California Department of Food and Agriculture (CDFA)

Division of Measurement Standards (DMS)

Natural Gas Motor Vehicle Fuels Pre-Rulemaking Workshop

September 15, 2015

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WELCOME!

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Natural Gas Motor Vehicle Fuels Pre-Rulemaking Workshop

September 15, 2015

Kristin Macey, California Department of Food and Agriculture, Division of Measurement Standards

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Topics for Discussion

- DMS Authority for Rulemaking
- Need for Rulemaking
- Overview of Fuels and Lubricants Programs
- Proposed Fuel Quality Specifications for CNG
- Proposed Regulatory Changes
- Timeline
- Additional References
- Contacts

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Rulemaking Authority and Necessity

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DMS Authority for Rulemaking

Business and Professions Code, Division 5 – Weights and Measures

§12027: General Authority.

The secretary may make such rules and regulations as are reasonably necessary for the purpose of carrying out the provisions of the law.

Need for Rulemaking

Business and Professions Code, Division 5 – Weights and Measures

§12107: Retail Fuel Dispenser Specifications. All retail fuel dispensers must follow the latest technical standards published in NIST Handbook 44 except as specifically modified through rulemaking. Handbook 44 Section 3.37. Mass Flow Meters is not consistent with AB 1907 (Ridley-Thomas, Chapter 805, 2014 Statutes), so modifications are required.

Need for Rulemaking

Business and Professions Code, Division 5 – Weights and Measures

§13440 and 13450: Fuel Quality Specifications. California law requires CDFA to adopt quality specifications for spark-ignition and compression-ignition fuels sold within California. This includes CNG and LNG retail motor vehicle fuels sold in California.

Need for Rulemaking

Business and Professions Code, Division 5 – Weights and Measures

§13470 and 13480: Price Indications and Dispenser Labeling. The law is specific about what consumers must be able to see during their purchase, so that there are sufficient details to ensure transparency in every transaction. This applies to all fuels sold at retail.

DMS Alternative and Renewable Fuels Program Overview

September 15, 2015

Kevin Schnepp, California Department of Food and Agriculture, Division of Measurement Standards

Alternative and Renewable Fuels

- Funded by Cap and Trade investment proceeds directed towards programs designed to affect greenhouse gas reductions from the agricultural and transportation sectors
- Establishes capabilities for the sampling and analysis of low-carbon renewable fuels in fuel laboratories in both Sacramento and Anaheim
- Supports the diversification of transportation fuels and reduces overall GHG emissions from both agriculture and transportation

Alternative and Renewable Fuels

- Conducts laboratory research and analysis necessary to evaluate, modify, and validate test methods for determination of fuel quality
- Evaluates fuel quality specifications for several low carbon, renewable and zero-emission fuels including renewable natural gas, bio-hydrogen, and dimethyl ether
- Promulgates regulations for the adoption fuel quality specifications for low carbon alternative and renewable fuels to enable commercialization
- Established fuels are subsequently tested and regulated by the Fuel and Lubricants Program

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Fuels and Automotive Lubricants Program Overview

September 15, 2015

Allan Morrison, California Department of Food and Agriculture, Division of Measurement Standards

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Fuels and Lubricants Program

- Assures quality standards for motor vehicle fuels, lubricants, transmission fluids, engine coolants and brake fluids
- Regulates labeling and price advertising
- Adopts specifications developed by ASTM International, SAE International, or vehicle manufacturers
- Samples products and enforces specifications
- Operates two testing laboratories in Sacramento and Anaheim

Fuels and Lubricants Laboratory

Products Tested

- Conventional fuels
  - Gasoline
  - Diesel Fuel
- Alternative fuels
  - Biodiesel
  - Ethanol Flex Fuels
  - Methanol Flex Fuels
  - Compressed Natural Gas
  - Liquid Petroleum Gas
  - Hydrogen
- Automotive products
  - Motor oil
  - Gear oil
  - Brake fluid
  - Automotive Transmission Fluids
  - Engine coolants
- Kerosene
- Fuel Oil

