only crane. AAR's members have also started introducing zero-emission intermodal cranes, low-emitting, natural-gas hostlers, battery-electric hostlers, and diesel switch locomotive filters to reduce emissions of criteria pollutants and toxic air contaminants at railyards and impacts on the communities in which we operate. Additional actions that reduce emissions include running longer trains, which haul more freight using the same number of locomotives, running trains closer together, which reduces idling by reducing the time a train must wait to enter the main lines, and several other operating efficiencies that have resulted in improved fuel efficiencies and, therefore, lowered emissions.

[7] https://www.wabteccorp.com/newsroom/press-releases/wabtec-to-modernize-330-norfolk-southern-locomotives.

In light of these initiatives that truly have made a difference in air quality, AAR remains disappointed that CARB continues to discard the cooperative relationship of the past by proposing regulations that will not result in any creditable emissions reductions in California, and therefore cannot be relied on to achieve attainment as required by the Clean Air Act ("CAA"). The components of the In-Use Locomotive Regulation referenced in the Draft EA are impractical, would significantly burden both intrastate and interstate railroad operations, and would impose tremendous costs on railroads operating in California and their customers with little or no measurable improvements in air quality or reductions in greenhouse gas emissions.

Ironically, CARB is proposing to arbitrarily impose stringent requirements on one mode of goods movement (rail) that it does not impose on other more emissive and less efficient modes (e.g., trucking). CARB's own Advanced Clean Fleets regulation allows diesel-powered trucks—assets with a far shorter life cycle and far lower capital cost—to operate in California through 2041. The In-Use Locomotive Rule will significantly increase costs to the railroads and impose burdens on railroad customers and communities where change-outs would occur, without imposing parallel costs on the trucking industry or other modes of goods movement—potentially increasing criteria, toxic, and climate pollutants by driving freight to transport modes with far more significant negative impacts on air quality. Indeed, in its Exchange Point study with the University of Illinois, CARB has reached the same conclusion.[8]

[8] *See* https://ww2.arb.ca.gov//sites/default/files/classic/railyard/docs/uoi_rpt_06222016.pdf at xii ("The North American Class 1 railroads have continually worked to remove barriers that prevent the seamless movement of freight. Operation with exchange points and a captive fleet in the South Coast reintroduces those barriers. Based on experience with captive fleets and lack of interoperability in Europe, operation with exchange points in the South Coast is likely to result in: increased operating costs, delays and network disruption due to locomotive exchange; decreased locomotive utilization, increased locomotive fleet size and the capital cost of establishing extra regional alternative-technology

To those knowledgeable about the law, the industry, and the science, CARB's planned rail regulatory initiatives are neither a lawful nor practical way to further reduce locomotive emissions. Instead, they are an arbitrary and capricious targeting of the railroad industry. As CARB continues down this flawed regulatory path and incorporates the proposed In-Use Locomotive regulation into its SIP and associated EA while also proposing federal actions further regulating locomotives, it is also failing to meet its obligations under CEQA by failing to fully disclose critical facts to the public.

II. CARB'S DRAFT EA FAILS TO MEET THE STANDARDS REQUIRED BY CEQA.

The California Environmental Quality Act ("CEQA") requires the preparation of an environmental impact report ("EIR") in order "to identify the significant effects on the environment of a project, to identify alternatives to the project, and to indicate the manner in which those significant effects can be mitigated or avoided." Cal. Pub. Res. Code ("PRC"), § 21002.1; *see also* 14 Cal. Code Regs. ("CEQA Guidelines") §§ 15000-15387. CARB implements this requirement through the preparation of an Environmental Analysis ("EA") under its certified equivalent program. *See* 17 CCR §§ 60000-60008. Nonetheless, the underlying substantive requirements of CEQA must be met by CARB's EA 17 CCR 60004(b). The primary purpose of CEQA is to require state agencies to consider and disclose to the public the environmental implications of their actions in order to foster an informed and transparent public decision-making process.

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locomotive maintenance, servicing and fueling facilities. According to the European experience, the net result of these outcomes will likely be a decrease in freight rail market share.").

