CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE
Division of Measurement Standards
Title 4, Division 9

PROPOSED CHANGES IN THE REGULATIONS

INITIAL STATEMENT OF REASONS

PROBLEM STATEMENT

California leads the nation in its long-term transportation strategy to reduce pollution and greenhouse gas emissions by adopting alternative fuel vehicles and zero-emission technologies. Accordingly, an aggressive expansion of a commercial fueling infrastructure is needed to meet the state's goals for adoption of low-emission hybrid electric and zero-emission battery electric vehicles (ZEVs). This proposed regulation enhances this strategy by establishing uniform standards for the electric charging stations which are steadily increasing throughout California.

The California Department of Food and Agriculture (Department) is mandated by Business and Professions Code (BPC) Division 5, Chapter 2, § 12107 to adopt requirements for commercial weighing and measuring devices used in California. Many commercial transactions are based on weight, volume, length, or count of products bought and sold. Common commercial weighing and measuring devices include grocery and deli scales, taximeters, and retail gasoline meters at service stations. An electric charging station, when used to transfer electricity to a vehicle for a fee, becomes a commercial measuring device subject to oversight by the Department.

The Department adopts by reference the latest U.S. standards created by the National Conference on Weights and Measures (NCWM) and published in the National Institute of Standards and Technology (NIST) *Handbook 44 - Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices*. Within NIST *Handbook 44* is Section 3.40. Electric Vehicle Fueling Systems – Tentative Code that was adopted in 2015 as a model national standard. The designation "Tentative Code" indicates this code has trial or experimental status. Until these standards are adopted as a permanent code by NCWM, the Department is not able to enforce the design specifications and accuracy tolerances for electric charging stations (a.k.a. Electric Vehicle Supply Equipment or EVSE) used for commercial purposes. With this regulation, the Department proposes to remove the tentative status from NIST *Handbook 44* Section 3.40. adopted in Title 4, Division 9, Chapter 1, § 4000. Application. of the California Code of Regulations (CCR) and make necessary exceptions and additions to enforce its provisions; which serve to ensure measurement accuracy in commercial transactions.

BACKGROUND

Governments have long recognized the importance of maintaining integrity and trust in the buying and selling of goods in local marketplaces. It is for this reason that commercial devices are highly regulated by law. Adoption and enforcement of NIST *Handbook 44* requirements ensure that neither consumers nor businesses in California suffer economic harm. EVSE used for commercial purposes must be safe, accurate, and durable to meet the needs of a quickly

expanding EVSE infrastructure in California. The amendments proposed in CCR §§ 4001 and 4002, of NIST *Handbook 44* adopted in CCR § 4000, will be applied to EVSE used for commercial purposes: (a) while undergoing type evaluation by the Department, (b) during installation or repair by a Registered Service Agency (RSA), and (c) during field testing by a weights and measures official.

(a) Type Evaluation by the Department.
Before any weighing or measuring device can be sold or used in California for commercial applications, it must be evaluated and approved by the Department (BPC § 12500.5). This process is known as "type evaluation." Type evaluation is the examination of a weighing or measuring device for the legal purpose of certifying that its design and performance follows all applicable weights and measures requirements for accuracy, reliability, and other specifications. Once a commercial device type has been successfully evaluated by the Department, that particular make and model may be mass produced for commercial purposes. No further evaluation by the Department is necessary unless the manufacturer makes modifications which will affect the accuracy or performance of the device.

The scope of type evaluation for commercial devices is based upon the criteria established in NIST *Handbook 44.* A tentative code is oftentimes not made permanent for several years; this allows jurisdictions sufficient time to study its requirements prior to finalization and adoption of a permanent code. A 2016 interagency agreement between the Department and the California Energy Commission (CEC) has provided the resources necessary to review the tentative code language, and research and acquire the most suitable test equipment for type evaluation and field testing. Upon adoption of the proposed regulation, the Department will be prepared and equipped to offer type evaluation services to EVSE manufacturers.

(b) Installation and Repair by a Registered Service Agency (RSA).
Maintenance and repair services of commercial weighing and measuring devices are performed by companies registered with the Department. The specifications and tolerances of NIST *Handbook 44* are applied when installing new devices or making corrective repairs. After verifying the device meets all design specifications and performance requirements, the RSA may place the device into service pending official testing and sealing by a weights and measures official [BPC §§ 12509(b), 12511.1, 12531, and 12532]. Utilizing RSAs saves a device user money by allowing them to use it immediately after installation or repair, rather than wait for a weights and measures official's visit.

(c) Field Testing by County Weights and Measures Officials.
The Department works closely with county sealers of weights and measures who, under the supervision and direction of the secretary, carry out most of the routine field testing of devices used for commercial purposes. The purpose of routine field testing is to ensure the device conforms to all applicable standards of NIST *Handbook 44* and to minimize the measurement error in commercial transactions. Upon adoption of the regulation, county weights and measures officials may fulfill their role of performing routine device testing of commercial EVSE.

The scope of this proposed regulation is limited to the commercial sale of electricity from publicly accessible EVSE to charge battery electric and plug-in hybrid electric vehicles. There are three

levels of EVSE equipment being installed in California. Level 1 EVSE operate on standard household 120 Volt power. Level 1 EVSE are more typically used by vehicle owners for home use and have very limited application in the commercial EVSE industry. Level 2 EVSE utilize 240 Volt alternating current (AC) like those used to power household electric appliances, e.g. clothes dryers, ranges, and ovens. Level 2 EVSE range in power from 6.6 kilowatts (kW) up to 19.2 kW resulting in a charge rate of 26 to 70 miles of driving range per hour of charging. The National Electrical Manufacturers Association (NEMA) reported that the majority of commercial EVSE installed in California are Level 2 models. The third type of EVSE are the more powerful DC fast chargers which are increasing in availability as the number of electric vehicles increases. DC fast chargers provide up to 40 miles of driving range for every 10 minutes of charging but are significantly more expensive to install and operate than Level 2 EVSE.

