Small LP Gas Jurisdictional Systems

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Small LP Gas Jurisdictional Systems

• NFPA 58, the Liquefied Petroleum Gas Code standard has been the guidance in the LP Gas/Propane industry since 1932
• All LP Gas installations are already required to meet the current design, construction, and material requirements as prescribed by NFPA 58
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• NFPA 58 is an “evolving standard” that is updated every three years
• By maintaining this update cycle, the standard will reflect and address the following
  – Historical safety issues in the industry
  – Emergency responder and firefighting concerns
  – Propane industry “Best Practices”
  – Latest industry technology
  – Current edition is 2017
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Typical Natural Gas Pipeline – Operating pressure of 200 to 1,200 psig

Typical Small LP Gas Pipeline – Operating pressure of 10 psig or less
# Small LP Gas Jurisdictional Systems

## Natural Gas Systems

**Complex systems**
- Miles of pipelines
- Compressor Stations
- Regulator Stations
- Metering Stations
- Delivery Stations
- Transmission lines
- Distribution lines
- Service lines

## Small LP Gas Jurisdictional System

**Less complex**
- Feet of pipeline
- Storage Tank(s)
- 1\(^{st}\) stage regulator
- 2\(^{nd}\) stage regulator(s)
- Service lines
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Small Jurisdictional System

Small Commercial and Residential System

System serves a public place customer and one (or more) other premise. This other premise may be attached to the public place or it may be separate.

Commercial Establishment served by one propane source, residential unit served by a separate source.
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### Jurisdictional System

- **Material:**
  - ASME 500 Tank
  - 1\textsuperscript{st} Stage Regulator *UL144*
  - (2) Second Stage Regulators *UL144*
  - (2) Meters
  - Pipe and Fittings

Material Cost: $1343.00  
Labor for Install: $480.00  
Total: $1823.00

Prices based on average material cost

### Non Jurisdictional System

- **Material:**
  - (1) ASME 500 Tank
  - (1)1\textsuperscript{st} Stage Regulator *UL144*
  - (1) 2\textsuperscript{nd} Stage Regulator *UL144*
  - (1) ASME 50 gal Tank
  - (1) Integral two Stage Regulator *UL144*
  - Pipe and Fittings

Material Cost: $1538.00  
Labor for Install: $480.00  
Total: $2018.00

Prices based on average material cost
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**Jurisdictional System**
- Installation documentation of pressure, leak and operating test maintained. System components listed. System installed meeting NFPA 58 requirements.
- Jurisdictional site specific binder created following procedures as outlined in Operations and Maintenance Manual.
- System mapped.
- Documentation of MOP & MAOP established.
- Establish Site Specific Emergency Response Plan
- Ensure mailing of Public Awareness Message to new user(s) and every 6 months following initial notification.

**Non-Jurisdictional System**
- Installation documentation of pressure, leak and operating test maintained. Materials listed and approved for LP gas use with pressure rating for the segment of the system installed. Materials and design meeting NFPA 58 requirements.
- Tank(s), regulators and piping visible are inspected at each delivery.
- Employees trained in Emergency Response.
- New user receives LP gas Safety Information.
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Jurisdictional System (cont’d)

• Register site with One-Call Provider
• Create site specific Distribution Integrity Management Plan for system.

Average Labor Cost to set up one small Jurisdictional System’s required documentation to meet 49 CFR 192 requirements for small LP systems: *Approximately $750

Non Jurisdictional System

• Installations with large amounts of underground piping and possible exposure to excavation would be registered with One-Call.

*Assumes operator has current O & M Plan, Operator Qualification Plan, and DIMP
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Jurisdictional System

In addition to Training meeting NFPA 58 requirements.

Training meeting 49 CFR 192 Subpart N

- Ensure task specific training for technician performing: installation, testing, patrols, repairs or inspections.
- Currently 19 task specific training modules.

Each Task specific training is identified in the Operator Qualification Plan to include training, written exam and skill evaluations.

3 year recurring certification on most covered tasks. 1 year recurring certification on Joining of PE pipe.

Average Cost for initial training of 1 technician on the additional 19 tasks.

$8,000

Non Jurisdictional System

Training meeting NFPA 58:

- Technicians installing, repairing, and maintaining systems are trained. CETP certification or equivalent and Licensed per individual state requirement.
- Delivery Drivers are trained in product transfer. CETP certification or equivalent and meet individual state training requirements.
- CETP requires training, written exam and skill evaluation for each certification type.
- 3 year recurring certification and state specific required continuing certification.
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Jurisdictional System

- Establish schedule and perform annual:
  - Leak survey
  - Atmospheric corrosion inspection
  - Regulator inspection
  - Relief Valve inspection
  - Key Valve inspection
  - Cathodic Protection testing

- Establish schedule and perform quarterly:
  - Patrolling
  - Odorization

Estimated cost for quarterly and annual testing and inspections of small system: $1700.00

Non Jurisdictional System

- Establish schedule and perform:
  - Cathodic Protection testing per NFPA 58, at initial installation, within first 18 months and every 3 years after.
  - Odorization testing is completed during each product transfer. From the refinery to transport or railcar to the bulk storage tanks, from the storage tanks to the bobtail, from the bobtail to the system tank.
  - Inspection of the tank and system is completed during each delivery.
  - System is inspected each time a new occupant moves in. Leak and operating tests are performed.
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**Additional cost** to operate one small LP gas pipeline system meeting the definition of a Jurisdictional System that complies with the requirements of 49 CFR Part 192.

