TITLE 13. CALIFORNIA AIR RESOURCES BOARD

NOTICE OF PUBLIC HEARING TO CONSIDER PROPOSED INNOVATIVE CLEAN TRANSIT REGULATION, A REPLACEMENT OF THE FLEET RULE FOR TRANSIT AGENCIES, AND DRAFT ENVIRONMENTAL ANALYSIS PREPARED FOR THE REGULATION

This notice announces the availability of the proposed Innovative Clean Transit (ICT) Regulation and a Draft Environmental Analysis (Draft EA) for public comment. The California Air Resources Board (CARB or Board) will conduct a public hearing at the time and place noted below to consider the proposed ICT Regulation.

DATE: September 27, 2018

TIME: 9:00 A.M.

LOCATION: California Environmental Protection Agency
California Air Resources Board
Byron Sher Auditorium
1001 I Street
Sacramento, California 95814

This item will be considered at a meeting of the Board, which will commence at 9:00 a.m., September 27, 2018, and may continue at 8:30 a.m., on September 28, 2018. Please consult the agenda for the hearing, which will be available at least ten days before September 27, 2018, to determine the day on which this item will be considered.

WRITTEN COMMENT PERIOD AND SUBMITTAL OF COMMENTS

Interested members of the public may present comments orally or in writing at the hearing and may provide comments by postal mail or by electronic submittal before the hearing. The public comment period for this regulatory action and Draft EA will begin on August 10, 2018. Written comments not physically submitted at the hearing must be submitted on or after August 10, 2018 and received **no later than 5:00 p.m. on** September 24, 2018. CARB requests that when possible, written and email statements be filed at least ten days before the hearing to give CARB staff and Board members additional time to consider each comment. The Board also encourages members of the public to bring to the attention of staff in advance of the hearing any suggestions for modification of the proposed regulatory action. Comments submitted in advance of the hearing must be addressed to one of the following:

Postal mail: Clerk of the Board, California Air Resources Board
1001 I Street, Sacramento, California 95814

Electronic submittal: http://www.arb.ca.gov/lispub/comm/bclist.php

Please note that under the California Public Records Act (Gov. Code, § 6250 et seq.), your written and oral comments, attachments, and associated contact information (e.g., your address, phone, email, etc.) become part of the public record and can be released to the public upon request.

Additionally, the Board requests but does not require that persons who submit written comments to the Board reference the title of the proposal in their comments to facilitate review.

AUTHORITY AND REFERENCE

This regulatory action is proposed under the authority granted in California Health and Safety Code, sections 38501, 38510, 38560, 39002, 39003, 39012, 39017, 39018, 39027, 39500, 39600, 39601, 39606, 39650, 39655, 39658, 39659, 39667, 40000, 43000.5, 43013, 43018, 43100, 43101, 43102, 43104, 43105, 43106, 43701(b), 43801 and 43806. This action is proposed to implement, interpret, and make specific California Health and Safety Code, sections 38501, 38510, 38560, 38596, 39002, 39003, 39017, 39027, 39500, 39600, 39601, 39650, 39655, 39658, 39659, 39667, 40000, 43000.5, 43013, 43018, 43101, 43104, 43105, 43701(b), 43801 and 43806; California Vehicle Code, sections 233, 350, 545, and 28114; Title 49, United States Code, Sections 5303 and 5324; Title 49, Code of Federal Regulations, section 665.13.

INFORMATIVE DIGEST OF PROPOSED ACTION AND POLICY STATEMENT OVERVIEW (GOV. CODE, § 11346.5, subd. (a)(3))

Sections Affected:

Proposed amendments to California Code of Regulations, title 13, sections 2023, 2023.1, 2023.2, 2023.3, 2023.4, and adoption of sections 2023.5, 2023.6, 2023.7, 2023.8, 2023.9, 2023.10 and 2023.11, and to recodify all of these into a new Article 4.3.

Documents Incorporated by Reference (Cal. Code Regs., tit. 1, § 20, subd. (c)(3)):

The following procedure would be incorporated in the regulation by reference as specified by sections 2023(b)(39) and 2023.4(c)(3)(C):

- Society of Automotive Engineering (SAE) International, Recommended Practice for Measuring Fuel Economy and Emissions of Hybrid-Electric and Conventional Heavy-Duty Vehicles, J2711_200209 (September 20, 2002), available at: https://www.sae.org/standards/content/j2711_200209/.

Background and Effect of the Proposed Regulatory Action:

Transit fleets operate in local communities and have a key role, not only in helping transit-dependent riders, but also in helping to shape transportation systems. Public

transit agencies are our clean air partners and have played, and will continue to play, an important role in helping California meet air quality standards and greenhouse gas (GHG) emissions reduction goals; namely, by employing the cleanest technologies, providing safe and reliable public transit services in low income and disadvantage communities (DAC) to reduce light-duty passenger vehicle miles traveled and single occupancy trips, and reducing congestion on roadways.

Under the current Fleet Rule for Transit Agencies (Transit Fleet Rule), sections 2023, 2023.1, 2023.2, 2023.3, and 2023.4, title 13, California Code of Regulations (CCR), public transit agencies operating urban bus fleets were required to select either the diesel bus path or the alternative-fuel bus path and comply with retrofit, fuel purchase, fleet average, and reporting requirements. The diesel bus path required retrofitting existing buses with diesel particulate filters, while agencies utilizing alternative-fuel path had to ensure that eighty-five percent of urban bus purchases were alternative fueled buses. To date, about 55 percent of all buses in California operate on alternative fuels.

In the 2006 amendment to the Transit Fleet Rule, there was a 15 percent zero-emission bus (ZEB) purchase requirement for larger transit agencies defined as with more than 200 urban buses to purchase ZEBs starting in 2011. Ten transit agencies subject to the ZEB purchase requirements accounted for about 60 percent of the statewide urban bus fleet. To date, except for the ZEB purchase requirement, all other regulatory provisions have been met and are being implemented.