Not all public-access EVSE will be required to comply with the proposed regulation. As decided by the California State Attorney General in Opinion No. SO 77-13 – November 22, 1977, county and state weights and measures officials do not have authority over commercially used devices owned by public entities, e.g. municipalities, special districts and California higher education institutions because they are not people as defined in BPC § 12011. There are also code restrictions published in NIST *Handbook 44* Section 3.40., paragraph A.2. Exceptions. that specify EVSE used by a public utility or municipality, electricity dispensed at no charge to the consumer, and wholesale delivery of electricity are not subject to the specifications, tolerances, and other technical requirements of that section. For those reasons, this proposed regulation will not apply to the following EVSE:

- Owned and operated by public utilities, public entities, and municipalities
- Not available to the public, e.g. EVSE used for residential or workplace charging
- That dispense electricity as motor vehicle fuel at no cost to the consumer
- That deliver wholesale electricity

According to the United States Department of Energy, Energy Efficiency and Renewable Energy (DOE – EERE) Alternative Fuels Data Center website, California has the largest number of publicly-available EVSE in the nation. The DOE – EERE database includes all Level 1, Level 2, and DC fast charge EVSE which are nonresidential and available for public access. As of October 2018, the website lists approximately 17,000 such EVSE charging stations in California; six times more than any other state and 28% of all the public-use EVSE in the nation.

LEGISLATIVE AND EXECUTIVE HISTORY

History

The United States is unique in that there are no federal weights and measures laws. NIST, a non-regulatory federal agency within the U.S. Department of Commerce, promotes uniformity throughout the country by providing technical advice to NCWM, weights and measures officials, and industry. The NCWM is a professional standards-setting organization made up of state and local regulatory officials, manufacturers of measuring instruments, representatives of trade associations and individual businesses, consumer groups, federal agencies, and foreign agencies. NCWM adopts model weights and measures laws and regulations for the U.S., which

are then published by NIST in its handbooks. When a state adopts these standards, they become mandatory. The Department has adopted NIST *Handbook 44* as state regulation by reference (BPC § 12107) and may modify, amend, or reject any part as needed for California's purposes.

Legislation

Assembly Bill (AB) 118 (Núñez, Statutes of 2007, Chapter 750) created the Alternative and Renewable Fuel and Vehicle Technology Program to fund new transportation fuels and technologies to support the state's climate change goals.

AB 631 (Ma, Statutes of 2011, Chapter 480) amended Public Utilities Code § 216(i) to clarify that the ownership, control, operation, or management of a facility that supplies electricity to the public only for use to charge light-duty plug-in electric vehicles, as defined, does not make the corporation or person a public utility.

Senate Bill (SB) 454 (Corbett, Statutes of 2013, Chapter 454), the Electric Vehicle Charging Stations Open Access Act, prohibits the owners and operators of EVSE from requiring a subscription or membership in any group as a condition of using a public EVSE; requires the total actual charges, including any network roaming charges, to be disclosed to the consumer at the point of sale; requires EVSE charging stations to be labeled as required by the Code of Federal Regulations Title 16, Part 309; and requires that an EVSE charging station accept payment by credit card or mobile technology, or both.

AB 808 (Ridley-Thomas, Statutes of 2015, Chapter 591) clarifies the Department's authority for the regulation and enforcement of motor vehicle fuels, lubricants, automotive products, and alternative fuels such as hydrogen, natural gas, and electricity. It also requires the Secretary to establish the method of sale of motor vehicle fuels and lubricants sold commercially to the public.

Governor's Executive Orders

Governor Brown's Executive Order B-16-12 orders all state agencies to support and facilitate the rapid commercialization of ZEVs in California. This order includes a goal for the development of infrastructure supporting up to one million ZEVs in the state by 2020 and 1.5 million by 2025.

Governor Brown's Executive Order B-30-15 established a new interim greenhouse gas emissions target reduction of 40 percent below 1990 levels by 2030 and directs all agencies to implement measures to meet this target. By replacing petroleum–fueled vehicles on the state's highways, ZEVs reduce tailpipe emissions of greenhouse gases and improve the state's air quality.

Governor Brown's Executive Order B-48-18 ordered a new target of putting five million ZEVs into operation on California highways by 2030. The executive order includes installation of 250,000 commercial Level 2 EVSE and 10,000 DC fast charge EVSE. The purpose of the order is to streamline and support the EVSE infrastructure.

ZEV Action Plans

2013 ZEV Action Plan. This Action Plan was developed to identify specific strategies and actions that state agencies would take to meet milestones of Executive Order B-16-12. The Department was tasked with ensuring that electricity can legally be sold as a retail transportation fuel on a megajoule or kilowatt-hour basis, and directed to enact necessary legislation, regulations, standards or certifications to enable hydrogen to be sold commercially on per kilogram basis.

2016 ZEV Action Plan. In this Action Plan, the Department's role was restated with more specificity: "Maintain infrastructure support through ongoing oversight of the retail fueling businesses serving ZEV owners and operators. Both PEV and FCEV dispensing equipment must be evaluated, approved and monitored to ensure accurate, equitable and legal trade is maintained."

2018 ZEV Action Plan Priorities Update. This Update was released following Governor Brown's signing of Executive Order B-48-18, to focus multi-stakeholder efforts on deploying charging and fueling infrastructure and making ZEVs increasingly affordable to own and operate. The Department is identified as lead agency to "Support broad-scale commercialization of zero-emission fuels to increase access, consumer awareness and confidence in ZEV technologies. Consumers become comfortable with products and technologies they see in use every day."

