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 INDIVUDUALS 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. Kaaeid 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).

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

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.

<u>Chapter 6. Automotive Products Specifications, Article 10. Specifications for Natural Gas Used as a Motor Vehicle Fuel.</u>

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)*
- *AB 808 (Ridley-Thomas, Statutes of 2015, Chapter 591)*
- *Governor's Executive Order S-3-05 www.gov.ca.gov/news.php?id=1861*
- *Governor's Executive Order S-06-06 www.gov.ca.gov/news.php?id=183*
- *Governor's Executive Order S-1-07 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 (ask Pam)*
- *U.S. Department of Energy Alternative Fuels Data Center "Regional Fuel Prices" chart and data www.afdc.energy.gov/states/CA*
- *CEC Energy Almanac: Retail Fuel Report and Data for California 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*
- *CEC and CARB joint report Reducing California's Petroleum Dependence, #P600-03-005F, August 2003.*
- *Institute of Transportation Studies UC Irvine Natural Gas Vehicle Incentive Project 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*
- *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*
- *CEC 2009 Natural Gas Vehicle Research Roadmap, August 2009* *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*
- *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
- CEC *2015 Integrated Energy Policy Report* www.energy.ca.gov/2015_energypolicy/
- 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
- SoCalGas Gas Transmission and High Pressure Distribution Pipeline Interactive Map – Ventura, 2016 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
- 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
- Westport Cummins *ISL G Near Zero, 2016* *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.

Assembly Bill No. 1907

CHAPTER 805

An act to amend Sections 13404 and 13470 of the Business and Professions Code, and to amend Section 8651.6 of the Revenue and Taxation Code, relating to taxation.

[Approved by Governor September 29, 2014. Filed with Secretary of State September 29, 2014.]

LEGISLATIVE COUNSEL'S DIGEST

AB 1907, Ridley-Thomas. Use fuel tax: natural gas: gallon equivalent.

Existing law regulates the sale, offer for sale, or advertisement for sale, at retail to the general public of petroleum products, including liquefied natural gas and compressed natural gas for use only as a motor vehicle fuel, as specified.

This bill would require compressed natural gas sold at retail to the public for use as a motor vehicle fuel to be sold in a gasoline gallon equivalent that is equal to 126.67 cubic feet, or 5.66 pounds, of compressed natural gas, measured at the standard pressure and temperature, as specified, and would require liquefied natural gas to be sold in a diesel gallon equivalent that is equal to 6.06 pounds of liquefied natural gas. This bill would prohibit a person from selling at retail any compressed natural gas or liquid natural gas for use as motor fuel from any place of business in this state unless there is displayed and labeled on the dispensing apparatus in a conspicuous place "Gasoline gallon equivalent" or "Diesel gallon equivalent," respectively.

The Use Fuel Tax Law imposes an excise tax upon natural gas at the rate of $0.07 for each 100 cubic feet, or 5.66 pounds, of compressed natural gas used, measured at standard pressure and temperature, and at a rate of $0.06 for each gallon of liquid natural gas used, as provided.

This bill would, on and after January 1, 2015, instead of using only a cubic foot measurement, impose an excise upon natural gas at the rate of $0.0887 for each 126.67 cubic feet, or 5.66 pounds, of compressed natural gas used, measured at standard pressure and temperature, and instead of using a gallon measurement, at a rate of $0.1017 for each 6.06 pounds of liquid natural gas used.

The people of the State of California do enact as follows:

SECTION 1. Section 13404 of the Business and Professions Code is amended to read:

13404. (a) The sale of compressed natural gas by persons who sell compressed natural gas at retail to the public for use only as a motor vehicle

fuel, and who are exempted from public utility status by subdivision (f) of Section 216 of the Public Utilities Code, is a sale of a motor fuel for the purposes of this chapter.

(b) Compressed natural gas sold at retail to the public for use as a motor vehicle fuel shall be sold in a gasoline gallon equivalent that shall be equal to 126.67 cubic feet, or 5.66 pounds, of compressed natural gas, measured at the standard pressure and temperature, described in Section 8615 of the Revenue and Taxation Code.

(c) Liquefied natural gas sold at retail to the public for use as a motor vehicle fuel shall be sold in a diesel gallon equivalent that shall be equal to 6.06 pounds of liquefied natural gas.

SEC. 2. Section 13470 of the Business and Professions Code is amended to read:

13470. (a) A person shall not sell at retail to the general public, any motor fuel from any place of business in this state unless there is displayed on the dispensing apparatus in a conspicuous place at least one sign or price indicator showing the actual total price per gallon or liter of all motor fuel sold therefrom. The actual total price per gallon, or liter, shall include fuel taxes and all sales taxes.

(b) (1) A person shall not sell at retail to the general public, any compressed natural gas for use as a motor fuel from any place of business in this state unless there is displayed and labeled on the dispensing apparatus in a conspicuous place "Gasoline gallon equivalent."

(2) A person shall not sell at retail to the general public, any liquefied natural gas for use as a motor fuel from any place of business in this state unless there is displayed and labeled on the dispensing apparatus in a conspicuous place "Diesel gallon equivalent."

(c) When a discount for cash is offered from a dispenser computing only at the credit price, at least one sign or label shall be conspicuously displayed on the dispenser indicating that the dispenser is computing at the credit price and indicating the amount of the discount per gallon or liter in letters and numerals not less than one-half inch high.

(d) If motor fuel is sold by the liter, the word "liter" shall be conspicuously displayed on the side of the dispensing apparatus from which service can be made.

SEC. 3. Section 8651.6 of the Revenue and Taxation Code is amended to read:

8651.6. (a) (1) Notwithstanding the provisions of Sections 8651 and 8651.5, on or after January 1, 1971, and before January 1, 2015, the excise tax imposed upon natural gas shall be at the rate of seven cents ($0.07) for each 100 cubic feet of compressed natural gas used, measured at standard pressure and temperature, and at a rate of six cents ($0.06) for each gallon of liquid natural gas used.

(2) Notwithstanding the provisions of Sections 8651 and 8651.5, on or after January 1, 2015, an excise tax imposed upon natural gas shall be imposed as follows:

(A) The rate of eight and eighty-seven hundredths cents ($0.0887) for each 126.67 cubic feet, or 5.66 pounds, of compressed natural gas used, measured at standard pressure and temperature.

(B) The rate of ten and seventeen hundredth cents ($0.1017) for each 6.06 pounds of liquid natural gas used.

(b) (1) All references in this code to Section 8651 shall, with respect to the rate imposed upon natural gas on or after January 1, 1971, also refer to this section.

(2) (A) Neither the tax imposed by this section nor the tax imposed by Section 8651 shall apply to the use of compressed natural gas or liquid natural gas used in a vehicle during any period of time for which the owner or operator of the vehicle has paid the annual flat rate fuel tax as provided in Section 8651.7.

(B) To the extent that an owner or operator has provided written representation to a fuel seller that the owner or operator has prepaid the annual flat rate fuel tax as provided in Section 8651.7, the owner or operator shall be solely responsible for the taxes due under this part and the fuel seller shall not be liable for collecting and remitting those taxes.

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Assembly Bill No. 808

CHAPTER 591

An act to amend Sections 13405, 13410, 13411, 13413, 13420, 13421, 13440, 13440.5, 13442, 13450, 13460, 13470, 13470.5, 13471, 13472, 13477, 13480, 13481, 13482, 13485, 13486, 13500, 13501, 13502, 13530, 13531, 13532, 13535, 13550, 13570, 13590, 13591, 13592, 13595, 13600, 13700, 13710, 13711, and 13741 of, to amend the headings of Chapter 14 (commencing with Section 13400) of, Article 2 (commencing with Section 13410) of Chapter 14 of, Article 5 (commencing with Section 13440) of Chapter 14 of, Article 5.5 (commencing with Section 13446) of Chapter 14 of, Article 6 (commencing with Section 13450) of Chapter 14 of, Article 8 (commencing with Section 13470) of Chapter 14 of, and Article 13 (commencing with Section 13550) of Chapter 14 of, Division 5 of, to add Section 13404.5 to, to repeal Sections 13401, 13402, and 13403 of, and to repeal and add Sections 13400 and 13446 of, the Business and Professions Code, relating to automotive fuels and products.

[Approved by Governor October 8, 2015. Filed with Secretary of State October 8, 2015.]

LEGISLATIVE COUNSEL'S DIGEST

AB 808, Ridley-Thomas. Automotive fuels and products.

(1) Existing law regulates the sales of motor vehicle fuels and lubricants. Existing law requires the Department of Food and Agriculture to establish standards for motor vehicle fuels and other petroleum products that are offered for sale in the state and requires the department, through the Division of Measurement Standards to enforce regulations and standards for motor vehicle fuels and lubricants. A violation of this law and those regulations and standards is a crime.

This bill would revise and recast those provisions and would additionally subject the retail sale of electricity for the purposes of transferring electricity to, or storing electricity onboard, an electric vehicle primarily for the purpose of propulsion and other alternative fuels. The bill would authorize the department to establish interim specifications for alternative fuels, as defined, until specified conditions are met. The bill would require the Secretary of Food and Agriculture to establish the method of sale of motor vehicle fuels and lubricants sold at retail to the public.

(2) Existing law prohibits the sale of a petroleum product that is conditioned on the purchase of another product, merchandise, or service, except that a person who operates a full service car wash facility may condition the sale of petroleum products on the purchase of a car wash.

This bill would instead prohibit the conditional sale of motor vehicle fuel rather than petroleum products, and would delete the exemption for full service car wash facilities.

(3) Existing law makes it unlawful for a person to sell or distribute engine oil or axle and manual transmission lubricant unless the SAE/API service classification is conspicuously marked on each container. A violation of this requirement is a crime.

This bill would revise the classifications and specifications to which engine oil or lubricants and axle and manual transmission lubricants are required to conform.

(4) Existing law regulates the sale of automotive products, such as engine coolant and antifreeze. Existing law requires the department to establish specifications for those products. Existing law deems an automatic transmission fluid as mislabeled under certain conditions. A violation of regulations governing the sale of automotive products is a crime.

This bill would revise and recast those provisions and would additionally deem transmission fluid to be mislabeled if the container and carton do not bear information identifying the container lot or batch. The bill would require the secretary to establish the method of sale of diesel exhaust fluid sold at retail to the public. The bill would authorize the sealer to take samples reasonably necessary for enforcement purposes under certain conditions. The bill would require manufacturers or packagers of automotive products, upon request, to provide to a duly authorized representative of the department documentation of claims made on their products.

(5) This bill would make conforming and nonsubstantive changes.

(6) Because a violation of the above provisions would be a crime, this bill would impose a state-mandated local program.

(7) The California Constitution requires the state to reimburse local agencies and school districts for certain costs mandated by the state. Statutory provisions establish procedures for making that reimbursement.

This bill would provide that no reimbursement is required by this act for a specified reason.

The people of the State of California do enact as follows:

SECTION 1. The heading of Chapter 14 (commencing with Section 13400) of Division 5 of the Business and Professions Code is amended to read:

CHAPTER 14. FUELS AND LUBRICANTS

SEC. 2. Section 13400 of the Business and Professions Code is repealed.

SEC. 3. Section 13400 is added to the Business and Professions Code, to read:

13400. For purposes of this chapter, the following terms mean the following:

(a) "Advertising medium" includes banner, sign, placard, poster, streamer, and card.

(b) "Alternative fuels" means:

(1) "Biodiesel," a fuel comprised of mono-alkyl esters of long chain fatty acids derived from plant or animal matter that meets the requirements of the ASTM International Standard Specification D6751 "Standard Specification for Biodiesel Fuel Blend Stock (B100) for Middle Distillate Fuels."

(2) "Biodiesel blend," a fuel comprised of biodiesel mixed with diesel fuel that meets the requirements of ASTM International Standard Specification D7467.

(3) "Dimethyl ether," an organic compound meant for combustion in compression-ignition engines that meets the requirements of dimethyl ether prescribed in this chapter.

(4) "Electricity," electrical energy transferred to or stored onboard an electric vehicle primarily for the purpose of propulsion.

(5) "Ethanol," denatured motor fuel ethanol meeting the requirements of ASTM International Standard Specification D4806.

(6) "Ethanol fuel blend," a motor vehicle fuel consisting primarily of ethanol mixed with gasoline meeting the standards prescribed for ethanol fuel blends by this chapter.

(7) "Hydrogen," a fuel consisting of high purity hydrogen intended for consumption in a motor vehicle with an internal combustion engine or fuel cell that meets the standards for hydrogen prescribed by this chapter.

(8) "Methanol fuel blend," a motor vehicle fuel consisting primarily of methanol mixed with gasoline meeting the standards prescribed by this chapter.

(9) "Natural gas," a gaseous mixture of hydrocarbon compounds consisting of primarily methane in the form of a compressed gas or a cryogenic liquid intended for use as a motor vehicle fuel.

(10) "Propane," a liquefied petroleum gas intended for use as a motor vehicle fuel and meeting the standards prescribed by this chapter.

(11) Any other fuel intended for use as a motor vehicle fuel that the secretary determines is an alternative fuel that has a standard specification from a standards development organization accredited by the American National Standards Institute (ANSI), or an interim standard specification pursuant to Section 13446.

(c) "Automotive spark-ignition engine fuel" means a product used for the generation of power in a spark-ignition internal combustion engine.

(d) "Compression-ignition engine fuel" means a product used for the generation of power in a compression-ignition internal combustion engine.

(e) "Developmental engine fuel" means an engine fuel that does not meet standards established by this chapter but has characteristics that may lead to an improved fuel standard or the development of an alternative fuel standard.

(f) "Diesel fuel" means any hydrocarbon oil meant for combustion in compression-ignition engines offered for sale that meets the standards for diesel fuel prescribed by this chapter.

(g) "Engine fuel" means any gasoline, diesel, or alternative fuel used for the generation of power in an internal combustion engine or fuel cell in a motor vehicle, or electrical power delivered conductively or inductively to an electric motor in electric or plug-in hybrid vehicles. "Motor vehicle fuel" means "engine fuel" when that term is used in this chapter.

(h) "Fuel oil" means any product offered for sale that is burned in a furnace or boiler for the generation of heat and meets the standards prescribed for fuel oil by this chapter.

(i) "Gasoline" means a volatile mixture of liquid hydrocarbons, generally containing small amounts of additives, suitable for use as a fuel in a spark-ignition internal combustion engine.

(j) "Gasoline-oxygenate blend" means a fuel consisting primarily of gasoline along with a substantial amount of one or more oxygenates that meets ASTM International Standard D4814.

(k) "Kerosene" means a fuel offered for sale that meets the standards for kerosene prescribed in this chapter.

(*l*) "Lubricant" means a lubricating oil or other substance that reduces friction and wear between moving parts within an engine and other motor vehicle components.

(m) "Lubricating oil" means motor oil, engine lubricant, engine oil, lubricating axle oil, gear oil, or manual transmission fluid.

(n) "Manufacturer" means manufacturer, refiner, producer, or importer.

(o) "Motor oil" means an oil that reduces friction and wear between the moving parts within an internal combustion engine and also serves as a coolant. For purposes of this chapter, motor oil also means engine oil.

(p) "Motor vehicle fuel" means an engine fuel intended for consumption in, including, but not limited to, an internal combustion engine, fuel cell, or electric motor to produce power to self-propel a vehicle designed for transporting persons or property on a public street or highway.

(q) "Octane number" or "antiknock index number," when used in this chapter, means that number assigned to a spark-ignition engine fuel that designates the antiknock quality. The "octane number" or "antiknock index number" shall be determined according to the ASTM International method or methods designated in the latest ASTM International Standard Specification D4814.

(r) "Oxygenate" means an oxygen-containing ashless organic compound, such as an alcohol or ether, that can be used as a fuel or fuel supplement.

(s) "Renewable diesel fuel" means a diesel fuel derived from nonpetroleum renewable resources. Renewable diesel fuel does not include biodiesel, as defined in paragraph (1) of subdivision (b).

(t) "Sell" or any of its variants means attempt to sell, offer for sale or assist in the sale of, permit to be sold or offered for sale or delivery, offer for delivery, trade, barter, or expose for sale.

(u) "Standard test" means a test conducted in accordance with the latest published standard adopted by ASTM International.

SEC. 4. Section 13401 of the Business and Professions Code is repealed.

SEC. 5. Section 13402 of the Business and Professions Code is repealed.

SEC. 6. Section 13403 of the Business and Professions Code is repealed.

SEC. 7. Section 13404.5 is added to the Business and Professions Code, to read:

13404.5. 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. In the absence of national standards, the secretary may adopt interim standards of method of sale until the time when the standards are adopted by the National Conference on Weights and Measures and published in the National Institute of Standards and Technology.

SEC. 8. Section 13405 of the Business and Professions Code is amended to read:

13405. (a) The department may grant a variance from the specifications of this chapter for developmental engine fuels if all of the following conditions apply:

(1) Variances may only be granted to provide for the development of information under controlled test conditions to assist in the creation of chemical and performance standards for engine fuels.

(2) Developmental engine fuel shall only be distributed or sold to fleet-type centrally fueled vehicle and equipment users.

(3) The applicant shall warn all parties in writing of any potential risk associated with the use of the developmental engine fuel.

(4) The applicant shall report information when and as the department may prescribe in order for the department to monitor the progress of the developmental engine fuel technology evaluation.

(b) The applicant for a variance shall comply with all other requirements, terms, and conditions contained in this division and regulations adopted by the department to further the purposes and administration of this section.

(c) (1) In granting a variance, the department expresses no opinion as to whether an applicant's developmental engine fuel will perform as represented by the applicant nor any opinion to the extent, if at all, that the developmental engine fuel may be safely and effectively used as a substitute for other spark-ignition or compression-ignition engine fuels without incident.

(2) Damages caused by the sale, delivery, storage, handling, and usage of the developmental engine fuel shall be addressed in accordance with contractual provisions negotiated and agreed upon by the applicant and the user.

(d) The department may withdraw a variance if the applicant does not adhere to the conditions required to obtain the variance or if the department recognizes a high probability of equipment harm with the continued use of the developmental engine fuel or to protect public safety.

SEC. 9. The heading of Article 2 (commencing with Section 13410) of Chapter 14 of Division 5 of the Business and Professions Code is amended to read:

Article 2. Sale of Motor Vehicle Fuels and Lubricants

SEC. 10. Section 13410 of the Business and Professions Code is amended to read:

13410. (a) No person engaged in the business of extracting oil or gas from lands within the state, or of producing motor vehicle fuels for sale within the state, may refuse to sell to any city or county sufficient quantities of his or her motor vehicle fuels or lubricants, or both, sold during the normal course of business for the essential services provided by the city or county.

(b) The board of supervisors of a county or its designated county agency, upon application for the purchase of motor vehicle fuels or lubricants, or both, to perform essential services by a city within that county, by any agency of such city or county that performs an essential service, or by any transit district created pursuant to law, may arrange for the purchase and shall apportion the purchase among all persons specified in subdivision (a) who engage in the sale of motor vehicle fuels or lubricants, or both, within that county. The board of supervisors or its designated county agency shall, to the extent possible, apportion the total purchase of the motor vehicle fuels or lubricants, or both, on the basis of the persons' sales of that motor vehicle fuel or lubricant, or both, in the county during the most recent 90-day period for which information is available.

(c) For purposes of this section, "essential services" means police, fire, health, and transportation services provided by public agencies.

SEC. 11. Section 13411 of the Business and Professions Code is amended to read:

13411. It is unlawful for any person to sell or offer to sell motor vehicle fuel for use in any vehicle, as the term vehicle is defined by the Vehicle Code, on the condition that the purchaser also must purchase or pay for any other products, merchandise, or services. This section does not apply to parking time charges at locations also selling electricity as a motor vehicle fuel.

SEC. 12. Section 13413 of the Business and Professions Code is amended to read:

13413. (a) It is unlawful for any person or other legal entity to make any deceptive, false, or misleading statement by any means whatever regarding quality, quantity, performance, price, discount, or saving used in the sale or selling of any commodity regulated pursuant to this chapter.

(b) The following misleading, unfair, or deceptive acts or practices committed or permitted by any person offering for sale any product that is regulated by this chapter are also a violation of this section:

(1) Misrepresenting the brand, grade, quality, or price of a motor vehicle fuel or lubricant.

(2) Using false or deceptive representations or designations in connection with the sale of motor vehicle fuels or lubricants.

(3) Advertising motor vehicle fuels or lubricants or services and not selling them as advertised.

(4) Advertising motor vehicle fuels or lubricants of a designated brand, grade, trademark, or trade name not actually sold or available for sale.

(5) Making false, deceptive, or misleading statements concerning conditions of sale or price reductions.

(6) Representing that the consumer will receive a rebate, discount, or other economic benefit and then failing to give that rebate, discount, or other economic benefit.

(7) Except as otherwise permitted, selling a grade of motor vehicle fuel at more than one price and advertising only the lower price without advertising each of the higher prices in equal size numerals on the same advertising medium.

(8) Placing letters, words, figures, or numerals on any advertising medium offering for sale any goods or merchandise, other than motor vehicle fuel, if the advertising medium may be construed by any reasonable person as advertising a price of motor vehicle fuel.

(9) Forging or falsifying any records or documents required by this chapter or knowingly keeping, using, or displaying the false or forged records or documents.

SEC. 13. Section 13420 of the Business and Professions Code is amended to read:

13420. Every person, firm, partnership, association, trustee, or corporation that owns, leases, or rents and operates a facility that offers any motor vehicle fuel for sale to the public from a fueling facility abutting or adjacent to a street or highway shall accurately update all signs, banners, or other advertising media that indicate hours of the sale. Advertising media indicating hours of sale shall be updated on a monthly basis.

SEC. 14. Section 13421 of the Business and Professions Code is amended to read:

13421. Every person, firm, partnership, association, trustee, or corporation that owns, leases, or rents and operates a facility that offers any motor vehicle fuel for sale to the public from the facility abutting or adjacent to a street or highway shall turn off all outdoor lighted advertising media at their place of business when they are not open for business. This section shall only apply to the fueling facility and not the retail business in a situation where the fueling facility is a part of and adjacent to a retail business provided the retail sale of gasoline or other motor vehicle fuel is not the primary purpose of that business.

SEC. 15. The heading of Article 5 (commencing with Section 13440) of Chapter 14 of Division 5 of the Business and Professions Code is amended to read:

Article 5. Standards for Spark-Ignition Fuels

SEC. 16. Section 13440 of the Business and Professions Code is amended to read:

13440. (a) The department shall 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.

(b) Any gasoline-oxygenate blend containing methanol shall also contain an alcohol cosolvent (butanol or higher molecular weight alcohol) in an amount equal to or greater than the volume percentage of methanol except those blends previously granted a waiver by the United States Environmental Protection Agency.

(c) The antiknock index as defined in Section 13400 for gasoline and gasoline-oxygenate blends shall not be less than 87.

(d) Gasoline and gasoline-oxygenate blends shall meet the latest specifications set forth in ASTM International Standard Specification D4814.

(e) Notwithstanding any other provision of this section, gasoline sold for use in Inyo or Mono County, or the portion of Kern County lying east of the Los Angeles County Aqueduct, shall comply with the latest specification set forth in ASTM International Standard Specification D4814 relating to volatility class standards for the season during which the gasoline is sold for either the interior region or the southeast region of California.

(f) Ethanol fuel blends shall meet the latest specifications set forth in ASTM International Standard Specification D5798.

(g) Methanol fuel blends shall meet the latest specifications set forth in ASTM International Standard Specification D5797.

(h) Liquefied petroleum gas for use as a motor vehicle fuel shall meet the latest specifications set forth in ASTM International Standard Specification D1835.

(i) Natural gas for use as a motor vehicle fuel shall meet the latest specification set forth by the ASTM International or SAE International.

SEC. 17. Section 13440.5 of the Business and Professions Code is amended to read:

13440.5. For purposes of determining the percentage of ethanol in a gasoline-oxygenate blend for use as a fuel, the volume of ethanol includes the volume of any denaturant (including gasoline) that is added to the extent that these denaturants do not exceed the maximum volume percent specified

in the latest standard established by ASTM International, except that no standard shall be less stringent than required by any California state law.

SEC. 18. Section 13442 of the Business and Professions Code is amended to read:

13442. (a) It is unlawful for any person to sell, offer for sale, or cause or permit to be sold or offered for sale, or deliver or offer for delivery, any product used as a motor vehicle fuel for internal combustion engines at any place where motor vehicle fuels are kept or stored for sale, which does not conform to the requirements of this article, unless and until there shall be firmly attached to or painted upon each container, receptacle, pump, and inlet end of the fill pipe of each underground storage tank, or other equipment used for storage of motor vehicle fuel, from which or into which the motor vehicle fuel is drawn or poured for sale or delivery, a sign or label, plainly visible, comprising the brand, trademark, or trade name of such fuel, or the words "no brand," that words shall be in letters of gothic type with a stroke of not less than one-eighth inch in width and not less than one inch in height, and also the words "not gasoline" in red letters of gothic type with a stroke of not less than one-half inch in width and not less than three inches in height, on a white background and not less than twice the size of any other letters or words appearing on or near the label or sign.

(b) The provisions of this article, as to the words "not gasoline," shall not apply to signs or labels used in connection with the sale or delivery of kerosene, jet or turbine fuel, diesel fuel, liquefied petroleum gas, natural gas, or motor fuel comprised of a mixture of gasoline and lubricating oil properly labeled in accordance with the provisions of Article 9 (commencing with Section 13480).

(c) This section does not apply to electricity sold as a motor vehicle fuel.

SEC. 19. The heading of Article 5.5 (commencing with Section 13446) of Chapter 14 of Division 5 of the Business and Professions Code is amended to read:

Article 5.5. Standards for Alternative Fuels

SEC. 20. Section 13446 of the Business and Professions Code is repealed.

