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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 Fuel Systems Code - 2006	CNG vehicles (incl. marine) and fueling facilities,	Probably single best source of guidance for CNG vehicles and fueling facilities.
NFPA 57 – Liquefied Natural Gas Vehicular Fuel System Code - 2002	LNG and L/CNG vehicles (incl. marine) and fueling facilities	Single best source of guidance for LNG 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 - 2003	Facilities dispensing <b>both</b> gaseous <b>and</b> 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- 1997	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 - 2002	CNG powered medium and heavy duty trucks (>14,000 gvwr)	Published in 2002.

Document	Applicability	Comments
SAE J2645 - Liquefied Natural Gas (LNG) Vehicle Metering and Dispensing Systems	LNG Vehicular Fuel Metering and Dispensing.	Published in 2003
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 - 2000	"New" 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 NGV1-1994 (with 1997 and 1998 addenda) – 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	

Document	Applicability	Comments
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 addendum) – Basic Requirements for Pressure Relief Devices for Natural Gas Vehicle Fuel Containers	Pressure Relief Devices for CNG Fuel Containers	
CGA C-6.4-1998 – 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.

Document	Applicability	Comments
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
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](http://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](http://www.ntis.gov)

Uniform Fire Code – Contact Western Fire Chiefs Association/Uniform Fire Code Association at 760-723-6911 or [www.wfca.com/ufca](http://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](http://www.intlcode.org)

Canadian Standards Association (CSA) documents – Contact CSA at 1-800-463-6727 or [www.csa.ca](http://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](http://www.cganet.com)

Code of Federal Regulations (CFR) – Can be obtained on the web at [www.access.gpo.gov](http://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.ViewTAC](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](http://www.asme.org)