REGULATORY HISTORY

California has no regulations for device design specifications and accuracy tolerances for EVSE used for commercial purposes to charge electric vehicles. The Department is the sole state agency responsible for weights and measures enforcement and is authorized to promulgate regulations for measurement standards. Although every state in the U.S. adopts NIST *Handbook 44*, the Department is not aware of any other state that has adopted regulations to remove the Tentative Code status of Section 3.40. to begin enforcement of this section.

In 2014, the Department adopted a Hydrogen Gas-Measuring Device regulation that is analogous to this rulemaking proposal regarding EVSE. In adopting Section 3.39. from the NIST Handbook, the Department removed the tentative code status present in NIST *Handbook 44* to make Section 3.39. enforceable in California. That regulation added § 4002.9 to California Code of Regulations (CCR) Title 4, Division 9, and paved the way for the development of a standardized commercial hydrogen fueling network in California. Today there are 35 retail hydrogen stations open to the public, and five manufacturers have successfully had their hydrogen dispensers type evaluated by the Department.

PURPOSE AND NECESSITY OF THE PROPOSED REGULATION

BPC § 12107 and CCR § 4000 requires the Department to adopt by reference the latest standards published in NIST *Handbook 44*, except as specifically modified, amended, or rejected by regulation adopted by the Secretary. In doing so, the Department adopts regulations in CCR § 4001. Exceptions. to reject language, as written, in sections of NIST *Handbook 44,* or adopts

regulation in CCR § 4002. Additional Requirements. to add additional requirements to meet the needs of California.

Amend CCR Chapter 1, Article 1, § 4001. Exceptions.
The Department proposes to add the following sections from NIST *Handbook 44* to the list in CCR § 4001. Exceptions. The following sections, as written, in NIST *Handbook 44* are not adopted or incorporated by reference:

3.40. Electric Vehicle Fueling Systems - Tentative Code
This amendment is necessary because, as the preamble language explains, a Tentative Code has only trial or experimental status and is not enforceable. Removal of the tentative code status from the adopted version of NIST *Handbook 44* Section 3.40. in CCR § 4000 will clarify that the Department intends to use the specifications, tolerances, and other technical requirements in NIST *Handbook 44* Section 3.40., with modifications, to regulate EVSE used for commercial purposes in California.

A.4. Type Evaluation.
It is necessary to edit this paragraph for clarity and to be consistent with other California regulations in CCR Title 4, Division 9, Chapter 9. California operates its own device certification type evaluation program called the California Type Evaluation Program (CTEP) as an alternative to the National Type Evaluation Program (NTEP). Manufacturers have the option to apply for CTEP approval when commercial weighing and measuring devices sold in California do not meet NTEP requirements. The current language of paragraph A.4. does not include this option for manufacturers doing business in California.

S.3.5. Temperature Range for System Components.
It is necessary to edit this paragraph because there is no requirement in this paragraph to make the operational temperature range marking on an EVSE “conspicuously, legibly, and indelibly” marked, if not able to meet the specified temperature range in this paragraph. Unlike this paragraph, language in paragraph S.5.2. requires the operating temperature range to be “conspicuously, legibly, and indelibly” marked on the device. Also, the specified temperature range in this paragraph, – 40 °C to + 85 °C (-40 °F to 185 °F), is not consistent with the temperature range specification stated in paragraph S.5.2.(e). This discrepancy creates confusion in the industry when the operational temperature range of the EVSE falls between, but not inclusive of, the two specified temperature ranges. These edits will make language in both paragraphs consistent with each other and eliminate confusion with required markings. It is also necessary to edit this paragraph because it does not allow for the CTEP Certificate of Approval (COA) to be an alternative process to the National Type Evaluation Program (NTEP) Certificate of Conformance (CC) process. The Department considers the CTEP COA to be an acceptable certification in lieu of the NTEP CC and is more likely to be issued to manufacturers doing business in California. The current language of paragraph S.3.5. does not include this option.

S.5.2. Temperature Range for System Components.
It is necessary to edit this paragraph because the temperature range specification in paragraph S.5.2.(e) is not consistent with the temperature range specification and requirement in paragraph S.3.5. In some cases, it is possible to have an operational temperature range that is wider than

the temperature range specification in S.5.2.(e), yet narrower than the temperature range specification in S.3.5. This discrepancy creates confusion in the industry as to which operable temperature range conditions require a marking on the EVSE.

Appendix D. Definitions, "electricity as vehicle fuel"
The definition in NIST *Handbook 44* for "electricity as vehicle fuel" is not consistent with California's definition of "electricity" as motor vehicle fuel in BPC § 13400(b)(4). It is necessary to make this edit to limit any confusion with differing definitions of electricity used as motor vehicle fuel and to remain consistent with California statute.

Amend CCR Chapter 1, Article 1, § 4002. Additional Requirements.
The Department proposes to amend and adopt the following sections of NIST *Handbook 44* adopted in CCR § 4000 to CCR § 4002. Additional Requirements. for EVSE used for commercial purposes:

CCR § 4002.11. Electric Vehicle Fueling Systems (3.40.)
This addition is necessary to adopt a new subsection under CCR § 4002. Additional Requirements. The proposed subsection removes the phrase "Tentative Code" from the section title making the code enforceable in California. Removal of this phrase, along with the preamble, will make clear and specific that the EVSE specifications, tolerances, and other technical requirements adopted by the Department in CCR § 4002.11. are intended to be used for enforcement purposes.