SEC. 21. Section 13446 is added to the Business and Professions Code, to read:

13446. The department may establish interim specifications for alternative fuel for use in motor vehicles 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. The department shall then adopt, by reference, the latest standard established by the ANSI-accredited standards development organization for alternative fuel, except that no specification shall be less stringent than required by any California state law.

SEC. 22. The heading of Article 6 (commencing with Section 13450) of Chapter 14 of Division 5 of the Business and Professions Code is amended to read:

Article 6. Standards for Compression-Ignition Engine Fuels, Kerosene, and Fuel Oils

SEC. 23. Section 13450 of the Business and Professions Code is amended to read:

13450. The department shall establish specifications for compression-ignition engine fuel, kerosene, and fuel oil. The department shall adopt by reference the latest standards established by a recognized consensus organization or standards writing organization such as the ASTM International or the SAE International, for compression-ignition engine fuels, kerosene, and fuel oil, except that no specification shall be less stringent than required by any California state law.

(a) Diesel fuel oil and renewable diesel fuel oil shall meet the specifications set forth in ASTM International Standard Specification D975.

(b) Kerosene shall meet the specifications set forth in ASTM International Standard Specification D3699.

(c) Fuel oil shall meet the specifications set forth in ASTM International Standard Specification D396.

(d) Biodiesel blends shall meet the latest specifications set forth in ASTM International Standard Specification D7467.

(e) Dimethyl ether used as a motor vehicle fuel shall meet the latest specifications set forth in ASTM International Standard Specification D7901.

(f) Renewable diesel fuel shall meet the specifications set forth in ASTM International Standard Specification D975.

SEC. 24. Section 13460 of the Business and Professions Code is amended to read:

13460. Engine oil shall not be sold or distributed for use in an internal combustion engine unless the product conforms to the following specifications:

(a) It shall meet the engine oil requirements established by a minimum of one current API classification pursuant to the latest revision of the SAE International Standard SAE J183 for engine oil performance and engine service classification, or a minimum of one current sequence of the European Automobile Manufacturers Association (ACEA) "European Oil Specification."

(b) It shall be free from water and suspended matter when tested by means of centrifuge, in accordance with the standard test ASTM D-2273.

(c) Any engine oil that is represented to meet SAE International SAE J183 engine oil performance and engine service classification SA must have either an acid number or base number of 0.20 mg of KOH/g as measured by ASTM International Standard Test Method D974 or equivalent.

(d) Any engine oil represented as "resource conserving" shall meet the requirements established by the latest revision of the SAE International Recommended Practice SAE J-1423.

SEC. 25. The heading of Article 8 (commencing with Section 13470) of Chapter 14 of Division 5 of the Business and Professions Code is amended to read:

Article 8. Price Indications on Motor Vehicle Fuel Dispensing Apparatus

SEC. 26. Section 13470 of the Business and Professions Code is amended to read:

13470. (a) A person shall not sell at retail to the general public, any motor vehicle fuel from any place of business in this state unless there is displayed on the dispensing apparatus in a conspicuous place at least one sign or price indicator showing the total price per gallon, liter, or other unit of measurement adopted pursuant to Section 12107, 13404, or 13404.5 of all motor vehicle fuel sold therefrom. The total price per gallon, liter, or other unit of measurement shall include applicable fuel taxes and all sales taxes.

(b) (1) A person shall not sell at retail to the general public, any compressed natural gas for use as a motor vehicle fuel from any place of business in this state unless there is displayed and labeled on the dispensing apparatus in a conspicuous place "Gasoline gallon equivalent."

(2) A person shall not sell at retail to the general public, any liquefied natural gas for use as a motor vehicle fuel from any place of business in this state unless there is displayed and labeled on the dispensing apparatus in a conspicuous place "Diesel gallon equivalent."

(c) When a discount is offered from a dispenser computing only at a higher price, at least one sign or label shall be conspicuously displayed on the dispenser indicating that the dispenser is computing at the higher price and indicating the amount of the discount per unit of measurement in letters and numerals not less than one-half inch high.

(d) If motor vehicle fuel is sold by unit of measurement other than gallon, that unit shall be conspicuously displayed on the side of the dispensing apparatus from which service can be made.

SEC. 27. Section 13470.5 of the Business and Professions Code is amended to read:

13470.5. Any person selling, offering for sale, or advertising for sale, at retail to the general public, any gasoline or other motor vehicle fuel from any place of business in this state by use of or through or from any dispensing apparatus and displaying any sign showing the total price per liter, shall, in addition, display in a conspicuous fashion in full view of the retail purchaser and in accordance with provisions of this chapter, a gallon-to-liter conversion table showing quantity and price equivalents.

SEC. 28. Section 13471 of the Business and Professions Code is amended to read:

13471. Each sign required by this article shall be placed in a conspicuous place on the dispensing apparatus and if service of motor vehicle fuel may be made from more than one side of such dispensing apparatus the sign shall be so placed as to be visible from at least two sides of the dispensing apparatus.

SEC. 29. Section 13472 of the Business and Professions Code is amended to read:

13472. When a sign is used in addition to a price indicator, as defined in Section 13470, and if the same grade of motor vehicle fuel is sold at a different price from any other dispenser on the same premises, it shall be unlawful to display the sign on a dispenser unless a sign with price numerals of equal size is displayed upon each dispenser from which the same grade of motor vehicle fuel is dispensed at higher prices.

SEC. 30. Section 13477 of the Business and Professions Code is amended to read:

13477. The provisions of this article do not apply to the sale of motor vehicle fuel for aircraft through or from any portable dispensing device.

SEC. 31. Section 13480 of the Business and Professions Code is amended to read:

13480. (a) It is unlawful for any person to sell any motor vehicle fuel or lubricant referred to in this chapter at any place where motor vehicle fuels or lubricants are kept or stored for sale, unless there is affixed to each container, receptacle, pump, dispenser, and inlet end of the fill pipe of each underground storage tank, from which or into which that product is drawn or poured out for sale or delivery, a sign or label plainly visible consisting of the name of the product, the brand, trademark, or trade name of the product, and, in the case of motor vehicle fuel and kerosene, the grade or brand name designation.

(b) When the product is a lubricant, as defined by Section 13400, each sign or label shall also have in letters or numerals, plainly visible, the viscosity grade classification as determined in accordance with the SAE International latest standard for engine oil viscosity classification SAE J300 or manual transmission and axle lubricants viscosity classification SAE J306, as applicable, and shall be preceded by the letters "SAE."

(c) When the product is automotive spark-ignition engine fuel, the secretary shall make rules and regulations as are reasonably necessary to define and enforce the octane number, antiknock index labeling requirements, or other labeling requirements of the product sold.

(d) When the product is a motor vehicle fuel consisting of a mixture or premixture of gasoline and oil or gasoline-oxygenate blend and motor oil, there shall be conspicuously displayed on the dispensing device at least one sign or label stating the ratio of gasoline to motor oil or gasoline-oxygenate blend to motor oil.

(e) All signs or labels required by this section for retail motor vehicle fuel dispensers and containers of more than one gallon capacity shall be in letters and numerals not less than one-half inch (12.70 mm) in height. On containers of one gallon or less, the signs or labels shall be in letters and

numerals not less than one-fourth inch (6.35 mm) in height and one-sixteenth inch (1.59 mm) in width.

(f) The provisions of this section pertaining to octane numbers or antiknock index and motor oil SAE International viscosity number grade shall not apply to products sold for aviation purposes.

(g) This section does not apply to electricity sold as a motor vehicle fuel.

SEC. 32. Section 13481 of the Business and Professions Code is amended to read:

13481. (a) If any motor vehicle fuel or lubricant is offered for sale, but not under any brand, trademark, or trade name, the words "no brand" shall be used as the brand, trademark, or trade name designation. The words "no brand" shall be in letters of gothic type with a stroke of not less than one-half inch in width, not less than three inches in height, and shall consist of red letters on a white background.

(b) This section does not apply to electricity sold as a motor vehicle fuel.

SEC. 33. Section 13482 of the Business and Professions Code is amended to read:

13482. (a) It is unlawful for any person to sell or distribute engine oil or lubricant unless both of the following are met:

(1) The product conforms to a minimum of one active API classification pursuant to the latest revision of SAE J183 "Engine Oil Performance and Engine Service Classification," a minimum of one active sequence of the European Automobile Manufacturers' Association (ACEA) "European Oil Sequences specification," or a minimum of one active OEM specification.

(2) The API classification or ACEA sequence or OEM specification and SAE J300 viscosity grade is conspicuously marked on each container or, if provided in bulk, properly described in product transfer documents.

(b) It is unlawful for any person to sell or distribute axle and manual transmission lubricant unless it conforms to an SAE J306 viscosity grade.

SEC. 34. Section 13485 of the Business and Professions Code is amended to read:

13485. Small hand measures used for delivery of motor vehicle fuels or lubricants, and filled in the presence of the customer, need not be labeled in accordance with this chapter if the receptacle, container, or pump from which motor vehicle fuels or lubricants are drawn or poured into the hand measures is properly labeled as required by this chapter.

SEC. 35. Section 13486 of the Business and Professions Code is amended to read:

13486. (a) It is unlawful, at any place of business where motor vehicle fuels or lubricants are sold, for any person to do either of the following:

(1) Deliver into a storage tank or container any motor vehicle fuel or lubricant other than the product identified on the label attached to the storage tank or container.

(2) Sell by means of, or through, a pump or other device, any motor vehicle fuel or lubricant other than the product identified on the required label, tag, or sign attached to the pump or other device.

(b) This section does not prohibit the delivery of motor vehicle fuel into a storage tank labeled with the authorized rebrand as provided in Article 14 (commencing with Section 13560).

SEC. 36. Section 13500 of the Business and Professions Code is amended to read:

13500. It is unlawful for any person to transport in any tank vehicle, for the purpose of sale or for delivery to any place where motor vehicle fuels or lubricants are stored for sale, any product referred to in this chapter unless there is firmly affixed at each outlet or valve of the tank vehicle, a metal tag, plate, or label. The tag, plate, or label shall display, in letters not less than one-half inch in height, the name and grade of the product in the tank compartment of the tank vehicle. In the case of motor oil, the SAE International viscosity number shall also be displayed on the tag, plate, or label.

SEC. 37. Section 13501 of the Business and Professions Code is amended to read:

13501. It is unlawful for any person, when delivering for the purpose of sale, or delivering to any place where products referred to in this chapter are kept for sale, to commingle any product with another product or to commingle grades of a product, if as a result of the commingling the product delivered does not meet the specifications adopted or established by the department.

SEC. 38. Section 13502 of the Business and Professions Code is amended to read:

13502. It is unlawful for any person to deliver into a storage tank or container at any place where products referred to in this chapter are stored for sale, any product other than the product identified on the label attached to the storage tank or container.

SEC. 39. Section 13530 of the Business and Professions Code is amended to read:

13530. (a) Nothing in this article applies to price indicators and signs referred to in Article 8 (commencing with Section 13470). However, any numerals designating the total price per gallon, liter, or other unit of measurement adopted pursuant to Section 12107, 13404, or 13404.5 for a particular brand and grade of motor vehicle fuel permitted or required under Article 8 (commencing with Section 13470) shall, unless otherwise stated, be identical in numerical value with the price per gallon, liter, or other unit of measurement for the same brand and grade of motor vehicle fuel permitted or required under this article.

(b) Nothing in this chapter requires that the cash or merchandise value of trading stamps be stated on any advertising media that either advertises the stamps or advertises the price of motor vehicle fuel.

(c) Unless otherwise prohibited, any person selling motor vehicle fuel by the liter shall be authorized to advertise its price by displaying on the advertising medium either the price per liter or the price per gallon.

SEC. 40. Section 13531 of the Business and Professions Code is amended to read:

13531. (a) (1) Every person offering for sale or selling any motor vehicle fuel to the public from any place of business shall display on the premises an advertising medium that complies with the requirements of this article and that advertises the total prices of the three major grades of motor vehicle fuel offered for sale.

(2) The advertising medium shall be clearly visible from the street or highway adjacent to the premises. When the place of business is situated at an intersection, the advertising medium shall be clearly visible from each street of the intersection.

(3) For purposes of this subdivision, motor vehicle fuel does not include propane.

(4) For purposes of this subdivision, electricity and natural gas sold as a motor vehicle fuel shall meet only the requirements adopted pursuant to Sections 13404 and 13404.5.

(b) The governing body of any city, county, or city and county may, by ordinance, exempt specified geographic areas from the provisions of this section if, pursuant to Article 5 (commencing with Section 65300) of Chapter 3 of Title 7 of the Government Code, the areas are designated on the local general plan as scenic corridors or historic preservation areas.

(c) (1) Except as provided in paragraph (2), any person who violates the provisions of subdivision (a) is guilty of an infraction and, upon conviction, is punishable by a fine not to exceed five hundred dollars ($500).

(2) Any person who violates the provisions of subdivision (a) and who has been previously convicted two or more times of a violation of subdivision (a) is guilty of a misdemeanor and, upon conviction, is punishable by imprisonment in the county jail not exceeding six months, by a fine not exceeding one thousand dollars ($1,000), or by both.

(d) Notwithstanding Section 13590, the district attorney of each county, or pursuant to Section 41803.5 of the Government Code, the city attorney of any general law city or chartered city within each county, or the county sealer, shall, upon complaint or upon his or her own motion, enforce the provisions of this section and, in addition, may bring an action for injunctive relief in accordance with Section 13611.

SEC. 41. Section 13532 of the Business and Professions Code is amended to read:

13532. (a) It is unlawful for any person to display any advertising medium that indicates the price of motor vehicle fuel unless the advertising medium displays all of the following:

(1) The total price per gallon, liter, or other unit of measurement adopted pursuant to Section 12107, 13404, or 13404.5, including all taxes, in numerals, and fractions when applicable, not less than six inches in height and of uniform size and color. For purposes of this article, fractions are considered one numeral. For purposes of this section, electricity sold as a motor vehicle fuel shall meet only the requirements adopted pursuant to Section 13404.

(2) The trademark or brand of the motor vehicle fuel in letters, figures, or numerals not less than one-third the size of the numerals designating the price.

(3) The word "gasoline" or the name of other motor vehicle fuel in letters not less than one-third the size of the numerals designating the price, but these words need not be more than four inches in height.

(4) The grade designation of the motor vehicle fuel in letters or numerals not less than one-sixth the size of the numerals designating the price, but this designation need not be more than four inches in height.

(5) If motor vehicle fuel prices are advertised by the unit of measurement other than gallon, the unit shall be displayed on the advertising medium in letters not less than one-third the size of the numerals designating the price.

(b) (1) It is unlawful for any person to display an advertising medium that advertises a discount or price reduction for motor vehicle fuel, unless the advertising medium contains all the following:

(A) The total price per gallon, liter, or other unit of measurement adopted pursuant to Section 12107, 13404, or 13404.5 from which the discount or price reduction is to be taken.

(B) The amount of the discount or price reduction in cents per gallon, liter, or other unit of measurement using numerals that do not exceed the height of the numerals in the advertised price.

(C) The conditions of the discount or price reduction using words whose letters are not less than one-third the size of the price numerals.

(2) Any limitations under which the discount or price reduction is offered shall be explained in words whose letters are not less than one-third the size of the numerals indicating the prices.

(3) There shall be available for each customer's reference, a chart showing the amount of discount for each type of unit being sold or fraction thereof in one cent ($0.01) increments, or the retail dispensers used to dispense motor vehicle fuel at the discount price shall be set to compute the total sale at the discounted price per gallon or liter and shall be clearly labeled "Includes Cash Discount" in letters not less than one inch in height.

(4) For purposes of this subdivision, the motor vehicle fuel shall be sold in the same unit of measure in which the discount and the price from which the discount is taken are advertised.

(c) In the event that the same grade of motor vehicle fuel is sold at different prices from any single place of business, it is unlawful for any person to display any advertising medium that advertises a price of a grade of motor vehicle fuel unless the advertising medium advertises in numerals of equal size each of the higher prices, including all taxes for which the grade is sold or offered for sale, and unless the advertising medium explains the conditions, and any limitations, under which that grade is sold or offered for sale at different prices. The words of explanation shall be clearly shown in letters at least one-third the size of the numerals indicating the prices. The different prices at which the same grade of motor vehicle fuel is sold or offered for sale shall be advertised in the same unit of measure as permitted or required by law.

(d) Nothing in this section prohibits any person who has posted or displayed a sign or advertising medium in compliance with this chapter from displaying additional signs or advertising media that state either (1) the amount of discount in cents per gallon, liter, or other unit of measurement adopted pursuant to Section 12107, 13404, or 13404.5, or (2) the total price of one or more brands or grades of motor vehicle fuel sold or offered for sale, provided the conditions and any limitations of the discount or price of the brand or grade of motor vehicle fuel are included in the additional advertising media in letters not less than one-third the size of the numerals indicating the discount or price.

SEC. 42. Section 13535 of the Business and Professions Code is amended to read:

13535. If any motor vehicle fuel or lubricant is advertised for sale, but not under any brand designation, the words "no brand" shall be used on the advertising medium as a brand designation.

SEC. 43. The heading of Article 13 (commencing with Section 13550) of Chapter 14 of Division 5 of the Business and Professions Code is amended to read:

Article 13. Inducements for the Sale of Motor Vehicle Fuel

SEC. 44. Section 13550 of the Business and Professions Code is amended to read:

13550. No motor vehicle fuel producer or distributor shall compel or unduly or unreasonably influence any retail dealer to participate in the giveaway or offer to give away free of charge any item of value, including trading stamps or any kind of merchandise or goods, whether or not the giveaway is conditional upon the purchase of motor vehicle fuels or lubricants. The decision to participate in those giveaways shall be solely that of the retail dealer. Nothing in this section shall prohibit a retail dealer from entering into an agreement to participate in any giveaway program.

SEC. 45. Section 13570 of the Business and Professions Code is amended to read:

13570. (a) A manufacturer, blender, agent, jobber, consignment agent, or distributor who distributes motor vehicle fuel that contain at least 1 percent alcohol by volume, shall state on an invoice, bill of lading, shipping paper, or other documentation used in normal and customary business practices, the percentage of alcohol, the type of alcohol, and, except in documentation certifying the octane rating of gasoline as required by federal law, the minimum antiknock index number, as defined in Section 13403, of the products distributed.

(b) If a motor vehicle fuel product contains less than 10 percent ethanol, a statement in the documentation that the product "contains up to 10% ethanol" meets the requirement of subdivision (a) that it state the percentage of ethanol.

(c) This section, as it relates to certification of the minimum antiknock index number, applies to all motor vehicle gasoline distributed.

SEC. 46. Section 13590 of the Business and Professions Code is amended to read:

13590. It is the duty of the department acting through the Division of Measurement Standards to enforce the provisions of this chapter, and to appoint and employ inspectors as may be necessary.

SEC. 47. Section 13591 of the Business and Professions Code is amended to read:

13591. (a) The department, its inspectors, and each sealer, are hereby authorized and empowered to inspect the motor vehicle fuels or lubricants referred to in this chapter and to enter, for the purpose of the inspection, any place where motor vehicle fuels or lubricants are kept or stored for sale.

(b) All those officers shall enforce the provisions of this chapter.

SEC. 48. Section 13592 of the Business and Professions Code is amended to read:

13592. The department, each sealer, and any person now or hereafter authorized or empowered by law to inspect the motor vehicle fuels or lubricants referred to in this chapter, may take such sample or samples as may be necessary of any motor vehicle fuel or lubricant kept or stored for the purpose of sale.

SEC. 49. Section 13595 of the Business and Professions Code is amended to read:

13595. (a) It is unlawful for any person to sell or deliver any motor vehicle fuel or lubricant referred to in this chapter that fails to meet the specifications required by this chapter.

(b) It is unlawful for any person to sell or deliver any motor vehicle fuel or lubricant referred to in this chapter into, from, or through an unlabeled or mislabeled container or device.

(c) (1) The department, each county sealer, deputy county sealer, and inspector may close and seal outlets and inlets of any receptacles, containers, pumps, dispensers, or storage tanks connected to the outlets and inlets, containing any motor vehicle fuel or lubricant referred to in this chapter that fails to meet the requirements of this chapter.

(2) The person so sealing shall post in a conspicuous place on the premises, where a receptacle, container, pump, dispenser, or storage tank connected to the outlets and inlets has been sealed, a notice stating that the action of sealing has been taken in accordance with this chapter, and giving warning that it is unlawful to break, mutilate, or destroy the seal or seals of the outlets and inlets, to move the container, or to remove the contents from the container, under the penalty provided in this division.

(d) If a container or lot of containers of any commodity subject to this chapter is found to contain a commodity not in conformity with this chapter, the secretary or sealer representing the secretary may take a sample or samples reasonably necessary for enforcement purposes and may, in writing, order the containers off sale. Any lot or container ordered off sale pursuant to this section shall be subject to a disposal order by the enforcing officer

and shall not be sold, offered for sale, or transported, except in accordance with that disposal order. Any action pursuant to this section shall not affect any rights of a retailer under a warranty of merchantability or warranty of fitness.

SEC. 50. Section 13600 of the Business and Professions Code is amended to read:

13600. It is unlawful for any person, or any member, officer, agent, or employee of a firm, association, or corporation, other than the department or any of the officers mentioned in this article, to break, mutilate, or destroy any seal or seals placed upon a container, receptacle, pump, or storage tank connected thereto, or any other storage tank containing a motor vehicle fuel or lubricant, when placed thereon as provided by this article, or to move a container so sealed, or remove the contents therefrom, or to cover, deface, or remove the notice of sealing required by this article.

SEC. 51. Section 13700 of the Business and Professions Code is amended to read:

13700. For purposes of this chapter, the following terms mean the following:

(a) "Automotive product" means engine coolant or antifreeze, prediluted engine coolant or prediluted antifreeze, brake fluid, transmission fluid, and diesel exhaust fluid.

(b) "Transmission fluid" means a product intended for use in a motor vehicle as either a lubricant, coolant, or liquid medium in any type of transmission, or any other type of unit through which, or by which, force, energy, or power is transferred from a motor vehicle engine by hydraulic means to the driving assembly. Transmission fluid does not include manual transmission lubricant, as described in the latest revision of the SAE Information Report on axle and manual transmission lubricants, SAE International J308.

(c) "Brake fluid" means the fluid intended for use as the liquid medium through which force is transmitted in the hydraulic brake system of a vehicle operated upon the highways.

(d) "Carton" means the package or wrapping in which a number of containers are shipped or stored.

(e) "Container" means any receptacle in which a commodity is immediately contained when sold, but does not mean a carton or wrapping in which a number of receptacles are shipped or stored, or a tank car or truck.

(f) "Diesel exhaust fluid" or "DEF" means an aqueous urea solution used in selective catalytic reduction to lower oxides of nitrogen concentration in the exhaust emissions of diesel engines that meets the last version of International Organization for Standardization (ISO) specification for DEF.

(g) "Engine coolant" or "antifreeze" means any substance or preparation, regardless of its origin, intended to be diluted before use as the cooling medium in the cooling system of an internal combustion engine to provide protection against freezing, overheating, and corrosion of the cooling system, or any product intended to be diluted before use that is labeled to indicate

or imply that it will prevent freezing or overheating of the cooling system of an internal combustion engine.

(h) "Label" means all written, printed, or graphic representations, in any form whatsoever, imprinted upon or affixed to any container referred to in this chapter.

(i) "Prediluted engine coolant" or "prediluted antifreeze" means any substance or preparation, regardless of its origin, intended or labeled for use at full strength as the cooling medium or as a top off in the cooling system of an internal combustion engine to provide or supplement protection against freezing, overheating, or corrosion of the cooling system.

(j) "Principal display panel" means that part of the label that is designed to most likely be displayed, presented, shown, or examined under normal and customary conditions of display and purchase.

SEC. 52. Section 13710 of the Business and Professions Code is amended to read:

13710. (a) (1) The department shall establish specifications for engine coolants, antifreeze, prediluted engine coolants, and prediluted antifreeze that promote the public safety in the operation of motor vehicles.

(2) The chemical, physical, and performance specifications for engine coolants and antifreeze and prediluted engine coolants and prediluted antifreeze under paragraph (1) shall not fall below the minimum specifications, if any, established by ASTM International. Engine coolant and antifreeze shall not contain, after dilution with 30 percent water and subsequent mixing, visually identifiable suspended matter or sediment. Prediluted engine coolant and prediluted antifreeze shall not contain, after mixing, visually identifiable suspended matter or sediment.

(3) For purposes of this subdivision, the department shall adopt the ASTM International testing procedures. Methanol- and ethanol-based coolants and antifreeze are not suitable for use in automotive engines and shall not be sold or distributed for automotive use.

(b) Transmission fluid shall meet the latest automotive manufacturers' recommended requirements for all transmissions disclosed on the label of its container. No transmission fluid shall be sold without clearly disclosing, on the label of its container, the type of transmission for which it is intended.

(c) The department shall establish specifications for brake fluid that promote the public safety in the operation of automotive vehicles. The specifications for brake fluid shall not fall below the minimum specifications established by the National Highway Traffic Safety Administration of the United States Department of Transportation.

(d) Any manufacturer or packager of any product regulated by this chapter and sold in the state shall provide, upon request to duly authorized representatives of the department, documentation of any claim made upon their products' label.

SEC. 53. Section 13711 of the Business and Professions Code is amended to read:

13711. (a) An engine coolant or antifreeze is mislabeled if any of the following occurs:

(1) The container does not bear a label on which is printed the brand name, principal ingredient, intended application of the coolant or antifreeze, name and place of business of the manufacturer, packer, seller, or distributor, and an accurate statement of the quantity of the contents in terms of liquid measure.

