

DEPARTMENT OF FOOD AND AGRICULTURE  
PROPOSED CHANGES IN THE REGULATIONS

Title 4. Business Regulations  
Division 9. Division of Measurement Standards  
Chapter 1. Tolerances and Specifications for Commercial Weighing and Measuring  
Devices  
Chapter 6. Automotive Product Specifications  
Chapter 7. Advertising of Gasoline and Other Motor Vehicle Fuels

**INITIAL STATEMENT OF REASONS**

PROBLEM STATEMENT

Division 5 of the Business and Professions Code (BPC) establishes the Department of Food and Agriculture's (Department) authority for oversight and regulation of motor vehicle fuels sold commercially in the state. BPC § 13440 requires the Department to establish specifications for automotive spark-ignition engine fuels. The sales of compressed natural gas (CNG) and liquefied natural gas (LNG) fuels are increasing within California. Currently, there are no quality specifications for CNG and LNG as a motor vehicle fuel to protect retail businesses and consumers from purchasing substandard fuel.

Assembly Bill 1907 (Ridley-Thomas, Statutes of 2014, Chapter 805), specified the method of sale for CNG and LNG in California in units of gasoline gallon equivalent (GGE) and diesel gallon equivalent (DGE), respectively. AB 1907 also defined the GGE to mean 5.66 pounds of CNG, and DGE to mean 6.06 pounds of LNG.

BPC § 12107 requires the Secretary to establish tolerances and specifications and other technical requirements for commercial weighing and measuring devices. In doing so, the Secretary shall adopt by reference, the latest standards as recommended 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,*" except as specifically modified, amended, or rejected by regulation adopted by the Secretary. The current version of NIST Handbook 44 is not consistent with the conversion values established in AB 1907. Rulemaking is necessary so that CNG and LNG dispenser labeling and testing conforms with the requirements codified by AB 1907.

## Background

### 1. General

The overall mission of weights and measures is to preserve and maintain the standards of measurements essential in providing a basis of value comparison for the consumer and fair competition for industry.

The Department's Division of Measurement Standards (Division) is responsible for applying uniform accuracy standards and method of sale requirements to commercial transactions, which provides citizens a basis of value comparison and fair competition in the marketplace. This responsibility includes the enforcement of fuel quality specifications, fuel dispenser standards, and fuel advertising, labeling and method of sale requirements for motor vehicle fuels sold commercially. Adherences to these standards provide both buyer and seller an assurance of equity and transparency, which is the foundation of an efficient and free market economy.

The Department has the authority to regulate weighing and measuring devices used in commerce (BPC § 12107). This is no small task since many commercial transactions are based upon the weight or volume of products bought and sold. Today, there are more than 1.4 million registered commercial weighing and measuring devices in California. The Department works closely with county sealers of weights and measures who, under the supervision and direction of the Secretary, carry out the majority of routine field testing of commercial devices. The purpose of routine field testing is to minimize the measurement error in commercial transactions.

### 2. Legislation

Assembly Bill 1907 (Ridley-Thomas, Statutes of 2014, Chapter 805) amended BPC §§ 13404 and 13470 and established the method of sale for CNG and LNG, at retail by persons not considered a public utility. The amended statutes also prohibit businesses from selling CNG or LNG at retail to the public unless there is displayed and labeled on the dispenser in a conspicuous place "Gasoline gallon equivalent" (GGE) or "Diesel gallon equivalent" (DGE), respectively. Revenue and Taxation Code (RTC) § 8651.6 was amended to add the conversion rates of 5.66 pounds of CNG per one GGE, and 6.06 pounds of LNG per one DGE.

Assembly Bill 808 (Ridley-Thomas, Statutes of 2015, Chapter 591) amended BPC § 13446 and authorized the Department to establish interim specifications via rulemaking for any alternative fuel until a standards development organization accredited by the American National Standards Institute (ANSI) formally adopts a standard for the fuel for use in motor vehicles.

## Description of the Public Problem, Administrative Requirements, or Other Conditions or Circumstances the Regulations are Intended to Address

The Department is authorized by BPC § 12027 to make such regulations as are necessary for the purpose of carrying out the provisions of Division 5.

BPC § 12107 authorizes the Department to establish tolerances and specifications for all commercial weighing and measuring devices, including motor vehicle fuel dispensing systems. BPC § 12107 states that the Secretary shall adopt, by reference, the latest standards as recommended by the NCWM and published in NIST Handbook 44 except as specifically modified, amended, or rejected by regulation adopted by the Secretary. The passage of AB 1907 requires regulatory actions to amend the California Code of Regulations (CCR), Title 4, Division 9 §§ 4000. Application., 4001. Exceptions. and 4002. Additional Requirements to comply with BPC § 12107.

Existing CCR § 4000. adopts by reference the current edition of NIST Handbook 44. However, NIST Handbook 44 does not include natural gas dispenser labeling requirements, does not recognize DGE units of measure and conversion rate for the sale of LNG, and has a conversion rate that conflicts with the conversion rate in RTC § 8651.6. NIST Handbook 44 does recognize the GGE unit for the sale of CNG but this is inconsistent with the GGE unit codified by AB 1907. CCR § 4001. Exceptions. identifies sections of NIST Handbook 44 that are not adopted and § 4002. Additional Requirements. includes NIST Handbook 44 requirements that have been modified or amended.