In 2009, CARB staff presented ZEB technology evaluations to the Board and concluded that the ZEB technologies were not commercially ready at that time. The Board, through Resolution 09-49, found, among other things, that technologies had not sufficiently advanced to appropriately assess commercial readiness, that costs of ZEBs remained significantly higher than the target prices on which the existing fleet rule had been premised, and that a new focus on GHG emissions reductions from transit was appropriate. The Board directed staff to prepare proposed amendments to the regulation to delay the ZEB purchase requirement, conduct further research on commercial-readiness metrics, implement the purchase requirement once commercial readiness had been achieved, and report back to the Board in 2012 on progress towards ZEB commercialization.

In 2010, CARB staff issued a regulatory advisory to temporarily withhold the implementation of the purchase requirement for ZEBs. In the advisory, CARB stated it did not intend to enforce the ZEB purchase requirement until CARB had developed and the Board had approved new purchase requirements based on the technology evaluation.

As part of the ZEB purchase requirement, the 2006 amendments included an advanced demonstration of ZEBs for transit agencies on the diesel path and a CARB evaluation of the status of technology. Five transit agencies in the Bay Area formed the Zero-Emission Bay Area (ZEBA) program. The original ZEBA program included twelve

fuel cell electric buses (FCEBs) deployed in 2010 with an additional FCEB was added to the fleet and put into service in late in 2015. At the time, FCEBs were the only available zero-emission technology to meet the demands of transit service. To date, the ZEBA program has demonstrated impressive milestone accomplishment and the feasibility of incorporating ZEBs into transit fleet operation.

CARB staff conducted a comprehensive technology evaluation in 2015 and concluded the ZEB technologies were now in their early commercialization stage. To date, both battery electric and fuel cell electric buses in active fleets can have bus availability of nearly 90%, which demonstrates technology improvement and viability. CARB staff updated the Board in February 2016 at a public hearing about the status of ZEB technology, price, and deployment. Significant technology advancements have been made in ZEBs with increased reliability and availability, declining costs for both vehicle and infrastructure, improved performance, and extended mileage range. Essential ZEB deployment experience has been gained from multiple fleets, including transit agencies and universities, through operating ZEBs in regular revenue service. A viable ZEB market has now developed with several transit agencies committing to fully electrify their fleets, all major bus manufacturers announcing ZEB production, and ZEB production facilities moving to California. In the update to the Board, staff discussed plans to reinstate ZEB purchase requirements, including the public process on amending the rule with a broader goal of making a transition to an all ZEB fleet. Staff has continued to analyze and update technical and cost information, as well as evaluate various regulatory strategies. This proposed ICT regulation is a result of that process.

Staff is proposing the following elements to ensure a successful and smooth transition to a complete ZEB fleet:

(1) ZEB Rollout Plan

- Each transit agency would be required to submit a ZEB Rollout Plan approved by governing board.
- The Rollout Plan will demonstrate how a transit agency plans for ZEB purchase and infrastructure buildout, and associated financial planning and workforce training.
- The ZEB Rollout Plan would be submitted to the Board, with due dates of June 30, 2020, for a large transit agency (with 100 or more transit buses) and June 30, 2023, for a small transit agency (with fewer than 100 transit buses).

(2) ZEB purchase requirements

- A large transit agency would purchase ZEBs according to the following schedule:
  - Starting January 1, 2023, 25 percent of annual new buses purchased;
  - Starting January 1, 2026, 50 percent of annual new buses purchased; and
  - Starting January 1, 2029, 100 percent of annual new buses purchased.

- A small transit agency would purchase ZEBs according to the following schedule:
  - Starting January 1, 2026, 25 percent of annual new buses purchased; and
  - Starting January 1, 2029, 100 percent of annual new buses purchased.

(3) Waiver for early compliance

- purchase requirements otherwise effective in calendar year 2023 would be waived if California transit agencies collectively purchase 1,000 or more ZEBs by December 31, 2020.
- purchase requirements otherwise effective in calendar year 2024 would be waived if California transit agencies collectively purchase 1,150 or more ZEBs by December 31, 2021.

(4) Zero-Emission Mobility Option

- A transit agency may use zero-emission cars or vans or bicycles to meet a portion of its ZEB requirements.

(5) ZEB Bonus credit

- Bonus credits for early placement of ZEBs, including extra credits for early FCEBs; however,
- Bonus credits do not apply to the waiver for early compliance.

(6) Optional Joint Zero-Emission Bus Group

- Allows for transit agencies to form a Joint Zero-Emission Bus Group to pool resources and more efficient utilization of infrastructure.

(7) Use of low NOx engines

- Starting January 1, 2020 transit agencies would be required to purchase low NOx engines if available for the bus and fuel type being purchased. The requirement does not apply to buses dispatched from NOx exempt areas.

(8) Use of renewable fuels

- Starting January 1, 2020, large transit agencies would be required to use renewable fuels for diesel and compressed natural gas (CNG) buses when fuel contracts are renewed to support existing renewable fuel policies.

(9) Deferral from ZEB purchase requirements

- A transit agency may submit a request for extension or exemption from ZEB purchase requirements, under conditions outside the transit agency's control.

(10) Reporting

- Starting 2021 all transit agencies would be required to report their fleet information annually for the prior compliance year.

Staff recognizes the challenges transit agencies are facing to transition to ZEB fleets, and the commitments that transit agencies, local government agencies, and the State

need to make. Even though ZEB technologies have advanced rapidly in recent years, continued improvements in ZEB costs and performance are still needed to facilitate the transition to full zero-emission technologies. Staff plans to provide the Board with an update on costs and performance of ZEBs by the end of 2021, which is two years before the first ZEB purchase requirement starts in 2023.

The performance review would identify the status of ZEB technology and would help the State design policies to further advance zero-emission technologies, and inform funding strategies related to zero-emission vehicles and infrastructure.

Objectives and Benefits of the Proposed Regulatory Action:

The proposed ICT regulation is identified in the State Strategy for the State Implementation Plan (State SIP Strategy) 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 is responsible for 41 percent of total GHG emissions, 80 percent of NOx emissions, and 90 percent of diesel particulate matter (PM). Diesel PM is a fine particulate, a toxic air contaminant, and a carcinogen that significantly threatens public health and the environment.[1]

Broadly implementing zero-emission technologies is a necessary component to effectively address these multiple and complicated air quality and climate protection issues. ZEBs have a higher equivalent fuel efficiency compared to the conventional internal combustion engine (ICE) technologies and provide immediate health benefits to local communities and significantly reduce petroleum and other fossil fuel use. The proposed ICT regulation is one step needed to accelerate the transition to zero emissions in the heavy- duty vehicle sector.