For the reasons explained below, CARB's Draft EA fails to adequately disclose the implications of its proposed In-Use Locomotive Regulation and requested federal actions and, as a result, CARB's Draft EA fails to satisfy its obligations under CEQA.

A. CARB's Draft SIP and EA Fail to Accurately Quantify the Emissions Reductions Expected from both its In-Use Locomotive Regulations and its Proposed Federal Actions to Regulate Locomotives.

Under the Clean Air Act, states are required to establish plans to meet EPA's standards for atmospheric pollutants, including ozone and particulate matter. 42 U.S.C. §§ 7407(a), 7408(a), 7409(a), 7410(a). When an area does not meet a standard, it is designated a "nonattainment" area. *See id.* §§ 7407(d)(1)(A), 7501(2). There are several degrees of nonattainment, ranging from marginal to extreme, *id.* § 7511(a)(1), and each classification imposes increasingly stringent requirements to reduce emissions and promote progress toward attainment. *Id.* § 7511a(b)(1)(A), (c)(2)(B), (d), (e). California has dozens of nonattainment areas ranging in severity from moderate to extreme.[9]

Notably, a state plan must "include enforceable emission limitations" to attain the relevant air quality standard. 42 U.S.C. § 7502(c)(2). For extreme ozone nonattainment areas, the plan must provide for reasonable further progress of "at least 3 percent of baseline emissions each year." 42 U.S.C. § 7511a(c)(2)(B)(i), (d), (e). As explained below, CARB has failed to satisfy this criterion with respect to both its proposed In-Use Locomotive Regulations and its request for federal action with respect to the regulation of locomotives.

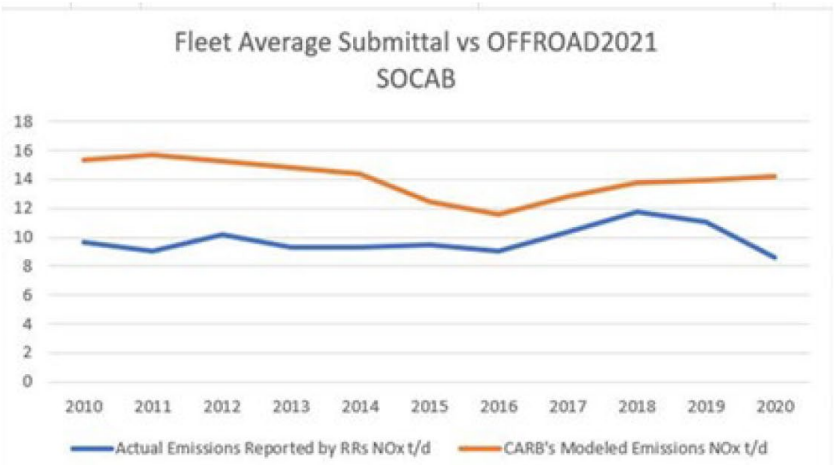
[9] *See* https://www3.epa.gov/airquality/greenbook/ancl.html.

1. CARB Overestimates the Estimated NO_x Reductions Resulting from its Proposed In-Use Locomotive Regulations.

On October 19, 2021, CARB released the latest version of its emission inventory model for offroad equipment (OFFROAD2021). The model can be accessed here: EMFAC (ca.gov). This model is ultimately used for SIP and regulatory development. OFFROAD2021 incorporates CARB's switch locomotive and line-haul locomotive models. AAR and the rail industry have been pointing out flaws in the line-haul forecasting methodology for the last two years, and as best as AAR can determine, this latest version of the OFFROAD model CARB has failed to address any of AAR's concerns.[10] CARB continues to rely on inflated and inaccurate emissions data in reaching its baseline estimates. As a result, actual emissions reductions resulting from its proposed In-Use Locomotive rule will be significantly lower than projected.

The graphic below compares the NO_x emissions in the South Coast Air Basin that are *predicted* by OFFROAD2021 for Union Pacific Railroad and BNSF Railway activities, compared with the *actual data* submitted by the railroads and accepted by CARB from 2010 to 2020 pursuant to the Fleet Average Agreement ("FAA"):

[10] AAR did not have significant concerns regarding the switch locomotive model.



