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Codes, Standards and Advisories Applicable to Natural Gas Vehicles and Infrastructure

(N.B. This list is not all-inclusive)

| Document | Applicability | Comments |
|---|--|---|
| NFPA 52 – Vehicular Gaseous Fuel Systems Code - 2010 | CNG LNG and L/CNG vehicles (incl. marine) and fueling facilities. Hydrogen vehicles are covered in this edition but will be transferred to NFPA 2 in the next edition of that code | Probably single best source of guidance for CNG, LNG and L/CNG vehicles and fueling facilities. |
| NFPA 88A – Standard for Parking Structures – 1998 | Open, enclosed, basement and underground parking structures | No special requirements for NGVs other than reference to NFPA 52 and 57 |
| NFPA 30A – Code for Motor Fuel Dispensing Facilities and Repair Garages - 2007 | Facilities dispensing both gaseous and liquid fuels at the same facility | Includes requirements of old 88B on repair garages. |
| NFPA 59A – Standard for the Production, Storage, and Handling of Liquefied Natural Gas - 2001 | Site selection, design, construction, and fire protection for LNG facilities. | |
| SAE J1616 – Recommended Practice for Compressed Natural Gas Vehicle Fuel - 1994 | CNG motor vehicle fuel | Recommendations on vehicular fuel composition. |
| SAE J2343 – Recommended Practices for LNG Powered Heavy-Duty Trucks-2008 | LNG powered heavy duty trucks | Primarily heavy truck recommendations but some maintenance facility equipment and procedures. |
| SAE J2406 – Recommended Practices for CNG Powered Medium and Heavy-Duty Trucks - 2004 | CNG powered medium and heavy duty trucks (>14,000 gvwr) | Published in 2002. |

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| SAE J2645 - Liquefied Natural Gas (LNG) Vehicle Metering and Dispensing Systems | LNG Vehicular Fuel Metering and Dispensing. | Published in 2009 |
| Design Guidelines for Bus Transit Systems Using Liquefied Natural Gas (LNG) as an Alternative Fuel (3/97) | Transit Facilities but useful reference for other fleets | FTA Report - Not only references required codes (e.g., NFPA) but also suggests additional precautions and provides general information. |
| Design Guidelines for Bus Transit Systems Using Compressed Natural Gas as an Alternative Fuel (6/96) | ditto | ditto |
| Compressed Natural Gas Safety in Transit Operations (10/95) | ditto | ditto |
| Liquefied Natural Gas Safety in Transit Operations (3/96) | ditto | ditto |
| Uniform Fire Code - 1997 | "The most widely adopted model building code in the US" | May be the fire code used in your area. Check with local fire marshal. |
| International Fire Code - 2010 | International fire code | Check with local fire marshal on applicability. |
| CSA B108-99 Natural Gas Fuelling Stations Installation Code | Canadian Std. applicable to fleet and public stations | |
| CSA B108-99 Appendix B – Indoor Fuelling of Natural Gas Vehicles | Canadian Std. Fueling facilities w/i a building that has primary functions other than fueling. Does not cover public stations. | Published August 2001. |
| CSA B109-01 – Natural Gas for Vehicles Installation Code | Canadian Std. Applies to "installation, servicing and repair of NG fuel systems on self-propelled vehicles." | |
| ANSI NGV1-2006 – Compressed Natural Gas Vehicle Fueling Connection Devices | CNG vehicular fueling connection devices | Assures standardized nozzles and receptacles |
| ANSI NGV2-2000 – Basic Requirements for Compressed Natural Gas Vehicle Fuel Containers | CNG fuel containers | Container requirements in addition to FMVSS 304. |
| ANSI NGV3.1-1995 – Fuel System Components for Natural Gas Powered Vehicles | Fuel system components for NGVs (excludes LNG components upstream of vaporizer) | Primarily for converted vehicles. |
| ANSI NGV4.1/ CSA 12.5 -1999 – NGV Dispensing Systems | CNG vehicular fuel dispensing systems | |