CCR § 4002.11.(a)
The Department proposes to add the new subdivision (a) to CCR § 4002.11. to specify the effective and enforceable date of this proposed regulation. Early installations of EVSE used for commercial purposes and already placed in service may not immediately meet the requirements of this proposed regulation. Manufacturers, owners, and operators of commercial EVSE requested this regulation be given a delayed effective date and not be made immediately enforceable upon adoption. The delayed effective date will provide businesses in the EVSE industry with necessary time to make existing commercial EVSE compliant with CCR § 4002.11. The Department acknowledges that manufacturers need time to bring their devices into compliance. For this reason, the Department proposes an effective date of January 1, 2020, to minimize disruption in the industry without unnecessarily delaying the benefits of the proposed regulation or the Department's mandated responsibility to regulate EVSE used for commercial purposes.

A.4. Type Evaluation.
It is necessary to amend this paragraph to clarify that the Department will accept EVSE certified by either the CTEP or NTEP processes. Allowing for either type certification makes this proposed regulation consistent with other California regulations and offers manufacturers doing business in California an option to have their devices certified by either process. The current language of paragraph A.4. does not include this option.

S.3.5. Temperature Range for System Components.
The edits to paragraph S.3.5. are necessary for clarity, consistency, and will provide flexibility of type certification to EVSE manufacturers, owners, and operators. The edits include the option for manufacturers to apply for a CTEP COA as an alternative to the NTEP CC. A CTEP COA is acceptable to the Department and is more likely to be submitted in California than an NTEP CC. The current language of paragraph S.3.5. does not include this option.

It is also necessary to add language requiring that the marking of a temperature range narrower than the specified range, – 40 °C to + 85 °C (– 40 °F to 185 °F), for the system or any measuring system component is "conspicuously, legibly, and indelibly" marked on the EVSE. This requirement will make this information readily accessible to consumers and device testers, and consistent with paragraph S.5.2. Weights and measures officials will also be able to quickly and easily determine if an EVSE is compliant with its associated CTEP COA or NTEP CC.

S.5.2. EVSE Identification and Marking Requirements.
The edits in paragraph S.5.2.(e) are necessary for clarity and consistency with the temperature range specification and requirement in paragraph S.3.5. With this change, the requirement for marking the temperature range in paragraph S.5.2.(e) will be consistent with the requirement in S.3.5. for marking the temperature range on the EVSE if different than the specified temperature range of – 40° C to + 85° C (-40 °F to 185 °F).

Appendix D. Definitions, "electricity as vehicle fuel"
The Department proposes this amendment to make this definition consistent with the existing statutory definition of "electricity" as motor vehicle fuel in BPC § 13400(b)(4).

BENEFITS OF THE REGULATION

The proposed regulation meets the Department's statutory mandate to adopt and enforce the requirements in NIST *Handbook 44.* This regulation enables the Department to begin its statutorily required oversight of EVSE used commercially for the sale of electricity as a motor vehicle fuel. Having standardized units of measure of electricity as a motor vehicle fuel, i.e. megajoules or kilowatt-hour, will provide a statewide basis of value comparison to consumers. Properly labeled commercial EVSE will provide a consistent fueling experience to consumers which will instill confidence in ZEV technologies. Additionally, equipment manufacturers will have standardized design requirements for commercial EVSE destined for the California marketplace. The proposed regulation will establish the framework essential for a fair, transparent, and equitable marketplace for California businesses. Standardization also helps eliminate inconsistent, misleading, or fraudulent business practices by retailers. This regulation will allow the Department to defend consumers against those kinds of business practices during EVSE transactions.

ECONOMIC IMPACT ASSESSMENT/ANALYSIS

1. Large Business Types
The Department initially determines from DOE – EERE and NEMA data that the proposed regulation may affect about 300 businesses in two primary industries in California: (a) manufacturers who fabricate and market EVSE for commercial purposes and (b) businesses that

own or operate EVSE for commercial purposes. Most of the businesses in the commercial EVSE industry are considered international companies. The Department makes the initial determination that these businesses do not meet the definition of a small businesses as defined in California Government Code Title 2, Chapter 3.5, § 11342.610.

(a) EVSE Manufacturers.
NEMA reports that 16 of their members manufacture EVSE devices or components. NEMA and some of its member manufacturers were involved with the NIST-led Electric Vehicle Fueling and Submetering: U.S. National Work Group on Measuring Systems which developed the EVSE code adopted in NIST *Handbook 44*. As a result, major EVSE manufacturers have already designed EVSE models for compliance with weights and measures requirements. Other EVSE manufacturers will have to modify, retrofit, or upgrade their EVSE to make them compliant. Since the proposed regulation applies only to EVSE used for commercial purposes in California, manufacturers may continue sales of noncompliant EVSE for home use, out-of-state sales, or other non-commercial applications.

The Department reviewed EVSE product information of the 16 NEMA member manufacturers and determined that most manufacturers produce an average of three models of EVSE that may be used for commercial purposes and require type evaluation. Device manufacturers pay all costs associated with type evaluation services as authorized in BPC § 12500.9. The Department estimates the cost for this service to be about $15,000 per model. EVSE manufacturers are only required to pay type evaluation costs one time for each model submitted to the Department. Additional costs are incurred only if a manufacturer makes modifications to their original model which would affect its accuracy or performance.

The Department's review of manufacturers' product information reveals a total of forty commercial Level 2 and DC fast charge EVSE models. The estimated indirect cost of this regulation to all manufacturers for type evaluation would be approximately $600,000 (40 × $15,000) in the first fiscal year this regulation becomes effective (January 1, 2020). The cost to an individual EVSE manufacturer averages $45,000 (3 × $15,000) in the first fiscal year this regulation becomes effective. Following the effective date of the regulation, only modified or new EVSE models destined for the California marketplace will be subject to type evaluation.