Actual NOx Emissions Reported by Railroads (t/d)	9.67	9.07	10.20	9.29	9.34	9.52	9.08	10.36	11.77	11.06	8.58
CARB's Modeled NOx Emissions (t/d)	15.36	15.73	15.25	14.80	14.41	12.49	11.55	12.80	13.76	13.97	14.20
Discrepancy (CARB vs FAA Submissions)	59%	73%	49%	59%	54%	31%	27%	24%	17%	26%	65%

As the data above demonstrate, CARB has consistently overestimated NO_x emissions from Class I locomotives in the South Coast Air Basin by approximately 40 percent. CARB's current locomotive inventory methodology extrapolates the forecast of South Coast Air Basin emissions to the rest of the state (ignoring the detailed, localized data supplied by each railroad in most years); consequently, this overestimate occurs in CARB's statewide locomotive inventory as well.

As noted above, over the last two years AAR has repeatedly communicated to CARB its concerns regarding the locomotive inventory and has had several detailed technical discussions with CARB to convey these concerns. Specifically, AAR's comments were submitted in writing to CARB on July 22, 2020. That submission was followed by several calls, culminating in a presentation on September 10, 2020, in which AAR presented to CARB a more accurate line-haul locomotive forecast. In addition to the September 10, 2020, presentation, AAR's consultants (CEA) sent several emails and had several calls with CARB explaining rail industry concerns with the inventory.

CARB's Draft SIP and Draft EA fail to accurately portray the baseline of emissions from locomotives and consequently overestimate the reductions (i.e. benefits) that would result from the passage of the proposed In-Use Locomotive Regulation. CARB has failed to fulfill its obligations under CEQA to properly inform the public as to the consequences of its proposed action.

2. CARB Fails to Quantify its Expected Emissions Reductions Resulting from its Request for Increased Federal Regulation of the Rail Industry.

In its Draft SIP, CARB fails to quantify the anticipated emissions reductions associated with more stringent national emissions standards, zero-emission standards for switch locomotives, and changing the regulations governing the remanufacturing of locomotives. Instead, CARB simply lists "NYQ," or "not yet quantified," in its tables of anticipated emissions reductions. This error has not been corrected in its Draft EA, and thus the expected benefits and costs associated with the proposal cannot be accurately quantified.

This lack of quantification is notable and important, particularly because the zero-emission locomotives envisioned by CARB are not commercially ready. While first generation zero-emissions locomotives are now being offered for sale, the technology has not yet been proven to be safe and sufficiently reliable to justify purchase of such an expensive and long-lived asset. The industry is still working to ensure this new technology (both the locomotive and associated charging) functions both commercially and operationally. Several years of field testing are still required before this technology is commercially ready. In any event, the zero-emissions locomotives currently offered are only suitable for yard (switching) use. They are not sufficiently powerful to pull line-haul trains unless they are part of a consist with diesel locomotives. Such a hybrid

approach to line-haul power provides only marginal emissions reductions. Additional research and development is needed before zero-emission line-haul locomotives are commercially available. Moreover, the necessary infrastructure to power zero emissions line-haul locomotives does not exist today—charging and refueling stations will be required across the nation before the rail industry can rely on battery-electric or hydrogen powered line-haul locomotives.

Moreover, approximately 16% and 30% of BNSF's and Union Pacific's (respectively) locomotive fleet is currently in storage or otherwise out of service. Accordingly, demand for new diesel locomotives has fallen to near-zero levels and is not expected to increase for several years. This is particularly true in light of CARB's proposal to ban the use of diesel locomotives decades before the end of these multi-million-dollar assets' useful life. Given these market conditions, CARB's proposal to change federal locomotive regulations is unlikely to lead to foreseeable or creditable emissions reductions.

Further, as explained above, in extreme nonattainment areas for some criteria pollutants, CARB's SIP must provide for reasonable further progress of "at least 3 percent of baseline emissions each year." 42 U.S.C. § 7511a(c)(2)(B)(i), (d), (e). CARB's proposed federal actions, the emissions reductions of which have not been quantified, cannot contribute to the reduction in baseline emissions because the federal actions may not impact railroad operations in California at all. For example, as noted above, zero-emission locomotives (including switchers) are not yet commercially ready. While there are several pilot projects ongoing, commercial viability of zero emissions locomotives is still several years away.

