

## MAJOR REGULATIONS STANDARDIZED REGULATORY IMPACT ASSESSMENT SUMMARY

DF-131 (NEW 11/13)

### STANDARDIZED REGULATORY IMPACT ASSESSMENT SUMMARY

Agency (Department) Name <b>California Air Resources Board</b>	Contact Person <b>Emily Wimberger</b>	Mailing Address <b>1001 I Street Sacramento, CA 95814</b>
Email Address <b>ewimberg@arb.ca.gov</b>	Telephone Number <b>(916) 327-5932</b>	
<p>1. Statement of the need for the proposed major regulation.</p> <p>The proposed innovative clean transit (ICT) regulation is identified in the State Implementation Plan (SIP) and 2017 Scoping Plan as a necessary component for California to achieve established near- and long-term air quality and climate mitigation targets. In California, the transportation sector accounts for 39 percent of total greenhouse gas (GHG) emissions and is a major contributor to oxides of nitrogen (NOx) and particulate matter (PM) emissions. Zero emission buses (ZEB) achieve the maximum GHG and NOx emissions reductions compared to conventional technologies, are 2 to 5 times more efficient than conventional technologies and significantly reduce petroleum use. The proposed ICT regulation is one step needed to accelerate the transition to zero emissions in the heavy-duty vehicle sector.</p> <p>ZEBs and their electric drivetrains have been identified as the beachheads, or technology footholds, of medium- and heavy-duty zero emission vehicle (ZEV) technologies. The knowledge and experience gained from installing supporting infrastructure, developing training programs, and gaining operating experience with ZEB technologies is enabling market expansion into other heavy-duty vehicle applications like school buses, delivery trucks, and vocational vehicles, which have similar weight considerations, durability requirements, drivetrains, and components. In addition, the deployment of ZEBs meets goals identified in the 2016 ZEV Action Plan that supports the governor's Executive Order B-16-12 and Executive Order B-48-18, which calls for 1.5 million ZEVs (including heavy-duty vehicles) in California by 2025 and establishes several milestones on the pathway toward this target. ZEBs achieve the maximum GHG and NOx reductions.</p>		
<p>2. The categories of individuals and business enterprises who will be impacted by the proposed major regulation and the amount of the economic impact on each such category.</p> <p>The proposed ICT regulation applies to all California transit agencies that own, lease, or operate buses with a gross vehicle weight rating (GVWR) greater than 14,000 lbs. The majority of the compliance costs borne by transit agencies are due to the required phase in of ZEB transportation technologies. As a result of regulatory compliance, secondary industries are indirectly impacted as a result of the proposed ICT regulation, including ZEB technology manufacturing and installation, electricity generation and transportation fuel manufacturing, and other support industries for transportation.</p>		
<p>3. Description of all costs and all benefits due to the proposed regulatory change (calculated on an annual basis from estimated date of filing with the Secretary of State through 12 months after the estimated date the proposed major regulation will be fully implemented as estimated by the agency).</p> <p>Costs: The proposed ICT regulation is estimated to result in a net savings to California transit agencies. From 2020 through 2043, the proposed ICT regulation is estimated to result in total savings of \$546 million and \$747 million relative to the baseline and current conditions, respectively. Relative to the baseline and current conditions, the highest annual cost of the proposed ICT regulation occurs in 2026 with an estimated direct cost of \$149 million and \$135 million, respectively.</p> <p>Benefits: The proposed ICT regulation is estimated to reduce GHG emissions by an estimated 12.1 million metric tons (MMT) carbon dioxide equivalent (CO<sub>2</sub>e) relative to the baseline and 13.2 MMT CO<sub>2</sub>e relative to current conditions, from 2020 to 2043. In addition to GHG emission reductions, the proposed ICT regulation is estimated to result in a 4,159 ton reduction in NOx and a 25 ton reduction in PM<sub>2.5</sub> relative to the baseline, and a 4,477 ton reduction in NOx and a 27 ton reduction in PM<sub>2.5</sub> relative to current conditions from 2020 through 2043. These emission reductions provide health benefits to individuals in California. The proposed ICT regulation is anticipated to result in LCFS credit generation and fuel and maintenance savings of up to \$520 million per year, with a cumulative cost savings of \$6 billion relative to the baseline, and \$6.3 billion relative to current conditions from 2020 to 2043.</p>		
<p>4. Description of the 12-month period in which the agency estimates the economic impact of the proposed major regulation will exceed \$50 million.</p> <p>The proposed ICT regulation is determined to be major due to the economic impacts of the estimated compliance costs of the proposal exceeding \$50 million in 2020 relative to the baseline and current conditions. Direct compliance costs are roughly \$70 million and \$74 million in 2020, relative to the baseline and current conditions respectively, but compliance costs turn into savings beginning in 2034 relative to the baseline and 2033 relative to current conditions.</p>		

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### 5. Description of the agency's baseline:

The economic impact of the proposed ICT regulation is evaluated against two baselines developed by CARB in consultation with Department of Finance (Finance). Two baselines are used to provide the public as much information as possible about the potential economic impacts of the proposal. The baselines reflect the inclusion of the Board's direction to delay the purchase requirement and CARB's advisory, as well as current conditions.