The availability of natural gas refueling infrastructure has shown relatively steady growth in California. In 2009, there were 191 CNG stations and 25 LNG stations. By 2014, the number of CNG and LNG stations had increased to 305 and 47, respectively. Public access fueling corridors now exist across most of the state for CNG and in the central and southern parts of California for LNG. At this time, there are no labeling and advertising requirements for CNG or LNG to provide transparency and consistency to the increasing number of motorists purchasing natural gas as a motor vehicle fuel.

The Department is authorized to take regulatory action to implement the provisions of BPC § 13446 to establish interim fuel quality specifications in the absence of natural gas fuel quality standards established by an ANSI-accredited standards development organization.

## BENEFITS OF THE REGULATION

The immediate beneficiaries of the proposed regulation will be owners and drivers of CNG and LNG vehicles. This regulatory action is intended to interpret and make specific the recent statutory changes incorporated under AB 1907 and AB 808.

The proposed regulation is intended to provide consumers with easily understandable unit pricing of CNG and LNG motor vehicle fuels, allowing direct comparison with the prices per gallon of gasoline or diesel fuel, with which motorists are most familiar. The regulation is also intended to clarify the Department's authority to sample and test natural gas engine fuels to ensure the quality of fuel necessary to safely and efficiently operate natural gas motor vehicles. California motorists will be assured that fuel used in CNG and LNG powered motor vehicles will not impair engine performance and durability. Fuel meeting minimum quality and performance standards helps to prevent engine damage which may result in costly repairs.

Californians will benefit from the increased use of CNG and LNG motor vehicles. Natural gas fuels are a low-carbon alternative fuel with significantly lower toxic and GHG emissions than traditional petroleum fuels. Any expansion of CNG and LNG fuels throughout the state will promote California's goals of improved air quality, public health, and energy independence. Natural gas can be produced from agricultural waste and other biomass and so it may be a carbon-neutral transportation fuel which helps meet California's biofuel production mandate and low carbon fuel standard.

#### ECONOMIC IMPACT ASSESSMENT/ANALYSIS

Currently, natural gas is sold at retail as a motor vehicle fuel in California on a limited but increasing basis and does not significantly impact the volume of conventional liquid petroleum fuels sold. According to the California Energy Commission's 2015 Integrated Energy Policy Report, natural gas demand in the transportation sector is expected to grow by more than 20 percent in the next five years. However, CNG and LNG sales are not expected to have any negative impact on the businesses selling gasoline and diesel fuels. As demand and production continue to increase, existing fuel retailers will have the opportunity to expand into the natural gas market.

All natural gas stations will incur minor additional labeling costs, to comply with the proposed regulations which would require posting three new labels per customer facing side of a dispenser: the methane number, minimum percent methane, and conversion rate for the number of pounds per GGE or DGE. Nearly all fueling stations the Department is aware of have less than eight dispensers and many have only two dispensers.

The Department believes that there are only five (less than two percent) of the 352 natural gas stations in California already dispensing fuel that may not meet the proposed fuel quality specification. These stations are located in one region in the Southern California Gas Company (SoCalGas) service district with a pipeline carrying gas from old oil wells. Two are owned and operated by SoCalGas in Santa Barbara and Oxnard, one by Clean Energy in San Luis Obispo, one by Waste Management in Santa Maria, and one by Revolution CNG in Paso Robles.

CNG fuel produced from this gas may not meet the proposed specification because the ratio of methane to heavier hydrocarbons is reported to be below the proposed

minimum. Pipeline gas is routinely dried and filtered before it is compressed for motor vehicle fuel. However, pipeline gas in this limited service district may need to be conditioned further by the addition of methane or some other refinement method to produce compliant fuel that will meet air quality and engine performance requirements. This additional conditioning to adjust methane number may require a one-time capital investment for conditioning equipment which represents an approximately 10 percent increase (\$100K) in the construction capital necessary to build a CNG station. Alternatively, blending equipment may be installed at slightly lower capital costs but blending technology requires ongoing operating costs associated with purchasing blending gas. During pre-rulemaking discussions with stakeholders, a representative of a natural gas provider stated that such conditioning was done in the past to address problems with natural gas containing higher levels of heavier hydrocarbons (“hot gas”) that does not meet the minimum engine fuel quality specifications recommended by natural gas vehicle manufacturers and the proposed regulation.

Due to nondisclosure of confidential business information regarding station dispensed volume and fiscal data, the volume of retail natural gas sales in the identified SoCalGas service district is unknown and the net economic costs that would likely be incurred by vehicle owners and operators currently purchasing CNG in this region cannot be reasonably determined.

The Department expects that costs of compliance with the proposed regulation for the five stations in this service district would be passed on to customers through higher fuel costs, mitigating the adverse economic impact on fuel sellers. Higher fuel prices would impact an unknown number of businesses that use natural gas-fueled vehicles. Since sales of natural gas-fueled cars were discontinued in California several years ago, the Department believes there would be a very limited impact on private individuals. Small increases in fuel costs would be largely offset by the ancillary benefits of improved vehicle performance and improved air quality.