(2) The container does not bear a chart on the label showing appropriate amounts of engine coolant or antifreeze and water in terms of liquid measure to be used to provide protection from freezing at temperatures to at least 30 degrees below zero Fahrenheit.

(3) The container does not bear a statement on the label showing the boiling point of a 50 percent by volume mixture of engine coolant or antifreeze and water in degrees Fahrenheit.

(4) The container is one quart or less and does not bear a label on which is printed the words "engine coolant" or "antifreeze" in letters at least ⅛ inch high on the principal display panel. The container is greater than one quart and does not bear a label on which is printed the words "engine coolant" or "antifreeze" in letters at least ¼ inch high on the principal display panel.

(5) The principal ingredient is propylene glycol or glycerin and the container does not bear a statement on the label not to use an ethylene glycol hydrometer concentration tester for propylene glycol or glycerin coolants.

(6) The container and carton do not bear a lot or batch number on the label identifying the container lot and date of packaging.

(b) A prediluted engine coolant or prediluted antifreeze is mislabeled if any of the following occurs:

(1) The container does not bear a label on which is printed the brand name, principal ingredient, intended application of the coolant or antifreeze, name and place of business of the manufacturer, packer, seller, or distributor, and an accurate statement of the quantity of the contents in terms of liquid measure.

(2) The container does not bear a statement on the label showing the protection from freezing in degrees Fahrenheit.

(3) The container does not bear a statement on the label showing the boiling point in degrees Fahrenheit.

(4) The container is one quart or less and does not bear a label on which is printed the words "prediluted engine coolant" or "prediluted antifreeze" in letters at least ⅛ inch high on the principal display panel. The container is greater than one quart and does not bear a label on which is printed the words "prediluted engine coolant" or "prediluted antifreeze" in letters at least ¼ inch high on the principal display panel.

(5) The container is one quart or less and does not bear a label on which is printed the words "DO NOT ADD WATER" in letters at least ⅛ inch high. The container is greater than one quart and does not bear a label on which is printed the words "DO NOT ADD WATER" in letters at least ¼ inch high.

(6) The principal ingredient is propylene glycol or glycerin and the container does not bear a statement on the label not to use an ethylene glycol hydrometer concentration tester for propylene glycol or glycerin coolants.

(7) The container and carton do not bear a lot or batch number on the label identifying the container lot and date of packaging.

(c) "Transmission fluid" is mislabeled if any of the following occurs:

(1) The container does not bear a label on which is printed the brand name, the name and place of business of the manufacturer, packer, seller, or distributor, the words "Transmission Fluid," and the duty type classification.

(2) The container does not bear a label on which is printed an accurate statement of the quantity of the contents in terms of liquid measure.

(3) The labeling on the container is false or misleading.

(4) The container and carton do not bear information that identifies the container lot or batch.

(d) Brake fluid is mislabeled if any of the following occurs:

(1) The container does not bear a label that conforms to the requirements of the National Highway Traffic Safety Administration, United States Department of Transportation, and upon which is printed the brand name.

(2) The container does not bear an accurate statement on the label of the quantity of the contents in terms of liquid measure.

(3) The labeling on the container is false or misleading.

(e) The secretary shall establish the method of sale of diesel exhaust fluid sold at retail to the public. In doing so, the secretary shall adopt, by reference, the latest method of sale for diesel exhaust fluid 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 modified, amended, or rejected by regulation adopted by the secretary.

(f) If a container or lot of containers of any commodity subject to this chapter is found to contain a commodity not in conformity with this chapter, the sealer may take one or more samples reasonably necessary for enforcement purposes and may, in writing, order the containers off sale. Any lot or container ordered off sale pursuant to this section shall be subject to a disposal order by the enforcing officer and shall not be sold, offered for sale, or transported, except in accordance with that disposal order. Any action pursuant to this section shall not affect any rights of a retailer under a warranty of merchantability or warranty of fitness.

SEC. 54. Section 13741 of the Business and Professions Code is amended to read:

13741. (a) It is unlawful for any person or other legal entity to make any deceptive, false, or misleading statement by any means whatever regarding quality, quantity, performance, price, discount, or saving in the sale or selling of any commodity regulated pursuant to this chapter.

(b) Any manufacturer or packager of any product subject to this chapter and sold in this state shall provide, upon request, to a duly authorized

representative of the department documentation of any claim made on his or her product's label.

SEC. 55. No reimbursement is required by this act pursuant to Section 6 of Article XIII B of the California Constitution because the only costs that may be incurred by a local agency or school district will be incurred because this act creates a new crime or infraction, eliminates a crime or infraction, or changes the penalty for a crime or infraction, within the meaning of Section 17556 of the Government Code, or changes the definition of a crime within the meaning of Section 6 of Article XIII B of the California Constitution.

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EXECUTIVE ORDER S-3-05

WHEREAS, California is particularly vulnerable to the impacts of climate change; and WHEREAS, increased temperatures threaten to greatly reduce the Sierra snowpack, one of the State's primary sources of water; and WHEREAS, increased temperatures also threaten to further exacerbate California's air quality problems and adversely impact human health by increasing heat stress and related deaths, the incidence of infectious disease, and the risk of asthma, respiratory and other health problems; and WHEREAS, rising sea levels threaten California's 1,100 miles of valuable coastal real estate and natural habitats; and WHEREAS, the combined effects of an increase in temperatures and diminished water supply and quality threaten to alter micro-climates within the state, affect the abundance and distribution of pests and pathogens, and result in variations in crop quality and yield; and WHEREAS, mitigation efforts will be necessary to reduce greenhouse gas emissions and adaptation efforts will be necessary to prepare Californians for the consequences of global warming; and WHEREAS, California has taken a leadership role in reducing greenhouse gas emissions by: implementing the California Air Resources Board motor vehicle greenhouse gas emission reduction regulations; implementing the Renewable Portfolio Standard that the Governor accelerated; and implementing the most effective building and appliance efficiency standards in the world; and WHEREAS, California-based companies and companies with significant activities in California have taken leadership roles by reducing greenhouse gas (GHG) emissions, including carbon dioxide, methane, nitrous oxide and hydrofluorocarbons, related to their operations and developing products that will reduce GHG emissions; and WHEREAS, companies that have reduced GHG emissions by 25 percent to 70 percent have lowered operating costs and increased profits by billions of dollars; and WHEREAS, technologies that reduce greenhouse gas emissions are increasingly in demand in the worldwide marketplace, and California companies investing in these technologies are well-positioned to profit from this demand, thereby boosting California's economy, creating more jobs and providing increased tax revenue; and WHEREAS, many of the technologies that reduce greenhouse gas emissions also generate operating cost savings to consumers who spend a portion of the savings across a variety of sectors of the economy; this increased spending creates jobs and an overall benefit to the statewide economy. NOW, THEREFORE, I, ARNOLD SCHWARZENEGGER, Governor of the State of California, by virtue of the power invested in me by the Constitution and statutes of the State of California, do hereby order effective immediately: 1. That the following greenhouse gas emission reduction targets are hereby established for California: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; by 2050, reduce GHG emissions to 80 percent below 1990 levels; and 2. That the Secretary of the California Environmental Protection Agency ("Secretary") shall coordinate oversight of the efforts made to meet the targets with: the Secretary of the Business, Transportation and Housing Agency, Secretary of the Department of Food and Agriculture, Secretary of the Resources Agency, Chairperson of the Air Resources Board, Chairperson of the Energy Commission, and the President of the Public Utilities Commission; and 3. That the Secretary shall report to the Governor and the State Legislature by January 2006 and biannually thereafter on progress made toward meeting the greenhouse gas emission targets established herein; and 4. That the Secretary shall also report to the Governor and the State Legislature by January 2006 and biannually thereafter on the impacts to California of global warming, including impacts to water supply, public health, agriculture, the coastline, and forestry, and shall prepare and report on mitigation and adaptation plans to combat these impacts; and 5. That as soon as hereafter possible, this Order shall be filed with the Office of the Secretary of State and that widespread publicity and notice be given to this Order.

Latest News


Governor Brown to Attend Host Breakfast Tomorrow in Sacramento 05-17-2016


Governor Brown to Attend Military Council Meeting Today 05-17-2016


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Governor Brown Announces Appointments 05-10-2016

S-06-06

WHEREAS, abundant biomass resources from agriculture, forestry and urban wastes can be tapped to provide transportation fuels and electricity to satisfy California's fuel and energy needs; and WHEREAS, ethanol is a renewable transportation biofuel that California consumes more than 900 million gallons a year which is approximately 25 percent of all the ethanol produced in the United States; and WHEREAS, California produces less than five percent of the ethanol it consumes; and WHEREAS, biomass fuels, including ethanol produced from cellulose and bio-diesel produced from a variety of sources, can reduce the state's reliance on petroleum fuels and work to lower fuel costs for consumers; and WHEREAS, in the Hydrogen Highway plan, the state has invested $6.5 million to support a network of more than 16 filling stations and a growing fleet of cars and buses that run on this clean fuel of the future; and WHEREAS, biofuels can be a clean, renewable source for hydrogen; and WHEREAS, biofuels offer greenhouse gas reduction benefits; and WHEREAS, biomass as a source of energy has the potential to power more than three million homes or produce enough fuel to run more than two million automobiles on an annual basis; and WHEREAS, biomass is a renewable resource which currently contributes two percent of the state's electricity mix, or nearly 1,000 megawatts of the state's generating capacity and is one of the options needed to achieve the State Renewables Portfolio Standard requirements; and WHEREAS, improvements in the use of waste and residues from forests and farms for energy production can actually decrease the greenhouse gas emissions associated with biomass decomposition that otherwise would occur; and WHEREAS, harnessing California's biomass resources to produce energy and other products is good for the state's economy and environment and contributes to local job creation; and WHEREAS, the increased use of biomass resources contributes solutions to California's critical waste disposal and environmental problems, including the risk of catastrophic wild fires, air pollution from open field burning, and greenhouse gas emissions from landfills; and WHEREAS, sustained biomass development offers strategic energy, economic, social and environmental benefits to California, creating jobs through increased private investment within the state. NOW, THEREFORE, I, ARNOLD SCHWARZENGGER, Governor of the State of California, by virtue of the power invested in me by the Constitution and the statutes of the State of California, do hereby order effective immediately: 1. The following targets to increase the production and use of bioenergy, including ethanol and bio-diesel fuels made from renewable resources, are established for California: a. Regarding biofuels, the state produce a minimum of 20 percent of its biofuels within California by 2010, 40 percent by 2020, and 75 percent by 2050; b. Regarding the use of biomass for electricity, the state meet a 20 percent target within the established state goals for renewable generation for 2010 and 2020; and 2. The Secretary for the California Resources Agency and the Chair of the Energy Resources Conservation and Development Commission ("Energy Commission") shall coordinate oversight of efforts made by state agencies to promote the use of biomass resources; and 3. The Air Resources Board, Energy Commission, California Environmental Protection Agency, California Public Utilities Commission, Department of Food and Agriculture, Department of Forestry and Fire Protection, Department of General Services, Integrated Waste Management Board, and the State Water Resources Control Board shall continue to participate on the Bioenergy Interagency Working Group chaired by the Energy Commission; and 4. The Energy Commission shall coordinate with other responsible state agencies to identify and secure federal and state funding for research, development and demonstration projects to advance the use of biomass resources for electricity generation and biofuels for transportation; and 5. The Energy Commission shall report to the Governor and the State Legislature through its Integrated Energy Policy Report, and biannually thereafter, on progress made in achieving sustainable biomass development in California; and 6. The California Air Resources Board is urged to consider as part of its rulemaking the most flexible possible use of biofuels through its Rulemaking to Update the Predictive Model and Specification for Reformulated Gasoline, while preserving the full environmental benefits of California's Reformulated Gasoline Programs; and 7. The California Public Utilities Commission is requested to initiate a new proceeding or build upon an existing proceeding to encourage sustainable use of biomass and other renewable resources by the state's investor-owned utilities; and 8. As soon as hereafter possible, this Order shall be filed with the Office of the Secretary of State and that widespread publicity and notice be given to this Order.

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Governor Brown Announces Appointments 05-10-2016

S-01-07

video

WHEREAS greenhouse gas ("GHG") emissions pose a serious threat to the health of California's citizens and the quality of the environment; and

WHEREAS California's transportation sector is the leading source of GHG emissions in the state, contributing over 40 percent of the state's annual GHG emissions; and

WHEREAS Assembly Bill 32 (Chapter 488, Statutes of 2006) requires a cap on GHG emissions by 2020, mandatory emissions reporting, identification of discrete early action measures, achievement of the maximum technologically feasible and cost-effective emission reductions from sources, and authorizes the development of a market-based compliance program; and

WHEREAS California is almost entirely dependent on one energy source for its transportation economy, relying on petroleum-based fuels to meet 96 percent of its transportation needs; and

WHEREAS there were more than 24 million motor vehicles registered in California in 2005 which is more than one per licensed driver; statewide gasoline consumption was almost 16 billion gallons in 2005 which is second only to the United States and slightly more than that of Japan (a country with four times the population); and there are only 80,000 hybrids and 240,000 flex-fuel vehicles on our roads today, together composing only 1.3% of all cars in California; and

WHEREAS California's dependence on a single type of transportation fuel whose price is highly volatile imperils our economic security, endangers our jobs, and jeopardizes our industries; and

WHEREAS diversification of the sources of transportation fuel will help protect our jobs and economy from the consequences of oil price shocks; and

WHEREAS alternative fuels can provide economic development opportunities and reduce emissions of greenhouse gases, criteria pollutants, and toxic air contaminants.

NOW, THEREFORE, I, ARNOLD SCHWARZENEGGER, Governor of the State of California, by virtue of the power invested in me by the Constitution and statutes of the State of California, do hereby order effective immediately:

1. That a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020 ("2020 Target").
2. That a Low Carbon Fuel Standard ("LCFS") for transportation fuels be established for California.
3. The Air Resources Board ("ARB") shall determine if an LCFS can be adopted as a discrete early action measure pursuant to AB 32, and, if so, shall consider the adoption of a LCFS on the list of early action measures required to be identified by June 30, 2007, pursuant to Heath and Safety Code section 38560.5.
4. The LCFS shall apply to all refiners, blenders, producers or importers ("Providers") of transportation fuels in California, shall be measured on a full fuels cycle basis, and may be met through market-based methods by which Providers exceeding the performance required by a LCFS shall receive credits that may be applied to future obligations or traded to Providers not meeting the LCFS.
5. The process for meeting the 2020 Target shall be as follows:
   A. The Secretary of the California Environmental Protection Agency ("Secretary") shall coordinate activities between the University of California, the California Energy Commission ("CEC"), and other agencies as required to develop and propose by June 30, 2007, a draft compliance schedule to meet the 2020 Target.
   B. The CEC shall incorporate as appropriate the LCFS draft compliance schedule into the State Alternative Fuels Plan ("SAFP") per AB 1007 (Chapter 371, Statutes of 2005), and upon adoption shall submit the SAFP to the ARB for consideration.
   C. Upon submission of the SAFP, the ARB shall consider initiating a regulatory proceeding to establish and implement the LCFS.
6. The Public Utilities Commission, in the implementation of the GHG emissions cap adopted by Decision 06-02-032, is requested to examine and address how the investor-owned utilities can contribute to reductions in GHGs in the transportation sector.

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7. The Secretary for Environmental Protection shall report to the Governor and the State Legislature by January 2008 and biannually thereafter on progress made toward meeting the 2020 Target.

This Order is not intended to, and does not, create any rights or benefits, substantive or procedural, enforceable at law or in equity, against the State of California, its departments, agencies, or other entities, its officers or employees, or any other person.

I FURTHER DIRECT that as soon as hereafter possible, this Order shall be filed with the Office of the Secretary of State and that widespread publicity and notice be given to this Order.

Decarbonizing The Gas Sector: Why California Needs A Renewable Gas Standard

November 2014

Bioenergy Association of California

Authors: Julia Levin, Katherine Mitchell, and Henry Swisher

BioenergyCA.org

I. Introduction

California is a global leader in the fight against climate change. The state has adopted dozens of policies to increase renewable energy, energy efficiency, recycling, carbon sequestration and more. In the electricity sector, California has adopted a Renewable Portfolio Standard (RPS) to increase renewable energy and decrease greenhouse gas emissions. In the transportation sector, California has adopted a Low Carbon Fuel Standard (LCFS) to reduce greenhouse gas emissions and diversify fuel supplies. Surprisingly, however, California has not adopted a policy to decarbonize or diversify the gas sector, which causes more than one-quarter of all greenhouse gas emissions in the state.[4]

Nearly half of all new natural gas fired power plants built in the U.S in 2013 were built in California

California will not be able to meet its long-term greenhouse gas reduction goals without reducing emissions from the gas sector. Yet California's natural gas use has been increasing in recent years and is likely to continue to do so given the rapid increase in gas fired power plants and the historically low price of natural gas.

Reducing emissions from California's gas sector will require a comprehensive statewide policy focused on decarbonizing and diversifying California's gas supply. This paper presents the rationale for a statewide gas strategy, beginning with an overview of the natural gas sector in California, then presenting the potential production and benefits of renewable gas – especially biogas generated from organic waste – and proposing the framework for a Renewable Gas Standard that would require a gradual but increasing percentage of California's gas to be renewable gas.

II. The Natural Gas Sector In California

California uses more than two trillion cubic feet of natural gas per year and gas use continues to increase (Table 1).[5] Most natural gas is used in the residential, industrial, commercial and electric sectors, with just a small fraction used as transportation fuel.

Natural gas is used to generate more than half of California's electricity supply[6] and the majority

4 Based on 2012 usage of natural gas, 2.313 trillion cubic feet emits 125.8 million metric tons of CO_2 equivalent emissions (based on the US Energy Information Agency conversion factor of 54.4 kg CO_2e / 1,000 cf of natural gas). http://www.eia.gov/environment/emissions/co2_vol_mass.cfm. California's total GHG emissions are 458 MMT CO_2e. California Air Resources Board, "Greenhouse Gas Inventory for 2000-2012 – by Category as Defined in the 2008 Scoping Plan," available at: www.arb.ca.gov/cc/inventory/inventory.htm.

5 CEC, footnote 1.

6 U.S. Energy Information Administration (US EIA). California generates 8115 GWh from natural gas out of a total of 15,083 GWh used in 2014. http://www.eia.gov/state/?sid=CA#tabs-4.

of its home heating and hot water.[7] It is also used for cooking and various industrial purposes. Natural gas use in California is highly seasonal, increasing in the winter for space heating and in the summer to generate electricity for air conditioning.[8]

Table 1 – Natural Gas Use in California (2010-2012)

Natural Gas End Use (billion cubic feet/year)	2010	2011	2012
Electricity Generation	922	796	1032
Industrial	548	559	577
Residential	509	518	485
Commercial	199	201	201
Natural Gas Vehicles	18	16	17
Total Natural Gas Demand	**2,196**	**2,091**	**2,313**

Source: California Energy Commission, 2014

California continues to add new natural gas fired power plants at a fast pace. In 2013, nearly half of all new natural gas power generation in the United States was built in California.[9] And more than half of new power generation in California came from natural gas, more than all new renewable energy sources combined.[10]

The California Public Utilities Commission has jurisdiction over 150,000 miles of utility-owned natural gas pipelines, which transported 82 percent of the total amount of natural gas delivered to California's gas consumers in 2012[11]. Residential and small commercial customers, referred to as "core" customers, account for

Sierra Energy's gasification facility on Fort Hunter Liggett will help the U.S Army to meet its energy security and military preparedness goals

7 CEC, footnote 1.

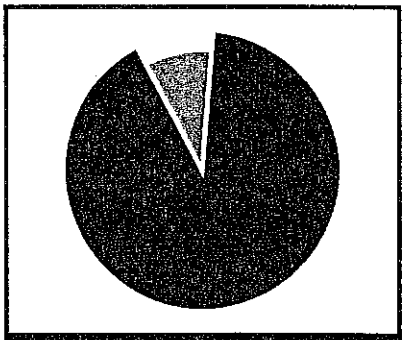
8 CEC, footnote 1.

9 US EIA, http://www.eia.gov/todayinenergy/detail.cfm?id=15751.

10 Id.

11 California Public Utilities Commission (CPUC), Overview of Natural Gas Sector. http://www.cpuc.ca.gov/PUC/energy/Gas/natgasandCA.htm.

approximately a third of the natural gas delivered by California utilities in 2012.[12] Large consumers, like electricity generators and industrial customers, referred to as "noncore" customers, accounted for two-thirds of the natural gas delivered by California utilities in 2012.[13] Most of California's small customers purchase natural gas from the utilities, while most large consumers purchase natural gas directly from producers and natural gas marketers.[14]



California imports 91% of the gas that it uses, costing the state more than $9 billion per year.

As a transportation fuel, natural gas is cleaner than diesel or gasoline. It is an important means to reduce air pollution and greenhouse gas emissions, especially from heavy duty vehicles such as trucks, buses, construction equipment and off-road vehicles. In the South Coast Air District, for example, vehicle emissions are the largest source of smog-forming NOx emissions, constituting seven of the ten largest sources of NOx emissions in the region.[15] In fact, more than 90 percent of Southern California's NOx emissions are from the combustion of gasoline and diesel by motor vehicles.[16] Replacing those petroleum fuels with natural gas can reduce NOx emissions by 50 percent and may be able to reduce NOx emissions as much as 90 percent in the future.[17] Natural gas can also reduce greenhouse gas emissions by 23 percent from diesel powered vehicles and by 28 percent from gasoline powered vehicles.[18]

Natural gas is cleaner and cheaper than petroleum based fuels, but it is still a fossil fuel with a number of economic and environmental drawbacks. On the economic side, California has to import 91 percent of the natural gas that it uses from other states and Canada (Table 2).[19] This means that California is sending nearly $9 billion per year out of state to purchase natural gas.[20] The loss to California's economy is much greater than that because California is also losing the

12 Id.

13 Id.

14 Id.

15 Henry Hugo, Assistant Deputy Executive Officer, South Coast Air Quality Management District, June 23, 2014 Presentation to the CEC, slides 3 and 4.

16 Gladstein, Neandross & Associates, Pathways to Near-Zero-Emission Natural Gas Heavy-Duty Vehicles, May 19, 2014, at p. 16. http://www.gladstein.org/pdfs/On-Road_Pathways.PDF.

17 Id at p. 9.

18 Todd Campbell, Clean Energy, June 23, 2014 Presentation to the California Energy Commission, slide 3.

19 California Gas and Electric Utilities' California Gas Report: Issues 2004-2013. http://www.pge.com/pipeline/library/regulatory/cgr_index.shtml; CEC Energy Almanac, Table 2, http://energyalmanac.ca.gov/naturalgas/natural_gas_supply.html.

20 Based on $4 per MMBtu x 2,405,520,000 MMBtu (2,313 billion scf of natural gas).

jobs, economic development, tax revenues and other economic multipliers that go with dollars spent on energy production. Importing 91 percent of California's gas supply, which is used to produce the majority of California's electricity supply, also leaves California vulnerable to market manipulation. California paid heavily for this vulnerability in the 2001-2002 energy crisis, when out-of-state gas traders manipulated the market and cost California ratepayers billions of dollars.

Table 2 - California Natural Gas Supply
Percentage of Supply by Region

	2008	2009	2010	2011	2012
California	13	12	12	11	9
Canada	19	21	23	19	16
Southwest US	46	43	41	32	35
Rocky Mountains	22	22	24	38	40
TOTAL	100	100	100	100	100

Source: California Energy Commission, 2014

Public health and environmental impacts add to the costs of natural gas. Natural gas is responsible for more than one-quarter of all greenhouse gas emissions in California – about 125 million tons of carbon dioxide equivalent emissions per year.[21] Natural gas is responsible for 90 percent of the greenhouse gas emissions from California's electricity sector.[22] Natural gas exploration, drilling and combustion have additional environmental and public health impacts.

While natural gas is cleaner and less expensive than diesel and gasoline, it provides far fewer benefits than renewable gas.

III. Renewable Gas Potential And Benefits

California can generate substantial quantities of renewable gas to reduce greenhouse gas emissions, diversify the gas sector and provide many other benefits. Renewable gas made from organic waste in California can provide more than 10 percent of the state's total gas supply

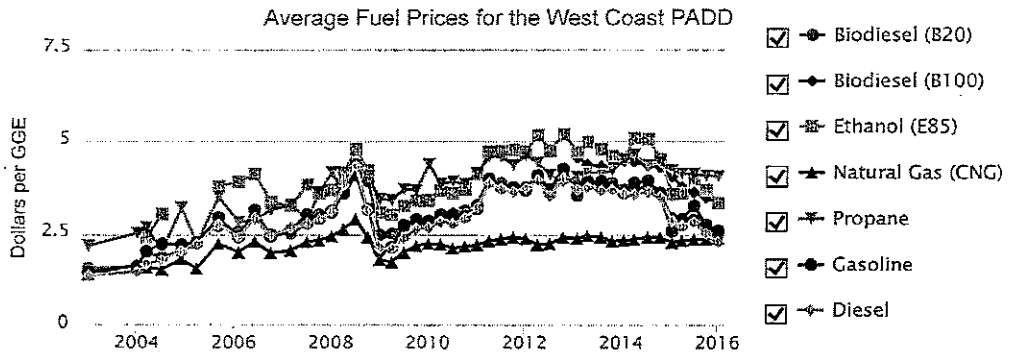
21 Based on California's 2012 gas consumption of 2.313 trillion cubic feet of gas and US EIA's emissions conversion factor of 54.5 kg of CO_2 per 1,000 scf of natural gas, emissions from California's gas sector were 125.8 MMT CO_2e in 2012. www.eia.gov/environment/emissions/CO2_vol_mass.cfm. California's total GHG emissions in 2012 were 458.7 MMT CO_2e. California Air Resources Board (CARB), "Greenhouse Gas Inventory for 2000-2012 – by Category as Defined in the 2008 Scoping Plan," available at: www.arb.ca.gov/cc/inventory/inventory.htm.
22 Id.