In general, the proposed ICT regulation would provide benefits in the following areas:

(1) Health benefits to Californians and workers at transit agencies through improved air quality and reduced premature mortality, hospital visits, and lost school or work days;
(2) Environmental benefits in air quality improvement, climate protection, and energy consumption reductions.

The anticipated benefits are summarized below:

Air Quality and Climate Benefits

The demanding air quality and climate protection goals that California faces require cleaner technologies deployed, especially in the transportation sector. The proposed ICT regulation helps reduce emissions through several ways:

[1] California Air Resources Board (CARB). Overview: Diesel Exhaust and Health. Available: https://ww2.arb.ca.gov/resources/overview-diesel-exhaust-and-health. Accessed July 23, 2018.

(1) Eliminates tailpipe emissions and avoids excess emissions caused by deteriorated vehicles;
(2) Increases fuel efficiency and thereby reduces the use of energy, which is the major source of carbon dioxide (CO_2) emissions through a combustion process;
(3) Better utilizes non-emitting renewable sources, such as solar energy;
(4) Reduces emissions from oil and gas extraction and production processes; and
(5) For the near term, pairs with the use of low NOx engines for additional NOx emission reduction.

Public Health and Worker Safety Benefits

Reduced emissions of $PM_{2.5}$ and NOx reduce premature mortality, hospitalizations, and emergency room visits. These benefits will accrue to the general public and workers exposed to emissions from transit buses, such as bus operators, passengers, and employees who work around bus traffic.

Energy Saving and Reduction of Petroleum Fuel Dependence

In the long term, implementation of the proposed ICT regulation will lead the heavy-duty vehicle sector to transform from petroleum and other fossil-based fuels toward hydrogen or electricity for public transportation. The superior equivalent fuel efficiency of ZEBs and the fuel sources together help pave a low carbon future for the heavy-duty vehicle sector.

In addition, the proposed ICT regulation incents other zero-emission mobility options for transit agencies. The zero-emission mobility option can further reduce emissions, enhance mobility, and improve efficiency in the public transit system.

Leading Zero-Emission Technologies in Other Heavy-Duty Sectors

Transit agencies have played an important role as the leader deploying cleaner, more efficient technologies in the heavy-duty vehicle sector. Examples include diesel particulate matter filters, CNG engines, and low NOx engines. Transit agencies are also playing that leadership role in transforming the heavy duty sector to zero-emission technologies. Transferable technologies include drivetrains, fueling and charging systems, workforce training, and operations and maintenance expertise.

Benefits in Disadvantaged Community and Job Creation

The proposed ICT regulation is anticipated to deliver public health and environmental benefits that include GHG, criteria, and toxic pollutant emission reductions in disadvantaged communities (DACs) where there are more transit dependent riders. Additionally, California is home to ZEB manufacturing, which brings high-quality jobs to local communities. There are several ZEB manufacturing plants in California, which

stand to increase production of ZEBs, and thus manufacturing and related jobs, including in DAC areas. Electricians, construction companies (such as infrastructure installers), some bus manufacturers, fuel cell and battery production, and electric drivetrain parts and components businesses can fall into the small business category, which may benefit.

Other Societal Benefits

The proposed ICT regulation includes options to encourage improved mobility and connectivity with zero-emission transportation modes. These efforts would make communities and cities more sustainable and enhance the benefits of investments in cleaner technologies by reducing growth in light-duty vehicle miles traveled (VMT). In the long term, advanced transportation systems and technologies, such as battery electric vehicles and zero-emission micro transit, have the potential to be a transformative element of a cleaner, safer, and more efficient transportation system.

Comparable Federal Regulations:

There are no comparable federal regulations, necessitating the proposed ICT regulations to protect public health and achieve climate protection benefits.

An Evaluation of Inconsistency or Incompatibility with Existing State Regulations (Gov. Code, § 11346.5, subd. (a)(3)(D)):

During the process of developing the proposed regulatory action, CARB conducted a search of any similar regulations on this topic and concluded these regulations are neither inconsistent nor incompatible with existing state regulations.

DISCLOSURE REGARDING THE PROPOSED REGULATION

Fiscal Impact/Local Mandate Determination Regarding the Proposed Action (Gov. Code, § 11346.5, subds. (a)(5)&(6)):

The determinations of the Board's Executive Officer concerning the costs or savings incurred by public agencies and private persons and businesses in reasonable compliance with the proposed regulatory action are presented below.

Cost to Any Local Agencies and School Districts Requiring Reimbursement under section 17500 et seq.

Pursuant to Government Code sections 11346.5, subdivision (a)(5) and 11346.5, subdivision (a)(6), the proposed regulatory action is a mandate that would create costs and cost-savings to local agencies, but not to school districts. However, these costs to local agencies are not reimbursable by the State under Government Code, title 2, division 4, part 7 (commencing with section 17500). Costs are not reimbursable when

they may be fully financed by local agencies raising their own fees. (*See, e.g., Clovis Unified School Dist. v. Chiang* (2010) 188 Cal App. 4th 794, 812; *Connell v. Superior Court* (1997) 59 Cal. App. 4th 382, 397-403; *County of Fresno v. State of California* (1991) 53 Cal. 3d 482, 487-88; Cal. Gov. Code section 17556(d)). The local transit agencies have authority to raise fees, if needed, to address the costs of this regulation. Therefore this is not a reimbursable mandate.

The proposed ICT regulation directly impacts transit agencies, who are local agencies. The costs and cost-savings to transit agencies varies annually. Specific costs to each agency are expected to vary based on the size of their bus fleet. Agencies with the largest bus fleets are likely to be impacted the most. Without additional funding support, upfront costs from purchasing ZEBs and improving or adding infrastructure would outweigh cost-savings in the early years of regulation adoption. Over time, cost-savings in ZEB maintenance, fuel costs, credit value from the Low Carbon Fuel Standard (LCFS) program, and the buildout of ZEB infrastructure is estimated to result in an overall cost-savings to transit agencies. This total cost estimate does not consider the potential incentives, grants, or other funding sources available to transit agencies, which is estimated to reduce some of the upfront cost.