- Documentation $750
- *Training (1 tech) $8,000
- Qtrly/Annual Test
  and inspections $1,700
  $10,450

*CETP and State Specific Licensing requirement cost is not included in this total.*
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Single source supplying a privately owned Inn with the supply tank on the same property.

Single source supplying a privately owned Inn, 4 rooms with gas fireplaces installed for guest use.
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The gas supply line is operating at 10 psig or less to the 2\textsuperscript{nd} stage regulator reducing line pressure to the boiler to 11” wc.

The gas supply line is operating at 10 psig or less to a 2\textsuperscript{nd} stage regulator reducing line pressure to the boiler and gas fireplace units to 11” wc.

The physical components of the portion of the system falling under the pipeline regulation has not changed in either example. The system was installed meeting NFPA 58 requirements.
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NFPA 58 System Design Requirements:

- Tank location and set backs
- Tank appurtenances
- Pipe material and location
- Regulator(s) and location
- Meter and location

Materials used in system must be approved for LP Gas and the pressures the component will be exposed to meeting ANSI, ASME, ASTM, AGA, CSA, UL ratings.
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 Systems installed to NFPA 58 code requirements meet the same requirements of a pipeline system per 49 CFR 192, which includes:

- Over pressure protection of the downstream components
- Components are approved and tested for the pressures in which they will operate.
- Materials in the system are protected from corrosion
  - Atmospheric
  - Underground (Cathodic)
- Protection from outside force damage
  - Vehicular
  - Weather related conditions (snow, ice, flooding, etc.)
  - Fire
- Proper odorization of the supply product
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• Part 192 allows the operator to reduce to the MAOP on a segment of pipeline that can not be reconditioned or phased out when it is considered to be in unsatisfactory condition.
  – This option applies to the natural gas pipelines that are already operating with higher established MAOPs based on the material SMYS yield strength. The multiple regulating stations between pipeline segments allows the ability to operate with lower MAOPs in identified segments.
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• The LP gas system’s MAOP is determined not only by the rated pressure capacity of the pipe and components, pressure test, and historical data but is also limited by the chemical make up of the product.

• The rated pressure capacity of the PE pipe most commonly used in these installations is not the limiting factor to establish the MAOP on the high pressure side of the system – it is limited by the concern of re-liquification of the LP gas vapor in the pipe at the higher pressures. NFPA 58 limits the pressure in PE piping to 30 psig.

• Allowable measures to mitigate abnormal operating conditions of natural gas pipelines do not apply to the LP Gas systems.
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• The proper design and construction of the LP gas installation by trained technicians will provide a safe reliable supply of propane to the end users.

• The inspection of the tank, visible pipe and regulators at the time of each delivery and meter read will provide time to observe an abnormal operating condition requiring immediate or scheduled repair.
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Challenges to meeting 192 compliance

• Multi state operators are challenged to incorporate the various state regulators interpretation of the language in 49 CFR Part 192.
• Individual state’s have language that states that if that state’s regulation conflicts with 49 CFR Part 192, the state’s regulation shall prevail.
• Multi state operators need to operate with multiple state specific O&M Manuals, OQ Plans, and DIMP to satisfy the request for language changes by the regulators.
• Repeat inspections of the same plans result in requested changes to the same plans previously inspected by the regulators and issuance of a Letter of Concern or in some cases NOPV.
• This results in repeated revisions to the Plans and distribution of the revised plans a challenge and a significant expense to the operator.
• PHMSA has not adopted NFPA58 beyond the 2004 edition. This limits the use of newer safer technology approved for use in LP Gas systems in newer additions of NFPA58.
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The number of reportable incidents on the Small LP Gas Jurisdictional systems is negligible for incidents resulting from:

- Operator error
- Equipment failure
- Material failure
- Outside force damage

Incidents as a result of third party excavation, which are a:

- Leading reported cause of incidents to a Small LP Gas Jurisdictional System.
- Limited risk based on small cubic ft volume of product in the pipeline, tank is accessible and service valve controlling flow can be shut-off quickly, excess flow valves installed in multi-container installation, limited flow rate thru singe tank installation pig tail.
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THANK YOU

QUESTIONS?