According to recent California Air Resources Board tests and a natural gas engine manufacturer, low and near-zero emission natural gas engines have been developed that require fuel with a minimum methane number of 75. The proposed quality specification would offer vehicle manufacturers, retailers, and purchasers assurance that the required fuel would be available for these engines. This would give consumers the option of buying low emission, high performance natural gas vehicles.

#### ESTIMATED COST OR SAVINGS TO THE PUBLIC AGENCIES OR AFFECTED INDIVIDUALS OR ENTITIES

##### 1. Public Agencies

There is no immediate cost or savings to the Department and county weights and measures jurisdictions associated with the adoption of these regulations. County weights and measures officials test and inspect the majority of commercial weighing

and measuring devices in California for accuracy and compliance with established advertising labeling and method of sale requirements. Counties recover their costs from annual device registration fees, and the Department's oversight activity over the counties also comes from the fees authorized in BPC Chapter 2, Article 2.1. Industry fees collected pursuant to BPC Chapter 14, § 13431 provide funding to the Department for the enforcement of fuel quality specifications, advertising, labeling and method of sale requirements.

## 2. Registered Service Agencies

Registered Service Agencies (RSAs) that currently install, repair, and provide maintenance service for natural gas dispensers would not incur additional fees or expenses. RSAs that decide to expand their services to include natural gas dispensers may need to purchase test equipment. The Department estimates that new equipment may cost up to \$25,000. The equipment cost would likely be offset by the increased business opportunities.

## 3. Natural Gas Retailers

The composition of natural gas throughout the state's pipeline system may vary depending on the source of the gas. The Department's proposed regulation contains performance-based fuel quality specifications for commercial sale of natural gas as a motor vehicle fuel. These include specifications for minimum antiknock properties, energy content, and allowable contaminant levels. The methane number is a measure of the fuel's antiknock property, similar to the minimum octane rating for gasoline. The Wobbe Index is used to determine the relative energy density which impacts the power output of the engine and effective driving range. Maximum allowable contaminant levels protect engine performance, reliability and durability.

New and existing businesses offering CNG or LNG for retail sale or distributing natural gas fuels with supplied natural gas not meeting the proposed specifications may incur a one-time capital cost for conditioning equipment to adjust the composition of their product to meet the proposed fuel quality specification. Economic estimates for conditioning equipment have been received by the Department from two established companies. EML Manufacturing, LLC estimated the cost of the equipment alone would be in the range \$40 – \$70,000 depending on the flow rate requirements. There would be additional site preparation, permitting and installation costs estimated between \$25 and \$40,000. Kaeid Lokhandwala of Membrane Technology and Research, Inc., estimated a minimum installed cost of \$100,000 for the company's membrane separation technology. This represents an approximate 10 percent capital increase to the construction costs of a new station requiring this equipment. Additional options for stations supplied with natural gas below the proposed specifications are discussed in the economic impact assessment section of this document.

The Department concludes that the proposed regulation: (1) may create new jobs within California; (2) may create new businesses within California; (3) may affect the

expansion of businesses currently doing business within California; and (4) is unlikely to eliminate any jobs or existing businesses. The Department estimates that between one and 10 new businesses in the RSA and engine mechanics sectors could be created as a result of increasing use of CNG and LNG fuels. These new businesses could add between 10 and 100 new jobs.

## PURPOSE

The purpose of the proposed regulation is to: 1) inform and protect consumers by ensuring that CNG and LNG motor vehicle fuels offered for sale in the state meet minimum quality and performance standards; 2) clarify and apply the motor vehicle fuel labeling and advertising requirements established by AB 1907 for CNG and LNG; and 3) provide a transparent marketplace and level playing field for natural gas retailers.

Natural gas fuels not meeting minimum quality standards adversely affect the performance, efficiency and durability of vehicles. Poor quality natural gas may also cause increased emissions of toxic chemicals and short-lived climate pollutants.

## SPECIFIC PURPOSE AND RATIONALE FOR EACH REGULATORY PROVISION

### Amend CCR Chapter 1, Article 1, § 4001. Exceptions.

BPC Chapter 2, § 12107 authorizes the Department to modify, amend, or reject by regulation the requirements in NIST Handbook 44. The regulation shall reject sections of NIST Handbook 44 listed below in order to comply with the provisions of AB 1907.

The Department proposes to add the following rejected sections from NIST Handbook 44 to the list found in § 4001 Exceptions:

S.1.2. Compressed Natural Gas Dispensers. The Department proposes that this requirement be removed. The Mass Flow Meters code in NIST Handbook 44 does not include LNG as a natural gas motor vehicle fuel that is currently recognized in BPC § 13404(c).

S.1.3.1.1. Compressed Natural Gas Used as an Engine Fuel. The Department proposes that this requirement be removed. NIST Handbook 44 recognizes *both* U.S. customary units (gasoline gallon equivalent units) and metric units (gasoline liter equivalent units), but BPC § 13404(b) mandates using only U.S. customary units in California.

S.5.2. Marking of Gasoline Volume Equivalent Conversion Factors for Compressed Natural Gas. The Department proposes that this requirement be removed. NIST Handbook 44 lists 4.660 lb as the conversion factor for natural gas to one GGE, but the language in BPC § 13404(b) mandates 4.66 lb as the conversion factor for one GGE in California.