(b) Businesses that Own or Operate Commercial EVSE.
Based on data from DOE – EERE and the limited scope of the proposed regulation, the Department initially determined that most of the businesses own or operate commercial EVSE that already meet NIST *Handbook 44* requirements; these businesses will not experience significant economic impacts. The remaining businesses will have to modify, retrofit, upgrade, or replace their EVSE to comply with the proposed regulation. The Department is uncertain how many owners or operators will choose to modify existing commercial EVSE or purchase and install new, compliant devices.

In January 2018, the Next 10 policy analysis group reported in, "The Road Ahead for Zero-Emission Vehicles in California – Market Trends & Policy Analysis," that there are approximately 16,500 public access EVSE installed in California. This number closely matches DOE – EERE database information. Both sources reflect about 3,500 EVSE are public access that are not

included in the scope of this rulemaking because they are owned and operated by state agencies, local municipalities, or utilities. Of the remaining 13,500 EVSE, some still dispense electricity at no cost to the consumer. Therefore, the Department initially determines approximately 12,000 (11,000 Level 2 + 1,000 DC fast charge) EVSE installed in California are public access EVSE used for commercial purposes and their owners or operators will be impacted by this proposed regulation and the requirements of NIST *Handbook 44* Section 3.40.

Without knowing whether a commercial EVSE owner or operator will modify, retrofit, upgrade or replace noncompliant commercial EVSE, the Department assumes the cost to completely replace a noncompliant commercial EVSE exceeds that of modifying, upgrading, or retrofitting it. This economic impact analysis estimates the replacement costs of two types of commercial devices: Level 2 EVSE and DC fast charge EVSE. Commercial Level 1 EVSE are negligible to the economic impact of this proposed regulation because of their extremely limited commercial application.

In November 2015, DOE – EERE released a report estimating the installed cost of a single-port commercial Level 2 EVSE to be between $3,000 - $6,000, and up to $40,000 for a high-output commercial DC fast charge EVSE. Estimated upgrade costs per unit will likely be less than full installed costs because the required power supply, wiring, and conduit is already installed, and installation and construction permits are already acquired. Furthermore, individual components may be retrofitted or replaced at minimal cost, and some EVSE may only require a simple software upgrade at little to no additional cost to gain compliance. Accordingly, the Department used a mid-range value of $4,500 to estimate the upgrade cost for currently installed Level 2 EVSE and the mid-point value of $20,000 to estimate the upgrade cost for currently installed DC fast charge EVSE.

Based on information in DOE – EERE's database and the Department's research, the Department estimates about 1,000 commercial Level 2 EVSE and about 170 commercial DC fast charge EVSE may not currently be compliant with the proposed regulation. The initial estimated cost for all businesses to upgrade noncompliant commercial Level 2 EVSE may be as much as $4.5 million (1,000 × $4,500) with little to no ongoing annual costs after upgrades have been made. The initial estimated cost for all businesses to upgrade noncompliant commercial DC fast charge EVSE may be as much as $3.4 million (170 × $20,000) with little to no ongoing annual costs after upgrades have been made.

The Department estimates the total upgrade costs for all businesses to be approximately $7.9 million ($4.5 million + $3.4 million) in the first fiscal year the regulation becomes effective (January 1, 2020). DOE – EERE's database reports about 10 major businesses that own or operate EVSE for commercial purposes in California that may have EVSE in need of upgrades. Although each business has its own unique number and models of EVSE, the Department estimates a typical business may have, on average, 100 (1,000 ÷ 10) Level 2 EVSE and about 17 (170 ÷ 10) that need to be upgraded. On average, the cost to a typical individual business is approximately $450,000 (100 × $4,500) for Level 2 EVSE and approximately $340,000 (17 × $20,000) for DC fast charge EVSE in the first fiscal year the regulation becomes effective (January 1, 2020).

Ongoing costs for EVSE owners or operators which are indirectly related to this rulemaking, include fees paid to their local county weights and measures department to annually register and test their commercial EVSE. Nearly each county has an ordinance, in accordance with state law, that allows them to charge fees to recover costs associated with these inspections (BPC § 12240). Counties are not currently registering and testing EVSE used for commercial purposes because the NIST *Handbook 44* specifications, tolerances, and other technical requirements for EVSE have not been adopted by the Department. Currently, there is not a specific fee associated with commercial EVSE registration and testing, so the "miscellaneous device fee" of up to $20 and "location fee" of up to $100 applies. The average cost incurred to all owners or operators of commercial EVSE for annual county registrations and inspections is $1.44 million (12,000 × $120) for the first fiscal year this regulation becomes effective (January 1, 2020). The device registration fee will be an ongoing, annual cost thereafter. The cost of county weights and measures services for each of the 10 major businesses is, on average, $144,000 [(12,000 ÷ 10) × $120].

2. Small Business Types

(a) General.

The Department initially determines that there are only a few small businesses involved in the commercial EVSE industry; the majority are large international corporations. The Department initially estimates that less than 2% of the approximately 300 affected businesses are considered small businesses according to California Government Code, Title 2, Chapter 3.5, § 11342.610. Of all businesses affected by this regulation the Department identified five (1.6% × 300) that are considered small. Four of the five small businesses identified by the Department are EVSE owners or operators having no more than 113 Level 2 EVSE each. The fifth small business identified by the Department is an RSA. The Department cannot determine how many EVSE manufactured, owned, or operated by small businesses may need to be upgraded to be compliant. Of the four small businesses, each one owns and operates an average of 72 Level 2 EVSE and fewer than 2 DC fast charge EVSE. The Department uses $4,500 per Level 2 EVSE and $20,000 per DC fast charge EVSE as estimates of the cost to upgrade noncompliant EVSE. The initial cost to each small business is about $324,000 (72 × $4,500) for Level 2 EVSE upgrades and about $40,000 (2 × $20,000) for DC fast charge EVSE upgrades. Because of this proposed regulation, the initial, direct impact to each small business is about $364,000 ($324,000 + $40,000) in the first calendar year after the regulation becomes effective (January 1, 2020).