Fuel Sampling

- Random Surveillance Sampling
- Market Place Surveys
- Complaints
- Follow up on all product failures

Fuel Sampling Locations

- Sampling starts at retail fuel stations
- Fuel Quality is enforced as a strict liability
- Follow up sampling at fuel distribution facilities and refineries may be conducted at the discretion of DMS
- No sampling is conducted from consumer fuel tanks

Fuel Quality Specifications

- Gasoline ASTM D4814
- Diesel Fuel ASTM D975
- Diesel-Biodiesel Blends ASTM D7467
- Ethanol Fuel ASTM D5798
- LPG ASTM D1835
- Dimethyl Ether ASTM D7901
- Hydrogen SAE J2719

Proposed Interim Fuel Quality Specifications for Natural Gas Motor Vehicle Fuels

September 15, 2015

John Mough, California Department of Food and Agriculture, Division of Measurement Standards

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Changes Under Consideration: CCR, Title 4, Division 9, Chapter 6

Add Article 10. Specifications for Natural Gas Used in Internal Combustion Engines

4193. Specifications – Natural Gas Used in Internal Combustion Engines. Natural Gas used in internal combustion engines shall meet the following requirements:

Changes Under Consideration: CCR, Title 4, Division 9, Chapter 6

Specifications for Natural Gas Used in Internal Combustion Engines:

- Methane Number
- Wobbe Index
- Hydrocarbon Dew Point (°C)
- Oxygen (max vol. %)
- Hydrogen (max vol. %)
- Particle Concentration (max mg/kg)
- Particle Size (max µm)

Changes Under Consideration: CCR, Title 4, Division 9, Chapter 6

Contaminants in Natural Gas Used in Internal Combustion Engines:

Ammonia
Sulfur Compounds
Halogenates
Siloxanes

Changes Under Consideration: CCR, Title 4, Division 9, Chapter 6

Methane Number (MN)

The Methane Number is a measure of the knock resistance of a natural gas fuel sample. It is a derived value related to the composition of the gas. Pure methane is assigned a MN of 100. Increasing concentrations of higher hydrocarbons reduce the MN. Manufacturers specify the minimum MN required for a given engine model.

Changes Under Consideration: CCR, Title 4, Division 9, Chapter 6

Wobbe Index

The Wobbe Index is a measure of the energy content of natural gas as delivered which takes into account both the higher heating value of the gas and its specific gravity. Pure methane has Wobbe Index of 1365 BTU/cu ft. The Wobbe Index of natural gas typically ranges from 1389 – 1681 BTU/cu ft depending on its composition.

Webinar Schedule

NG Rulemaking Webinars:

Sep. 30 Methane Number Calculation

Oct. 14 Methane Number Specification

Nov. 18 Methane Number Value

Details sent via email to stakeholder list and also available at http://www.cdfa.ca.gov/dms/

Proposed Amendments to the California Code of Regulations Mass Flow Meter Code September 15, 2015

Kristin Macey, California Department of Food and Agriculture, Division of Measurement Standards

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Changes Under Consideration: Section 3.37. Mass Flow Meters

California Code of Regulations Title 4, Division 9, Article 1

Add Exceptions to Section 4001.:

NIST Handbook 44 Section 3.37. Mass Flow Meters Paragraphs S.1.2., S.1.3.1.1., S.5.2., and UR.3.8: NOT ADOPTED

Changes Under Consideration: Section 3.37. Mass Flow Meters

California Code of Regulations Title 4, Division 9, Article 1

Amendments and Additions to NIST Handbook 44 Section 3.37. Mass Flow Meters in Section 4002.10.:

Amend paragraphs S.1.2., S.1.3.1.1., S.5.2., and UR.3.8.

Add paragraphs S.1.3.1.2. and S.5.3.