UR.3.8. Return of Product to Storage, Retail Compressed Natural Gas Dispensers. The Department proposes that this requirement be removed. NIST Handbook 44 only addresses CNG (and not LNG) in the return of product to storage.

Appendix D. Definitions. *gasoline gallon equivalent (GGE)*. The Department proposes that this definition be removed. NIST Handbook 44 lists 5.660 lb per GGE, whereas AB 1907 mandates 5.66 lb per GGE.

Appendix D. Definitions. *gasoline liter equivalent (GLE)*. The Department proposes that this definition be removed. NIST Handbook 44 recognizes both U.S. Customary and SI (metric) units but AB 1907 does not authorize the sale of compressed natural gas in SI units (liters).

Amend CCR, Chapter 1, Article 1, National Uniformity, Exceptions and Additions. § 4002. Additional Requirements

BPC § 12107 of the Business and Professions Code provides for the Department to modify, amend, or reject by regulation the requirements in NIST Handbook 44. The regulation shall add or replace the sections listed below in order for the Department to comply with the provisions of BPC § 13404.

The Department proposes to amend Chapter 1, Article 1, § 4002 by adding the following subsection 4002.10. Mass Flow Meters (3.37) to the list found in § 4002 to comply with BPC § 13404:

S.1.2. Compressed Natural Gas Dispensers. The Department proposes that this requirement be added to replace NIST Handbook 44 Paragraph S.1.2., to include CNG and LNG price computing and mass display requirements.

S.1.3. Liquefied Natural Gas Used as an Engine Fuel. The Department proposes to add Paragraph S.1.3.1.2. to include the diesel gallon equivalent units of measure that is not part of NIST Handbook 44.

S.5.2. Marking of Gasoline Volume Equivalent Conversion Factors for Compressed Natural Gas. The Department proposes that this Paragraph be added to replace NIST Handbook 44 Paragraph S.1.2. to include CNG gasoline gallon equivalent conversion rate.

S.5.3. Marking of Diesel Volume Equivalent Conversion Factors for Liquefied Natural Gas. The Department proposes that Paragraph S.5.3. be added to include the LNG diesel gallon equivalent conversion factor, which is not currently part of NIST Handbook 44.

UR.3.1.1. Marking of Equivalent Conversion Factors for Compressed Natural Gas. The Department proposes that Paragraph UR.3.1.1. be added to include that the

retailer is responsible to ensure that the necessary required CNG conversion factor statement is marked on the dispenser.

UR.3.1.2. Marking of Equivalent Conversion Factors for Liquefied Natural Gas. The Department proposes that Paragraph UR.3.1.2. be added to include that the retailer is responsible to ensure that the required LNG conversion factor statement is marked on the dispenser.

UR.3.8. Return of Product to Storage, Retail Compressed Natural Gas Dispensers. The Department proposes to adopt a new paragraph that is not part of NIST Handbook 44, since LNG is not referenced in NIST Handbook 44.

Appendix D. Definitions. *diesel gallon equivalent (DGE)*. The Department proposes to adopt a new section that is not part of NIST Handbook 44. The Department proposes to recognize the diesel gallon unit of measure and conversion rate mandated by AB 1907.

Appendix D. Definitions. *gasoline gallon equivalent (GGE)*. The Department proposes that this definition be added to replace the conflicting definition NIST Handbook 44. This addition is necessary because AB 1907 mandates 5.66 lb per one (1) GGE, instead of the 5.660 lb per one (1) GGE currently specified in NIST Handbook 44.

#### Chapter 6. Automotive Products Specifications, Article 10. Specifications for Natural Gas Used as a Motor Vehicle Fuel.

BPC § 13440 requires the Department to establish specifications for automotive spark-ignition engine fuels. The Department shall adopt by reference the latest standards established by a recognized consensus organization or standards writing organization such as ASTM International or SAE International, for automotive spark-ignition engine fuel, except that no specification shall be less stringent than required by any California state law. BPC § 13446 provides authority for the Department to establish interim specifications for alternative fuels until a standards development organization accredited by the American National Standards Institute (ANSI) such as ASTM or SAE formally adopts a standard for the fuel for use in motor vehicles.

The Department proposes to add Article 10 and the following new sections to comply with BPC § 13404:

New § 4192. Definitions Used in This Article. The Department proposes to define the terminology used in Chapter 6 by adding eight definitions related to natural gas motor vehicle fuels that are necessary to clarify the specific meaning of terms used in Article 10.

New § 4193. Specifications for Natural Gas Used in Internal Combustion Engines. To comply with BPC §§ 13440 and 13446, the Department must establish standards for internal combustion engine fuels. When a recognized consensus organization such

as ASTM International or SAE International has established specifications for natural gas motor vehicle fuel, the Department is required to adopt those specifications. Because no recognized consensus organization has developed specifications for natural gas motor vehicle fuel, the Department proposes to adopt a new section that establishes interim fuel quality specifications for natural gas when sold at retail as a motor vehicle fuel.