An indirect cost of this regulation to all businesses, including small businesses, that own EVSE is an inspection and registration fee by county weights and measures officials of $120 per EVSE. The cost to each of the four small businesses is estimated to be $8,640 (72 × $120). The inspection and registration fee is an ongoing, annual cost. The sum of costs to an individual small business in California is $372,640 ($364,000 + $8,640).

(b) Registered Service Agencies (RSAs).

Only one RSA is registered with the Department to perform installations, tests, and repairs of EVSE. Many RSAs operating in California qualify as small businesses according to Government Code Title 2, Chapter 3.5, § 11342.610. The Department initially determines this proposed regulation will not incur additional costs to the one RSA registered to install, test, and repair EVSE since that business already has the necessary approved equipment and qualifications. It is

unknown how many RSAs currently registered to perform electrical sub-metering work will choose to expand into EVSE services; those that do not expand their operations will not be impacted by the proposed regulation.

In summary, the total economic impact of this proposed regulation to EVSE manufacturers, businesses that own or operate commercial EVSE, small business, and RSAs in California is $9.94 million ($600,000 + $7.9 million + $1.44 million) in the first fiscal year this regulation becomes effective (January 1, 2020). There is an indirect, ongoing cost to all businesses that own or operate commercial EVSE of $1.44 million per year thereafter for annual EVSE registration and inspection services by county weights and measures officials.

Creation or Elimination of Jobs within California

Business and Professions Code § 12107 and CCR Title 4 § 4000 adopt the current version of the specifications, tolerances, and other technical requirements published in NIST *Handbook 44*. The Department initially determines that the proposed modifications, amendments, or rejections of the specifications, tolerances, and other technical requirements for commercial EVSE make them enforceable by the Department. Therefore, the proposed regulation will not directly create or eliminate jobs in California.

Creation of New Businesses or the Elimination of Existing Businesses within California

Business and Professions Code § 12107 and CCR Title 4 § 4000 adopt the current version of the specifications, tolerances, and other technical requirements published in NIST *Handbook 44*. The Department initially determines that the proposed modifications, amendments, or rejections of the specifications, tolerances, and other technical requirements for commercial EVSE make them enforceable by the Department. Therefore, the proposed regulation will not directly create new businesses or eliminate existing businesses in California.

Expansion of Businesses Currently Doing Business in California

Business and Professions Code § 12107 and CCR Title 4 § 4000 adopt the current version of the specifications, tolerances, and other technical requirements published in NIST *Handbook 44*. The Department initially determines that the proposed modifications, amendments, or rejections of the specifications, tolerances, and other technical requirements for commercial EVSE make them enforceable by the Department. The proposed regulation may cause the expansion of businesses currently doing business within the state to meet the demand of a rapidly expanding commercial EVSE infrastructure meant to achieve the Governor’s executive orders.

Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State’s Environment

This proposed regulation supports the Governor’s goals to increase the number of ZEV operating on state highways, reduce dependence on petroleum-sourced fuels and decrease California’s carbon footprint. The Governor’s Executive Order B-16-2012 predicts that over 1.5 billion gallons of petroleum-sourced fuels will be displaced by increasing the number of ZEVs in California. The

proposed regulation both supports the growth of the ZEV market and facilitates the development of an adequate EVSE infrastructure; two paramount factors positively influencing California's long-term transportation strategy.

The California Air Resources Board's Greenhouse Gas Emission Inventory website reports that the transportation sector is the biggest contributor (41%) to California's greenhouse gas emissions. This proposed regulation will facilitate the infrastructure growth essential for supporting the increasing number of low-emission hybrid electric and zero-emission battery electric vehicles. In turn, this will help improve air quality, thus reducing the medical risks to Californians associated with pollution caused by high-carbon emitting vehicles.

EVIDENCE SUPPORTING FINDING OF NO SIGNIFICANT STATEWIDE ADVERSE ECONOMIC IMPACT DIRECTLY AFFECTING BUSINESS

The Department initially determines there is no significant statewide adverse economic impact directly affecting businesses in California. Existing statute (BPC § 12500.5) already requires manufacturers of EVSE for commercial purposes to obtain a one-time device type evaluation and approval, and BPC § 12210 already allows for local county weights and measures departments to register and seal all commercial weighing devices. Those costs to businesses are not a direct impact of this regulation. Although there will be a direct cost to manufacturers of commercial EVSE that may need to retrofit or upgrade current noncompliant commercial EVSE, those businesses may actually benefit from the rapid increase of EVSE installations occurring statewide by competitively marketing and installing compliant ones. The Department did not find any other supporting evidence that the proposed regulation will directly cause significant statewide adverse economic impacts directly affecting businesses conducting business in California.