Transit agencies will need to identify means of addressing capital costs of bus purchase and infrastructure buildout in early years. The proposed ICT regulation is structured to provide an opportunity for transit agencies to take early action, ahead of regulatory deadlines, and would allow agencies to be eligible for grant funding, which could substantially reduce or eliminate the incremental costs of ZEB purchases and infrastructure.

The State is committed to providing funding to help with transition to zero-emission technologies. There are several funding sources that could offset the incremental costs to transit agencies without relying on financing options (see the Initial Statement of Reason (ISOR) Chapter III, Section C). For example, on May 31, 2018, the California Public Utility Commission (CPUC) unanimously approved transportation electrification projects proposed by three major Investor Owner Utilities (IOUs), with a total of $738 million including $236 million from Pacific Gas and Electric and $343 million from Southern California Edison on medium and heavy-duty infrastructure, required under Senate Bill 350, chapter 547, statutes of 2015.[2] This approval would reduce the infrastructure costs to transit agencies in those utility service areas. In addition, on May 25, 2018, CARB approved allocations for Volkswagen Environmental Trust Funds that included up to $65 million for zero-emission transit buses.

If insufficient funding is available to cover the upfront incremental costs, local agencies may also need to consider alternative methods to purchase buses, including battery

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[2] *Application of San Diego Gas & Electric Company (U 902E) for Approval of SB 350 Transportation Electrification Proposals (Cal.P.U.C. Decision 18-05-040 May 31, 2018) No. A 17-01-020 and Related Matters A 17-01-021, 17-01-022.*

lease arrangements that mitigate the higher bus costs. In some cases, local governments or transit agencies may need to augment grant funding to address the remaining incremental costs. Local governments or transit agencies may need to reallocate revenue resources among different municipality services or transportation programs to comply with the ICT regulation.

Cost or Savings for State Agencies:

The ICT proposal will impose costs on CARB. In addition to current resources allocated to transit-related programs, CARB estimates one additional position is necessary to:

- develop a reporting system prior to initial reporting by transit agencies in 2021, assisting transit agencies with compliance and annual reporting,
- disseminate information to transit fleets, and
- conduct compliance and enforcement activities, including auditing reported information and visiting sites to confirm vehicle equipment.

The cost of the position is estimated to be $165,000 in 2020, and $164,000 every year afterwards. The fund to cover the additional staff is expected to come from the Air Pollution Control Fund.

The ICT proposal is not expected to have adverse impacts on other state agencies.

Other Non-Discretionary Costs or Savings on Local Agencies:

The proposed ICT regulation affects transit agencies and is not expected to impose any non-discretionary costs or saving to transit agencies.

Cost or Savings in Federal Funding to the State:

The Federal Transit Administration (FTA) provides grants to local public transit systems, including buses. Since 1964, FTA has partnered with state and local governments to create and enhance public transportation systems, investing more than $11 billion annually to support and expand public transit services. FTA provides annual formula grants to transit agencies nationwide as well as discretionary funding in competitive processes. The proposed ICT regulation is not expected to impose any costs or saving in Federal Funding to the State.

Housing Costs (Gov. Code, § 11346.5, subd. (a)(12)):

The Executive Officer has also made the initial determination that the proposed regulatory action will not have a significant effect on housing costs. Nothing in the regulation is expected to impact housing costs.

Significant Statewide Adverse Economic Impact Directly Affecting Business, Including Ability to Compete (Gov. Code, §§ 11346.3, subd. (a), 11346.5, subd. (a)(7), 11346.5, subd. (a)(8)):

The Executive Officer has made an initial determination that the proposed regulatory action would not have a significant statewide adverse economic impact directly affecting businesses, including the ability of California businesses to compete with businesses in other states, or on representative private persons.

Industries that manufacture or support ZEB technologies will see a demand increase as a result of the proposed ICT regulation. These businesses vary in size, revenue, and type of operations. The main impacted businesses include:

- ZEB manufacturers within motor vehicle manufacturing industries (NAICS code 3361)
- Electrical vehicle supply equipment (EVSE) suppliers and installers (NAICS codes 3359 and 3353)
- Construction and engineering service for hydrogen fueling station (NAICS code 5413)
- Utilities (NAICS code 2211) as electricity generator and distribution, and hydrogen producer (NAICS code 3251)

There are several ZEB manufacturers with plants located in California, including BYD Motors Inc., Complete Coach Works, Ebus, El Dorado National-California, Gillig, GreenPower, and Proterra. The increase in the production and usage of ZEBs could also benefit various businesses related to the ZEB component supply chain, including those involved in battery, fuel cell, and electric drivetrain businesses. Some of these are also located in California.

Because of the reduced use of conventional buses with internal combustion engines, the demand decrease is expected in the industries of conventional bus manufacturing and oil and gas. As most conventional bus manufacturers are likely to manufacture ZEBs at the same time, they may shift their operations to ZEB manufacturing to accommodate the increased demand for ZEB technologies.

Small businesses in the industries described above could face similar impacts as typical businesses. Electricians, construction companies, including infrastructure installers, some bus manufacturers, fuel cell and battery production, and electric drivetrain parts and components businesses may fall into the small business category. The benefits to ZEB manufacturers and other related business discussed above also apply to small businesses. But there is insufficient information about these indirect effects to quantify them or conclude they would be significant.

MAJOR REGULATION: Statement of the Results of the Standardized Regulatory Impact Analysis (Gov. Code, § 11346.3, subd. (c)):

In April 2018, CARB submitted a Standardized Regulatory Impact Analysis (SRIA) to the Department of Finance (DOF) for its review. CARB has updated the proposed ICT regulation since the original SRIA submittal, and to address DOF comments. The revisions are discussed in the ISOR, Chapter VIII, Section A.

The Creation or Elimination of Jobs within the State

Employment growth slows minimally for local government during the early years of the assessment as transit agencies begin phasing-in ZEB technologies. In later years, as operating and maintenance spending decreases, local government sees positive, though small, employment growth relative to current conditions.