#### Chapter 7. Advertising of Gasoline and Other Motor Vehicle Fuels.

The secretary shall establish the method of sale of motor vehicle fuels and lubricants sold at retail to the public. In doing so, the secretary shall adopt, by reference, the latest method of sale for motor vehicle fuels and lubricants adopted by the National Conference on Weights and Measures and published in the National Institute of Standards and Technology Handbook 130 “Uniform Laws and Regulations in the Areas of Legal Metrology and Engine Fuel Quality,” except as specifically provided by the Legislature or modified, amended, or rejected by regulations adopted by the secretary.

The Department proposes to amend Chapter 7 as follows:

§ 4200. Advertising Medium. The Department proposes to amend this section to correct an incorrect reference to the BPC.

§ 4201. Price Sign Display on Dispensing Apparatus. The Department proposes to amend this section, which is necessary to clarify that GGE and DGE units of measure are to be included for the sale of natural gas to the public.

New § 4206. Labeling and Price Sign Advertising Requirements for Compressed Natural Gas and Liquefied Natural Gas. It is necessary for the Department to be clear and consistent with AB 1907 that amends the units of measurement for the sale and dispenser labeling of natural gas as a motor vehicle fuel.

#### NECESSITY

BPC § 12107 of the BPC requires the Department to adopt by reference, the latest standards in NIST Handbook 44 except as specifically modified, amended, or rejected by regulation. To be consistent with amended BPC § 13404, it is necessary for the Department to amend CCR § 4001 in NIST Handbook 44, 3.37. Mass Flow Meters, to add the prescribed legal units for sale.

BPC § 13440 requires the Department to establish specifications for automotive spark-ignition engine fuels. The Department shall adopt by reference the latest standards established by a recognized consensus organization or standards writing organization such as ASTM International or SAE International for automotive spark-ignition engine fuel, except that no specification shall be less stringent than required by any California state law.

There are currently no ASTM or SAE specifications for natural gas motor vehicle fuels. However, BPC § 13446 provides authority for the Department to establish interim specifications for alternative fuel such as natural gas until a standards development organization accredited by ANSI, such as ASTM or SAE, formally adopts a standard for the fuel for use in motor vehicles.

BPC § 13404.5 requires the Department to adopt, by reference, the latest method of sale for motor vehicle fuels and lubricants adopted by NCWM and published in NIST Handbook 130 *Uniform Laws and Regulations in the Areas of Legal Metrology and Engine Fuel Quality* (Handbook 130), except as specifically provided by the Legislature. Recently, AB 1907 established GGE and DGE as the method of sale in California for CNG and LNG, respectively. NIST Handbook 130 allows other methods of sale for both CNG and LNG. Regulatory action is needed to implement the mandated methods of sale for natural gas motor vehicle fuels specified by AB 1907.

CCR, Title 4, Division 9, Chapter 7 establishes requirements for the dispenser labeling and advertising of retail motor vehicle fuels. Regulatory action is needed to add a section applicable to natural gas fuels to Chapter 7

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

The Department relied on the following documents in drafting the regulatory language of this proposal:

- AB 1907 (Ridley-Thomas, Statutes of 2014, Chapter 805) (ask Pam)
- AB 808 (Ridley-Thomas, Statutes of 2015, Chapter 591) (ask Pam)
- Governor's Executive Order S-3-05 [www.gov.ca.gov/news.php?id=1861](http://www.gov.ca.gov/news.php?id=1861)
- Governor's Executive Order S-06-06 [www.gov.ca.gov/news.php?id=183](http://www.gov.ca.gov/news.php?id=183)
- Governor's Executive Order S-1-07 [www.gov.ca.gov/news.php?id=5172](http://www.gov.ca.gov/news.php?id=5172)
- Bioenergy Association of California, *Decarbonizing the Gas Sector: Why California needs a renewable Gas Standard*, 2014.  
[http://www.bioenergyca.org/wp-content/uploads/2015/03/BAC\\_RenewableGasStandard\\_2015.pdf](http://www.bioenergyca.org/wp-content/uploads/2015/03/BAC_RenewableGasStandard_2015.pdf) (ask Pam)
- U.S. Department of Energy Alternative Fuels Data Center "Regional Fuel Prices" chart and data [www.afdc.energy.gov/states/CA](http://www.afdc.energy.gov/states/CA) (ask Pam)
- CEC Energy Almanac: Retail Fuel Report and Data for California [www.energyalmanac.ca.gov/gasoline/piira\\_retail\\_survey.html](http://www.energyalmanac.ca.gov/gasoline/piira_retail_survey.html)
- CalEPA OEHHA Fact Sheet Health Effects of Diesel Exhaust [www.oehha.ca.gov/public\\_info/facts/dieselfacts.html](http://www.oehha.ca.gov/public_info/facts/dieselfacts.html)
- CEC and CARB joint report *Reducing California's Petroleum Dependence*, #P600-03-005F, August 2003. (ask Pam)
- Institute of Transportation Studies UC Irvine Natural Gas Vehicle Incentive Project [www.ngvip.its.uci.edu/](http://www.ngvip.its.uci.edu/)