Changes Under Consideration: Section 3.37. Mass Flow Meters

S.1.2. Compressed Natural Gas and Liquefied Natural Gas Dispensers. – Except for fleet sales and other price contract sales, a compressed or liquefied 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.

Changes Under Consideration: Section 3.37. Mass Flow Meters

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.)

Changes Under Consideration: Section 3.37. Mass Flow Meters

S.1.3.1.2 Liquefied Natural Gas Used as an Engine Fuel. – When liquefied natural gas is dispensed as an engine fuel, the delivered quantity shall be indicated in "diesel gallon equivalent (DGE) units". (Also see definitions.)

Changes Under Consideration: Section 3.37. Mass Flow Meters

S.5.2. Marking of Gasoline Volume Equivalent Conversion Factor <u>for Compressed Natural Gas</u>. – 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~~ <u>means</u> 5.66~~0~~ lb of <u>Compressed</u> Natural Gas" permanently and conspicuously marked on the face of the dispenser ~~according to the method of sale used~~.

Changes Under Consideration: Section 3.37. Mass Flow Meters

S.5.3. Marking of Equivalent Conversion Factor for Liquefied Natural Gas. – A device dispensing liquefied natural gas shall have the statement "1 Diesel Gallon Equivalent (DGE) means 6.06 lb of Liquefied Natural Gas" permanently and conspicuously marked on the face of the dispenser.

Changes Under Consideration: Section 3.37. Mass Flow Meters

UR.3.8. Return of Product to Storage, Retail Compressed and Liquefied 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.

Changes Under Consideration: CCR, Title 4, Division 9, Definitions

Appendix D. Deleted definition:

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

Appendix D. Added definition:

<u>diesel gallon equivalent (DGE). – Diesel gallon equivalent (DGE) means 6.06 pounds of natural gas. [3.37]</u>

Proposed Amendments to the California Code of Regulations for the advertising, labeling and sale of Natural Gas Motor Vehicle Fuels
September 15, 2015

Kristin Macey, California Department of Food and Agriculture, Division of Measurement Standards

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Changes Under Consideration: CCR, Title 4, Division 9, Chapter 7

Add: 4205. Labeling and Price Sign Advertising Requirements for Compressed Natural Gas and Liquefied Natural Gas.

All dispensers, advertising signs and storage tank labels shall comply with the requirements of Sections 13470, 13480 and 13532 of the Business and Professions Code.*
(* Note: AB 808 proposes changes to Section 13532 that would exempt Natural Gas from street sign advertising requirements.)

Changes Under Consideration: CCR, Title 4, Division 9, Chapter 7

Add: 4205.:

(b) All dispensers of Compressed Natural Gas fuel shall be labelled in a conspicuous place "Gasoline gallon equivalent".

(c) All dispensers of Liquefied Natural Gas fuel shall be labelled in a conspicuous place "Diesel gallon equivalent".

Rulemaking Timeline for July 1, 2016 Effective Date

DATE	TASK
Sept. – Nov. 2015	Pre-rulemaking webinars: Sep. 30 Methane Number Calculation Oct. 14 Methane Number Specification Nov. 18 Methane Number Value
December 11, 2015	OAL to post notice of rulemaking, "Initial Statement of Reasons"
January 25, 2016	End of 45 day public comment period
February 8, 2016	Revision of proposed rule (if needed)
February 23, 2016	End of 15-day comment period

Rulemaking Timeline for July 1, 2016 Effective Date

DATE	TASK
March 1-15, 2016	CDFA/DMS internal review
March 15, 2016	DMS to complete "Final Statement of Reasons" and send package to OAL
April 26, 2016	End period for OAL review of package
On or before April 26, 2016	OAL approves for publication and sends to Secretary of State April 26, 2016 for publication July 1, 2016
July 1, 2016	Regulation goes into effect

Questions and Discussion

Public Comments

Thank You!!!

Contact information:

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Thank You!!!

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