CARB utilized Regional Economic Modeling, Inc. (REMI) version 2.1.1, specific to California, to model the macroeconomic impact of the proposed ICT regulation, which assumes the California economy absent the proposed ICT regulation. REMI Policy Insight Plus (PI+) is utilized to provide year-by-year estimates of the total impacts of the proposed ICT regulation, pursuant to the requirements of SB 617 and Finance. CARB uses the REMI PI+ one-region, 160-sector model that has been adjusted to reflect conforming forecasts dated June 2017 provided by Finance which include California population figures, U.S. real GDP forecast, and civilian employment growth numbers.

### 6. For each alternative that the agency considered (including those provided by the public or another governmental agency), please describe:

- a. All costs and all benefits of the alternative
- b. The reason for rejecting alternative

Alternative 1: Higher ZEB purchase requirement starting 2020

a. From 2020 through 2043, Alternative 1 is estimated to increase initial capital costs to about \$200 million per year in 2021 to 2025, but will result in total costs that are \$967 million lower and \$1,168 million lower relative to the baseline and current conditions, respectively. The cumulative GHG emission reductions for Alternative 1 relative to the baseline and current conditions are 16.2 MMT CO<sub>2</sub>e and 17.3 MMT CO<sub>2</sub>e respectively from 2020 to 2043. For tailpipe NO<sub>x</sub> and PM<sub>2.5</sub>, Alternative 1 is expected to deliver an estimated 4,633 tons and 33 tons emission benefits from 2020 to 2043 when compared with the baseline, and 4950 tons and 36 tons when compared to current conditions.

b. Alternative 1 is rejected because it is infeasible to carry out statewide. Alternative 1 quadruples the number of ZEBs that are required in 2020 to 2023 and significantly increases the costs to the point that transit agencies will be unlikely to be able to find sufficient funds to continue normal bus purchase patterns.

Alternative 2: Low NO<sub>x</sub> CNG bus and renewable natural gas purchase requirement starting 2020

a. From 2020 through 2043, Alternative 2 is estimated to cost \$442 million more relative to the baseline, and would cost \$241 million more relative to current conditions. Alternative 2 reduces NO<sub>x</sub> but does not reduce GHG emissions nor PM<sub>2.5</sub> emissions. For tailpipe NO<sub>x</sub>, Alternative 2 is expected to deliver an estimated 2,507 tons emission benefits from 2020 to 2043 when compared with the baseline, and 2,824 tons when compared with current conditions. For tailpipe PM<sub>2.5</sub>, CARB estimates that the cumulative emissions from 2020 to 2043 for Alternative 2 will be 2 tons higher than the baseline, and remains about the same when compared to current conditions.

b. Alternative 2 is rejected because it will not reduce GHG emissions, which is a key goal of the regulation and will not help the State to achieve the long term air quality and climate protection goals.

### 7. A description of the methods by which the agency sought public input. (Please include documentation of that public outreach).

For the proposed ICT regulation, CARB has conducted a multi-level public process. Staff created a technical workgroup that comprises interested stakeholders including transit agencies, environmental groups, utilities, technology providers, and fuel providers. In addition, CARB created a transit subcommittee with two subgroups to discuss transit specific issues: one subgroup focused on cost, the second on the regulatory concept. In addition to group meetings, CARB staff also conducted individual meetings with over ten transit agencies.

Since 2015, CARB has also held two workshops, five workgroup meetings, four subcommittee meetings, various subgroup meetings, one LCFS overview meeting, three transportation electrification meetings, and one technology symposium to provide information to the public and solicit feedback. CARB posted information regarding these events and any associated materials on the ICT website and distributed notice of these meetings through a public list serve that includes over 5,300 recipients. At the meetings, which were available by webcast and teleconference, CARB solicited stakeholder feedback on the proposed ICT regulation and the overall regulatory process.

### 8. A description of the economic impact method and approach (including the underlying assumptions the agency used and the rationale and basis for those assumptions).

The proposed ICT regulation is simulated in REMI by adjusting local government spending to reflect the compliance cost of the proposal the will be incurred by California transit agencies. These spending changes include ZEB capital purchases, including ZEBs and charging infrastructure, fuel and maintenance expenditures, as well as LCFS credit generation. The government demand variable simulates the increase in demand for ZEB technology manufacturing and installation, increase in electricity and hydrogen consumption, and the decrease in conventional fuel consumption. The State government spending and State government employment variables mimic the increased spending for additional staff resources. The years of analysis are 2020 through 2045; these years are used to simulate the proposed ICT regulation through 12 months post full implementation.

Agency Signature



Agency Head (Printed)

Richard Corey

Date

4/23/2018