- California Natural Gas Vehicle Coalition 2013 Natural Gas Fueling Station Directory for California, Arizona and Nevada [www.cngvc.org/news-and-resources/fueling-stations.php](http://www.cngvc.org/news-and-resources/fueling-stations.php)
- CARB Memorandum of Exemption for Southern California Gas Company, October 2010.
- CARB Technology Assessment: Low Emission Natural Gas and Other Alternative Fuel Heavy-Duty Engines, 2015  
[www.arb.ca.gov/msprog/tech/techreport/ng\\_tech\\_report.pdf](http://www.arb.ca.gov/msprog/tech/techreport/ng_tech_report.pdf)
- CEC 2009 Natural Gas Vehicle Research Roadmap, August 2009  
[www.energy.ca.gov/2008publications/CEC-500-2008-044/CEC-500-2008-044-F.PDF](http://www.energy.ca.gov/2008publications/CEC-500-2008-044/CEC-500-2008-044-F.PDF)
- 2015 Natural Gas Vehicle Research Roadmap (Draft), July 2015  
[www.afdc.energy.gov/pdfs/draft-natural-gas-vehicle-research-roadmap.pdf](http://www.afdc.energy.gov/pdfs/draft-natural-gas-vehicle-research-roadmap.pdf)
- NIST Handbook 44, Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices  
<http://www.nist.gov/pml/wmd/pubs/hb44.cfm>
- NIST Handbook 130, Uniform Laws and Regulations in the Areas of Legal Metrology and Engine Fuel Quality  
<http://www.nist.gov/pml/wmd/pubs/hb130.cfm>
- CARB Low Carbon Fuel Standard, 2015  
[www.arb.ca.gov/regact/2015/lcfs2015/lcfsfinalregorder.pdf](http://www.arb.ca.gov/regact/2015/lcfs2015/lcfsfinalregorder.pdf)
- CEC 2015 Integrated Energy Policy Report  
[www.energy.ca.gov/2015\\_energy/policy/](http://www.energy.ca.gov/2015_energy/policy/)
- NGV America CNG Station Construction and Economics, 2014  
<http://www.ngvamerica.org/stations/cng-station-construction-and-economics/>
- SoCalGas Gas Transmission and High Pressure Distribution Pipeline Interactive Map – Santa Barbara, 2016  
[www.socalgas.com/safety/pipeline-maps/santa-barbara.shtml](http://www.socalgas.com/safety/pipeline-maps/santa-barbara.shtml)
- SoCalGas Gas Transmission and High Pressure Distribution Pipeline Interactive Map – Ventura, 2016  
[www.socalgas.com/safety/pipeline-maps/ventura.shtml](http://www.socalgas.com/safety/pipeline-maps/ventura.shtml)
- SoCalGas Gas Transmission and High Pressure Distribution Pipeline Interactive Map – San Luis Obispo, 2016  
[www.socalgas.com/safety/pipeline-maps/san-luis-obispo.shtml](http://www.socalgas.com/safety/pipeline-maps/san-luis-obispo.shtml)
- SoCalGas Map Showing Paso Robles Area of SoCalGas Company in San Luis Obispo Service Area, 2006  
[www.socalgas.com/regulatory/tariffs/tm2/pdf/SLO\\_Map.pdf](http://www.socalgas.com/regulatory/tariffs/tm2/pdf/SLO_Map.pdf)
- Westport Cummins ISL G Near Zero, 2016  
[www.cumminswestport.com/models/isl-g-near-zero](http://www.cumminswestport.com/models/isl-g-near-zero)

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

The Department has initially determined that these proposed changes would not have a significant adverse economic impact directly affecting businesses including the

ability of California businesses to compete with businesses in other states because of the small number of retailers that sell natural gas to the public.

The Department is aware of only five retail natural gas fueling stations located in limited service district that may be impacted by the proposed regulation. Two are owned and operated by SoCalGas in Santa Barbara and Oxnard, one by Clean Energy in San Luis Obispo, one by Waste Management in Santa Maria, and one by Revolution CNG in Paso Robles. The Department considered the following options for natural gas stations in this localized service district:

1. Install conditioning skids at the spur for each station along the pipeline.

It is technically feasible to condition nonconforming hot pipeline gas to meet the proposed quality specification. This would require a significant one-time capital investment for each station and minor ongoing expenses for operation and maintenance. The operation would need to be located at the main pipeline at the spur for the station so that components removed from the pipeline gas could be reinjected back into the main stream. This would require approval of the pipeline operator.

Economic estimates for conditioning equipment have been received by the Department from two established companies. Edmond Loh of EML Manufacturing, LLC, estimated the cost of the equipment alone would be in the range \$40 – \$70,000 depending on the flow rate requirements. There would be additional site preparation, permitting and installation costs estimated between \$25 and \$40,000. Kaaeid Lokhandwala, of Membrane Technology and Research, Inc., estimated a minimum installed cost of \$100,000 for the company's membrane separation technology. The equipment is available for lease and a trial demonstration of the technology could be negotiated. Again, the approval of the pipeline operator would be required.

The disadvantage of this solution is the initial capital outlay requirement, along with possible logistical challenges of site access and pipeline operator approval.