ESTIMATED COST OR SAVINGS TO PUBLIC AGENCIES OR AFFECTED PRIVATE INDIVIDUALS OR ENTITIES

The Department initially determines that the proposed regulation:

1. Will not impose a mandate on local agencies or school districts. The proposed regulation does not mandate local county agencies to register and seal commercial EVSE. It is California law that provides for that oversight authority and responsibility. Besides the Department, no other public agency or special districts has oversight authority in this matter. County agencies, city agencies, and school districts are not required to comply with the proposed regulation as they are exempt from the proposed regulation. This exemption comes from NIST *Handbook 44*, Section 3.40, paragraph A.2. Exceptions. and the California State Attorney General Opinion No. SO 77-13 – November 22, 1977.
2. Will not result in any cost or savings to any other state agency. The proposed regulation will not involve the oversight activity or expenses of any other state agency. No other state agency has statutory authority to oversee and enforce the proposed regulation. State agencies are not required to comply with the proposed regulation as they are exempt from the proposed regulation, as stated in NIST *Handbook 44*, Section 3.40, paragraph A.2. Exceptions.

3. Will not result in any reimbursable costs or savings under Part 7 (commencing with § 17500) of Division 4 of the Government Code to local agencies or school districts. The proposed regulation does not involve state-mandated local programs and does not provide for reimbursable costs regulated under Government Code, Division 4, Part 7 § 17500.
4. Will not result in any nondiscretionary costs or savings to local agencies or school districts. For the reasons stated in number 1. above, the proposed regulation will not result in any nondiscretionary costs or savings to local agencies or school districts.
5. Will not result in any cost or savings in federal funding to the state. Neither Federal nor California law provides for federal funding to oversee and enforce electricity dispensed by EVSE as motor vehicle fuel. The proposed regulation does not impose any costs or savings of federal funding to California.

Public Agencies

Based on its economic analysis, the Department initially determines this proposed regulation will not have a significant statewide adverse economic or fiscal impact on housing costs, public agencies, or other public entities in California. The Department determines each county weights and measures department will need to acquire about $20,000 of equipment to test and seal EVSE used for commercial purposes within their jurisdiction. However, some counties may choose to share the equipment with neighboring counties to perform routine inspections. Other counties may wish to delay an equipment purchase and conduct “witness” testing where they direct and oversee testing by an RSA. Each county agency has authority to offset the cost of regulating EVSE (via local ordinance), up to the statutory maximum established in BPC § 12240, by charging device registration fees assessed for their services. This proposed regulation may generate a statewide revenue to county weights and measures departments of approximately $1.44 million beginning January 1, 2020, and each year thereafter from annual device registration fees to offset the cost of registration services.

There will be no fiscal impact to the Department as all costs of enforcing this regulation are offset by revenues for services provided. Direct and indirect costs associated with type evaluation performed by the Department are borne by manufacturers of new commercial devices, and RSAs pay annual registration fees which cover programmatic expenses related to the Department’s oversight of businesses installing or repairing commercial devices; including EVSE used for commercial purposes. On behalf of the Department, counties collect a Department administrative fee at the time they collect their annual device registration fees. That fee is remitted to the Department to recover reasonable administrative and enforcement costs incurred by the department for exercising supervision over and performing investigations in connection with commercial device testing and other associated activities (BPC § 12241).

Private Individuals

Consumers make a conscience choice to purchase a vehicle type. This proposed regulation does not directly impact private individuals who have chosen to buy an electric vehicle. Any costs borne by businesses ultimately gets passed on to consumers, so drivers of electric vehicles may be affected by slightly increased prices in electricity sold as a motor vehicle fuel. Conversely, it is equally probable prices may decrease based on competitive pricing in the marketplace fueled by rapid expansion of the EVSE infrastructure by 2030. The Department did not find any data to support either of those possibilities.

Another benefit private individuals in California may experience from this proposed regulation is the anticipated improvements in air quality due to the reduced use of petroleum-sourced fuels. The Department did not find substantial data to quantify the financial cost or benefit of improved air quality to private individuals in California because of this regulation.

DUPLICATION OR CONFLICT WITH FEDERAL REGULATIONS

The proposed regulation does not conflict with any federal regulations or statutes. No federal laws or regulations mandate the proposed regulation.

REASONABLE ALTERNATIVES TO THE REGULATIONS AND THE AGENCY'S REASONS FOR REJECTING THOSE ALTERNATIVES

The Department must determine that no reasonable alternative it considered or that has otherwise been identified and brought to its attention would be more effective in carrying out the purpose for which the action is proposed or 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 provision of law.

Alternative 1 – Do Nothing

If the Department takes no action, it will not be able to comply with Governor Brown's Executive Orders B-16-12, B-30-15, and B-48-18.

If the Department takes no action, it will also fail to fulfill the statutory mandate of BPC § 12107 to oversee commercial EVSE dispensing electricity as motor vehicle fuel. Specifically, the Department will not be able to enforce requirements in NIST *Handbook 44* Section 3.40. Consequently, the emerging commercial electric vehicle fueling marketplace will be susceptible to inconsistencies and confusion with the metering, dispensing, and method of sale requirements of electricity as motor vehicle fuel. Consumers will be less likely to make value-based comparisons for when they purchase electricity from EVSE. The Department will be unable to take enforcement action in response to consumer complaints about deceptive and misleading business practices.

The Department rejects the alternative of doing nothing because of Governor Brown's executive orders and its statutory mandate to enforce standards for commercial weighing and measuring devices, protect consumers, and maintain fair competition in the marketplace.

Alternative 2 – Adopt alternative or less stringent tolerances, standards, and requirements than those published in NIST *Handbook 44* Section 3.40.

NIST *Handbook 44* provides uniform model national standards for commercial weighing and measuring device tolerances to facilitate the expansion of the commercial EVSE infrastructure. The adoption of alternative or less stringent requirements by California could lead to a patchwork of different standards throughout the U.S. Since California leads the way in number of electric vehicles and charging stations, this could cause a negative impact on the broad-scale ZEV adoption and EVSE infrastructure development on a national level. This could increase EVSE

manufacturing costs, reduce the availability of commercial EVSE produced for California and cause consumer confusion.