Industries that manufacture, install, and support ZEB technologies see employment growth at levels higher than current conditions. These industries include ZEB manufacturing, charging infrastructure manufacturing, engineering services, electricity generation, and hydrogen generation. With manufacturing facilities located in California, BYD, Proterra and GreenPower may bring significant employment opportunities. Some of these industries may fall into the category of small businesses and they would expect to see an increase in these types of jobs.

As transit agencies begin the deployment of ZEBs, demand for maintenance and conventional fuels decline, corresponding with the slowing in employment growth that is anticipated in these industries.

The Creation of New Businesses or the Elimination of Existing Businesses within the State

The proposed ICT regulation would provide incentives for the expansion of ZEBs and related component manufacturing. Business creation can occur both within the state and outside. Many manufacturers of ZEBs and component suppliers are already operating in California, suggesting there will be growth in the state.

The Competitive Advantages or Disadvantages for Businesses Currently Doing Business within the State

The proposed ICT regulation imposes requirements on California transit agencies that are publically owned and operated. No significant impacts to the competitiveness of businesses in California due to the proposed ICT regulation are anticipated.

The Increase or Decrease of Investment in the State

Private domestic investment consists of purchases of residential and nonresidential structures and of equipment and software by private businesses and nonprofit institutions. It is used as a proxy for impacts on investments in California because it provides an indicator of the future productive capacity of the economy.

The proposed ICT regulation is unlikely to have any significant impact on investments in California. The induced demand for ZEB technologies by the transit agencies is not likely responsible for the overall decrease in gross domestic private investment for the proposed ICT regulation. As modeled, the proposed ICT regulation shows a slight decrease in investment growth, likely driven by the cumulative changes in government demand across multiple industries as ZEB technologies are phased in. The relative changes to growth in private investment, however, were indiscernible from the baseline (current conditions) in the SRIA analysis (ISOR Appendix B). The updated assumptions in the proposed ICT regulation analyzed here are not anticipated to change this result.

The Incentives for Innovation in Products, Materials, or Processes

Due to the proposed ICT regulation, there is anticipated to be growth in the industries that manufacture ZEB technologies, including the manufacturing industry for ZEB infrastructure and parts. There is still opportunity to improve upon existing technologies as there have been steady advancements in BEBs and FCEBs historically, which staff assumes will continue throughout the life of the ICT regulation but were not quantified. The innovation and technology demonstration as a result of the proposed ICT regulation could assist with the development of other zero emission heavy-duty vehicles.

The Benefits of the Regulations, Including, But Not Limited to, Benefits to the Health, Safety, and Welfare of California Residents, Worker Safety, and the State's Environment and Quality of Life, Among Any Other Benefits Identified By the Agency

The proposed ICT regulation would reduce GHG, PM, and NOx emissions. When compared with current conditions from 2020 to 2050, the proposed ICT regulation is estimated to result in cumulatively 19 million metric tons (MMT) of reductions in CO_2e, 7,032 tons reduction in NOx, and 39.4 tons reduction in $PM_{2.5}$.

Reduced emissions of $PM_{2.5}$ and NOx provided health benefits which lead to avoided premature mortality, avoided hospitalizations, and avoided emergency room visits. Emission reductions also reduce occupational exposure for individuals, such as bus operators, passengers, and employees who work around bus traffic.

Department of Finance Comments and Responses

The responses to DOF's comments are also included in the ISOR, Appendix B-2.

1. **DOF Comment:** Battery disposal will increasingly be an issue once this proposed regulation is fully implemented. Either transit agencies will face disposal costs, or there will be environmental costs. The SRIA must include one or the other to fully cover regulatory impacts.

Response:

All batteries have a finite lifetime. Proper disposal at the end of battery life is important for environmental protection. However, the batteries used by ZEBs are expected to outlast the transit buses and the cost of recycling may not be incurred by the transit agencies.

Batteries used by zero-emission technologies are rechargeable and have a longer life span compared to conventional batteries. Though the energy capacity of the batteries used in ZEBs will degrade over time, when used properly, the battery life can often outlast the bus life. According to a study conducted by the National Renewable Energy Laboratory (NREL), it is anticipated that the batteries will retain approximately 70 percent of their initial capacity, and potentially operate for 10 years after bus retirement when treated properly.[3, 4] Some ZEB manufacturer(s) even provide a 12-year battery warranty. A transit agency can choose to recondition a battery to extend its useful life. The average bus life in California is about 14 years. Upon the retirement of a transit bus, if the battery still has remaining useful life, the battery can be reconditioned and resold or repurposed for other uses, such as energy storage, which does not have as severe demand on the battery.

NREL suggested that used batteries could replace grid-connected combustion turbine peaker plants, and provide peak-shaving service.[5] The NREL study concluded that the battery's second use can "eliminate end-of-service costs for automotive battery owner and provide low- to zero-emission peaking services to electric utilities, reducing cost, use of fossil fuels, and greenhouse gas emissions … the overall benefit to society can be quite large."[6]

If a battery continues to be used after bus retirement, it will not incur a disposal cost to the transit agencies. On the contrary, it could become a new revenue source for the transit agencies when these batteries are repurposed for different uses. However, the cost of battery disposal has to be paid at a certain point of its lifetime. This new

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[3] National Renewable Energy Laboratory (NREL). Battery Second Use for Plug-In Electric Vehicles Analysis. Available: https://www.nrel.gov/transportation/battery-second-use-analysis.html. Accessed July 23, 2018.
[4] NREL (2015). Identifying and Overcoming Critical Barriers to Widespread Second Use of PEV Batteries. February, 2015. Available: https://www.nrel.gov/docs/fy15osti/63332.pdf.
[5] NREL (2015). Identifying and Overcoming Critical Barriers to Widespread Second Use of PEV Batteries. February, 2015. Available: https://www.nrel.gov/docs/fy15osti/63332.pdf.
[6] (NREL). Battery Second Use for Plug-In Electric Vehicles Analysis. Available: https://www.nrel.gov/transportation/battery-second-use-analysis.html. Accessed July 23, 2018.

revenue source from battery repurposing could be used to pay for the disposal cost. Staff was not able to obtain sufficient data regarding the residual value of the batteries after they are retired from buses to provide estimates, because few battery electric buses have reached the end of life stage. However, some lithium-ion battery manufacturers do provide an attractive residual value to customers upon the retirement of a battery.[7] Therefore, staff believes that the residual value can offset the recycling cost and does not include a residual battery value in the economic analysis for the transit agencies.