More California Videos on YouTube

(https://www.youtube.com/user/CleanCitiesTV/search?query=California)

Chart
Data

Regional Fuel Prices



Average fuel prices as of January 2016

	West Coast Region		National Average	
Fuel	**per unit sold**	**per GGE**	**per unit sold**	**per GGE**
Biodiesel (B20)	$2.74/gallon	$2.49/GGE	$2.41/gallon	$2.19/GGE
Biodiesel (B99–B100)	$3.39/gallon	$3.36/GGE	$3.21/gallon	$3.18/GGE
Ethanol (E85)	$2.37/gallon	$3.34/GGE	$1.86/gallon	$2.62/GGE
Natural Gas (CNG)	$2.40/GGE	$2.40/GGE	$2.09/GGE	$2.09/GGE
Propane	$2.94/gallon	$4.06/GGE	$2.85/gallon	$3.93/GGE
Gasoline	$2.60/gallon	$2.60/GGE	$1.98/gallon	$1.98/GGE
Diesel	$2.55/gallon	$2.30/GGE	$2.23/gallon	$2.01/GGE

Source: Average prices per gasoline gallon equivalent (/glossary.html#GasolineGallonEquivalent) (GGE) for the West Coast PADD (/glossary.html#PetroleumAdministrationforDefenseDistricts) from the Alternative Fuel Price Report (/fuels/prices.html)

Bioenergy Production and Infrastructure

Ethanol Plants 6

U.S. Department of Energy - Energy Efficiency and Renewable Energy
Alternative Fuels Data Center

Natural Gas

Natural gas, a domestically produced gaseous fuel, is readily available through the utility infrastructure (natural_gas_distribution.html). Whether produced via conventional (natural_gas_conventional.html) or renewable (natural_gas_renewable.html) methods, this clean-burning alternative fuel must be compressed or liquefied for use in vehicles.

Fuel Prices (prices.html)

Find natural gas fuel prices and trends.

Basics (natural_gas_basics.html)

Find information about natural gas, including production, distribution, and related links.

Benefits and Considerations (natural_gas_benefits.html)

Explore the benefits and considerations of using natural gas as a vehicle fuel.

Stations (natural_gas_stations.html)

Locate natural gas fueling stations in your area and learn about natural gas fueling infrastructure.

Vehicles (/vehicles/natural_gas.html)

Learn about natural gas vehicles and find information about vehicle availability, conversions, emissions, maintenance, and safety.

Laws and Incentives (/fuels/laws/NG)

Find natural gas laws and incentives in your area.

The AFDC is a resource of the U.S. Department of Energy's Clean Cities (http://cleancities.energy.gov/) program.

U.S. Department of Energy - Energy Efficiency and Renewable Energy
Alternative Fuels Data Center

Natural Gas Benefits and Considerations

Whether produced via conventional or renewable methods, the advantages of natural gas as an alternative fuel include its domestic availability, established distribution network, relatively low cost, and emissions benefits.

Natural gas produced via renewable methods offers additional benefits. Renewable natural gas (natural_gas_renewable.html) (RNG) is essentially biogas—the gaseous product of the decomposition of organic matter—that has been processed to purity standards. Capturing biogas from landfills and livestock operations reduces emissions by preventing methane release into the atmosphere. Methane is 25 times stronger than carbon dioxide as a greenhouse gas. Additionally, producing biogas through anaerobic digestion (/glossary.html#AnaerobicDigestion) reduces odors and produces nutrient-rich liquid fertilizer.

RNG and conventional natural gas (natural_gas_conventional.html), and must be compressed (CNG) or liquefied (LNG) for use in vehicles. Like any alternative fuel, there are some considerations to take into account when contemplating the use of natural gas.

Energy Security

In 2014, the United States imported about 27% of the petroleum it consumed, and transportation accounted for more than 70% of total U.S. petroleum consumption. With much of the world's petroleum reserves located in politically volatile countries, the United States is vulnerable to supply disruptions. However, because U.S. natural gas reserves are abundant, this alternative fuel can be domestically produced and used to offset the petroleum currently being imported for transportation use.

Vehicle Performance

Natural gas vehicles (/vehicles/natural_gas.html) (NGVs) are similar to gasoline or diesel vehicles with regard to power, acceleration, and cruising speed. The driving range of NGVs is generally less than that of comparable gasoline and diesel vehicles because, with natural gas, less overall energy content can be stored in the same size tank as the more energy dense gasoline or diesel fuels. Extra natural gas storage tanks or the use of LNG can help increase range for larger vehicles.

In heavy-duty vehicles, dual-fuel, compression-ignited engines are slightly more fuel-efficient than spark-ignited dedicated natural gas engines. However, a dual-fuel engine increases the complexity of the fuel-storage system by requiring storage of both types of fuel.

Lower Emissions

All new vehicles are equipped with effective emission control systems and must meet the same emissions standards, regardless of fuel type. Consequently, tailpipe emissions (/vehicles/emissions_natural_gas.html) from natural gas vehicles are comparable to those of gasoline and diesel vehicles equipped with modern emissions controls. According to Argonne National Laboratory's Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation (GREET) model (https://greet.es.anl.gov/), light-duty vehicles running on natural gas can reduce life cycle greenhouse gas emissions by 6% to 11%. In addition, because CNG fuel systems are completely sealed, the vehicles produce no evaporative emissions.

Infrastructure and Vehicle Availability

A wide variety of new, heavy-duty natural gas vehicles are available from U.S. original equipment manufacturers (OEMs). Although the number of available light-duty natural gas vehicles from OEMs is limited, the choices are steadily growing. For availability, see the Alternative Fuel and Advanced Vehicle Search (/vehicles/search/) or the Clean Cities 2015 Vehicle Buyers Guide (http://www.afdc.energy.gov/uploads/publication/2015_vehicle_buyers_guide.pdf).

Fleets and consumers also have the option of reliably converting existing gasoline or diesel vehicles for natural gas operation using qualified system retrofitters. It is critical that all vehicle and engine conversions (/vehicles/natural_gas_conversions.html) meet the emissions and safety regulations (/vehicles/conversions_regulations.html) and standards instituted by the U.S. Environmental Protection Agency, the National Highway Traffic Safety Administration, the National Fire Protection Agency's NFPA 52 (http://www.nfpa.org/codes-and-standards/document-information-pages?mode=code&code=52) Vehicular Gaseous Fuel Systems Code, and state agencies like the California Air Resources Board.

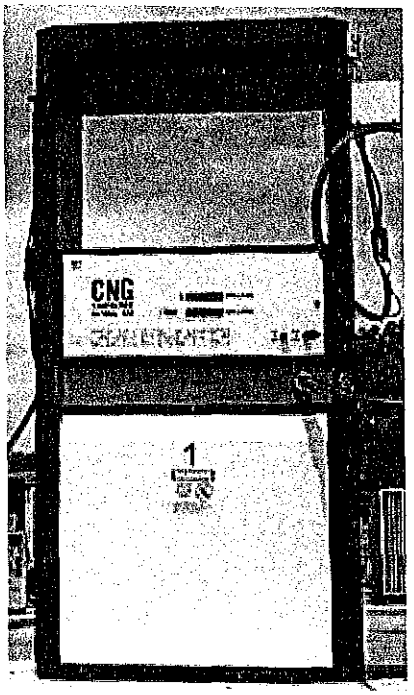
Although the United States has an extensive natural gas distribution system in place, vehicle fueling infrastructure is limited.

Therefore, fleets may need to install their own natural gas fueling infrastructure (natural_gas_infrastructure.html), which can be costly. Finding partners who will commit to use the infrastructure can improve the payback period.

U.S. Department of Energy - Energy Efficiency and Renewable Energy
Alternative Fuels Data Center

Natural Gas Fueling Stations

Hundreds of compressed natural gas (CNG) fueling stations are available in the United States. Several liquefied natural gas (LNG) fueling stations are available mostly in areas that service the long-haul trucking industry. For consumers, fueling natural gas vehicles at home can be possible with the help of a small fueling appliance.



Station Locations (natural_gas_locations.html)

Find natural gas fueling stations by location or along a route.

Infrastructure Development (natural_gas_infrastructure.html)

Learn about developing natural gas fueling infrastructure.

CALIFORNIA ENERGY COMMISSION

Energy ALMANAC

Retail Fuel Report and Data for California

The Petroleum Industry Information Reporting Act (PIIRA) requires all retail service stations in California to file a Retail Fuel Outlet Annual Report (CEC-A15) and report retail sales of gasoline, diesel and other transportation fuels. Sales data reported does not include commercial fleets, government entities, private cardlocks (facilities open only to participating companies and not the general public), or rental facilities/equipment yards.

For the 2012 calendar year, there were approximately 10,000 retail fueling stations in California. Among this number includes different types of retail fueling stations, such as service stations, hypermarkets, truck stops, public card locks, and airports. Station population varies due to the opening of new stations, closures of existing stations and consolidations/changes of ownership.

The following charts and graphs are based on actual reported data and where noted, derived data from the A15 retail fuel report. For 2012, the California Energy Commission analyzed approximately 8,050 station reports and estimated the total station population is 10,000 stations, plus or minus 30 stations. Statewide total estimates are calculated using a statistical method of resampling with replacement referred to as "bootstrapping."

Retail Station Summary

The following tables summarize the sales volumes and retail station counts for various fuels reported on the A15 for 2009-2012. For station counts, some fuel facilities sell more than one type of fuel and are counted multiple times. Because these values are based on survey responses, the total number of actual stations and sales volumes is greater per each fuel. Natural gas represents both liquid natural gas (LNG) and compressed natural gas (CNG).

Count of Retail Fuel Station by Fuel - Survey Responses

Reporting Year	Gasoline	Diesel	E85[1]	Propane	Natural Gas
2009	8,138	3,826	30	726	52
2010	7,707	3,715	36	679	42
2011	8,036	3,942	42	809	48
2012	7,748	3,847	51	805	32

Retail Sales Volumes - Survey Responses (Million Gallons)

Reporting Year	Gasoline	Diesel	E85[1]	Propane	Natural Gas
2009	12,764	1,393	1.38	40.87	3.84
2010	12,238	1,285	2.00	32.64	4.09
2011	12,644	1,346	3.89	19.82	7.26
2012	12,241	1,325	5.12	25.44	6.60

[1] According to the Air Resources Board (ARB), E-85 dispensed, in California, averages 83 percent ethanol and 17 percent gasoline.

Retail Fueling Stations by Station Type

The table below reports the percentages of fueling stations by station type in 2012, based on A15 responses. 90 percent of fueling facilities are service stations and the remaining 10 percent are other types of facilities, some of which cater to specific transportation sectors, such as watercraft for marinas.

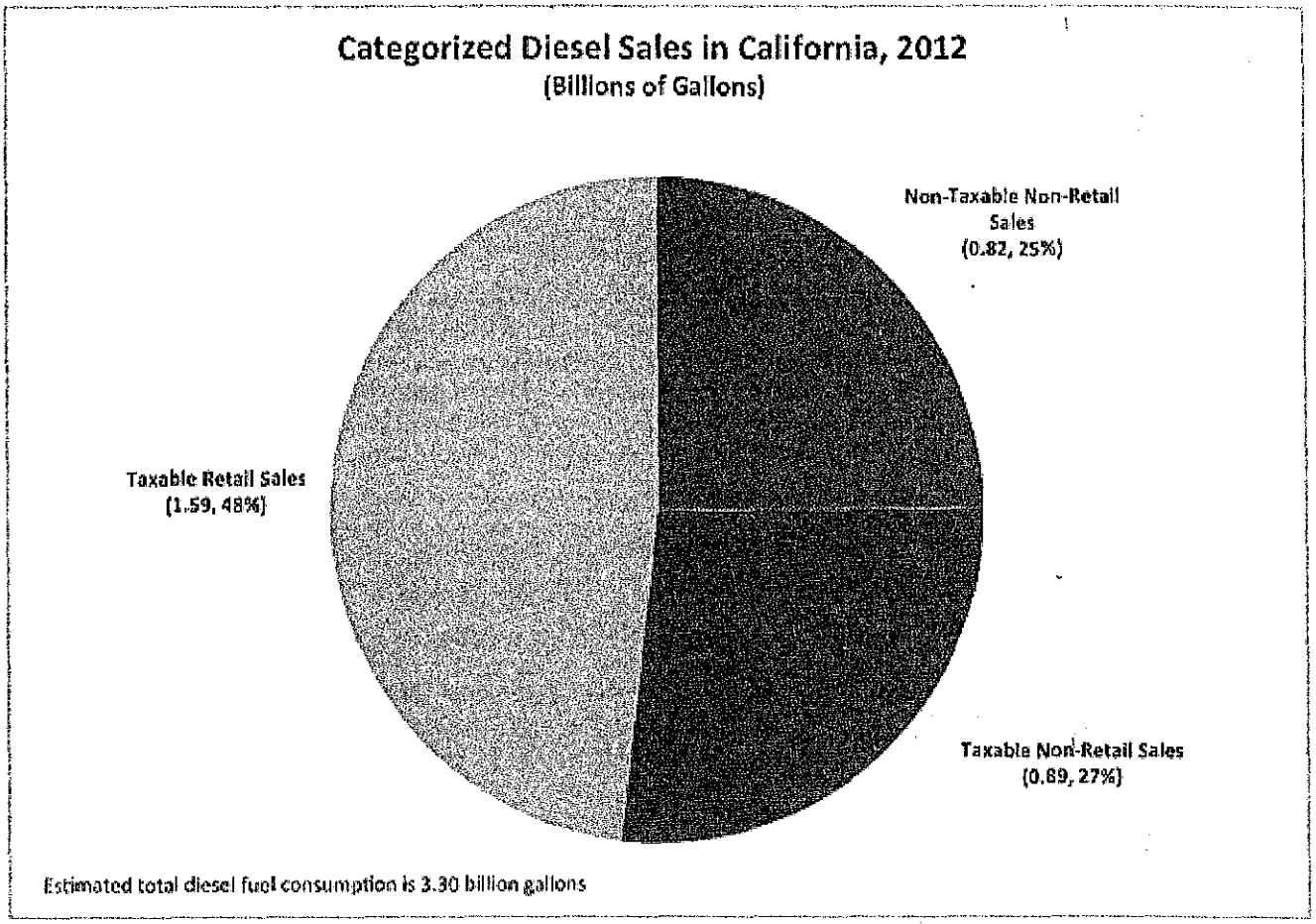
Operational Designation	Percetage of Reporting Stations
Gas Station/Service Station	90%
Cardlock	3%
Other	2%
Airport	2%
Marina	1%
Truck Stop	1%
Hypermart	1%

Diesel Sales

In 2012, total diesel sales were 3.30 billion gallons, while retail sales were estimated to be 48 percent of total sales. The majority, 52 percent, of diesel sales are divided into two categories of non-retail taxable and non-taxable sales.

- **Taxable retail sales:** These sales occur to individual end-users at retail stations, including truck stops. This is the only category of sales reflected by the A-15 survey, and totaled 1.45 billion gallons in 2011.
- **Taxable non-retail sales:** This type of diesel is typically consumed by commercial fleets and totaled 1.01 billion gallons in 2011.
- **Non-taxable sales:** Includes "dyed" diesel intended for construction vehicles, farm diesel and other off-road uses, totaling 0.8 billion gallons in 2011.

The chart below illustrates the breakdown of diesel sales in terms of retail and non-retail sales. Only taxable retail diesel sales are reflected in the A-15 survey.



2012 Fast Facts:

- The estimated total number of retail stations in California decreased from 10,030 stations in 2011 to 10,000 in 2012.

2012 Fast Facts - Gasoline:

- Estimated total gasoline retail sales totaled 14.49 billion gallons in 2012.
- The average gasoline sales per station were 1.58 million gallons, or 132,000 gallons per month.
- The top 1% of reporting retail gasoline stations in California sold approximately 7% of the total gasoline. The average gasoline sales per station of the top 1% was 11.79 million gallons, or 980,000 gallons per month.
- The top 21% of reporting retail gasoline stations in California sold half of the total gasoline. The average of gasoline sales per station of the top 21% was 3.73 million gallons, or 311,000 gallons per month.

2012 Fast Facts - Diesel:

- The percentage of reporting stations which sell diesel fuel gradually increased from 45% in 2008 to 50% in 2012.
- The average diesel sales per station were 0.34 million gallons, or 28,000 gallons per month.
- In 2012, estimated taxable retail diesel sales were 1.59 billion gallons, out of a total 3.30 billion gallons of diesel sold.
- Approximately 48% of the estimated diesel sales and nearly all the gasoline sales in California were at the retail level.
- The top 1% of reporting retail diesel stations in California sold approximately 31% of the total retail diesel. The average of diesel sales per station of the top 1% was 10.5 million gallons, or 875,000 gallons per month.

- The top 3% of reporting diesel stations sold half the retail diesel. The average of diesel sales per station of the top 3.0% was 5.67 million gallons, or 473,000 gallons per month.

Methodology

Total taxable sales volumes of gasoline in California are available from the California Board of Equalization (BoE). Staff uses this data as a benchmark for gasoline consumption after minor adjustments to account for rebates and audit adjustments. The A15 reported gasoline volumes totaled 2.25 billion gallons less than the BoE volumes because A15 reports are not received from all stations.

Using a statistical resampling methodology staff estimated the total gasoline station population needed to match the gasoline volumes reported by BoE. The method of resampling (or bootstrapping) refers to a computer-aided statistical method which uses a subset of data from a population to estimate statistics such as the mean, variance or percentiles pertaining to the population as a whole

To implement this resampling method, staff first estimated the number of retail stations operating in California for a given year using the staff-adjusted gasoline sales data from BoE as a calibration target. The projected station counts were then used to extrapolate total retail diesel sales volumes statewide. State results were in turn used to estimate the gasoline and diesel sales at the county level, along with how many stations are estimated to be operating in each county. The results are reflected in the charts and tables on the subsequent web pages.

Overall station count totals have a margin of error of +/- 30 stations at the 95% confidence level. Projected retail fuel sales have a margin of error of +/- 6 million gallons (less than half a percent) at the 95% confidence level.

Stations Reported and Projected Station Counts by County

Retail Gasoline Sales by County

Retail Diesel Sales by County

Health Effects of Diesel Exhaust

A fact sheet by
Cal/EPA's Office of Environmental Health Hazard Assessment and
The American Lung Association of California.

AMERICAN LUNG ASSOCIATION. of California

Diesel fuel is widely used throughout our society. It powers trucks that deliver products to our communities, buses that carry us to school and work, agricultural equipment that plants and harvests our food, and backup generators that can provide electricity during emergencies. It is also used for many other applications. Diesel engines have historically been more versatile and cheaper to run than gasoline engines or other sources of power. Unfortunately, the exhaust from these engines contains substances that can pose a risk to human health.

In 1998, the California Environmental Protection Agency's Office of Environmental Health Hazard Assessment (OEHHA) completed a comprehensive health assessment of diesel exhaust. This assessment formed the basis for a decision by the California Air Resources Board (ARB) to formally identify particles in diesel exhaust as a toxic air contaminant that may pose a threat to human health. The American Lung Association of California (ALAC) and its 15 local associations work to prevent lung disease and promote lung health. Since 1904, the American Lung Association has been fighting lung disease through education, community service, advocacy and research.

This fact sheet by OEHHA and ALAC provides information on health hazards associated with diesel exhaust.

Diesel exhaust contains more than 40 toxic air contaminants

What is diesel exhaust?

Diesel exhaust is produced when an engine burns diesel fuel. It is a complex mixture of thousands of gases and fine particles (commonly known as soot) that contains more than 40 toxic air contaminants. These include many known or suspected cancer-causing substances, such as benzene, arsenic and formaldehyde. It also contains other harmful pollutants, including nitrogen oxides (a component of urban smog).

How are people exposed to diesel exhaust?

Diesel exhaust particles and gases are suspended in the air, so exposure to this pollutant occurs whenever a person breathes air that contains these substances. The prevalence of diesel-powered engines makes it almost impossible to avoid exposure to diesel exhaust or its byproducts, regardless of whether you live in a rural or urban setting. However, people living and working in urban and industrial areas are more likely to be exposed to this pollutant. Those spending time on or near roads and freeways, truck loading and unloading operations, operating diesel-powered machinery or

working near diesel equipment face exposure to higher levels of diesel exhaust and face higher health risks.

What are the health effects of diesel exhaust?

As we breathe, the toxic gases and small particles of diesel exhaust are drawn into the lungs. The microscopic particles in diesel exhaust are less than one-fifth the thickness of a human hair and are small enough to penetrate deep into the lungs, where they contribute to a range of health problems.

Diesel exhaust and many individual substances contained in it (including arsenic, benzene, formaldehyde and nickel) have the potential to contribute to mutations in cells that can lead to cancer. In fact, long-term exposure to diesel exhaust particles poses the highest cancer risk of any toxic air contaminant evaluated by OEHHA. ARB estimates that about 70 percent of the cancer risk that the average Californian faces from breathing toxic air pollutants stems from diesel exhaust particles.

Diesel exhaust increases the risk of cancer...

In its comprehensive assessment of diesel exhaust, OEHHA analyzed more than 30 studies of people who worked around diesel equipment, including truck drivers, railroad workers and equipment operators. The studies showed these workers were more likely to develop lung cancer than workers who were not exposed to diesel emissions. These studies provide strong evidence that long-term occupational exposure to diesel exhaust increases the risk of lung cancer. Using information from OEHHA's assessment, ARB estimates that diesel-particle levels measured in California's air in 2000 could cause 540 "excess" cancers (beyond what would occur if there were no diesel particles in the air) in a population of 1 million people over a 70-year lifetime. Other researchers and scientific organizations, including the National Institute for Occupational Safety and Health, have calculated cancer risks from diesel exhaust that are similar to those developed by OEHHA and ARB.

Exposure to diesel exhaust can have immediate health effects. Diesel exhaust can irritate the eyes, nose, throat and lungs, and it can cause coughs, headaches, light-headedness and nausea. In studies with human volunteers, diesel exhaust particles made people with allergies more susceptible to the materials to which they are allergic, such as dust and pollen. Exposure to diesel exhaust also causes inflammation in the lungs, which may aggravate chronic respiratory symptoms and increase the frequency or intensity of asthma attacks.

... And it can cause coughs and aggravate asthma

Diesel engines are a major source of fine-particle pollution. The elderly and people with emphysema, asthma, and chronic heart and lung disease are especially sensitive to fine-particle pollution. Numerous studies have linked elevated particle levels in the air to increased hospital admissions, emergency room visits, asthma attacks and premature deaths among those suffering from respiratory problems. Because children's lungs and respiratory systems are still developing, they are also more susceptible than healthy adults to fine particles. Exposure to fine particles is associated with increased frequency of childhood illnesses and can also reduce lung function in children.

Like all fuel-burning equipment, diesel engines produce nitrogen oxides, a common air pollutant in California. Nitrogen oxides can damage lung tissue, lower the body's resistance to respiratory infection and worsen chronic lung diseases, such as asthma. They also react with other pollutants in the atmosphere to form ozone, a major component of smog.

What is being done to reduce the health risks from diesel exhaust?

Improvements to diesel fuel and diesel engines have already reduced emissions of some of the pollutants associated with diesel exhaust. However, diesel exhaust is still one of the most widespread and toxic substances in California's air.

ARB's Diesel Risk Reduction Plan, when fully implemented, will result in a 75 percent reduction in particle emissions from diesel equipment by 2010 (compared to 2000 levels), and an 85 percent reduction by 2020. The plan calls for the use of cleaner-burning diesel fuel, retrofitting of existing engines with particle-trapping filters, and the use in new diesel engines of advanced technologies that produce nearly 90 percent fewer particle emissions, as well as the use of alternative fuels.

Diesel exhaust contributes to smog and fine-particle pollution

The use of other fuels, such as natural gas, propane and electricity offer alternatives to diesel fuel. All of them produce fewer polluting emissions than current formulations of diesel fuel. As a result of ARB and local air-quality regulations, public transit agencies throughout California are using increasing numbers of passenger buses that operate with alternative fuels or retrofitted equipment.

For further information

Office of Environmental Health Hazard Assessment

1001 I Street, P.O. Box 4010, Sacramento, CA 95812-4010
(916) 324-7572
www.oehha.ca.gov

Air Resources Board

1001 I Street, Sacramento, CA 95814
(800) 363-7664
www.arb.ca.gov

American Lung Association of California

921 11th Street, Suite 700, Sacramento, CA 95814
(916) 442-4446
For your local office, call (800) LUNG-USA
www.californialung.org

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see OEHHA's web site at www.oehha.ca.gov/public_info.html.

Reducing California's Petroleum Dependence

CALIFORNIA ENERGY COMMISSION

CALIFORNIA AIR RESOURCES BOARD

JOINT AGENCY REPORT

AUGUST 2003
P600-03-005F

Gray Davis, *Governor*

price volatility, improve environmental quality, and demonstrate positive leadership in the effort to reduce greenhouse gas emissions.

Recommendation #2. The Governor and Legislature should work with the California delegation and other states to establish national fuel economy standards that double the fuel efficiency of new cars, light trucks and SUVs.

