SPS 340.60 Liquefied Natural Gas Systems (LNG) Checklist
Vehicular Fuel Gas Systems Code NFPA 52 – 2010 DISPENSING

Owner: _____City; _____State/zip_____

Location: _____ Contact Phone: _____ Cell: _____

Tank Manufacturers_____ Tank Capacity _____ Year Built _____

Vessel Marking: _____ NB No._____ Serial No. _____ MAWP _____ QTY. _____

Chapter 12 LNG Fueling Facilities		
Code Section	**Item Description**	**Std Para.**
12.1.1	Applies to design etc. of equipment used for the storage and dispensing of LNG and L/CNG as engine fuel for vehicles of all types.	
12.1.2	Dispensing of LNG shall comply with a permanent LNG refueling installation	
12.2.1.1 – 12.2.1.2	Tamper protection for unattended facilities, storage & transfer equipment	
12.2.1.3	Operating Instructions conspicuously posted	
12.2.1.4	Lighting for night operations	
12.2.1.7 – 12.2.1.8	Sites dispensing saturated LNG barrier requirements for personnel and operator	
12.2.2.1 – 12.2.2.2	Sitting not below overhead 600 volt electric lines; vaulted or UG OK	
12.2.2.3	Protection from other combustibles to be provided if present	
12.2.2.4	Fired equipment to be located IAW table 12.2.2.4	
12.2.2.5 – 12.2.2.6	Setbacks for Point of transfer not less than 25 ft. (includes max length of hose)	
12.2.3.1 – 12.2.3.5.2	Spill containment and site prep of impoundment areas	
12.2.3.6 – 12.2.3.8.3	Impounding containment design and drainage	
12.2.4.1.1 – 12.2.4.1.2	Bldgs. Exclusive to LNG fueling to be type I or II windows & doors permit egress	
12.2.4.2.1 – 12.2.4.2.2	Deflagration venting location and type	
12.2.4.2.3 – 12.2.4.2.6	Ventilation means, monitors, system shut down, ventilation rates	
12.2.4.3	Reactivation of auto shut down shall be by manual means	
12.2.4.4 – 12.2.4.4.2	Gas detection system location, alarms, operation	
12.2.4.5 – 12.2.4.6	Dispensing Equip. in or attached to bldgs for other purpose, access & fire doors	
12.2.4.7 – 12.2.4.8	"NO-SMOKING" - signage and location of piping shutoff valves outside of bldg.	
12.2.4.9	Bldgs and/or rooms for storage or dispensing electrical class per table 12.2.2.4	
12.3.1 – 12.3.2	Cargo transport unload to fueling facility	
12.3.3 – 12.3.6	Isolation valves, backflow prevention, status indicator, personnel, ignition source	
12.3.7.1 – 12.3.7.2	Methane detection and fire protection	
12.3.8.1 – 12.3.12	Transport bleed connections, wheel chocks, engine off, setback from container	
12.4.1 – 12.4.3	Dispensing device damage protection, ESD and ESD actuator location	
12.4.4	Max delivery pressure $\leq$ MAWP of vehicle tank	
12.4.5 – 12.4.6	Hose arms require shut-off and break-away at fuel end, & secured when not in use	
12.4.7 – 12.4.7.2	Hose or arms $\geq$ 3" liq. or 4" vapor ESV with in 10' ; 2 or more legs ESV in each leg	
12.4.8.1 – 12.4.8.2	Loading arms &hose bleed or vents and discharge location	
12.4.9 – 12.4.10	Fueling connector to be safe & reliable and have interlock or self-closing ends	
12.4.11	Transfer to onboard vehicle per OEM instructions and shall be posted at dispenser	
12.4.12 – 12.4.13	AHJ approval required for equip. spacing; and for exemption from Section 12.4	
12.5	Piping and components to comply with Chapter 16	
12.6.1 – 12.6.3	PRV install to reduce damage to piping, sealed, stationary tank PRV per CGAS-1.3	
12.6.4 – 12.6.4.2	Thermal expansion relief valve requirements	
12.7.1 – 12.7.3	UG and Submerged piping corrosion control	
12.8.1 – 12.8.7	Stationary pumps and compressor requirements	
12.9.1 – 12.9.8	Vaporizer requirements	
12.10.1 – 12.10.12	LNG-to-CNG (L/CNG) system requirements	
12.11.1 – 12.11.3.2	Instrumentation, Press. gauge; temp. monitor, and emerg. shut down device (ESV)	
12.12.1 – 12.12.8	Electrical IAW NFPA 70	
12.13.1 – 12.13.1.1	Maintenance program per OEM include test & inspection conducted at least 6 mos	
12.13.1.2 – 12.13.1.3	Refueling site maint. program or safety analysis kept for duration of sites operation	
12.13.3 – 12.13.4.1	Safety device out of service for maintenance Signage and follow 29 CFR 1910	
12.13.5 – 12.13.6	Free of rubbish & debris for 25' grass areas maintained not to present a hazard	
Code Section	**Item Description**	**Std Para.**
12.13.7 – 12.13.9	Test, inspection, scheduling of safety and fire equip. access routes for fire equip.	