2. **DOF Comment:** the SRIA must have growth in the number of buses over time that is at least proportional to population growth, rather than assuming that the total remains at 2016 levels.

   The 2029 population is projected to be more than 10 percent larger than the 2016 population. Economic trends suggest that growth is more urban, and with limited road capacity, the demand for public transportation will likely rise. The SRIA notes that the relative costs per bus will remain the same no matter the total, but a higher total will increase electricity demand and demand for low-carbon fuels. A key assumption is that renewable fuel prices decrease, with hydrogen prices falling to around 30 percent of current levels, and greater demand could either stimulate production or stress supplies and raise prices. There is a great deal of inherent uncertainty about how markets will develop, but the current static assumption will likely understate the scale of changes. Not keeping up with population growth also understates the health benefits of reducing emissions in urban areas.

Response:

In the SRIA, a static population based on the National Transit Database (NTD) 2016 was used for cost analysis.[8] The total number of buses may increase over time as human population and/or passenger mile grows. The cost analysis in the ISOR has been updated to incorporate growth of bus population, which represents Metropolitan Planning Organizations' (MPOs) forecasts and human population increase. As shown in CARB's mobile source emissions inventory, EMFAC 2017, the statewide growth rates of urban buses ranges from 0.7 percent to 1.4 percent per year between 2020 and 2050. This forecast is based on MPOs' vehicle miles traveled (VMT) targets and human population growth. For areas governed by an MPO that forecasts transit growth in target years of the Regional Transportation Plan/Sustainable Communities Strategy, the growth rate is generated by linear interpolation of the growth between the base year and target years. For areas that are not covered by an MPO, or where a local MPO does not

[7] EnerDel applies a 25% of residual value to retired batteries. Available: http://enerdel.com/services/guaranteed-residual-value/. Accessed July 10, 2018.
[8] National Transit Database (NTD) (2016). 2016 Annual Database Revenue Vehicle Inventory. Available: https://www.transit.dot.gov/sites/fta.dot.gov/files/Revenue%20Vehicle%20Inventory_0.xlsx..

provide transit growth, the county-level human population growth rate published by the Department of Finance was used as a surrogate for transit growth.[9]

This growth will increase the number of ZEBs projected under the proposed ICT regulation, as well as the number of conventional internal combustion buses projected under current conditions. The vehicle number growth will then have an effect on the associated costs for both the proposed ICT regulation and current conditions. The growth impact on cost is modeled and included for ZEB infrastructure with the proposed ICT regulation because all infrastructure will be new. However, it is difficult to model for the infrastructure for buses with internal combustion engines due to limited or no information. For instance, it is uncertain which transit agencies will need to have major infrastructure expansion, like adding a new facility, or whether existing fueling infrastructure and space will need to be upgraded or expanded to accommodate such growth. For example, a depot yard that is servicing 100 buses may have a capacity of 110 buses, or may need to be expanded. This granular information is not readily available. Therefore, the increase of fueling infrastructure for buses with internal combustion engines is not included in the current conditions, which will result in a lower total cost. If total costs in the current conditions are a lower estimate, the incremental costs in the proposed ICT regulation relative to current conditions would be a higher estimate. This assumption results in a conservative assumption for total costs in the proposed ICT regulation.

The bus population growth was accounted for in the emission reduction modeling and the infrastructure for ZEBs. Therefore, there is no change on emission reductions and health benefit. This growth will also not change the fuel prices for conventional fossil fuels and electricity. The prices of compressed natural gas, gasoline and diesel are based on the energy prices for the transportation sector in the Energy Information Administration (EIA)'s Annual Energy Outlook 2018 (Reference case and Pacific region). Compared with other vehicles in the transportation sector, transit buses consume a small amount of the total energy. A population increase of 0.7 to 1.4 percent is not expected to impact fuel prices. Electricity price is determined by rate schedules and is also not anticipated be impacted by minor changes in the bus population.

Hydrogen price, however, is more dependent on station throughput. The higher the throughput is, the lower the hydrogen price. It is possible that an increase in the population of buses that use hydrogen could result in a decrease in the price of hydrogen. Given the lack of hydrogen market history, the price impact of this change in bus population is difficult to predict and was not estimated as part of the economic analysis. The current assumption without incorporating bus growth for hydrogen price is conservative, and the costs may be lower than presented.

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[9] California Air Resources Board (CARB) (2018). EMFAC2017 Volume III – Technical Documentation. March 1, 2018. Available: https://www.arb.ca.gov/msei/downloads/emfac2017-volume-iii-technical-documentation.pdf.

3. **DOF Comment:** Public transit is no longer the only option to personal vehicles for individuals, and some private companies are now providing bus service, for their employees, as an alternative to public buses. If transit agencies raise prices to cover higher initial costs of this proposed regulation, such alternatives may be even more attractive, and undercut the estimated benefits. The SRIA could usefully add a discussion of these dynamics.

Response:

There will be upfront capital costs associated with ZEBs and their infrastructure due to the proposed ICT regulation. This might raise concerns that transit agencies may pass on the incremental costs to individuals through changes in service or fares. The State is aware of these concerns and is committed to providing incentives to help ease the transition to zero-emission technologies. In fact, the proposed ICT regulation is structured to provide opportunities for transit agencies to take advantage of substantial incentive funding that is being prioritized to ensure a successful transition to zero-emission technologies. These funding opportunities should substantially offset the upfront capital costs.

There are several major funding programs established to reduce the incremental costs associated with zero-emission technologies, such as Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP). For fiscal year (FY) 2017-2018, the budget allocated up to $180 million for the HVIP program with a minimum of $35 million set aside to fund ZEBs exclusively. An additional $125 million has been allocated to the HVIP program per Senate Bill 856 for the FY 2018-2019. Transit agencies can use state and federal grant funding to reduce or eliminate most of the initial incremental capital costs of the proposed regulation. In addition, staff estimated that, in the long-term, the cost savings outweigh the capital costs of adding ZEBs. Therefore, the likelihood of transit agencies raising fares to cover the higher initial cost is low. If a transit agency considers a fare increase, any increase has to be approved by the board of a transit agency.