The most effective way to improve vehicle fuel economy is to revise the federal CAFE standards. In cooperation with other states, California should press the Congress to adopt new standards, which double the fuel economy of new vehicles. The goal in Recommendation #1 (15 percent below 2003 demand) assumes that the federal government doubles the current CAFE standard. Should the federal government fail to implement a CAFE standard that doubles the fuel efficiency of new cars, it would be necessary to reassess the goal in Recommendation #1.

Recommendation #3. The Governor and Legislature should establish a goal to increase the use of non-petroleum fuels to 20 percent of on-road fuel consumption by 2020 and 30 percent by 2030.

California should act to increase the use of non-petroleum fuels as a strategy to reduce petroleum demand and to hedge against the costs and risks of a growing dependence on petroleum fuels. The Governor and Legislature should adopt a goal establishing a minimum fraction of on-road transportation fuel that is derived from non-petroleum sources. Consistent with the petroleum reduction goal of Recommendation #1, the agencies recommend an additional goal of 20 percent use of non-petroleum fuels by the year 2020 and 30 percent by 2030. This recommendation is expressed as a percentage of fuel that is used, not as a percentage reduction in forecasted demand.

The goal of 20 percent non-petroleum fuel use in 2020, increasing to 30 percent in 2030, would include the non-petroleum portion of fuel blends such as Fischer-Tropsch diesel and conventional gasoline. By the end of 2003, California's gasoline will contain approximately 5.7 percent ethanol and that ethanol should be recognized as meeting a portion of the recommended non-petroleum fuel goal. In 2020, the 20 percent recommended goal equates to approximately 15 percent non-petroleum fuel in fuel blends (ethanol as a portion of conventional gasoline and Fischer-Tropsch fuel as a portion of diesel) plus another 5 percent non-petroleum fuel such as hydrogen used in hydrogen fuel cell vehicles. The 30 percent goal in 2030 equates to approximately 13 percent non-petroleum fuel in fuel blends (again ethanol as a portion of conventional gasoline and Fischer-Tropsch as a portion of diesel) plus another 17 percent non-petroleum fuel such as hydrogen used in hydrogen fuel cell vehicles.

This goal would be met if the petroleum reduction strategy outlined in this report is implemented. The value of this goal is to assure that regardless of how petroleum reduction is achieved, a minimum percentage of the fuel used in California will come

INSTITUTE OF TRANSPORTATION STUDIES
UNIVERSITY of CALIFORNIA • IRVINE (//www.its.uci.edu)

(//energy.ca.gov)

Natural Gas Vehicle Incentive Project (NGVIP)

The Natural Gas Vehicle Incentive Project (NGVIP) provides incentives to reduce the purchase price of new on-road natural gas vehicles for use in California. The incentives are available on a first-come, first-served basis and at varying levels depending on the gross vehicle weight. Details of the program are available in the application manual (/apply/new).

The NGVIP is administered by the Institute of Transportation Studies, at UC Irvine (http://www.its.uci.edu) on behalf of the California Energy Commission (http://energy.ca.gov).

Recent Updates

⚠ **September 11, 2015:** We have processed all applications received to date and sent emails to the contact person listed on each ARF-1 form indicating whether the application was confirmed for a reservation or placed on the wait list.

Contact us (/contact) if you have received an acknowledgement that your application was received but have not yet received a response regarding indicating whether your application was confirmed or waitlisted.

⚠ **September 08, 2015:** The administrative delays we were experiencing have been resolved and we are now processing applications for approval. All applicants to date should receive a response via email by the end of the week.

See the News and Announcements (/news) page for older announcements.

At a Glance...

Who is eligible?

- Individuals, firms, and public agencies purchasing new, eligible natural gas vehicles for use in California.
- Eligible vehicles are new, on-road natural gas vehicles purchased after August 07, 2015 or the date on your reservation confirmation, whichever is later.
- Vehicles must be registered in California and operated in the state at least 90% of the time for three years.

How do I apply?

Obtaining an incentive has three main steps (see the application manual for complete details).

1. Apply to reserve up to 30 incentives for the purchase of qualifying vehicles.
2. After receiving your reservation confirmation, purchase, take delivery of, and register your vehicle(s) in the State of California.
3. Send in your incentive payment request along with the required supporting documentation.

How long does it take?

Once the administrator has received a valid incentive payment request with complete supporting documentation, we will process and send your incentive payment within 90 days.

Funding Status Summary

The NGVIP Administrator is now accepting reservation applications. See the application manual (/apply/new) for details.

Incentive Reservation Processing	
Available for New Reservations	$214,000
Requested	$8,786,000
Processing (est)	$214,000
Available (est)	$0
Waitlist (est)	$8,572,000

Confirmed Incentive Status	
Total Funding	$10,187,000
Reserved	$8,359,000
Issued	$1,614,000
Available for New Reservations	$214,000

Additional details and definitions available on the funding status page (/funding-status)

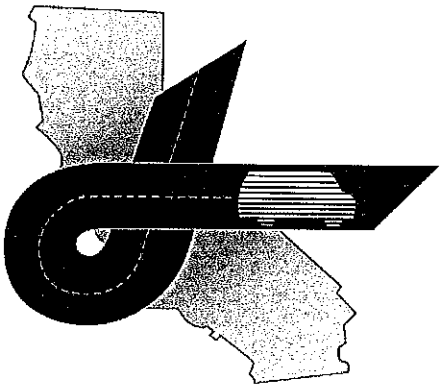
Other Links

- The CEC's Alt Fuels page (http://energy.ca.gov/altfuels) (you may subscribe to the Alt Fuels mailing list from here)

info@ngvip.its.uci.edu (mailto:info@ngvip.its.uci.edu)

California NGV Coalition

2013 Natural Gas Fueling Station Directory



For copies of this station directory contact:

California Natural Gas Vehicle Coalition
1029 K Street, Suite 24
Sacramento, CA 95814

Phone: 916-448-0015
Email: directory@cngvc.org

California Natural Gas Vehicle Coalition

Who we are: The California NGV Coalition is an industry trade association dedicated to promoting natural gas as a clean, low-carbon alternative transportation fuel for California. Members of the Coalition include vehicle and engine manufacturers and retrofitters, natural gas utilities, fuel providers, builders and owners of fueling stations, industry equipment manufacturers, and fleet users of natural gas vehicles.

The Coalition supports the use of both compressed natural gas (CNG) and liquefied natural gas (LNG) in a full range of vehicle types, from light-duty passenger vehicles to medium- and heavy-duty vans, trucks, and tractors.

What we do: The California NGV Coalition represents the natural gas vehicle industry in Sacramento and around the state to support policies that promote the use of natural gas as a transportation fuel.

We work with the state Legislature, the California Air Resources Board, the California Energy Commission, local governments, regional air pollution control districts, and the state's major ports to educate policy makers about the economic and environmental benefits of natural gas as a vehicle fuel. The Coalition also works closely with the environmental community, state and local agencies, and industry members to advance policies that benefit the natural gas vehicle industry.

Our activities include sponsoring legislation and advocating for the industry in regulatory proceedings. Examples of the Coalition's work include providing crucial information to the California Energy Commission on natural gas market economics, contributing technical analyses to well-to-wheels fuel-cycle emissions reports, and participating in policy working groups.

Why it matters: For a century, petroleum has dominated the transportation fuel supply in California and the U.S. Now concerns about air pollution and climate change, fuel supply and security, and simply the cost of petroleum fuel compel California to reduce its petroleum dependence.

Natural gas provides a path to this goal today. For 20 years it has demonstrated lower pollutant emissions than gasoline and diesel and is now recognized as a low-carbon fuel. As the world's oil reserves shrink, important new natural gas supplies are being discovered in the U.S. And the pump price of natural gas is consistently and significantly lower than that of gasoline and diesel fuel.

Southern California

Central California

Northern California

Nevada

Arizona

Other Information

NONDISCLOSURE AND LIMITED USE AGREEMENT

THIS NONDISCLOSURE AND LIMTED USE AGREEMENT, dated December 16, 2015 (this "Agreement"), is by and between Southern California Gas Company, a California public utility ("SoCalGas"), and the California Department of Food and Agriculture, a California government agency ("CDFA;" CDFA and SoCalGas are collectively referred to herein as "Parties" and individually as "Party"), together with CDFA's employees, officers, directors, advisors, Contractors (defined below), representatives and agents (individually, "Representative," and collectively, "Representatives").

RECITALS

A. WHEREAS, CDFA, through its Division of Measurement and Standards, is responsible for overseeing the fuel quality, dispenser accuracy, and advertising of fuels sold at retail in the State of California, including emerging alternative and renewable fuels such as biodiesel, renewable diesel, natural gas, and electricity;

B. WHEREAS, CDFA is presently developing a proposed set of specifications for the use of natural gas ("NG") as a motor vehicle fuel in the State of California, and is in need of data and information pertaining to NG that is distributed for use in California;

C. WHEREAS, SoCalGas has possession of certain proprietary data and information pertaining to NG (collectively, "Confidential Information") that it transports and distributes for use in its service territory which is the southern half of California;

D. WHEREAS, employees of one or more private firms under contract with CDFA ("Contractors") may be involved in CDFA's receipt and review of the Confidential Information;

E. WHEREAS, CDFA and SoCalGas both acknowledge and agree that SoCalGas is not under a legal obligation to provide the Confidential Information to CDFA; and

F. WHEREAS, in the spirit of cooperation and goodwill, SoCalGas desires to provide the Confidential Information to CDFA, in accordance with the terms of this Agreement.

NOW, THEREFORE, in consideration of the premises and mutual covenants set forth in this Agreement, the Parties hereto hereby agree as follows:

AGREEMENT

1. DEFINITION

"Confidential Information," as defined above, shall include any and all proprietary information concerning the business, operations and assets of SoCalGas, its present and future direct or indirect parent company(ies), whether or not prepared in

connection with CDFA's request for such information, including, without limitation, gas quality information pertaining to the NG that SoCalGas distributes for use in California, composition of pipeline gas such as mole percent of methane, ethane, propane, butanes, pentanes, C6+ hydrocarbons, nitrogen, CO_2, Wobbe Index and MWM Methane Number, for SoCalGas's BTU districts, but excluding information (1) known to CDFA or a Representative prior to obtaining the same from SoCalGas; (2) in the public domain at the time of disclosure by CDFA; (3) obtained by CDFA or a Representative from a third party who did not receive same, directly or indirectly, from SoCalGas; or (4) approved for release by written authorization of an authorized officer of SoCalGas. CDFA shall have the burden of proof to establish the applicability of any of these four exceptions.

2. **LIMITED USE; NONDISCLOSURE**

CDFA hereby represents, warrants, and covenants that it shall use the Confidential Information only for the sole and limited purpose of developing a proposed MWM methane number specification for the labelling of NG intended for use as a motor vehicle fuel in California. Neither CDFA nor its Representatives shall use the Confidential Information for its own benefit or for developing other NG labelling or compositional specifications other than for the limited purpose set forth herein. Nor shall the provision of the Confidential Information impose or create an obligation on the part of SoCalGas to develop or provide additional or more specific gas composition data to CDFA.

Furthermore, CDFA agrees to use the higher of the same degree of care it uses with respect to its own proprietary or confidential information or a reasonable standard of care to prevent unauthorized use or disclosure of the Confidential Information. Without limiting the generality of the foregoing, CDFA shall not disclose the Confidential Information to any individual or entity other than a Representative. Except as otherwise provided herein, CDFA and its Representatives will keep confidential and not disclose the Confidential Information. CDFA shall cause each of its Representatives to become familiar with, and abide by, the terms of this Agreement. CDFA shall be responsible for any breach of this Agreement by its Representatives.

In the event that, pursuant to the Public Records Act (the "PRA," codified at California Government Code §§ 6250-6270), a PRA request is filed by a third party with CDFA requesting access to or copies of any or all of the Confidential Information, then both SoCalGas and CDFA agree that the Confidential Information constitute and shall be deemed to be "Records Exempt from Disclosure" pursuant to the PRA. CDFA further agrees that it shall treat and handle the Confidential Information in accordance with all of the applicable procedures pertaining to "Records Exempt from Disclosure" as set forth in the PRA.

IN NO EVENT SHALL THE CONFIDENTIAL INFORMATION EVER BE USED IN ANY LEGAL ACTION OF ANY KIND OF INCLUDING BUT NOT LIMITED TO ANY ENFORCEMENT, CIVIL OR CRIMINAL ACTION AGAINST SOCALGAS, ITS EMPLOYEES, OFFICERS, OR AGENTS, OR ITS AFFILIATES.

3. **COURT OR ADMINISTRATIVE ORDER**

Notwithstanding the provisions of Article 2 above, CDFA and its Representatives may disclose any of the Confidential Information in the event, but only to the extent, that, based upon reasonable advice of counsel, it is required to do so by the disclosure requirements of any law, rule, or regulation or any order, decree, subpoena or ruling or other similar process of any court, securities exchange, governmental agency or governmental or regulatory authority. Prior to making or permitting any of its Representatives to make such disclosure, CDFA shall immediately provide SoCalGas with prompt written notice of any such requirement so that SoCalGas (with CDFA's assistance) may seek a protective order or other appropriate remedy.

4. **PUBLICITY**

CDFA and its Representatives shall not, without the prior written consent of SoCalGas, disclose to any person (1) the fact that the Confidential Information has been made available to CDFA or its Representatives, or (2) any information regarding the ongoing discussions and negotiations between the parties, including the fact that such discussions and negotiations are occurring; provided, however, that CDFA and its Representatives may disclose the information described in clauses (1) and (2) above if such disclosure is required under any of the circumstances described in Article 3 above, in which case the procedures specified therein with respect to such disclosure shall apply.

5. **DOCUMENT RETENTION**

At any time upon the request of SoCalGas, CDFA shall promptly deliver to SoCalGas or destroy (with such destruction to be certified to SoCalGas) all portions of documents (and all copies thereof, however stored) furnished to or prepared by CDFA and its Representatives that contain Confidential Information and all other portions of documents in CDFA's possession that contain or that are based on or derived from Confidential Information.

6. **SURVIVAL**

Notwithstanding the return or destruction of all or any part of the Confidential Information, the terms of this Agreement shall nevertheless remain in full force and effect with respect to the Confidential Information. Moreover, CDFA represents, warrants, and covenants that its Contractors have put into place security procedures and practices appropriate to the nature of the Confidential Information involved and which will be used at all times with respect thereto to protect it from unauthorized access, destruction, use, modification, or disclosure. Without limiting the generality of the foregoing or any other provision of this Agreement, CDFA's Contractor shall access, collect, store, use, and disclose the Confidential Information under policies, practices and notification requirements no less protective than those under which SoCalGas operates.

7. **ASSIGNMENT**

Neither party may assign (by operation of law or otherwise) any of its rights or obligations hereunder without the prior written consent of the other party.

8. **REMEDIES**

The parties acknowledge that the Confidential Information is valuable and unique, and that damages would be an inadequate remedy for breach of this Agreement and the obligations of CDFA and the Representatives are specifically enforceable. Accordingly, the parties agree that in the event of a breach or threatened breach of this Agreement by CDFA, SoCalGas shall be entitled to seek an injunction preventing such breach, without the necessity of proving damages or posting any bond. Any such relief shall be in addition to, and not in lieu of, money damages or any other legal or equitable remedy available to SoCalGas.

9. **NO IMPLIED LICENSES**

Nothing in this Agreement will be construed as granting any rights to CDFA, by license or otherwise, to any of the Confidential Information, except as specifically stated in this Agreement.

10. **NONWAIVER**

It is understood and agreed that no failure or delay by SoCalGas in exercising any right, power or privilege available hereunder or under applicable law shall operate as a waiver thereof, nor shall any single or partial exercise thereof preclude any other or further exercise thereof the exercise of any other such right, power or privilege.

11. **ENTIRE AGREEMENT; AMENDMENT**

This Agreement contains the entire agreement between the parties with respect to the subject matter hereof, and may be amended only in writing signed by both parties. This Agreement supersedes any previous confidentiality or nondisclosure agreement or contractual provisions between the parties to the extent they relate to the subject matter hereof.

12. **GOVERNING LAW**

The formation, interpretation and performance of this Agreement shall be governed by the internal laws of the State of California.

13. **ATTORNEYS' FEES**

If any action at law or in equity is brought to enforce or interpret the provisions of this Agreement, the prevailing party shall be entitled to recover from the unsuccessful party all costs, expenses (including expert testimony) and reasonable attorneys' fees, including allocated costs and fees of in-house counsel, incurred therein by the prevailing party.

14. **VENUE AND JURISDICTION**

In the event of any litigation to enforce or interpret any terms of this Agreement, unless the parties agree in writing otherwise, such action shall be brought in a

Superior Court of the State of California located in the County of Los Angeles (or, if the federal courts have exclusive jurisdiction over the subject matter of the dispute, in the U.S. District Court for the Central District of California), and the parties hereby submit to the exclusive jurisdiction of said courts.

15. NOTICES

All notices to be given under this Agreement shall be in writing and either sent by a nationally recognized overnight courier service, in which case notice shall be deemed delivered as of the date shown on the courier's delivery receipt; or sent by facsimile during business hours of the recipient, with a copy of the notice also deposited in the United States mail (postage prepaid) the same business day, in which case notice shall be deemed delivered on transmittal by facsimile provided that a transmission report is generated reflecting the accurate transmission of the notices, or sent by United States mail, postage prepaid, in which case notice shall be deemed delivered as of two business days after deposit in the mail, addressed as follows:

SoCalGas: Deanna Haines
Director of Gas Engineering
Southern California Gas Company
Gas Engineering Department, GT-11A5
555 West Fifth Street
Los Angeles, CA 90013
Facsimile: 213-518-2324
Phone: 213-244-3010
Email: DHaines@semprautilities.com

With copy to: Vincent Gonzales
Senior Environmental Counsel
Southern California Gas Company
Law Department, GT-14E7
555 West Fifth Street
Los Angeles, CA 90013
Facsimile: 213-629-9620
Phone: 213-244-2948
Email: vmgonzales@semprautilities.com

CDFA: _____
_____
_____
Facsimile: _____
Phone: _____
Email: _____

With a Copy to: _____
_____
_____
Facsimile: _____
Phone: _____
Email: _____

These addresses may be changed by written notice to the other Party provided that no notice of a change of address shall be effective until actual receipt of the notice. Copies of notices are for informational purposes only, and a failure to give or receive copies of any notice shall not be deemed a failure to give notice.

16. **SAVINGS CLAUSE; EFFECT OF UNIFORM TRADE SECRETS ACT**

If any provision of this Agreement or the application thereof to any person, place, or circumstance, shall be held by a court of competent jurisdiction to be invalid, unenforceable, or void, the remainder of the Agreement and such provisions as applied to other persons, places, and circumstances shall remain in full force and effect. In the event of any conflict between any provision hereof and any provision of the Uniform Trade Secrets Act of California, the provision affording the greater degree of protection to the disclosing party shall control.

17. **COUNTERPARTS**

This Agreement may be executed in one or more counterparts, each of which will be deemed to be an original of this Agreement and all of which, when taken together, will be deemed to constitute one and the same agreement. The exchange of copies of this Agreement and of signature pages by facsimile transmission or by other electronic means shall constitute effective execution and delivery of this Agreement as to the parties and may be used in lieu of the original Agreement for all purposes.

IN WITNESS WHEREOF, the Parties have executed this Agreement as of the date above written.

Southern California Gas Company	California Department of Food and Agriculture
By: _____	**By:** _____
Name: Deanna Haniè r	**Name:** _____
Title: Director, Gas Engineering	**Title:** _____

California Environmental Protection Agency

AIR RESOURCES BOARD

DRAFT
TECHNOLOGY ASSESSMENT: LOW EMISSION NATURAL GAS AND OTHER ALTERNATIVE FUEL HEAVY-DUTY ENGINES

September 2015

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gas recirculation (EGR), dedicated EGR, advanced air-to-fuel ratio control, and faster light-off engine strategies.

Q. What are the main challenges or roadblocks to wider use of heavy-duty natural gas trucks?

A. Limited fueling infrastructure, higher capital cost than comparable diesel trucks, and lack of availability of high-power/high-torque natural gas engines are the main challenges currently limiting a wider use of heavy-duty natural gas engines.

Natural gas engines are ideal candidates for centrally fueled vehicles. They are typically used in vehicles such as transit buses, local delivery trucks, short-haul tractors, school buses, refuse trucks and other general purpose trucks with operations mostly in urban areas where they could be refueled after a shift or a typical day of operation. Out of the nearly two million total heavy-duty trucks and buses (over 8,500 pounds gross vehicle weight rating) that operate in California, about 18,000 (or 1 percent)[8] are natural gas powered vehicles, including about 6,500 transit buses.[9] However, usage in line-haul vehicles has been limited due to limited refueling infrastructure. The lower energy density of natural gas also requires natural gas vehicles to have larger, heavier fuel tanks which reduce the payload capacity and thus lower productivity of natural gas vehicles.

Furthermore, broader usage generally has been slowed by the incremental cost; a natural gas truck is typically $30,000 to $80,000 more expensive than a comparable diesel truck. In addition, relative to diesel engines, commercially available natural gas engines do not deliver the same high power and high torque performance in line-haul and construction operations. Current natural gas powered buses and trucks employ 8.9 L and 11.9 L natural gas engines, while line-haul trucks typically use 13 L to 15 L engines.

Q. What is the current state of natural gas fueling infrastructure in the United States?

A. Nationwide, as shown in Table ES-1, there are currently 1,039 compressed natural gas (CNG) stations accessible to heavy-duty vehicles, of which 591 are publicly-accessible and 110 liquefied natural gas (LNG) stations accessible to heavy-duty vehicles, of which 73 are publicly accessible. Figure ES-2 shows the location of these stations.[10] California accounts for a significant fraction of these stations, with 207 CNG stations (102 of them publicly accessible) and 44 LNG stations (15 publicly accessible). Most of the CNG stations are clustered, so that

[8] Based on the U.S. Department of Energy (DOE), Energy Information Administration database, there were approximately 18,000 natural gas fueled trucks and buses operating in California, in 2011. <http://www.eia.gov/renewable/afv/index.cfm>.

[9] The number of transit buses is from ARB's Transit Fleet Reporting database as of 3/11/15.

[10] The U.S. DOE, Alternative Fuels Data Center, provides a list of alternative fueling stations and their location in the U.S. The database is updated monthly, and the numbers shown here are as of April 21, 2015. <http://www.afdc.energy.gov/data_download/>.

there is a reasonable density of fueling stations in certain regions, with large gaps in coverage in between. There are fewer LNG stations, though a few regional corridors capable of supporting dedicated long-haul routes do exist. For comparison, there are approximately 36,000 diesel fueling stations in the nation, with 5,000 of them publicly accessible. Looking to the future, there are 213 (144 CNG and 69 LNG) heavy-duty accessible natural gas stations planned around the country, including 17 (15 CNG and 2 LNG) in California.

The CEC is also funding natural gas fueling infrastructure projects in California through its competitive grant program, the Alternative and Renewable Fuel and Vehicle Technology Program (ARFVTP). For fiscal year 2015-2016, CEC staff is recommending to award funds of about $5.5 million for natural gas fueling infrastructure projects.[11]

The SCAQMD also provides funds for development of natural gas fueling infrastructure. To date, SCAQMD has provided over $25 million in funding of cost-shared projects for installing CNG and LNG fueling stations and production facilities within the SCAQMD's 4-county jurisdiction. The projects are funded primarily through the Clean Fuels Fund, or through funds distributed by the Mobile Source Air Pollution Reduction Committee.[12]

Table ES-1: Natural Gas Refueling Stations

Heavy-Duty Accessible (Class 6 to 8)		Open stations		Planned Stations	
		Nationwide	California	Nationwide	California
CNG	Total	1039	207	144	15
	Publicly Accessible	591	102	101	6
	Private	448	105	43	9
LNG	Total	110	44	69	2
	Publicly Accessible	73	15	68	1
	Private	37	29	1	1

Medium-Duty Accessible (Class 3 to 5)		Open stations		Planned Stations	
		Nationwide	California	Nationwide	California
CNG	Total	394	64	20	4
	Publicly Accessible	207	42	17	3
	Private	187	22	3	1

[11] California Energy Commission. *Investments in California's Alternative and Renewable Fuel and Vehicle Technology Markets.* <http://www.energy.ca.gov/contracts/transportation.html#PON-14-608>.
[12] SCAQMD, *Infrastructure and Fuel Production.* <http://www.aqmd.gov/home/library/technology-research/projects#&MainContent_C002_Col00=2>.

NATURAL GAS VEHICLE RESEARCH ROADMAP

FINAL CONSULTANT REPORT

Prepared For:
California Energy Commission
Public Interest Energy Research Program

Prepared By:

California Institute for
Energy and the Environment

August 2009
CEC-500-2008-044-F

Prepared By:
Bevilacqua-Knight, Inc
Oakland, California
Commission Contract No. CN-06-04

Under Master Contract:
California Institute for Energy and the Environment
Office of the President
Oakland, California
Contract No. 500-99-0133

Prepared For:
Public Interest Energy Research (PIER)
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Preface

The California Energy Commission's Public Interest Energy Research (PIER) Program supports public interest energy research and development that will help improve the quality of life in California by bringing environmentally safe, affordable, and reliable energy services and products to the marketplace.

The PIER Program conducts public interest research, development, and demonstration (RD&D) projects to benefit California.

The PIER Program strives to conduct the most promising public interest energy research by partnering with RD&D entities, including individuals, businesses, utilities, and public or private research institutions.

- PIER funding efforts are focused on the following RD&D program areas:
- Buildings End-Use Energy Efficiency
- Energy Innovations Small Grants
- Energy-Related Environmental Research
- Energy Systems Integration
- Environmentally Preferred Advanced Generation
- Industrial/Agricultural/Water End-Use Energy Efficiency
- Renewable Energy Technologies
- Transportation

The Natural Gas Vehicle Research Roadmap is the final report for the Natural Gas Vehicle Research Roadmap Peer Review project (contract number 500-99-0133). The information from this project contributes to PIER's Transportation Program.