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| ANSI NGV4.2/CSA 12.52 -1999 – Hoses for NGVs and Dispensing Systems | CNG dispenser and vehicular hose assemblies | |
| ANSI NGV4.4/CSA 12.54 -1999 – Breakaway Devices for Natural Gas Dispensing Hoses and Systems | CNG dispenser shear valves and fueling hose emergency breakaway shutoff devices | |
| ANSI NGV4.6/CSA 12.56 -1999 – Manually Operated Valves for Natural Gas Dispensing Systems | Manually operated CNG valves, excluding cylinder shut-off valves | |
| ANSI NGV4.8/CSA 12.8 -2002 – Natural Gas Vehicle Fueling Station Reciprocating Compressor Guidelines | Compressor packages containing reciprocating compressors used in CNG fueling station service. | |
| ANSI PRD1-1998 (with 1999 & 2007 addenda) – Basic Requirements for Pressure Relief Devices for Natural Gas Vehicle Fuel Containers | Pressure Relief Devices for CNG Fuel Containers | |
| CGA C-6.4-2003 – Methods for External Visual Inspection of Natural Gas Vehicle Fuel Containers and Their Installations | CNG vehicular fuel containers | Referenced in ANSI NGV2 |
| 49 CFR 178.56 – Specification 4AA welded steel cylinders | CNG cylinders for fueling stations. | Generally not used for new CNG fueling stations. ASME vessels now generally used. |
| 49 CFR 178.57 – Specification 4L welded insulated cylinders | LNG vehicular fuel tank requirement called out in NFPA 57. | Option is meeting ASME Boiler and Pressure Vessel Code. |
| 49 CFR 571.304, FMVSS 304 – Compressed Natural Gas Fuel Container Integrity | CNG motor vehicle fuel containers | DOT Federal Motor Vehicle Safety Standard for CNG motor vehicles. |
| 49 CFR 571.303, FMVSS 303 – Fuel System Integrity of Compressed Natural Gas Vehicles | CNG vehicles ≤10,000 lbs. GVWR and school buses | DOT Federal Motor Vehicle Safety Standard for crash test of light duty vehicle and school bus CNG fuel systems. |
| 49 CFR 393.65, FMCSR – All Fuel Systems | Commercial vehicles in interstate commerce | DOT Federal Motor Carrier Safety Regulations. May have been adopted by states for intrastate application. Wasn't written w NGVs in mind but may be legally applicable. |

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| 40 CFR 80.33 - Controls applicable to natural gas retailers and wholesale purchaser-consumers | Retailer and wholesale purchaser-consumers of NG | EPA 1.2 gm limit on atmospheric venting per refueling. |
| 40 CFR 86.098-8 - Emission standards for 1998 and later model year light-duty vehicles | Light-Duty Vehicles | Requires NGV1 receptacles. |
| ASME Boiler and Pressure Vessel Code, Section VIII (Pressure Vessels) | Sections applicable to LNG containers used on vehicles and in fueling stations. Sections applicable to containers used in CNG fueling stations. | |
| CA Code of Regulations, Title 13, Div 2, Ch 4, Article 2 | Fuel systems using LNG in 13 CCR 935, CNG in 13 CCR 934 | CA vehicle requirements |
| CA Code of Regulations, Title 8, Div 1, Ch 4, Subchapter 1 | CNG and LNG Storage Tanks | CA fuel storage requirements |
| CA Code of Regulations, Title 13, Div 3, Ch 5, Article 3, Sec 2292.5 | CNG sold in CA | CA CNG composition requirements |
| TX Administrative Code, Title 16, Part 1 | CNG regulations in Chapter 13, LNG regulations in Chapter 14 | TX requirements |

Availability:

National Fire Protection Association (NFPA) documents – contact NFPA at 1-800-344-3555 or <http://catalog.nfpa.org>

Society of Automotive Engineers (SAE) documents – contact SAE at 774-726-0790 or www.sae.org/products

Federal Transit Administration (FTA) documents – contact William Hathaway at 617-494-2081 or the National Technical Information Service at 703-605-6050 or www.ntis.gov

Uniform Fire Code – Contact Western Fire Chiefs Association/Uniform Fire Code Association at 760-723-6911 or www.wfca.com/ufca or buy from a bookstore, such as Amazon.Com

International Fire Code – Contact International Codes Council at 703-931-4533 or www.intlcode.org

Canadian Standards Association (CSA) documents – Contact CSA at 1-800-463-6727 or www.csa.ca

ANSI NGV documents – May be purchased from CSA at <http://www.csa-intl.org/onlinestore/getcatalogdrilldown.asp?Parent=0&k=3&l=1> or ANSI at <http://webstore.ansi.org/ansidocstore/default.asp>

Compressed Gas Association (CGA) documents – Contact CGA at 703-788-2700 or www.cganet.com

Code of Federal Regulations (CFR) – Can be obtained on the web at www.access.gpo.gov

California Code of Regulations (CCR) – Can be obtained on the web at <http://ccr.oal.ca.gov>

Texas Administrative Code – Can be obtained on the web at [http://info.sos.state.tx.us:80/pub/plsql/readtac\\$ext](http://info.sos.state.tx.us:80/pub/plsql/readtac$ext). ViewTAC

ASME Boiler and Pressure Vessel Code – Contact ASME at 800-843-2763 or www.asme.org

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