Transit systems are evolving, and there could be many innovative alternatives to public transit in the near future. Some alternatives, such as private shuttle and ride-hailing (transportation network companies) services, have become popular in recent years. This would be the case with or without the proposed ICT regulation. Alternatives that might arise to supplant public transit cannot be easily predicted. In addition, the emissions impacts of those replacements could be minimal because other transportation modes are transitioning to low- and zero-emission pathways. The proposed ICT regulation itself is not anticipated to significantly alter the dynamic between public transit and other personal/private alternatives. Staff views any significant change in fares by transit agencies to cover initial capital costs as unlikely, given that the proposed regulation is structured to provide ample funding for transit agencies to offset those costs. In addition, the proposed ICT regulation contains a

Zero-Emission Mobility program option that can synergistically work with these alternatives to increase accessibility to the entire transit system.

Business Report (Gov. Code, §§ 11346.5, subd. (a)(11); 11346.3, subd. (d)):

There are no reporting requirements for businesses. The only reporting requirements are for transit agencies. Even if Government Code sections 11346.5, subdivision (a)(11), and 11346.3, subdivision (d), applied, the Executive Officer finds the reporting requirements of the proposed regulatory action which apply to transit agencies are necessary for the health, safety, and welfare of the people of the State of California. The information contained in the reports is necessary for CARB to assess transit agencies' ability and potential to transition to zero-emission technologies, and to mitigate barriers.

Cost Impacts on Representative Private Persons or Businesses (Gov. Code, § 11346.5, subd. (a)(9)):

In developing this regulatory proposal, CARB staff evaluated the potential economic impacts on representative private persons or businesses. The proposed ICT regulation directly impacts transit agencies, who are local governmental agencies. The impacts are discussed in ISOR Appendix B. There are no direct regulatory costs incurred by individuals as a result of the proposed ICT regulation. Transit agencies that experience increased costs may pass on costs to individuals, through changes in service or bus fares. However, grant funding can help reduce or eliminate most of the initial capital costs of the proposed ICT regulation, and in the long term the cost savings outweigh the incremental capital costs of adding ZEBs.

Effect on Small Business (Cal. Code Regs., tit. 1, § 4, subds. (a) and (b)):

The Executive Officer has also determined under California Code of Regulations, title 1, section 4, that the proposed regulatory action would not affect small businesses because the proposed ICT regulation directly impacts transit agencies, which are a part of local governments. There is no cost for small or typical private-sector businesses.

Consideration of Alternatives (Gov. Code, § 11346.5, subd. (a)(13)):

Before taking final action on the proposed regulatory action, the Board must determine that no reasonable alternative considered by the Board, or that has otherwise been identified and brought to the attention of the Board, would be more effective in carrying out the purpose for which the action is proposed, would be as effective and less burdensome to affected private persons than the proposed action, or would be more cost-effective to affected private persons and equally effective in implementing the statutory policy or other provisions of law.

The analysis of such alternatives can be found in Chapter IX of the ISOR for the proposed alternatives. Staff has discussed eight alternative concepts in the ISOR,

including stricter and less stringent ZEB purchase requirement, buses with low NOx engines paired with renewable fuel purchase requirement, performance based approach, bus manufacturer sales requirement, voluntary ZEB purchase, California Transit Association's Statewide Transit Electrification Proposal, and proposals from environmental groups and labor unions.

Staff has conducted economic analyses on two of the alternatives. Alternative 1 requires 100 percent ZEB purchase starting 2020, which is much more stringent than the proposed ICT regulation. Alternative 1 could provide more emission reductions and health benefits from early years; however, it also bears some risks. First, it moves all infrastructure cost earlier which could be too much of a financial burden for transit agencies to accommodate. Second, a sudden high cost in the early years does not allow transit agencies time to plan for funding sources and could result in adverse impacts like service cuts. Third, it does not allow transit agencies time to adjust for the new technology learning curve and troubleshooting. Fourth, this alternative does not allow the use of funding sources that may be available in later years and therefore increases the upfront program incremental cost. The costs of Alternative 1 in combination with limited access to funding programs make it unlikely for transit agencies to continue normal bus purchase patterns. This may result in transit agencies keeping high emitting buses longer or may result in transit agencies reducing service. Alternative 1 was rejected due to the high initial costs without adequate opportunity for funding.

Alternative 2 requires purchase of low NOx engines when new bus purchases are made, and the use of renewable fuels. It does not require the purchase of any ZEBs. This alternative results in lower direct costs to transit agencies and fewer emission benefits. It would not decrease GHG or PM emissions, would not achieve the maximum NOx reduction possible, and would not advance the adoption of heavy duty zero-emission technologies that have a great fuel efficiency advantage and therefore potentials to reduce GHG emissions and fossil fuel dependency. Though Alternative 2 requires renewable fuel purchase, GHG emission reductions are already claimed by the LCFS program. The proposed ICT regulation is identified as a State SIP strategy and is designed to help achieve California's air quality and climate protection goals. 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.

No alternative proposed was found to be less burdensome and equally effective in achieving the purposes of the regulation in a manner that ensures full compliance with the authorizing law. The Board has not identified any reasonable alternatives that would lessen any adverse impact on small business.

STATE IMPLEMENTATION PLAN REVISION

If adopted by CARB, CARB plans to submit the proposed regulatory action to the United States Environmental Protection Agency (U.S. EPA) for approval as a revision to the California State Implementation Plan (SIP) required by the federal Clean Air Act (CAA). The adopted regulatory action would be submitted as a SIP revision because it amends regulations intended to reduce emissions of air pollutants in order to attain and maintain the National Ambient Air Quality Standards promulgated by U.S. EPA pursuant to the CAA.