2. Blend high concentration methane gas or LNG at the pipeline spur or at the station to increase methane number.

If there are no quality issues with the pipeline gas beyond the heavy hydrocarbons, it might be possible to enrich the pipeline gas to meet proposed quality specifications by the addition of high-purity methane. SoCalGas has indicated that this technique has been used in the past and could be a feasible alternative approach. The cost of blending equipment is estimated to be significantly lower than the more complex conditioning equipment stated above. Blending could be done at the retail station if the site could accommodate delivery and storage of the methane or LNG. This approach requires a one-time investment at each station for the blending equipment and ongoing costs for the purchase, delivery and storage of the blending gas.

The disadvantage of this solution is the initial capital outlay requirement, along with possible logistical challenges of site access, permitting and pipeline operator approval. The ongoing operating costs for purchasing blending gas would likely be passed on to consumers of this fuel.

### 3. Convert the affected retail stations to contract fleet sales only.

Converting to contract fleet sales only would remove the affected stations from the scope of the proposed regulation. The number of CNG cars and pickups still in operation in the impacted areas is unknown, but is likely quite small since these have not been sold in California for many years. There may also be business owners in the affected areas who use a one or two light and medium duty CNG vans or small trucks for their business operations. These would not be fleet operators so the typical contract sale model would not apply. However, the impact on these individual owners who could not buy their fuel at retail in the affected areas could be significant. In some cases, they could install home CNG refueling units at a cost estimate of approximately \$5000. Alternatively a CNG co-op could be established for these drivers who could then participate in a contract sale arrangement.

The disadvantage to this solution is that retail sales at these locations could not grow with the projected increased utilization of CNG powered vehicles.

### 4. Legal option to sell CNG not meeting minimum fuel quality specifications may be pursued through a variance program available with the Department.

Natural gas fueling stations could apply for the Department's Developmental Engine Fuel Variance Program. As authorized by the BPC and the CCR, the Department may grant a variance from the specifications of BPC Chapter 14. This program limits sales to local fleet-type groups and equipment users. The variance authorization is limited to two-years with an automatic renewal for an additional two years unless an action to revoke is initiated by the Department.

The disadvantage to this solution is that retail sales at these locations could not grow with the projected increased utilization of CNG powered vehicles. The variance would expire after a maximum of four years, after which, variance holders would have to conform to the same specifications and requirements as current retail stations.

The requirement that natural gas retailers correctly label dispensers will impact some retailers who are small businesses. These entities will incur minor costs to properly label dispensers. Some retailers, such as the five retail CNG stations identified, may incur one-time capital costs for equipment to condition the composition of their dispensed fuel to meet the proposed fuel quality specifications.

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

There are minimal immediate costs to the Department associated with the adoption of the proposed fuel quality specifications. The Division would be required to obtain specialized sampling equipment to collect natural gas fuel samples at retail dispensers. Two sampling apparatus would be required, one for the Sacramento laboratory and one for the Anaheim laboratory. The Department estimates the cost of this equipment to be roughly \$20,000 each, for a total cost of \$40,000

The Department can accommodate the anticipated costs of initial sampling and testing with existing resources. As the number of retail CNG and LNG locations is expected to grow slowly over the near term, there will not be a significant increase in the cost to the Department for inspection or enforcement activities.

The Department has initially determined that the proposed regulations:

- Will not impose a mandate on local agencies or school districts.
- Will not result in any cost or savings to any other state agency.
- Will not result in any reimbursable costs or savings under Part 7 (commencing with Section 17500) of Division 4 of the Government Code to local agencies or school districts.
- Will not result in any nondiscretionary costs or savings to local agencies or school districts.
- Will not result in any cost or savings in federal funding to the state.

The Department has made an initial determination that the action will not have a significant statewide adverse economic impact on housing costs or on California businesses, including the ability of California businesses to compete with businesses in other states.

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

### Alternatives Considered for Proposed Changes to Title 4, Division 9, Chapter 1, Article 1, National Uniformity, Exceptions And Additions

The Department has determined that there is not a reasonable alternative to the proposed changes to CCR Title 4, Division 9, Article 1, Chapter 1, Part 3, Section 3.37. Mass Flow Meters and Article 1, Chapter 1, Part 7, NIST Handbook 44, Appendix D Definitions. These changes are necessary to bring existing regulation into compliance with the statutory changes to BPC § 13404 made by AB 1907.

Alternatives Considered for Proposed Addition of CCR Title 4, Division 9, Chapter 6, Article 10. Specifications For Natural Gas Used in Internal Combustion Engines.

Based on information gathered through its pre-rulemaking workshop and three follow-up webinars, the Department believes that the proposed quality specifications in subsections (a), (b), (c), and (d) of Article 10 are consistent with nearly all natural gas fuels currently sold in California. Therefore, the Department believes that these requirements are the most cost-effective and least burdensome solution available that will protect consumers from substandard fuel.

Alternative 1 – Do nothing:

The Department has determined that doing nothing is not a reasonable alternative to adopting fuel quality specifications for natural gas motor vehicle fuels. BPC § 13440 requires the Department to adopt specifications for spark-ignition engine fuels. When no standards have been developed by a recognized consensus organization such as ASTM International or SAE International, the Department must adopt its own interim standards. To date, no such consensus organization standards have been published. To fulfill the requirements of BPC § 13440, the Department must therefore adopt interim quality specifications to oversee and regulate the retail sale of CNG and LNG motor vehicle fuels for internal combustion engines in California.