For more information about the PIER Program, please visit the Energy Commission's website at www.energy.ca.gov/research/ or contact the Energy Commission at 916-654-4878.

Please site this report as follows:

Bevilacqua-Knight, Inc. 2009 *Natural Gas Vehicle Research Roadmap*. California Energy Commission, PIER Transportation Program. (CEC-500-2008-044-F)

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Abstract

The California Energy Commission's Roadmap identifies initiatives and projects that research, develop, demonstrate, and deploy advanced fuel-efficient natural gas powered transportation technologies and fuel-switching strategies that result in a cost-effective reduction of on-road and off-road petroleum fuel use in the short and long term. Research roadmap findings show that there exists a lack of heavy-duty and off-road engine sizes or capacity and that vehicle integration of new engines is a significant hurdle to greater natural gas vehicle availability and market penetration. Specific research topics include Engine Development and Vehicle Integration, Fueling Infrastructure and Storage, and Technical and Strategic Studies.

Keywords: Natural gas vehicles, heavy-duty natural gas engines, natural gas fuel, natural gas fueling infrastructure, low-emission trucks, liquefied natural gas transportation fuel

Energy Research and Development Division
INTERIM PROJECT REPORT

2015 NATURAL GAS VEHICLE RESEARCH ROADMAP (DRAFT)

Prepared for: California Energy Commission

Prepared by: National Renewable Energy Laboratory

JULY 2015

CEC-500-2015-091-D

PREPARED BY:

Primary Author:
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Executive Director

PREFACE

The California Energy Commission Energy Research and Development Division supports public interest energy research and development that will help improve the quality of life in California by bringing environmentally safe, affordable, and reliable energy services and products to the marketplace.

The Energy Research and Development Division conducts public interest research, development, and demonstration (RD&D) projects to benefit California.

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- Buildings End-Use Energy Efficiency
- Energy Innovations Small Grants
- Energy-Related Environmental Research
- Energy Technology Systems Integration
- Environmentally Preferred Advanced Generation
- Industrial/Agricultural/Water End-Use Energy Efficiency
- Renewable Energy Technologies
- Transportation

The *2015 Natural Gas Vehicle Research Roadmap* is the interim report for the Development of Natural Gas Vehicle Research Roadmap project (contract number 500-12-008). The information from this project contributes to the Energy Research and Development Division's Transportation Program.

For more information about the Energy Research and Development Division, please visit the Energy Commission's website at www.energy.ca.gov/research/ or contact the Energy Commission at 916-327-1551.

ABSTRACT

The California Energy Commission's *2015 Natural Gas Vehicle Research Roadmap* guides investments made by the Energy Commission in natural gas vehicle research and development to provide value to California utility ratepayers. Using natural gas transportation in California has the potential to reduce petroleum consumption, decrease vehicle emissions and provide fuel cost savings to California businesses and consumers.

The report updates the *2009 Natural Gas Vehicle Research Roadmap* and provides the framework and foundation for future investments. Changes between 2009 and 2014 are discussed to provide a context for the natural gas vehicle market and necessary research; The report includes research recommendations on 1) range and storage, 2) engine performance and availability, 3) vehicle emission and environmental performance and 4) analysis and information sharing. Specifically, low natural gas prices, increased supplies, and a changing regulatory landscape have impacted the natural gas vehicle market. These changes have also impacted traditionally fueled vehicles, changing the overall vehicle technology market.

The *2015 Natural Gas Vehicle Research Roadmap* stresses the need for continued investment and innovation in natural gas vehicle technology to ensure continued competitiveness and ratepayer benefits. Continued research on enhanced gas storage, engine and vehicle availability, advanced engine design, enhanced emission controls and hybridization represent key contributions necessary to advance the natural gas vehicle market. The roadmap also calls for coordinated investment among California stakeholders and the federal government to leverage investments and continue soliciting input on research priorities.

Keywords: California Energy Commission, natural gas vehicles, natural gas, alternative fuels, compressed natural gas, liquefied natural gas, natural gas fueling infrastructure, technology roadmap, research, PIER, NGVTF

Please use the following citation for this report:

Schroeder, Alex. (National Renewable Energy Laboratory). 2015. ***2015 Natural Gas Vehicle Research Roadmap.*** California Energy Commission. Publication number: CEC-500-2015-091-D.

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EXECUTIVE SUMMARY

The *2015 Natural Gas Vehicle Research Roadmap* informs natural gas vehicle research and development investments made by the California Energy Commission to promote ratepayer benefits for Californians. Specifically, using natural gas as a transportation fuel has demonstrated reductions in petroleum consumption, greenhouse gas emissions, local air pollution, and operating costs for businesses and consumers. The *2015 Natural Gas Vehicle Research Roadmap* updates the previous *2009 Roadmap* and seeks to 1) identify emerging opportunities and fundamental changes in the natural gas vehicle market and associated technologies and 2) reassess the priority of previously identified technologies given developments that have occurred over the last five years.

Between 2009 and 2014, numerous developments have influenced priorities for research specifically:

- A growing, stable, market for natural gas production and use
- Increased natural gas engine availability, performance, and reliability
- Significant regulatory and policy developments that increase requirements for emission reductions
- Performance and efficiency gains in conventional vehicle technologies

Favorable economics and increased availability have transitioned the natural gas vehicle market to one that requires more attention to remaining market barriers experienced by both new and existing technologies. The emergence of competitive engine and vehicle offerings, from passenger cars to heavy-duty trucks, fueled by the growing availability of low-price natural gas presents greater public benefits. The synergistic effects of growing market-scale vehicle and fueling infrastructure availability translate into opportunities for future growth of natural gas vehicle adoption.

To keep up with existing and emerging technologies and support increasingly stringent future regulations, natural gas vehicle technologies must experience significant levels of innovation in these key topics:

- Range, infrastructure and natural gas storage
- Engine performance and availability
- Vehicle emissions and environmental performance
- Analysis and information sharing

Each of these topics represents a market barrier to natural gas vehicle deployment and can be addressed through a variety of research and development activities. With increased opportunities for natural gas vehicles, it is vital for stakeholders to maintain progress in dynamic markets, invest in a broad selection of technologies to overcome new barriers for more growth, and coordinate efforts to ensure maximum impact.

As previous California Energy Commission documents have demonstrated, increased adoption of natural gas vehicles in California can reduce overall petroleum consumption, greenhouse gas emissions, and fueling costs for utility ratepayers. Specifically, this Roadmap recommends the following R&D actions be pursued in order to maximize those benefits:

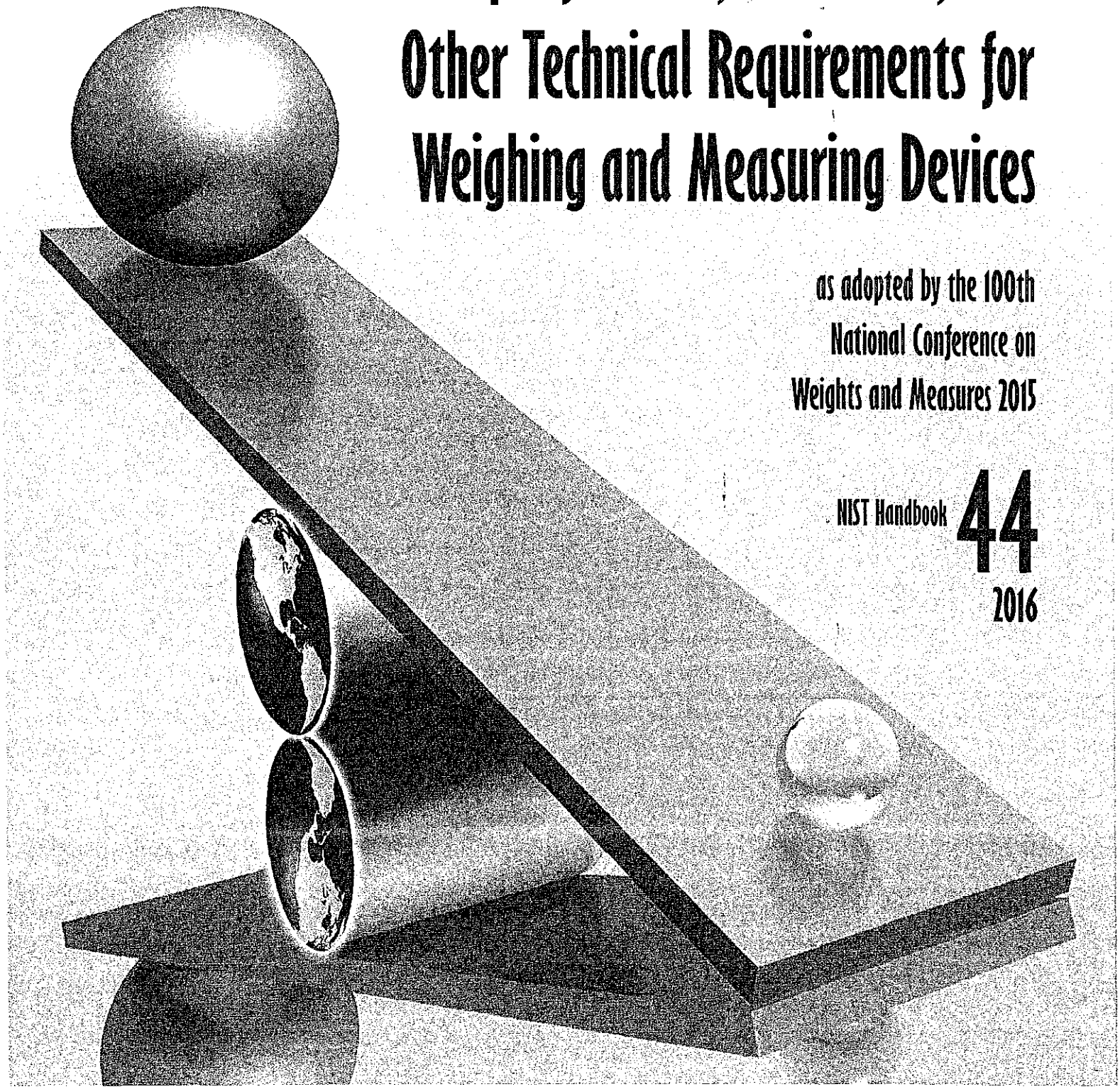
- Decrease the cost of on-board natural gas storage and increase vehicle integration of storage
- Increase natural gas engine and vehicle availability, improve efficiency and maintain similar performance characteristics to gasoline and diesel alternatives.
- Advance technologies that continue to reduce NOx and greenhouse gas emissions.
- Continue supporting current, accurate, and timely information on natural gas vehicle technologies and availability.
- Continue coordination and collaboration between and among California and federal agencies with natural gas vehicle stakeholders to adapt to changing markets, customer needs, and technology developments.

Benefits to California

These recommendations will develop and help bring to market advanced transportation technologies that reduce air pollution and greenhouse gas emissions beyond applicable standards. As a transportation fuel, natural gas could offset over 750 million gallons of diesel per year by 2022, reducing greenhouse gas emissions by 4 million metric tons per year and saving the state approximately $1.35 billion in fueling costs annually.

NIST
National Institute of
Standards and Technology
U.S. Department of Commerce

Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices



as adopted by the 100th
National Conference on
Weights and Measures 2015

NIST Handbook 44
2016

Section 3.37. Mass Flow Meters

A. Application

A.1. Liquids. – This code applies to devices that are designed to dynamically measure the mass, or the mass and density of liquids. It also specifies the relevant examinations and tests that are to be conducted.
(Amended 1997)

A.2. Vapor (Gases). – This code applies to devices that are designed to dynamically measure the mass of hydrocarbon gas in the vapor state. Examples of these products are propane, propylene, butanes, butylenes, ethane, methane, natural gas and any other hydrocarbon gas/air mix.

A.3. Additional Code Requirements. – In addition to the requirements of this code, Mass Flow Meters shall meet the requirements of Section 1.10. General Code.

S. Specifications

S.1. Indicating and Recording Elements.

S.1.1. Indicating Elements. – A measuring assembly shall include an indicating element. Indications shall be clear, definite, accurate, and easily read under normal conditions of operation of the instrument.

S.1.2. Compressed Natural Gas Dispensers. – Except for fleet sales and other price contract sales, a compressed natural gas dispenser used to refuel vehicles shall be of the computing type and shall indicate the quantity, the unit price, and the total price of each delivery. The dispenser shall display the mass measured for each transaction either continuously on an external or internal display accessible during the inspection and test of the dispenser, or display the quantity in mass units by using controls on the device.
(Added 1994)

S.1.3. Units.

S.1.3.1. Units of Measurement. – Deliveries shall be indicated and recorded in grams, kilograms, metric tons, pounds, tons, and/or liters, gallons, quarts, pints and decimal subdivisions thereof. The indication of a delivery shall be on the basis of apparent mass versus a density of 8.0 g/cm^3. The volume indication shall be based on the mass measurement and an automatic means to determine and correct for changes in product density.
(Amended 1993 and 1997)

S.1.3.1.1. Compressed Natural Gas Used as an Engine Fuel. – When compressed natural gas is dispensed as an engine fuel, the delivered quantity shall be indicated in "gasoline liter equivalent (GLE) units" or "gasoline gallon equivalent (GGE) units." (Also see definitions.)
(Added 1994)

S.1.3.2. Numerical Value of Quantity-Value Divisions. – The value of a scale interval shall be equal to:

(a) 1, 2, or 5; or

(b) a decimal multiple or submultiple of 1, 2, or 5.

S.1.3.3. Maximum Value of Quantity-Value Divisions.

(a) The maximum value of the quantity-value division for liquids shall not be greater than 0.2 % of the minimum measured quantity.

S.5. Markings. – A measuring system shall be legibly and indelibly marked with the following information:

(a) pattern approval mark (i.e., type approval number);

(b) name and address of the manufacturer or his trademark and, if required by the weights and measures authority, the manufacturer's identification mark in addition to the trademark;

(c) model identifier or product name selected by the manufacturer;

(d) nonrepetitive serial number;

(e) *the accuracy class of the meter as specified by the manufacturer consistent with Table T.2. Accuracy Classes for Mass Flow Meter Applications Covered in NIST Handbook 44, Section 3.37 Mass Flow Meters;* [*Nonretroactive as of January 1, 1995]*
(Added 1994)

(f) maximum and minimum flow rates in pounds per unit of time;

(g) maximum working pressure;

(h) applicable range of temperature if other than − 10 °C to + 50 °C;

(i) minimum measured quantity; and

(j) product limitations, if applicable.

S.5.1. Location of Marking Information; Retail Motor-Fuel Dispensers. *– The marking information required in General Code, paragraph G-S.1. Identification shall appear as follows:*

(a) within 60 cm (24 in) to 150 cm (60 in) from the base of the dispenser;

(b) either internally and/or externally provided the information is permanent and easily read; and

(c) on a portion of the device that cannot be readily removed or interchanged (i.e., not on a service access panel).

Note: *The use of a dispenser key or tool to access internal marking information is permitted for retail liquid-measuring devices. [Nonretroactive as of January 1, 2003]*
(Added 2006)

S.5.2. Marking of Gasoline Volume Equivalent Conversion Factor. – A device dispensing compressed natural gas shall have either the statement "1 Gasoline Liter Equivalent (GLE) is Equal to 0.678 kg of Natural Gas" or "1 Gasoline Gallon Equivalent (GGE) is Equal to 5.660 lb of Natural Gas" permanently and conspicuously marked on the face of the dispenser according to the method of sale used.
(Added 1994)

S.6. Printer. – When an assembly is equipped with means for printing the measured quantity, the following conditions apply:

(a) the scale interval shall be the same as that of the indicator;

(b) the value of the printed quantity shall be the same value as the indicated quantity;

(c) a quantity for a delivery (other than an initial reference value) cannot be recorded until the measurement and delivery has been completed;

UR.3.8. Return of Product to Storage, Retail Compressed Natural Gas Dispensers. – Provisions at the site shall be made for returning product to storage or disposing of the product in a safe and timely manner during or following testing operations. Such provisions may include return lines, or cylinders adequate in size and number to permit this procedure.

(Added 1998)

feeding mechanism. – The means for depositing material to be weighed on the belt conveyor. [2.21]

fifth wheel. – A commercially-available distance-measuring device which, after calibration, is recommended for use as a field transfer standard for testing the accuracy of taximeters and odometers on rented vehicles. [5.53, 5.54]

fifth-wheel test. – A distance test similar to a road test, except that the distance traveled by the vehicle under test is determined by a mechanism known as a "fifth wheel" that is attached to the vehicle and that independently measures and indicates the distance. [5.53, 5.54]

flag. – A plate at the end of the lever arm or similar part by which the operating condition of a taximeter is controlled and indicated. [5.54]

fractional bar. – A weighbeam bar of relatively small capacity for obtaining indications intermediate between notches or graduations on a main or tare bar. [2.20]

ft^3/h. – Cubic feet per hour. [3.33]

G

gasoline gallon equivalent (GGE). – Gasoline gallon equivalent (GGE) means 5.660 pounds of natural gas. [3.37]
(Added 1994)

gasoline liter equivalent (GLE). – Gasoline liter equivalent (GLE) means 0.678 kilograms of natural gas. [3.37]
(Added 1994)

gauge pressure. – The difference between the pressure at the meter and the atmospheric pressure (psi). [3.33]

gauge rod. – A graduated, "dip-stick" type of measuring rod designed to be partially immersed in the liquid and to be read at the point where the liquid surface crosses the rod. [4.42]

gauging. – The process of determining and assigning volumetric values to specific graduations on the gauge or gauge rod that serve as the basis for the tank volume chart. [4.42]

graduated interval. – The distance from the center of one graduation to the center of the next graduation in a series of graduations. – (Also see "value of minimum graduated interval.") [1.10]

graduation. – A defining line or one of the lines defining the subdivisions of a graduated series. The term includes such special forms as raised or indented or scored reference "lines" and special characters such as dots. (Also see "main graduation" and "subordinate graduation.") [1.10]

grain class. – Different grains within the same grain type. For example, there are six classes for the grain type "wheat:" Durum Wheat, Hard Red Spring Wheat, Hard Red Winter Wheat, Soft Red Winter Wheat, Hard White Wheat, and Soft White Wheat. [5.56(a), 5.57]
(Added 2007)

grain hopper scale. – One adapted to the weighing of individual loads of varying amounts of grain. [2.20]

grain moisture meter. – Any device indicating either directly or through conversion tables and/or correction tables the moisture content of cereal grains and oil seeds. Also termed "moisture meter." [5.56(a), 5.56(b)]

grain sample. – That portion of grain or seed taken from a bulk quantity of grain or seed to be bought or sold and used to determine the moisture content of the bulk. [5.56(a), 5.56(b)]

NIST
National Institute of Standards and Technology
U.S. Department of Commerce

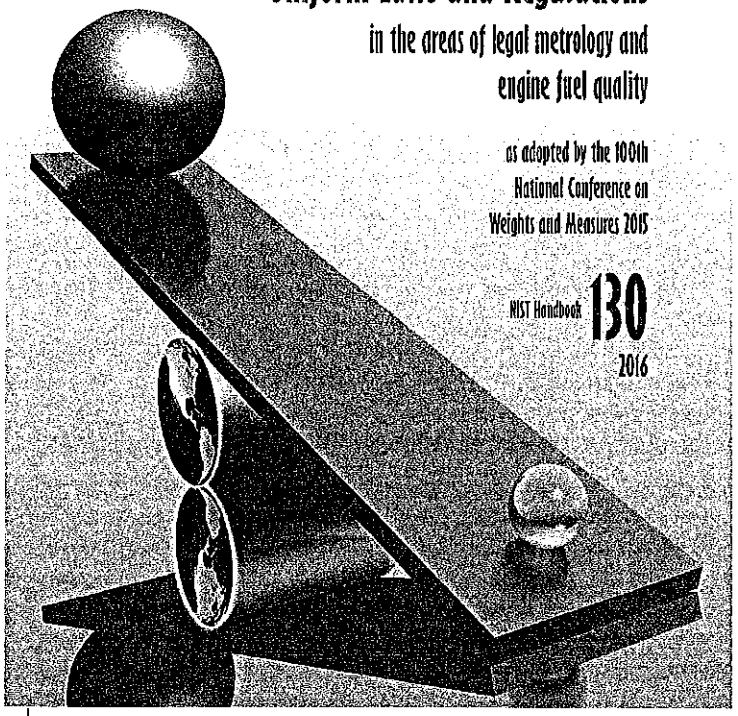
Uniform Laws and Regulations

in the areas of legal metrology and engine fuel quality

as adopted by the 100th National Conference on Weights and Measures 2015

NIST Handbook 130

2016



NIST Technical Publications

Periodical

Journal of Research of the National Institute of Standards and Technology—Reports NIST research and development in metrology and related fields of physical science, engineering, applied mathematics, statistics, biotechnology, and information technology. Papers cover a broad range of subjects, with major emphasis on measurement methodology and the basic technology underlying standardization. Also included from time to time are survey articles on topics closely related to the Institute's technical and scientific programs. Issued six times a year.

Nonperiodicals

Monographs—Major contributions to the technical literature on various subjects related to the Institute's scientific and technical activities.

Handbooks—Recommended codes of engineering and industrial practice (including safety codes) developed in cooperation with interested industries, professional organizations, and regulatory bodies.

Special Publications—Include proceedings of conferences sponsored by NIST, NIST annual reports, and other special publications appropriate to this grouping such as wall charts, pocket cards, and bibliographies.

National Standard Reference Data Series—Provides quantitative data on the physical and chemical properties of materials, compiled from the world's literature and critically evaluated. Developed under a worldwide program coordinated by NIST under the authority of the National Standard Data Act (Public Law 90-396). NOTE: The Journal of Physical and Chemical Reference Data (JPCRD) is published bimonthly for NIST by the American Institute of Physics (AIP). Subscription orders and renewals are available from AIP, P.O. Box 503284, St. Louis, MO 63150-3284.

National Construction Safety Team Act Reports—This series comprises the reports of investigations carried out under Public Law 107-231, the technical cause(s) of the building failure investigated; any technical recommendations for changes to or the establishment of evacuation and emergency response procedures; any recommended specific improvements to building standards, codes, and practices; and recommendations for research and other appropriate actions to help prevent future building failures.

Building Science Series—Disseminates technical information developed at the Institute on building materials, components, systems, and whole structures. The series presents research results, test methods, and performance criteria related to the structural and environmental functions and the durability and safety characteristics of building elements and systems.

Technical Notes—Studies or reports which are complete in themselves but restrictive in their treatment of a subject. Analogous to monographs but not so comprehensive in scope or definitive in treatment of the subject area. Often serve as a vehicle for final reports of work performed at NIST under the sponsorship of other government agencies.

Voluntary Product Standards—Developed under procedures published by the Department of Commerce in Part 10, Title 15, of the Code of Federal Regulations. The standards establish nationally recognized requirements for products, and provide all concerned interests with a basis for common understanding of the characteristics of the products. NIST administers this program in support of the efforts of private-sector standardizing organizations.

Order the following NIST publications—FIPS and NISTIRs—from the National Technical Information Service, Springfield, VA 22161.

Federal Information Processing Standards Publications (FIPS PUB)—Publications in this series collectively constitute the Federal Information Processing Standards Register. The Register serves as the official source of information in the Federal Government regarding standards issued by NIST pursuant to the Federal Property and Administrative Services Act of 1949 as amended, Public Law 89-306 (79 Stat. 1127), and as implemented by Executive Order 11717 (38 FR 12315, dated May 11, 1973) and Part 6 of Title 15 CFR (Code of Federal Regulations).

NIST Interagency or Internal Reports (NISTIR)—The series includes interim or final reports on work performed by NIST for outside sponsors (both government and nongovernment). In general, initial distribution is handled by the sponsor; public distribution is handled by sales through the National Technical Information Service, Springfield, VA 22161, in hard copy, electronic media, or microfiche form. NISTIR's may also report results of NIST projects of transitory or limited interest, including those that will be published subsequently in more comprehensive form.

2.25. Baler Twine. – Baler twine shall be sold on the basis of length in meters or feet, and net mass or weight by kilograms or pounds.
(Added 1992)

2.26. Potpourri. – Potpourri shall be sold as follows:

(a) Potpourri packaged in advance of sale shall be sold by weight, except when sold in a decorative container or sachet, which may be sold by count.

(b) Potpourri sold from bulk shall be sold by weight or by dry volume.
(Added 1992)

2.27. Retail Sales of Natural Gas Sold as a Vehicle Fuel.

2.27.1. Definitions.

2.27.1.1. Natural Gas. – A gaseous fuel composed primarily of methane that is suitable for compression and dispensing into a fuel storage container(s) for use as an engine fuel.

2.27.1.2. Gasoline Liter Equivalent (GLE). – Gasoline liter equivalent (GLE) means 0.678 kg of natural gas.

2.27.1.3. Gasoline Gallon Equivalent (GGE). – Gasoline gallon equivalent (GGE) means 2.567 kg (5.660 lb) of natural gas.

2.27.2. Method of Retail Sale and Dispenser Labeling.

2.27.2.1. Method of Retail Sale. – All natural gas kept, offered, or exposed for sale and sold at retail as a vehicle fuel shall be in terms of the gasoline liter equivalent (GLE) or gasoline gallon equivalent (GGE).