ENVIRONMENTAL ANALYSIS

CARB, as the lead agency for the proposed ICT regulation, has prepared a draft environmental analysis (Draft EA), which analyzes the ICT Regulation in accordance with the requirements of its regulatory program certified by the Secretary of Natural Resources. (California Code of Regulation, title 17, sections 60006-60008; California Code of Regulation, title 14, section 15251, subdivision (d)). The Draft EA assesses the potential for significant adverse and beneficial environmental impacts associated with the proposed actions and provides a programmatic environmental analysis of the reasonably foreseeable compliance responses that could result from implementation of the proposed regulations.

The resource areas from the California Environmental Quality Act (CEQA) Guidelines Environmental Checklist were used as a framework for a programmatic environmental analysis of the direct, and reasonably foreseeable indirect, environmental impacts resulting from implementation of the proposed regulations. The Draft EA provides an analysis of both the beneficial and adverse impacts and feasible mitigation measures for the reasonably foreseeable compliance responses associated with the recommended amendments.

The Draft EA concluded that implementing the proposed regulations could result in the following short-term and long-term beneficial and adverse impacts:

- beneficial impacts to energy demand, and greenhouse gases;
- less than significant impacts, or no impacts, to air quality, energy demand, greenhouse gases, land use planning, mineral resources, population and housing, public service, and recreation; and
- potentially significant adverse impacts to aesthetics, agricultural and forest resources, air quality, biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, land use planning, mineral resources, noise, transportation and traffic, and utilities and service systems.

The potentially significant and unavoidable adverse impacts are primarily related to short-term, construction-related activities. This explains why some resource areas are

identified above as having both less-than-significant impacts and potentially significant impacts. Please refer to the Draft EA for further details.

The Draft EA is included as Appendix C to the ISOR and can be obtained from CARB's website at: https://www.arb.ca.gov/regact/2018/ict2018/ict2018.htm

Copies of the Draft EA may also be obtained from CARB's Public Information Office, 1001 I Street, First Floor, Environmental Services Center, Sacramento, California, 95814.

SPECIAL ACCOMMODATION REQUEST

Consistent with California Government Code Section 7296.2, special accommodation or language needs may be provided for any of the following:

- An interpreter to be available at the hearing;
- Documents made available in an alternate format or another language; and
- A disability-related reasonable accommodation.

To request these special accommodations or language needs, please contact the Clerk of the Board at (916) 322-5594 or by facsimile at (916) 322-3928 as soon as possible, but no later than 10 business days before the scheduled Board hearing. TTY/TDD/Speech to Speech users may dial 711 for the California Relay Service.

Consecuente con la sección 7296.2 del Código de Gobierno de California, una acomodación especial o necesidades lingüísticas pueden ser suministradas para cualquiera de los siguientes:

- Un intérprete que esté disponible en la audiencia;
- Documentos disponibles en un formato alterno u otro idioma; y
- Una acomodación razonable relacionados con una incapacidad.

Para solicitar estas comodidades especiales o necesidades de otro idioma, por favor llame a la oficina del Consejo al (916) 322-5594 o envié un fax a (916) 322-3928 lo más pronto posible, pero no menos de 10 días de trabajo antes del día programado para la audiencia del Consejo. TTY/TDD/Personas que necesiten este servicio pueden marcar el 711 para el Servicio de Retransmisión de Mensajes de California.

AGENCY CONTACT PERSONS

Inquiries concerning the substance of the proposed regulatory action may be directed to the agency representative Yachun Chow, Manager, Zero Emissions Truck and Bus Section, at (916) 322-7450 or (designated back-up contact) Shirin Barfjani, Air Pollution Specialist, at (916) 445-6017.

AVAILABILITY OF DOCUMENTS

CARB staff has prepared a Staff Report: Initial Statement of Reasons (ISOR) for the proposed regulatory action, which includes a summary of the economic and environmental impacts of the proposal. The report is entitled: Staff Report: Initial Statement of Reasons – Public Hearing to Consider the Proposed Innovative Clean Transit Regulation a Replacement of the Fleet Rule for Transit Agencies.

Beginning on August, 7, 2018, copies of the ISOR and the full text of the proposed regulatory language, in underline and strikeout format to allow for comparison with the existing regulations, may be accessed on CARB's website listed below:

https://www.arb.ca.gov/regact/2018/ict2018/ict2018.htm

Copies may also be obtained from the Public Information Office, Air Resources Board, 1001 I Street, Visitors and Environmental Services Center, First Floor, Sacramento, California, 95814.

The agency representative to whom nonsubstantive inquiries concerning the proposed administrative action may be directed is Chris Hopkins, Regulations Coordinator, (916) 445-9564. The Board staff has compiled a record for this rulemaking action, which includes all the information upon which the proposal is based. This material is available for inspection upon request to the contact persons.

HEARING PROCEDURES

The public hearing will be conducted in accordance with the California Administrative Procedure Act, Government Code, title 2, division 3, part 1, chapter 3.5 (commencing with section 11340).

Following the public hearing, the Board may vote on a resolution directing the Executive Officer to:

- make any proposed modified regulatory language that is sufficiently related to the originally proposed text that the public was adequately placed on notice and that the regulatory language as modified could result from the proposed regulatory action, and any additional supporting documents and information, available to the public for a period of at least 15 days;
- consider written comments submitted during this period; and
- make any further modifications as may be appropriate in light of the comments received available for further public comment.

The Board may also direct the Executive Officer to:

- evaluate all comments received during the public comment periods, including comments regarding the Draft Environmental Analysis, and prepare written responses to those comments; and

- present to the Board, at a subsequently scheduled public hearing, the final proposed regulatory language, staff's written responses to comments on the Draft Environmental Analysis, along with the Final Environmental Analysis for action.

FINAL STATEMENT OF REASONS AVAILABILITY

Upon its completion, the Final Statement of Reasons (FSOR) will be available and copies may be requested from the agency contact persons in this notice, or may be accessed on CARB's website listed below.

INTERNET ACCESS

This notice, the ISOR and all subsequent regulatory documents, including the FSOR, when completed, are available on CARB's website for this rulemaking at https://www.arb.ca.gov/regact/2018/ict2018/ict2018.htm

CALIFORNIA AIR RESOURCES BOARD

Richard W. Corey
Executive Officer

Date: July 24, 2018

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our website at www.arb.ca.gov.