In addition, even if EPA were to eventually promulgate new regulations governing locomotive emissions and remanufacturing of locomotives, the North American rail industry does not operate within a single state's borders. Locomotives move between states and even countries. As such, even if new rules were promulgated, CARB could not attribute any resulting emissions reductions solely to California for the purposes of its SIP. Instead, these reductions would be spread across the United States as the locomotive fleet gradually turned over based on revised regulations. These reductions cannot be credited to California as part of its SIP because there is no way to isolate reductions within the state.

3. CARB fails to quantify the increase in emissions associated with the shift of interstate transportation from rail to truck associated with its proposed In-Use Locomotive rule and proposed changes to Federal locomotive regulations.

In its Draft EA, CARB fails to acknowledge the likelihood (or even the possibility) that its proposed In-Use Locomotive Rule or CARB's proposed changes to federal locomotive regulations will result in increased freight transportation (and especially interstate transportation) by trucks. This mode shift would result from the imposition of increased costs on rail freight transportation associated with CARB's proposals to limit the useful life of locomotives operated in California and CARB's proposed changes to federal locomotive remanufacturing requirements. These two elements of CARB's proposals would impose significant costs on rail freight transportation due to an arbitrary limitation on the effective life of locomotives, while there are no such cost burdens imposed on trucks carrying interstate freight.[11] Even if interstate freight trucks have zero emissions from their engines (setting aside

[11] This outcome is predicted in CARB's Exchange Point study cited above where the costs evaluated were related to increased freight delays and the capital costs of unique California locomotive

the lifecycle emissions associated with the energy required to produce and charge batteries), those trucks will have particulate emissions from brake and tire wear—emissions that are not associated with locomotive operations.

The potential for mode shift is real and is certainly no more speculative than the emission reductions CARB asserts will be associated with the proposed In-Use Locomotive rule and Federal rule changes. At its core, CEQA requires disclosure of potential environmental impacts associated with proposed regulatory actions, and not assertions of potential benefits and dismissal of potential disadvantages as "speculative." CARB's Draft EA fails to satisfy CEQA's requirements by failing to address the potential mode shift associated with the locomotive provisions of the 2022 State Strategy for the California SIP.

B. CARB's Locomotive Plan Exceeds the Agency's Legal Authority and Thus Cannot Be Lawfully Promulgated.

The Draft EA states that the proposed In-Use Locomotive Regulation "would use mechanisms available under CARB's regulatory authority to accelerate the adoption of advanced, cleaner technologies, and include zero emission technologies, for locomotive operations." Draft EA at 27. However, as AAR (and others) have briefed CARB in the past, the Proposed Rules are subject to preemption under at least the ICC Termination Act of 1995, the Railroad Revitalization and Regulatory Reform Act of 1976, the Locomotive Inspection Act, the Clean Air Act, and EPA regulations. *See* AAR Comments on Draft State Strategy for the State

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maintenance, service, and refueling facilities. The source of the increased costs imposed solely on locomotives—unique California infrastructure requirements or reduced useful life for locomotives—is not relevant to the conclusion that these increased costs will result in a shift of interstate freight transportation from rail to truck.

Implementation Plan submitted to CARB on March 4, 2022. CARB's proposed In-Use Locomotive Regulation is an unlawful state program. As such, CARB should disclose in its EA the risks associated with the challenges to its legal authority and likelihood of the vacatur of these rules by a federal court.

III. CARB'S CHARACTERIZATION OF FEDERAL REGULATIONS AS A "LOOPHOLE" IS BOTH INACCURATE AND MISLEADING.

In multiple documents and presentations, CARB has referred to the need for EPA to "[a]ddress [the] locomotive remanufacturing loophole." Draft EA at 33. This characterization is both inaccurate and misleading and, by implying that this feature of EPA's lawfully promulgated regulatory scheme was a mistake, misinforms the public regarding the existing regulatory scheme.