The Department rejects Alternative 2 because of the potential negative impacts on the expansion and interoperability of the commercial EVSE infrastructure in California and across the country. Businesses that own or operate commercial EVSE, doing businesses in California, and California consumers making purchases of electricity dispensed as motor vehicle fuel could also be negatively impacted by this alternative.

TECHNICAL, THEORETICAL, AND/OR EMPIRICAL STUDY, REPORTS, OR DOCUMENTS

The Department relied on the following documents to draft the proposed regulatory language of this rulemaking:

1. Office of Governor, https://gov.ca.gov, “Executive Order B-16-2012,” March 2012, https://www.gov.ca.gov/2012/03/23/news17472, accessed on 10/1/18.

2. Office of Governor, https://gov.ca.gov, Executive Order B-30-15, “Governor Brown Establishes Most Ambitious Greenhouse Gas Reduction Target in North America,” April 2015, https://www.gov.ca.gov/2015/04/29/news18938, accessed on 10/1/18.

3. Office of Governor, https://gov.ca.gov, Executive Order B-48-18, “Governor Brown Takes Action to Increase Zero-Emission Vehicles, Fund New Climate Investments,” January 2018, https://www.gov.ca.gov/2018/01/26/governor-brown-takes-action-to-increase-zero-emission-vehicles-fund-new-climate-investments/#, accessed on 10/1/18.

4. Office of Governor, https://gov.ca.gov, “2016 ZEV Action Plan, Governor’s Interagency Working Group on Zero-Emission Vehicles,” October 2016, https://www.gov.ca.gov/wp-content/uploads/2018/01/2016_ZEV_Action_Plan-1.pdf, accessed on 9/27/18.

5. U.S. Department of Energy, https://energy.gov, Office of Energy Efficiency & Renewable Energy, Fuel Cell Technologies Office, “Electric Vehicles: Charging on the Road,” 2017, https://energy.gov/eere/electricvehicles/charging-road, accessed on 10/1/18.

6. U.S. Department of Energy, https://energy.gov, Office of Energy Efficiency & Renewable Energy, Vehicle Technologies Office, “Costs Associated with Non-Residential Electric Vehicle Supply Equipment – Factors to consider in the implementation of electric vehicle charging stations,” November 2015, https://www.afdc.energy.gov/uploads/publication/evse_cost_report_2015.pdf, accessed on 9/27/18.

7. F. Noel Perry, Next 10, “The Road Ahead for Zero-Emission Vehicles in California – Market Trends & Policy Analysis,” Beacon Economics, January 2018, http://next10.org/sites/next10.org/files/ca-zev-brief.pdf, accessed on 9/6/18.

8. U.S. Department of Energy, https://energy.gov, Office of Energy Efficiency & Renewable Energy, Alternative Fuels Data Center, “Alternative Fueling Station Locator,” February 2018, https://www.afdc.energy.gov/locator/stations, accessed on 10/1/18.

9. National Institute of Standards and Technology, OWM, https://www.nist.gov/pml/weights-and-measures, “Report of the 100th National Conference on Weights and Measures,” as Adopted by the 100th National Conference on Weights and Measures, 2015, https://www.nist.gov/sites/default/files/documents/2017/03/13/sp1210-2015-final.pdf, Specifications and Tolerances Committee agenda item 360-5, accessed on 8/16/18.

10. National Institute of Standards and Technology, OWM, https://www.nist.gov/pml/weights-and-measures, NIST “*Handbook 44, Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices,*” 2018 edition, https://www.nist.gov/pml/weights-and-measures/nist-handbook-44-2018-current-edition, accessed on 8/16/18.

11. The National Electrical Manufacturers Association (NEMA), Association of Electrical and Medical Imaging Equipment Manufacturers, https://www.nema.org, “EVSE Powering the Electric Vehicle,” September 2011, https://www.nema.org/Products/Documents/nema+evse+presentation+for+communities.pdf, accessed on 9/25/18.

12. Department of Food and Agriculture, Division of Measurement Standards, https://www.cdfa.ca.gov/dms, “Develop Standards for Electric Vehicle Infrastructure,” Energy Commission Agreement Number: 600-15-010, CDFA/DMS Agreement Number: 15-0274, hardcopy accessed on 9/9/18.

13. Department of Food and Agriculture, Division of Measurement Standards, https://www.cdfa.ca.gov/dms, “DMS – 9: Jurisdiction Over Municipal Devices,” excerpt from Office of the Attorney General, https://oag.ca.gov, “Jurisdiction Over Commercially Used Devices,” Opinion No. SO 77-13 – November 22, 1977, hardcopy accessed on 9/6/18.

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15. Office of Governor, https://gov.ca.gov, “2018 ZEV ACTION PLAN Priorities Update, Governor’s Interagency Working Group on Zero-Emission Vehicles,” September 2018, http://business.ca.gov/Portals/0/ZEV/2018-ZEV-Action-Plan-Priorities-Update.pdf, accessed on 9/27/18.

16. California Air Resources Board, https://arb.ca.gov, “California Greenhouse Gas Emissions for 2000 to 2016, Trends of Emissions and Other Indicators,” 2018 Edition, https://www.arb.ca.gov/cc/inventory/pubs/reports/2000_2016/ghg_inventory_trends_00-16.pdf, accessed on 9/27/18.

17. National Institute of Standards and Technology, OWM, https://www.nist.gov/pml/weights-and-measures, “Electric Vehicle Fueling and Submetering: U.S. National Work Group on Measuring Systems,” August 2012, https://www.nist.gov/pml/weights-and-measures/legal-metrology-devices/electric-vehicle-fueling-and-submetering, accessed on 9/27/18.