2.27.2.2. Dispenser Labeling. – All retail natural gas dispensers shall be labeled with the conversion factor in terms of kilograms or pounds. The label shall be permanently and conspicuously displayed on the face of the dispenser and shall have either the statement "1 Gasoline Liter Equivalent (GLE) is equal to 0.678 kg of Natural Gas" or "1 Gasoline Gallon Equivalent (GGE) is equal to 5.660 lb of Natural Gas" consistent with the method of sale used.

2.28. Communication Paper.

2.28.1. Definitions.

2.28.1.1. Communication Paper. – Packaged bond, mimeo, spirit duplicator, xerographic, and other papers, including cut-sized office paper and computer paper.

2.28.1.2. Basis Weight. – As used in this regulation for labeling means the grade, category, or identity of the paper determined according to the latest version of ASTM Standard Method D646, "Grammage of Paper and Paperboard." Basis weight is used as a standard of identity and is not considered a net weight declaration.

2.28.2. Method of Retail Sale and Labeling.

2.28.2.1. Method of Retail Sale. – All packaged communication paper kept, offered, or exposed for sale and sold at retail shall be sold in terms of sheet length and width and count.

(c) A label shall be posted which states "For Use in Flexible Fuel Vehicles (FFV) Only." This information shall be clearly and conspicuously posted on the upper 50 % of the dispenser front panel in a type at least 12.7 mm (½ in) in height, 1.5 mm (1/16 in) stroke (width of type). A label shall be posted which states, "CHECK OWNER'S MANUAL," and shall not be less than 6 mm (¼ in) in height by 0.8 mm (1/32 in) stroke; block style letters and the color shall be in definite contrast to the background color to which it is applied.

(Amended 2007, 2008, and 2014)

3.9. M85 Fuel Methanol.

3.9.1. How to Identify M85 Fuel Methanol. – Fuel methanol shall be identified as M85.

Example:
M85

3.9.2. Retail Dispenser Labeling.

(a) Fuel methanol shall be labeled with its automotive fuel rating in accordance with 16 CFR Part 306.

Example:
M85 Methanol

(b) A label shall be posted which states "For Use in Vehicles Capable of Using M85 Only." This information shall be clearly and conspicuously posted on the upper 50 % of the dispenser front panel in a type of at least 12.7 mm (½ in) in height, 1.5 mm (1/16 in) stroke (width of type).

(Amended 2008)

3.10. Liquefied Petroleum Gas (LPG).

3.10.1. How LPG is to be Identified. – Liquefied petroleum gases shall be identified by grades Commercial Propane, Commercial Butane, Commercial PB Mixtures or Special-Duty Propane (HD5).

3.10.2. Retail Dispenser Labeling. – Each retail dispenser of LPGs shall be labeled as "Commercial Propane," "Commercial Butane," "Commercial PB Mixtures," or "Special-Duty Propane (HD5)."

3.10.3. Additional Labeling Requirements. – LPG shall be labeled with its automotive fuel rating in accordance with 16 CFR Part 306.

3.10.4. NFPA Labeling Requirements Also Apply. (Refer to the most recent edition of NFPA 58.)

3.11. Compressed Natural Gas (CNG).

3.11.1. How Compressed Natural Gas is to be Identified. – For the purposes of this regulation, compressed natural gas shall be identified by the term "Compressed Natural Gas" or "CNG."

3.11.2. Retail Sales of Compressed Natural Gas Sold as a Vehicle Fuel.

3.11.2.1. Method of Retail Sale. – All CNG kept, offered, or exposed for sale or sold at retail as a vehicle fuel shall be in terms of the gasoline liter equivalent (GLE) or gasoline gallon equivalent (GGE).

3.11.2.2. Retail Dispenser Labeling.

3.11.2.2.1. Identification of Product. – Each retail dispenser of CNG shall be labeled as "Compressed Natural Gas."

3.11.2.2.2. Conversion Factor. – All retail CNG dispensers shall be labeled with the conversion factor in terms of kilograms or pounds. The label shall be permanently and conspicuously displayed on the face of the dispenser and shall have either the statement "1 Gasoline Liter Equivalent (GLE) is equal to 0.678 kg of Natural Gas" or "1 Gasoline Gallon Equivalent (GGE) is equal to 5.660 lb of Natural Gas" consistent with the method of sale used.

3.11.2.2.3. Pressure. – CNG is dispensed into vehicle fuel containers with working pressures of 16 574 kPa, 20 684 kPa, or 24 821 kPa. The dispenser shall be labeled 16 574 kPa, 20 684 kPa, or 24 821 kPa corresponding to the pressure of the CNG dispensed by each fueling hose.

3.11.2.2.4. NFPA Labeling. – NFPA Labeling requirements also apply. (Refer to NFPA 52.)

3.11.3. Nozzle Requirements for CNG. – CNG fueling nozzles shall comply with ANSI/AGA/CGA NGV 1.

3.12. Liquefied Natural Gas (LNG).

3.12.1. How Liquefied Natural Gas is to be Identified. – For the purposes of this regulation, liquefied natural gas shall be identified by the term "Liquefied Natural Gas" or "LNG."

3.12.2. Labeling of Retail Dispensers of Liquefied Natural Gas Sold as a Vehicle Fuel.

3.12.2.1. Identification of Product. – Each retail dispenser of LNG shall be labeled as "Liquefied Natural Gas."

3.12.2.2. Automotive Fuel Rating. – LNG automotive fuel shall be labeled with its automotive fuel rating in accordance with 16 CFR Part 306.

3.12.2.3. NFPA Labeling. – NFPA Labeling requirements also apply. (Refer to NFPA 57.)

3.13. Oil.

3.13.1. Labeling of Vehicle Engine (Motor) Oil Required.

3.13.1.1. Viscosity. – The label on any vehicle engine (motor) oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall contain the viscosity grade classification preceded by the letters "SAE" in accordance with the SAE International's latest version of SAE J300, "Engine Oil Viscosity Classification."

(Amended 2012 and 2014)

3.13.1.2. Brand. – The label on any vehicle engine (motor) oil container and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall contain the name, brand, trademark, or trade name of the vehicle engine (motor) oil.

(Added 2012 and 2014)

3.13.1.3. Engine Service Category. – The label on any vehicle engine (motor) oil container, receptacle, dispenser or storage tank and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall contain the engine service category, or categories, displayed in letters not less than 3.18 mm (⅛ in) in height, as defined

California Environmental Protection Agency
Air Resources Board

You are here: ARB Home » Low Carbon Fuel Standard

Low Carbon Fuel Standard

This page last reviewed May 9, 2016

This page provides information regarding ARB's Low Carbon Fuel Standard (LCFS) Program pursuant to the California Assembly Bill AB 32 and the Governor's Executive Order S-01-07.

Watch: Low Carbon Fuel Standard Video

Program Implementation Activities:

Public Meetings and Workshops	LCFS Data Dashboard
	Request a New Fuel Pathway to Receive a Carbon Intensity Score
Account Registration for Fuel and Credit Reporting	Electricity and Hydrogen Provisions

Background, Meetings, Guidance Documents, Reporting Tool & Other Information

- General Information, Public Meetings & Workgroups
- Regulation Materials
- Guidance Documents and FAQs
- Fuel Pathways and Carbon Intensity Scores
- LCFS Data Management System for Registration and Reporting
- LCFS Program Data

What's New?

- **June 2, 2016:** LCFS Public Workshop to discuss proposed amendments and provide an update on the status of pathway application processing and unique identifiers for LCFS credits. For more information... NEW!
- **May 9, 2016:** 2015 LCFS Compliance Information Credit Clearance Market Information. NEW!
- **May 9, 2016:**

Final Regulation Order

Adopt new sections 95480, 95480.1, 95481, 95482, 95483, 95484, 95485, 95486, 95487, 95488, 95489, and 95490, title 17, California Code of Regulations (CCR), to read as follows:

(Note: The entire text of Subarticle 7 and sections 95480, 95480.1, 95481, 95482, 95483, 95484, 95485, 95486, 95487, 95488, 95489, and 95490 is new language. Subsection headings are shown in *italics* and are to be italicized in Barclays California Code of Regulations.)

Subchapter 10. Climate Change
Article 4. Regulations to Achieve Greenhouse Gas Emission Reductions

Subarticle 7. Low Carbon Fuel Standard

Section 95480. Purpose

The purpose of this regulation is to implement a low carbon fuel standard, which will reduce greenhouse gas emissions by reducing the full fuel-cycle, carbon intensity of the transportation fuel pool used in California, pursuant to the California Global Warming Solutions Act of 2006 (Health & Safety Code (H&S), section 38500 et.seq.).

NOTE: Authority cited: Sections 38510, 38560, 38560.5, 38571, 38580, 39600, 39601, 41510, 41511, Health and Safety Code; and *Western Oil and Gas Ass'n v. Orange County Air Pollution Control District*, 14 Cal.3rd 411, 121 Cal.Rptr. 249 (1975). Reference cited: Sections 38501, 38510, 38560, 38560.5, 38571, 38580, 39000, 39001, 39002, 39003, 39515, 39516, 41510, 41511, Health and Safety Code; and *Western Oil and Gas Ass'n v. Orange County Air Pollution Control District*, 14 Cal.3rd 411, 121 Cal.Rptr. 249 (1975).

Section 95480.1. Applicability

(a) *Applicability of the Low Carbon Fuel Standard.*

Except as provided in this section, the California Low Carbon Fuel Standard regulation, title 17, California Code of Regulations (CCR), sections 95480 through 95490 (collectively referred to as the "LCFS") applies to any transportation fuel, as defined in section 95481, that is sold, supplied, or offered for sale in California, and to any person who, as a regulated party defined in section 95481 and specified in section 95484(a), is responsible for a transportation fuel in a calendar year. The types of transportation fuels to which the LCFS applies include:

(1) California reformulated gasoline ("gasoline" or "CaRFG");
(2) California diesel fuel ("diesel fuel" or "ULSD");

(3) Fossil compressed natural gas ("Fossil CNG") or fossil liquefied natural gas ("Fossil LNG");
(4) Biogas CNG or biogas LNG;
(5) Electricity;
(6) Compressed or liquefied hydrogen ("hydrogen");
(7) A fuel blend containing hydrogen ("hydrogen blend");
(8) A fuel blend containing greater than 10 percent ethanol by volume;
(9) A fuel blend containing biomass-based diesel;
(10) Denatured fuel ethanol ("E100");
(11) Neat biomass-based diesel ("B100"); and
(12) Any other liquid or non-liquid fuel.

The provisions and requirements in section 95484(c), (d) and (e) apply starting January 1, 2010. All other provisions and requirements of the LCFS regulation apply starting January 1, 2011.

(b) *Credit Generation Opt-In Provision for Specific Alternative Fuels.* Each of the following alternative fuels is presumed to have a full fuel-cycle, carbon intensity that meets the compliance schedules set forth in section 95482(b) and (c) through December 31, 2020. With regard to an alternative fuel listed below, the regulated party for the fuel must meet the requirements of the LCFS regulation only if the regulated party elects to generate LCFS credits:

(1) Electricity;
(2) Hydrogen;
(3) A hydrogen blend;
(4) Fossil CNG derived from North American sources;
(5) Biogas CNG; and
(6) Biogas LNG.

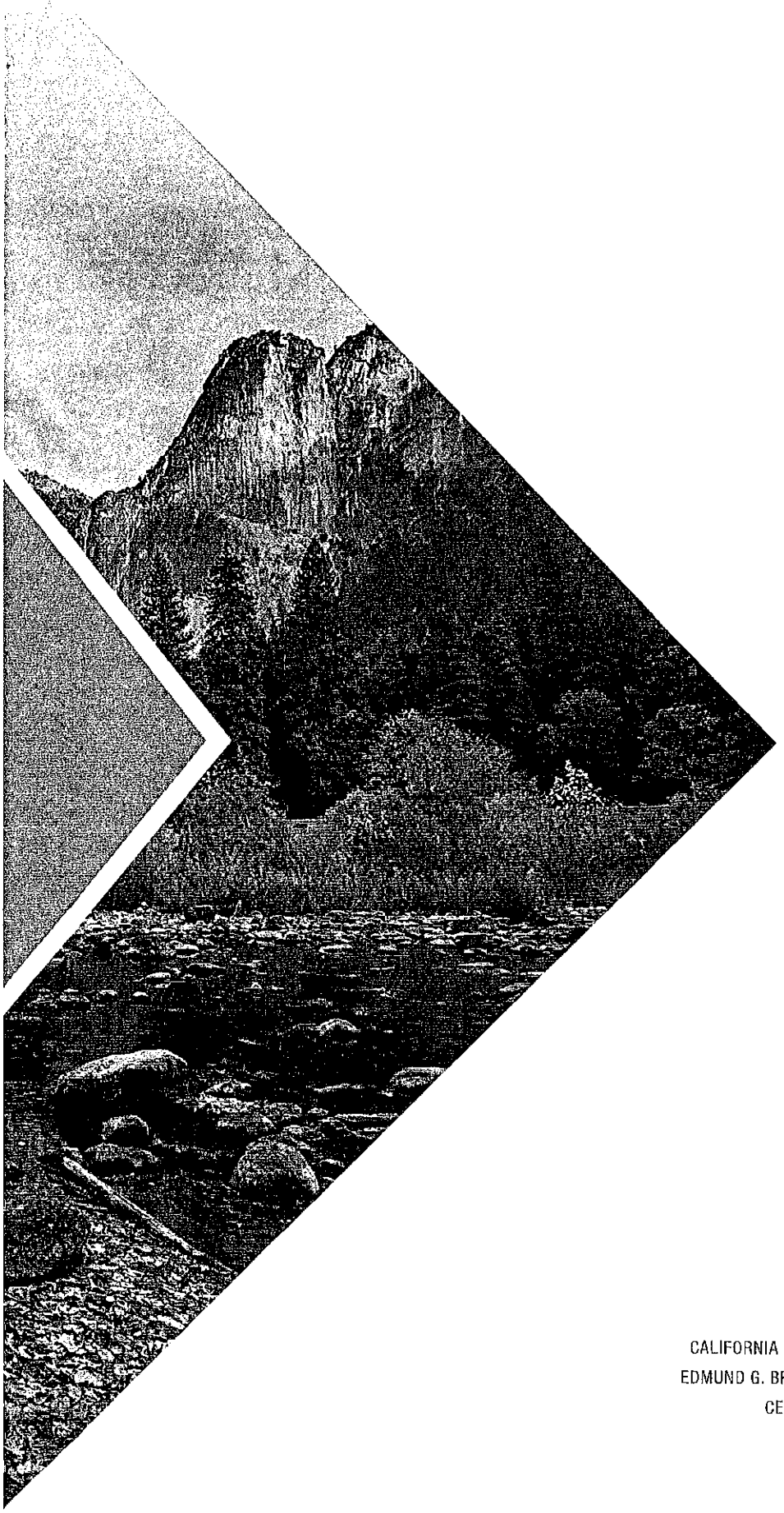
(c) *Exemption for Specific Alternative Fuels.* The LCFS regulation does not apply to an alternative fuel that meets the criteria in either (c)(1) or (2) below:

(1) An alternative fuel that:

(A) is not a biomass-based fuel; and
(B) is supplied in California by all providers of that particular fuel for transportation use at an aggregated volume of less than 420 million MJ (3.6 million gasoline gallon equivalent) per year;

A regulated party that believes it is subject to this exemption has the sole burden of proving to the Executive Officer's satisfaction that the exemption applies to the regulated party.

(2) Liquefied petroleum gas (LPG or "propane").



2015 IEPR

INTEGRATED ENERGY POLICY REPORT

CALIFORNIA ENERGY COMMISSION
EDMUND G. BROWN JR., GOVERNOR
CEC-100-2015-001-CMF

PREFACE

Senate Bill 1389 (Bowen, Chapter 568, Statutes of 2002) requires the California Energy Commission to prepare a biennial integrated energy policy report that assesses major energy trends and issues facing the state's electricity, natural gas, and transportation fuel sectors and provides policy recommendations to conserve resources; protect the environment; ensure reliable, secure, and diverse energy supplies; enhance the state's economy; and protect public health and safety (Public Resources Code § 25301[a]). The Energy Commission prepares these assessments and associated policy recommendations every two years, with updates in alternate years, as part of the Integrated Energy Policy Report. Preparation of the Integrated Energy Policy Report involves close collaboration with federal, state, and local agencies and a wide variety of stakeholders in an extensive public process to identify critical energy issues and develop strategies to address those issues.

ABSTRACT

The *2015 Integrated Energy Policy Report* provides the results of the California Energy Commission's assessments of a variety of energy issues facing California. Many of these issues will require action if the state is to meet its climate, energy, air quality, and other environmental goals while maintaining reliability and controlling costs. The *2015 Integrated Energy Policy Report* covers a broad range of topics, including energy efficiency, benchmarking under the Assembly Bill 758 Action Plan, strategies related to data for improved decisions in the *Existing Buildings Energy Efficiency Action Plan*, building energy efficiency standards, the impact of drought on California's energy system, achieving 50 percent renewables by 2030, Renewable Action Plan status, the *California Energy Demand Forecast*, the *Natural Gas Outlook*, the *Assembly Bill 1257 Report*, methane emissions, the *Transportation Energy Demand Forecast*, Alternative and Renewable Fuel and Vehicle Technology Program benefits updates, landscape-scale planning efforts, transmission projects, the California Independent System Operator energy imbalance market, the *Desert Renewable Energy Conservation Plan*, climate change vulnerability and adaptation options, update on electricity infrastructure in Southern California, an update on trends in California's sources of crude oil, and an update on California's nuclear plants.

Keywords: California Energy Commission, energy efficiency, renewables, electricity demand forecast, natural gas outlook, transportation energy demand forecast, Assembly Bill 758 Action Plan, nuclear, *Existing Buildings Energy Efficiency Action Plan*, zero-net-energy, natural gas, methane emissions, benchmarking, plug loads, crude-by-rail, climate adaptation, climate change, Under 2 MOU, landscape-scale planning, *Desert Renewable Energy Conservation Plan*, *Strategic Transmission Investment Plan*, Southern California reliability, drought, Alternative and Renewable Fuel and Vehicle Technology Program benefits, energy imbalance market, drought

Please use the following citation for this report:
California Energy Commission. 2015. *2015 Integrated Energy Policy Report*. Publication Number: CEC-100-2015-001-CMF.

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LIST OF FIGURES

CNG Station Construction and Economics

Land and Access

Land is a significant component in building a CNG station. Requirements for land begin at approximately ½ acre of property for a light duty station, and increase with larger applications. The decision will need to be made to build on a new site, or incorporate CNG fueling at an existing site such as an existing station. If civil design work is needed for new construction, a geotechnical site evaluation will likely be required. This evaluation will provide critical soil composition information necessary for concrete foundations and electrical grounding systems. Considerations must be given to road access (public or private) and utility connections. Easy access to major trunk highways is always a great idea, or partnering with a convenience store is another workable plan as well.

Utilities

An adequate natural gas supply accessible to your location is critical. Contact your localgas distribution company early in the site selection process. Not having adequate gas supply, gas pressure, or being too far from the gas supply could be a deal breaker. Keep the local distribution company involved and updated on the progress of the station, as this organization may be your primary source of natural gas.

Further, high capacity electrical service will be required at most CNG fueling installations to run the equipment necessary to prepare, store, and dispense CNG to waiting vehicles. Contact your local utility provider to confirm adequate power is available or can be provided.

Other Pre-Construction Considerations

It is extremely important to contact the local Fire Marshall and Building Inspector. They provide guidance through the permitting process to make sure the station is designed and constructed in accordance with all applicable local, state, and federal laws, rules, regulations, codes and standards. Some aspects of the construct on require certain licenses or permits, so contact a qualified contractor who specializes in building CNG stations.

Secure and review a current National Fire Prevention Association Code (NFPA-and/or an International Fire Code (IFC) guideline for compressed natural gas vehicle fuel systems. These codes apply to all CNG stations and facilities.

Depending on a fleet application, or commercial venture, research into the requirements of the class of vehicles (light, medium, heavy) to be fueled will be helpful. Each type will have its own impact on the design and performance of your station. Contact the state and local municipal agencies to determine what permits or licenses are required to dispense CNG.

CNG Station Construction Codes

There are a variety of national and local codes and standards to which CNG stations must adhere. This includes, but is not limited to, the addition of fire extinguishers in key locations and multiple emergency shut off valves. Additionally, the construction and permitting process is subjective and can vary based on the code official's knowledge and familiarity with CNG fueling applications.

The process of complying with existing codes and standards is further complicated by the number of code forming organizations with codes affecting CNG refueling stations:

Click here for a partial list of the codes and standards that apply to CNG stations in the U.S.

CNG Station Anatomy
CNG Station Design
CNG Station Business Models
CNG Station Construction & Economics
LNG/LCNG
LNG Production
Station Analysis Map
CNG Vehicle Fueling

- American National Standards Institute (ANSI)
- American Society of Mechanical Engineers (ASME)
- American Society for Nondestructive Testing (ASNT)
- National Electrical Manufacturers Association (NEMA)
- National Fire Protection Association (NFPA)
- National Electric Code (NEC)
- Occupational Safety and Health Act (OSHA)
- Uniform Building Code, Local Jurisdiction (UBC)
- Uniform Fire Code (UFC)
- Uniform Plumbing Code (UPC)
- National Institute of Standards and Technology (NIST)
- Society of Automotive Engineers (SAE)
- Underwriters Laboratory (UL)

Station Economics

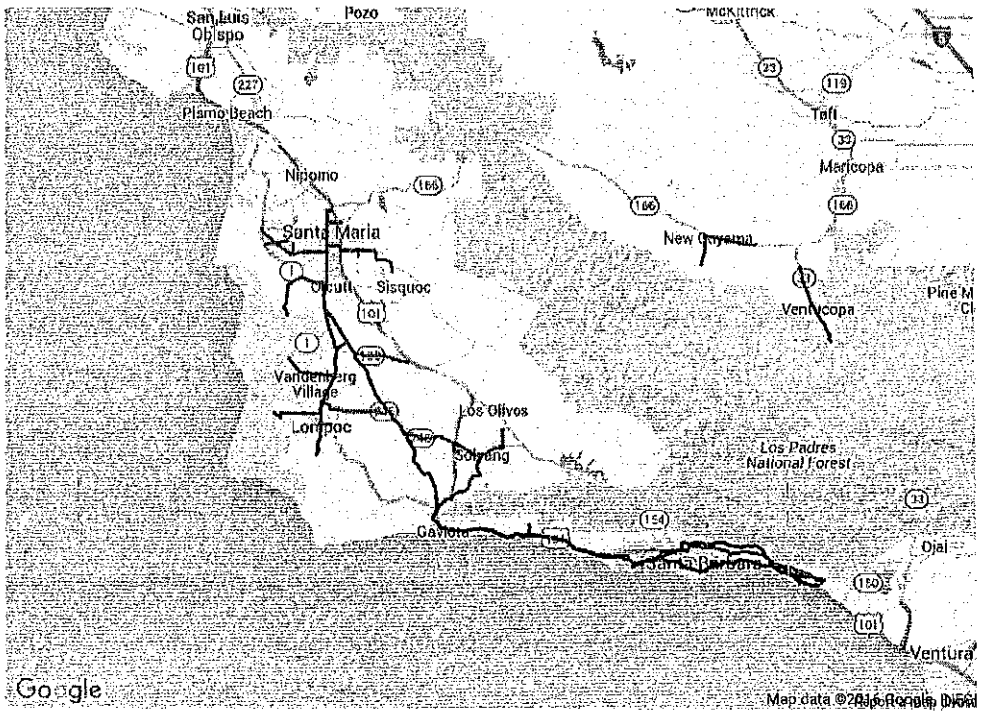
The cost associated with constructing a CNG refueling station can vary significant depending on size and application and ranges from $675,000 to $1,000,000 or more depending on flow through. Developing to a standard station size with in the North American market enables developers to reduce cost by utilizing economies of scale.The table below provides estimates of equipment and installation costs for one time-fill and two fast-fill stations, and illustrates several scenarios for the number and type of vehicles that can be refueled at the station. Please note that land costs vary and therefore were not considered here. Since it is recommended that fast-fill stations incorporate redundancies in their design, the table also shows a fast-fill station with two compressors. It is also important to note that the costs associated with combination-fill stations will incorporate the costs of both fast and time-fill stations.

	Fast Fill Station I	Fast Fill Station II	Time Fill Station
	Natural gas dryer, one 300 scfm compressor, 3 ASME vessel high-pressure storage systems	Natural gas dryer, two 300 scfm compressors, 3 ASME vessel high-pressure storage systems, 1 two-hose fast-fill dispenser	Natural gas dryer, one 300 scfm compressor, 20 two-hose, time-fill dispensers (no redundancy)
Component	$500,000	$650,000	$375,000
Installation	$300,00	$350,00	$300,0
Total Cost	$800,000	$1,000,000	$675,000
Vehicle Fueling Scenarios	15 light-duty/15 GGE consecutively fueling in a 1-hour peak period or randomly arriving light-duty/10 GGE or 10 heavy-duty/20 DGE consecutively fueling in a 1-hour peak period or randomly arriving heavy-duty	15 light-duty/15 GGE consecutively fueling in a 1-hour peak period or Randomly arriving light-duty/10 GGE or 10 heavy-duty/20 DGE consecutively fueling in a 1-hour peak period or Randomly arriving heavy-duty/10 DGE	40 vehicles/38 GGE in a 10-hour period or 40 vehicles/33 DGE in each vehicle in a 10-hour period

SoCalGas

Gas Transmission and High Pressure Distribution Pipeline Interactive Map - Santa Barbara

Find Address Enter your zip code or address.



Dark Blue Transmission Lines: Generally large diameter pipelines that operate at pressures above 200 psi and transport gas from supply points to the gas distribution system.