Notably, CARB supported EPA's adoption of these regulations, including the provisions it now characterizes as a "loophole." CARB submitted comments on or related to the proposed regulations in 1997, 2004, 2006, and 2007. In its 2004 comment, CARB "fully support[ed] the direction that U.S. EPA is taking to control emissions from [locomotives []] in the [Advanced Notice of Proposed Rulemaking on the Control of Emissions of Air Pollution from New Locomotive Engines].[12] A significant portion of that proposed regulation, which was later finalized and promulgated, related to the emissions standards for remanufactured locomotives. At no point during that rulemaking did CARB assert that a limit should be imposed on the

[12] Letter from Alan C. Lloyd, Ph.D., Chairman, Air Resources Board, to Margo T. Oge, Director, Office of Transportation, US EPA (Aug. 26, 2004).

number of times a particular locomotive can be remanufactured. For CARB to now refer to this federal program as a "loophole" is disingenuous at best.

EPA has promulgated nationwide regulations governing the lifespan of locomotives and has expressly prohibited states from promulgating their own conflicting regulations. In CAA section 209(e), Congress preempted state and local governments from adopting or enforcing "any standard or other requirement relating to the control of emissions from . . . new locomotives or new engines used in locomotives." 42 U.S.C. § 7543(e)(1)(B). EPA defines "new locomotive" as a "locomotive or locomotive engine which has been remanufactured" that was built after January 1, 1973. 40 C.F.R. § 92.2 (emphasis added). Because EPA's regulations address not only newly built, but also remanufactured engines, they establish the national standards with respect to the lifecycle and emissions requirements for locomotives operating in the United States.

CARB, acknowledging its lack of legal authority to impose different standards on its own, characterizes these lawfully promulgated federal regulations as a "loophole." In its Draft EA, CARB incorrectly states that "[t]he result [of the federal regulations] is continued remanufacturing of old and polluting locomotives to the same pollution tier standards, and persistent pollution from these sources."[13] This is plainly incorrect. In fact, EPA regulations require that when a tier 0, 1, or 2 locomotive is first remanufactured it must be upgraded to meet lower emission rates. For example, a Tier 0 locomotive must be remanufactured to meet

[13] This is plainly incorrect. In fact, EPA regulations require that when a locomotive is first remanufactured it must be upgraded to meet lower emission rates. For example, a Tier 0 locomotive must be remanufactured to meet Tier 0+ standards, which achieve a 16% reduction in NO_x emissions and a 63% reduction in PM emissions.

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CARB contemplates a petition to EPA to close this "loophole" by inventing a novel definition of "useful life" and other provisions that differ from current EPA regulations, thus altering the certification system for all U.S. and Canadian locomotives.

CARB's proposal is a breathtakingly broad request, given the interconnected nature of the U.S. and North American rail network and the federal regulatory framework that exclusively governs it. But describing these regulations as a "loophole" is also inaccurate and misleading. The regulations governing the remanufacture of locomotive engines were originally promulgated in 1998 and revised 2008. 73 Fed. Reg. 37096. As with all lawfully promulgated regulations, EPA published its proposed rule for public comment prior to finalization. In the notice, EPA stated that "[t]he near-term program [] includes new emission limits for existing locomotives and marine diesel engines that apply when they are remanufactured and take effect as soon as certified remanufacture systems are available, as early as 2008." *Id.* Put differently, the regulations governing emissions standards for remanufactured locomotive engines are a central feature of EPA's regulatory regime, not a "loophole."

EPA's approach to remanufactured locomotives makes sense: locomotives have lifecycles that can span many decades. EPA's regulations ensure that remanufactured locomotives meet emissions limits. Contrary to CARB's assertion that the regulations allow older locomotives to be remanufactured and to the "same pollution tier standard," the regulations allow tier 0, 1, and 2 locomotives to be remanufactured to be more efficient with

lower emissions than when first manufactured. For example, remanufacturing a Tier 0 locomotive engine to a Tier 0+ reduces particulate and NO_x emissions by as much as 33 percent. Similar reductions are achieved by remanufacturing many engines.

IV. CONCLUSION

AAR appreciates this opportunity to comment on CARB's Draft EA. We continue to hope for a return to our fruitful history of meaningful cooperation and communication between CARB Staff, AAR, and its members.

Respectfully submitted,

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