Alternative 2 – Adopt natural gas fuel quality specifications that include a permanent minimum methane number of 60:

The Department considered and rejected setting a permanent methane number of 60 for natural gas fuels. This value corresponds to the lowest quality natural gas fuel available today in California that is offered for retail sale at the five stations in the SoCalGas service district. Permanently adopting this minimum would not lead to any improvements in the quality of natural gas motor vehicle fuels in California. This alternative would disadvantage the great majority of CNG and LNG retailers, who already offer higher quality fuels.

Without a reliable supply of high-quality natural gas fuels throughout the state, heavy duty vehicles on California highways will continue to burn petroleum diesel fuel. Engine manufacturers have stated that new engine designs for heavy duty Class 7 and 8 vehicles cannot meet the power needs and emission requirements with fuel having a methane number of less than 75. Establishing a minimum methane number of 60 would provide no incentive for retailers of lower quality fuel to offer the higher quality fuels required by new engine designs. Continued use of diesel powered vehicles will not reduce levels of greenhouse gas, smog precursors, and toxic emissions, thereby impeding progress towards California's clean air and climate change goals.

The Department believes that the proposed minimum methane number of 75 provides the best balance between the benefits to Californians and the costs to affected businesses.

Alternative 3 – Adopt natural gas fuel quality specifications that phase in minimum methane number requirements over several years.

The Department considered and rejected phasing in a higher minimum methane number over time. This alternative would disadvantage the great majority of CNG and LNG retailers, who already offer higher quality fuels. Also, natural gas fuel with a lower methane number may not meet minimum specifications for engine warranty requirements.

The methane number of natural gas motor vehicle fuel is determined by the composition of the pipeline gas used. When the available pipeline gas results in fuel of sub-standard quality, its composition must be modified through conditioning, by removal of heavy hydrocarbon gases, addition of methane, or both. Conditioning of pipeline gas can be designed to meet a minimum methane number of 75. The Department believes when conditioning of pipeline gas is necessary, there is no benefit from accomplishing this in phases.

Alternatives Considered for Proposed Amendment to CCR Title 4, Division 9, Chapter 7, Section 4200, Advertising Medium.

The Department has determined that there is no reasonable alternative to making correct the authority and references for this section.

Alternatives Considered for Proposed Amendment to CCR Title 4, Division 9, Chapter 7, Section 4201, Price Sign Display on Dispensing Apparatus.

The Department has determined that there is not a reasonable alternative to the proposed amended language for § 4201. This change is required for consistency with BPC § 13470 as amended by AB 1907 and to prevent misleading labeling of natural gas fuel dispensers.

Alternatives Considered for Proposed Addition of CCR Title 4, Division 9, Chapter 7, § 4206 Labeling and Price Sign Advertising Requirements for Compressed Natural Gas and Liquefied Natural Gas.

Alternative 1 – Do Nothing.

If the Department chooses to do nothing, there would be no specific or enforceable requirements for the dispenser labeling and price sign advertising of natural gas motor vehicle fuels. The Department believes that regulations for the retail sale of natural gas fuels should be consistent with those that apply to other motor vehicle fuels sold in California. These regulations ensure that retailers provide accurate information to

consumers, give buyers a basis for making value comparisons for their purchases, ensure minimum quality and performance specifications, and provide a basis for fair competition among suppliers and retailers. In addition, the proposed regulatory changes are necessary for consistency with BPC § 13470 which requires CNG and LNG dispensers be labeled with their respective methods of sale, “gasoline gallon equivalent” and “diesel gallon equivalent.”

Alternative 2 – Add § 4206, Labeling and Price Sign Advertising Requirements for Compressed Natural Gas and Liquefied Natural Gas without the requirements as stated in § 4206 subsections (c) and (d) for labeling dispensers with the minimum methane number and minimum percent methane of the fuel offered for sale.

The Department has determined that the minimum methane number and minimum percent methane are key qualities of natural gas fuels, comparable to the specification of an octane rating for gasoline fuel. The posting of these values on fuel dispensers would provide transparency in the sale of natural gas fuels and give buyers a basis for making value comparisons for their purchases without imposing an undue burden on retailers.

Alternatives Considered for Proposed Addition of CCR Title 4, Division 9, Chapter 7, § 4207, Additional Posting and Labeling Requirements for Compressed Natural Gas and Liquefied Natural Gas.

The Department has determined that there is not a reasonable alternative to the proposed additional language for § 4207. All fuels must comply with the Federal Trade Commission (FTC) labeling requirements. FTC regulations 16 CFR 306 and 309 require retailers to post the minimum percentage of the primary component of alternative motor vehicle fuels. The proposed requirement would benefit fuel buyers by giving California weights and measures officials’ clear authority to enforce the FTC regulations as they apply to natural gas fuels. As part of its research to write the proposed regulations, the Department discovered that some natural gas fuel retailers are not complying with the FTC posting requirements.

DUPLICATION OR CONFLICT WITH FEDERAL REGULATIONS

The proposed regulation is not in conflict with any federal regulations contained in the Code of Federal Regulations (CFR). The proposed regulation is not mandated by federal law or regulation. The proposed regulation will create uniformity with the FTC 16 CFR 306 and 309 labeling regulations.