Light Blue High Pressure Distribution Lines: Pipelines that operate at pressures above 60 psi and deliver gas in smaller volumes to the lower pressure distribution system.

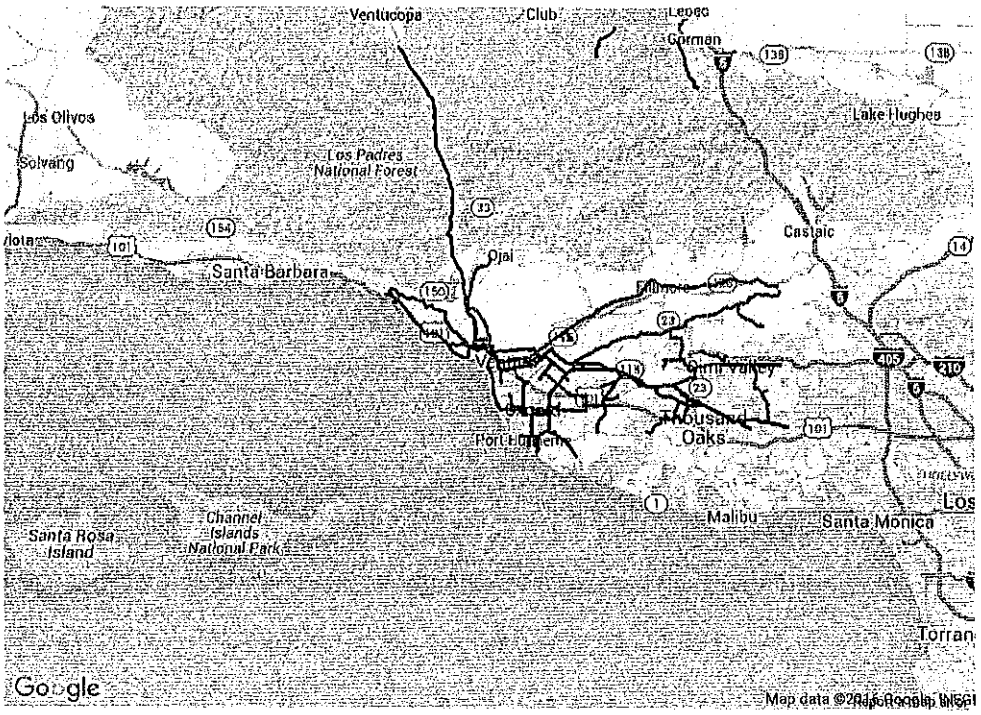
Accuracy of pipeline locations can vary +/- 500 feet.

Information from this website should *never* be used as a substitute for calling 811 two business days before digging.

SoCalGas
A Sempra Energy utility

Gas Transmission and High Pressure Distribution Pipeline Interactive Map - Ventura

Find Address Enter your zip code or address.



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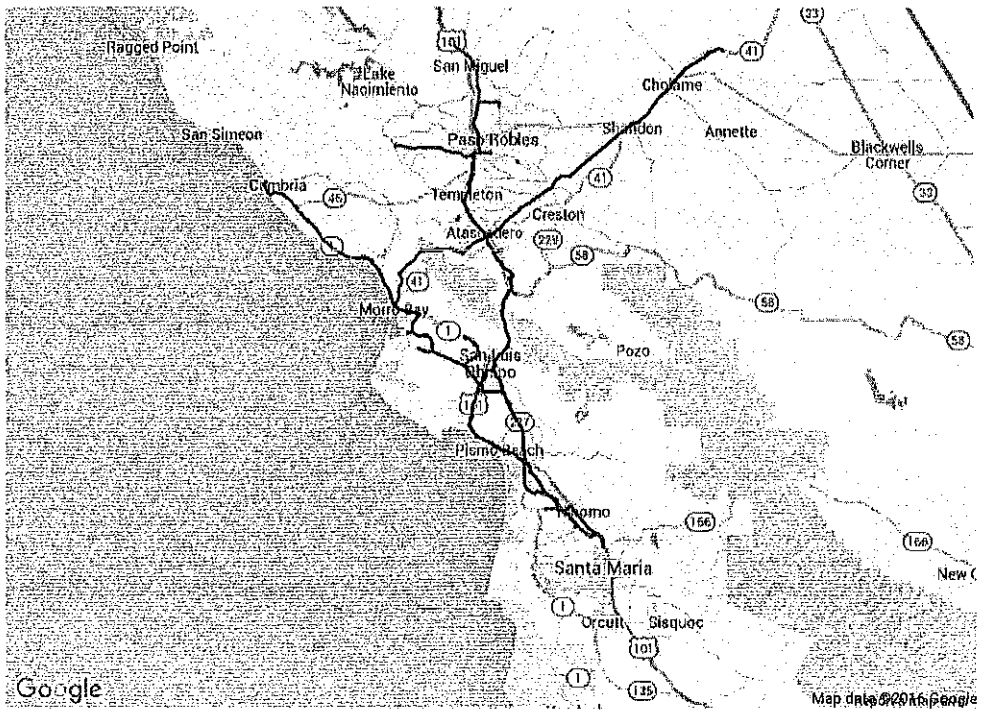
SoCalGas

Gas Transmission and High Pressure Distribution Pipeline Interactive Map - San Luis Obispo

Find Address Enter your zip code or address.



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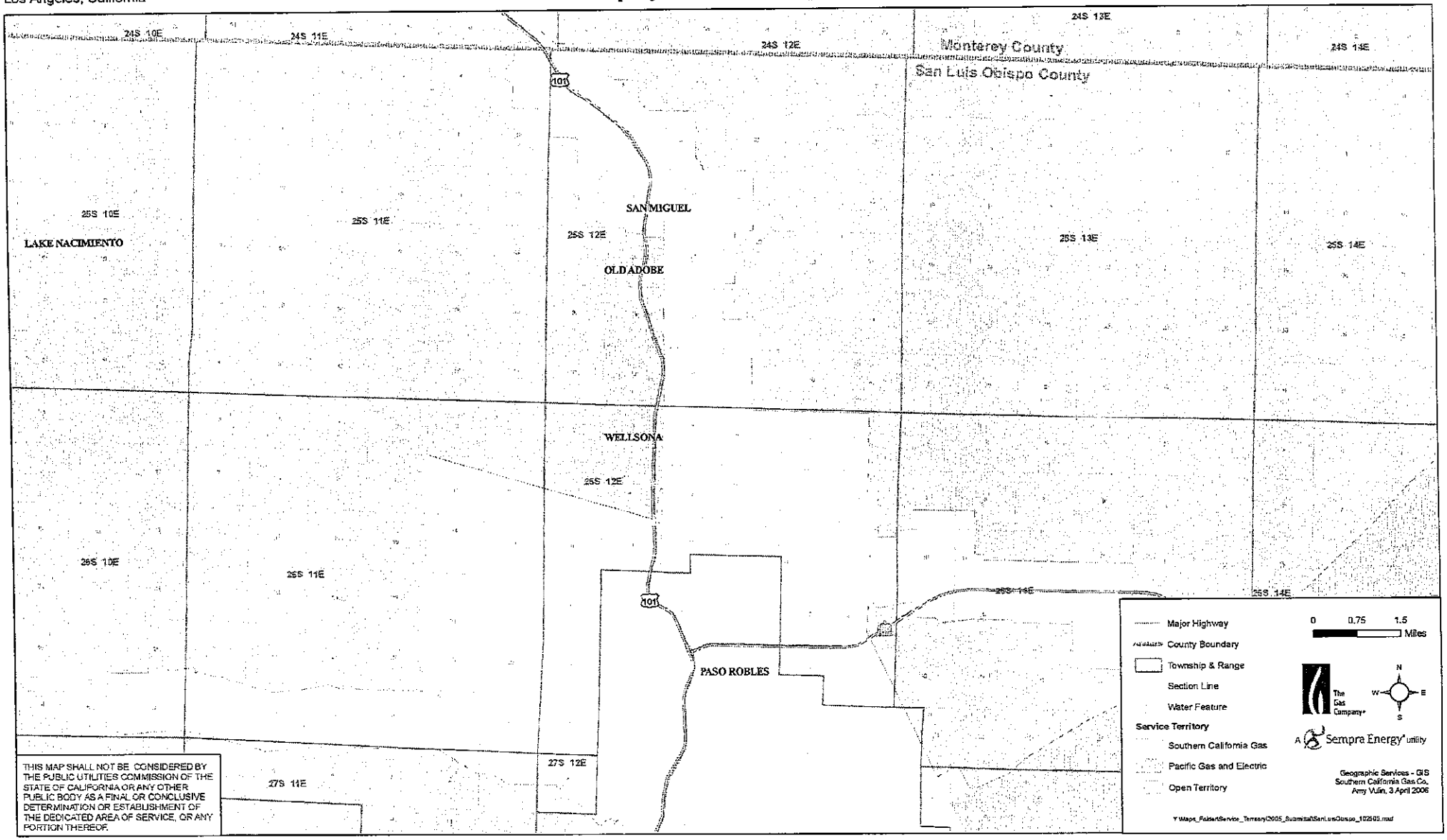
MAP SHOWING PASO ROBLES AREA OF
SOUTHERN CALIFORNIA GAS COMPANY IN
SAN LUIS OBISPO COUNTY SERVICE AREA

(See Attached Map)

SOUTHERN CALIFORNIA GAS COMPANY
Los Angeles, California

Map Showing Paso Robles Service Area of Southern California Gas Company in San Luis Obispo County

REVISED CAL. P.U.C. SHEET NO. 40433-G
CANCELING CAL. P.U.C. SHEET NO. 27972-G

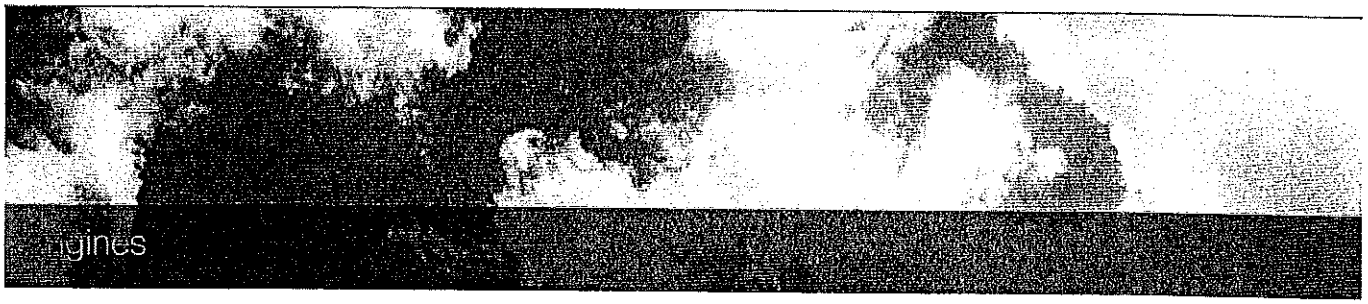


THIS MAP SHALL NOT BE CONSIDERED BY THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA OR ANY OTHER PUBLIC BODY AS A FINAL OR CONCLUSIVE DETERMINATION OR ESTABLISHMENT OF THE DEDICATED AREA OF SERVICE, OR ANY PORTION THEREOF.

(TO BE INSERTED BY UTILITY)
ADVICE LETTER NO. 3620
DECISION NO. _____

ISSUED BY
LEE SCHAVRIEN
SENIOR VICE PRESIDENT
REGULATORY AFFAIRS

(TO BE INSERTED BY CAL. P.U.C.)
DATE FILED April 5, 2006
EFFECTIVE May 5, 2006
RESOLUTION NO._____

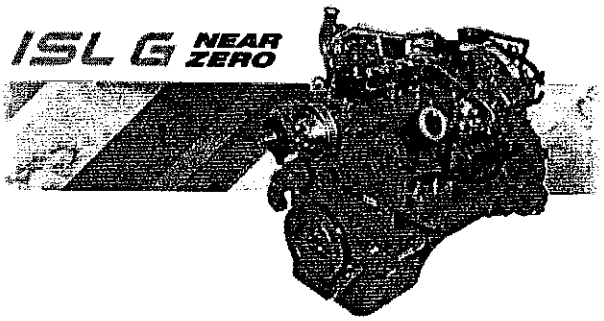


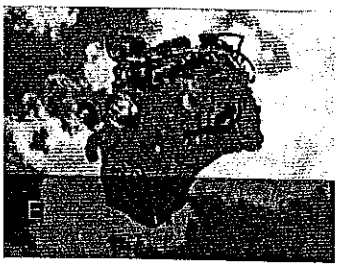
Models
- ISX12 G
- ISL G
- ISL G Near Zero
- ISB6.7 G
- C Gas Plus
- B Gas Plus

Technology
Intended Use Guidelines
Warranty
Legacy Products

ISL G Near Zero

Overview | Specifications | Ratings | Maintenance | Features





The ISL G Near Zero (NZ) NOx natural gas engine is the first MidRange engine in North America to receive emission certifications from both the U.S. Environmental Protection Agency (EPA) and Air Resources Board (ARB) in California for meeting the 0.02 g/bhp-hr optional Near Zero NOx Emissions standards for medium-duty truck, urban bus, school bus, and refuse applications.

The game-changing Cummins Westport ISL G NZ exhaust emissions will be 90% lower than the current EPA NOx limit of 0.2 g/bhp-hr. California ARB has defined this certified Near Zero emissions level of 0.02 g/bhp-hr NOx as equivalent to a 100% battery truck using electricity from a modern combined cycle natural gas power plant. The ISL G NZ will also meet the 2017 EPA greenhouse gas emission requirements with a 9% GHG reduction from the current ISL G.

Like the industry leading ISL G engine, the ISL G Near Zero will operate on 100% natural gas which can be carried on the vehicle in either compressed (CNG) or liquefied (LNG) form. The ISL G Near Zero can also run on renewable natural gas (RNG).

Available in 2016, the ISL G NZ will be offered as a first fit engine with truck, transit, school bus, and refuse OEMs, as well as for engine replacement in existing ISL G powered natural gas vehicles.

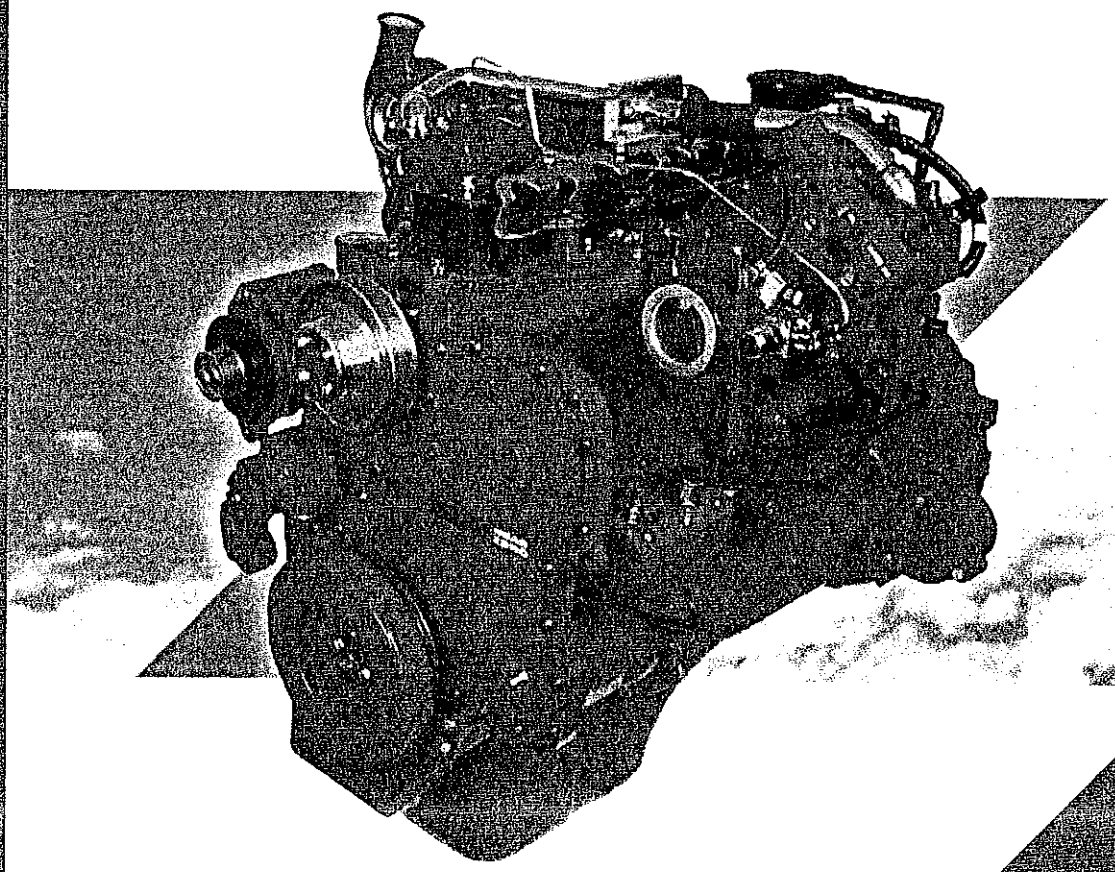
Download Brochures
ISL G Near Zero Fact Sheet
ISL G Near Zero Benefits
Product Information Bulletin - Intended Use Guidelines

Cummins Westport

The Natural Choice

introducing

ISL G NEAR ZERO



Cummins Westport

ISL G NEAR ZERO

In 2016, Cummins Westport introduces the ISL G Near Zero (NZ) natural gas engine - the first MidRange engine in North America to receive emissions certifications from the U.S. Environmental Protection Agency (EPA) and the Air Resources Board (ARB) in California for meeting the 0.02 g/bhp-hr optional Near Zero NOx Emissions standard. The ISL G NZ is designed for new medium-duty truck, urban bus, school bus, and refuse applications. It is also available for repowers of existing natural gas vehicles.

With exhaust emissions 90% lower than the current EPA NOx limit of 0.2 g/bhp-hr, the ISL G NZ also meets the 2017 EPA greenhouse gas emission requirements with a 9% GHG reduction from the current ISL G. For engines operating on renewable natural gas (RNG), GHG reductions may be even further reduced. ARB has defined this certified Near Zero emission level as equivalent to a 100% battery truck using electricity from a modern combined cycle natural gas power plant.

The ISL G NZ features the same Stoichiometric cooled Exhaust Gas Recirculation (SEGR) combustion technology, spark ignition, and simple TWC aftertreatment as the ISL G natural gas engine. It can operate on 100 percent natural gas, which can be carried on the vehicle in either compressed or liquefied form (CNG / LNG respectively), and it can also run on 100 percent biomethane or renewable natural gas, which meet published Cummins fuel specifications.

CNG LNG

Features

- Electronic Control Module: Provides full monitoring and control of engine sensors, fuel system and ignition system, with full interface capability to Cummins INSITE and diagnostic service tools.
- Three-Way Catalyst: Simple passive device, highly effective hydrocarbon, CO and NOx control with no maintenance costs. No Diesel Particulate Filter (DPF) or Selective Catalytic Reduction (SCR) systems are required. The ISL G Near Zero catalyst includes a mid-catalyst temperature sensor connected to the ECM.
- Closed Crankcase Ventilation (CCV): The ISL G Near Zero features a chassis mounted CCV system that prevents crankcase emissions, generated by the engine during normal operation, from escaping into the atmosphere. Crankcase emissions are captured and redirected through the CCV filter, where oil is removed, before sending the gases back to the intake manifold to be reintroduced to the combustion chamber. This reduces engine related methane emissions by 70%.

Ratings

Model	Advertised HP (kW) @rpm	Peak Torque lb-ft (N•m) @rpm	Governed Speed
ISL G NZ 320	320 (239) @2000	1000 (1356) @1300	2200 RPM
ISL G NZ 300	300 (224) @2100	860 (1166) @1300	2200 RPM
ISL G NZ 280	280 (209) @2000	900 (1220) @1300	2200 RPM
ISL G NZ 260	260 (194) @2200	660 (895) @1300	2200 RPM
ISL G NZ 250	250 (186) @2200	730 (990) @1300	2200 RPM

ISL G Near Zero Specifications

Advertised Horsepower	320 hp	239 kW
Peak Torque	1,000 lb-ft	1,356 N•m
Governed Speed	2,200 rpm	
Clutch Engagement Torque	550 lb-ft	746 N•m
Type	4-cycle, spark-ignited, inline 6-cylinder, turbocharged, CAC	
Displacement	540 cu. in.	8.9 L
Bore and Stroke	4.49 in x 5.69 in	114 mm x 145 mm
Operating Cycles	4	
Oil System Capacity	7.3 U.S. gal	27.6 L
Coolant Capacity	13.1 U.S. qts	12.4 L
System Voltage	12 V	
Net Weight w/ Std. Accessories, Dry	1,625 lbs	737 kg
Aftertreatment	Three-Way Catalyst (TWC)	
Fuel Types	CNG / LNG / Biomethane. Methane number 75 or greater	

Warranty

The ISL G Near Zero engine will be offered with the same base warranty and extended warranty options as the ISL G natural gas engine.

Better Customer Care

Cummins Westport-powered vehicles are supported by Cummins service network, the largest and most capable in North America. Cummins authorized technicians are fully trained on Cummins Westport natural gas engines, with ready access to Genuine Cummins Parts and warranty support. For questions regarding your Cummins Westport engine, or for assistance in finding a repair facility in the United States or Canada, call Cummins Care at: 1-800-DIESELS™ (1-800-343-7357).

Cummins Westport

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Cummins Westport

Product Information Bulletin

ISB6.7 G, ISL G, ISL G Near Zero and ISX12 G Intended Use Guidelines

March 18, 2016

The low emissions and high performance of the Cummins Westport ISB6.7 G, ISL G, ISL G Near Zero (NZ) and ISX12 G natural gas engines continue to make these engines the natural choice for a wide variety of local, regional, and on highway applications. The success of these engines has also led to increasing use in applications that have been traditionally served by larger, heavier engines.

Intended Use Guidelines are provided to ensure customers' expectations for performance, efficiency, reliability, and durability can be satisfied. With the introduction of the ISB6.7 G and ISL G NZ engines in 2016, these guidelines have been updated.

In general, for applications for applications up to 33,000 lb. the ISB6.7 G is recommended.

For vehicles operating up to 66,000 lb. GVW, the ISL G/ISL G NZ natural gas engines are an excellent choice.

For vehicles operating more than 60,000 miles per year and up to 80,000 lb. GVW, regardless of application, the ISX12 G is recommended.

Most ISL G and ISX12 G natural gas engines will spend considerable time in urban traffic or on secondary roads, so startability and cruise gradeability must meet customer expectations.

Startability of a vehicle is defined as the maximum grade on which a vehicle can begin to move in its lowest gear without throttle application and is directly related to the total gear ratio and engine displacement.

Cruise gradeability refers to the vehicle's ability to maintain desired on highway cruise speeds on a minimum 0.5% grade.

ISB6.7 G, ISL G and ISL G Near Zero engines are compatible with automatic transmissions, the supplier of which can be consulted on performance predictions based on rear axle ratio, tire size, desired top road speed, and intended use.

Optimum fuel economy in regional haul applications is achieved when the ISL G is geared to cruise in the 1800-2000 rpm range.

ISX12 G engines are compatible with automatic, manual and automated manual transmissions, the supplier of which can be consulted on performance predictions based on rear axle ratio, tire size, desired top road speed, and intended use.

Optimum fuel economy in line haul applications is achieved when the ISX12 G is geared to cruise in the 1400-1475 rpm range.

Cummins PowerSpec helps you find the ideal gearing specs for the ISB6.7 G. ISL G / ISL G NZ and ISX12 G. For more information visit powerspec.cummins.com

Intended Service Guidelines

Customer expectations for performance, reliability, and durability change with the nature of the vehicle's use. Some applications like line-haul trucking operate at relatively high duty cycles for long durations. Other applications like refuse collection operate at low duty cycles but with extremely high stop/start frequency.

Customers have the responsibility to operate and maintain their engines as recommended in Operation and Maintenance manuals. Maintenance intervals as published by Cummins Westport are similar to Cummins diesel engines and are established based on vehicle applications and average speed.

Some examples of recommended guidelines are as follows:

		ISB6.7 G		ISL G ISL G NZ		ISX12 G	
General Recommendations		<33,000 lb		< 66,000 lb		< 80,000 lb	
Intended Use	Minimum Startability (%)	GVW (lbs)	GCW (lbs)	GVW (lbs)	GCW (lbs)	GVW (lbs)	GCW (lbs)
Line Haul	14	26,000	33,000	66000	66000	80000	80000
Local P&D	20	33,000	33,000	66000	66000	80000	80000
Regional Haul	20	33,000	33,000	66000	66000	80000	80000
Utility/Dump Truck	28	33,000	33,000	66000	66000	80000	80000
Refuse Packer	28	33,000	N/A	72000	N/A	80000	N/A
Transit/Shuttle Bus	20	33,000	N/A	66000	N/A	80000	80000
Highway Coach	20	33,000	N/A	66000	N/A	80000	80000

Consult your Cummins or Cummins Westport representative referring to Application Engineering Bulletin (AEB) 140.26, Automotive Natural Gas Intended Service Guidelines, for further information.

Exceptions

Cummins Westport advises that no waivers or exceptions will be granted for operation outside Intended Use Guidelines.

Customers should be advised that not following recommended intended use, maintenance or operating guidelines **may** lead to diminished performance, reliability, durability and support.

Cummins Westport Inc. is a joint venture of Cummins Inc. and Westport Innovations Inc. that designs, engineers and markets 6 to 12 litre spark-ignited natural gas engines for North American commercial transportation applications such as school buses, trucks, and transit buses.

For further information on Cummins Westport products visit **www.cumminswestport.com**

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