Chapter 15 LNG Fire Protection		
15.2.1.1 – 15.2.1.2	Fire protection determine by analysis and guidance factors as listed	
15.2.2 – 15.2.3	Coordinated with Emergency Response agencies cover potential conditions	
15.2.4	Equipment and methane detection maintained	
15.3.1 – 15.3.5	Ignition source control; no smoking, welding, cutting, vehicle restrictions	
15.4.1 – 15.4.5	Personnel safety and training	
15.5.1 – 15.5.2	Facility security, procedures and posting	
15.6 – 15.7	Hazard detection; Parking of LNG vehicles at or in facilities	
15.8	Warning sign requirements type, lettering not less than 6", and color	
Chapter 16 LNG installation Requirements for ASME Tanks for LNG		
Yellow highlights are from chapter 13 of NFPA 59-A		
16.1 – 16.2	Applies to containers $\leq$ 70,000 wgc unattended facilities secured against tampering	
16.3.1 – 16.3.2	All piping as part of Tank complies with ASME Sec VIII or ASME B31.3 & on U-1	
16.3.3 – 16.3.4	Inner & outer tank internal piping design = MAWP of inner tank; no bellows	
16.3.5 – 16.3.12	Containers to be double walled insulated. Inner to be welded ASME/NB registered	
16.3.13 -16.3.13.2	Vessel PRV requirements	
16.3.14	Thermal barrier preventing outer tank temp below design	
16.3.15 – 16.3.15.2	Seismic considerations; applies to tanks reinstalled built prior to 7/1/1996	
16.3.16 – 16.3.18	Mfg. nameplate requirements, vessel opening labeled, legible under all conditions	
16.4.1 – 16.4.2	Container foundations and supports and flooding precautions	
16.5.1 – 16.5.6	Container installation, separation distances, UG need corrosion protection	
16.6.1 – 16.6.4	Product retention valves	
16.7.1 – 16.7.2	Container inspection responsibilities	
16.8.1 – 16.8.2	Testing and purging of LNG containers	
16.8.3 – 16.8.3.2	Repairs field welding saddle plates/brackets only. Other repairs to original code only	
16.8.4	Containers placed in or out of service to be purged and inerted	
16.9.1	All container and associated facility piping to comply with ASME B31.3	
16.9.2	Type F, spiral welded, furnace butt welded products shall not be used	
16.9.3 – 16.9.4	All welding to comply with ASME IX, Oxy-fuel gas welding not allowed	
16.9.5	Brazing filler must exceed 1000 ^{0}F	
16.9.6 – 16.9.7	All pipe & tubing to be austenitic S/S below -20^{0}F and min. melting of 1500^{0}F	
16.9.8	Compression cplngs. Not to be used below -20^{0}F unless comply 318 of B31.3	
16.9.9	Stab in pipe connections not allowed	
16.9.10	Extended bonnet valves to be used for cryo-service and not more than 45^0 of vertical	
16.9.11	Level of piping inspection to be specified	
16.10.1	Instrumentation design so if power or control air fails system goes to failsafe	
16.10.2	LNG containers to be equipped with 2 independent L/L devices 1 dip tube and 2nd a continuous indication from full to empty	
16.10.3.1	Container to have pressure gauge at point above max liquid level	
16.10.3.2	Vacuum jacketed vessels shall have means to check annular space	
16.11.1	Safety valves o be provide in compliance with AME BPVC	
16.11.1.1 – 16.11.1.2	PRV communicate with vapor space and be sized per NPA 59-A 7.9.5 or CGA S-1.3	
16.11.2	Each pressure & vacuum PRV shall be able to be isolated by full opening stop valves	
16.11.2.1	The stop valve shall be lockable or sealable in full open	
16.11.2.2	Sufficient valves to be installed to provide capacity maintenance or service valves	
16.11.2.3	1 PRV required a full port opening 3-way valve with spare PRV or a valve under each PRV shall be installed	
16.11.3	Stop valves under individual PRV,s shall be locked or sealed open	
16.11.4	PRV stacks designed to prevent dirt, debris, water etc. discharge to atmos. To be vertical	
NFPA-30A Chap 12 & 4.3.72	This chapter shall apply when LNG is dispensed as motor vehicle fuel along with Class I or Class II flammable liquids. **NFPA 30A 4.3.7.2** Guard Posts or other approved means	