

Gas - Adding or Extending Piping

Permit Requirements

- A permit is required when installing new gas piping or when altering an existing gas line.
- Permits are issued to either the owner *or* to a State-licensed contractor with a current City of San Jose Business License.
- Permits are obtained at the San Jose Building Division Permit Center, or 24/7 by the Internet:
 - The Permit Center is located in City Hall at 200 East Santa Clara Street. Office hours are from 9:00 a.m. to 4:00 p.m., Monday through Friday.
 - Permits online: <https://www.sjpermits.org/>
- Plans are usually **not** required. However, gas-sizing calculations may be required to verify that the gas piping is sized per the minimum code requirements. [See Worksheet, page 3]
- The calculations, if required, shall be made available at the time of inspection.

Installation Requirements

- **Unions** [inline couplings] are **not** permitted in a gas piping system **except** as follows:
 - Unions are allowed *downstream of* [after] appliance shutoff valves, meter locations and immediately downstream of building shutoff valves.
 - The use of right/left couplings and nipples are required in lieu of unions in all other locations.
- **Metallic gas piping** is not allowed outdoors in or within six inches of the ground.
Exception: Only piping which has been factory coated with approved materials is acceptable for burial in the ground.
- Appliances and UPC-approved **Flexible gas connectors** from the gas pipe to the appliances shall be sized and installed in accordance with code requirements and manufacturer's specifications.
- The gas pipe must be **firecaulked** tightly where the pipe penetrates the exterior surface of the fire chamber in a factory-built fireplace. Also, the interior void shall be filled with fiberglass insulation or mineral wool. It must also be firecaulked at any penetrations through a garage or any other fire-rated wall.
- **Shutoff valve** requirements are as follows:
 1. Required in the gas piping system ahead of all gas appliances,
 2. Must be accessible and in the same room as the appliance,
 3. Must not leak,
 4. Shall be within **three feet** of the appliance, *except* as follows:
 - Shutoff valves may be within **six** feet of the gas dryer or freestanding oven,
 - Shutoff valves for log lighters to be within **four** feet of the fireplace opening.

Note: Fireplace shutoff valves must be installed **outside** the firebox.
- **Pipe support** is based on the size of the pipe. Protect pipes from damage.

UPC Table 12-2	
Size of pipe	Pipe Support Distance (max.)
1/2"	6'
3/4" to 1"	8'
1-1/4" or larger- Horizontal	10'
1-1/4" or larger- Vertical	Every Floor

Inspection Requirements

- All new piping shall be inspected prior to covering any portion of new piping.
- The applicant must perform a gas test and have it witnessed by the inspector for all portions of new gas piping, after all nailing of covering sheetrock and any other concealing is complete.
- The person doing the work is responsible for performing the gas test and calling for inspection.
- Inspections may be scheduled by calling (408) 535-3555 from 8:00 a.m. to 5:00 p.m, or over the Internet. Any cancellations must be received by 2 p.m. the business day before the scheduled inspection.

Gas Test Requirements **UPC 319, UPC 1204.3.2**

- The entire gas piping system shall be tested, with all appliances shut off at the valve or disconnected and capped. Caution: Some of the older wedge-type shut-off valves tend to leak and then the pressure test can damage the appliances; disconnection and pre-testing is recommended.
- The inspection shall include an air pressure test. The gas piping shall stand a pressure of **not less than (10) pounds per square inch** gauge pressure. The test gauge must be accurate to 1/10 of one pound and have a pressure range of not more than twice the test pressure applied. The test must hold for at least **15 minutes** with no perceptible drop in pressure while the Inspector waits.

Welded piping and those pipes holding gas at over 14 inches water column pressure shall be tested at not less than 60 psi with a gauge with 1 psi increments for at least 30 minutes.

Note that the test gauge requirements have changed slightly from the prior requirements and policies.

UPC Table 12-1: Average Gas Use			
Appliance (typical)*	Minimum demand per hour		
	Btu/hr	Watts	Cubic Ft/Hr
Barbecue (residential)	50,000	14,650	50
Bunsen Burner	3,000	879	3
Domestic Clothes Dryer	35,000	10,255	35
Domestic Gas Range	65,000	19,045	65
Domestic Recessed Oven Section	25,000	7,325	25
Domestic Gas Cooktop	40,000	11,720	40
Fireplace Log Lighter (commercial)	50,000	14,650	50
Fireplace Log Lighter (residential)	25,000	2,930	25
Gas Engines (per Horsepower)	10,000x Hp	2,930 x Hp	10 x Hp
Gas Refrigerator	3,000	879	3
Mobile Home (single)**	250,000	73,275	250
Steam Boilers (per horsepower)	50,000 x Hp	14,650 x Hp	50 x Hp
Storage Water Heater up to 30 gallons	30,000	8,790	30
Storage Water Heater 40-50 gallons	50,000	14,650	50
Furnace	See Manufacturer's Specifications		
Pool Heater	See Manufacturer's Specifications		
Instantaneous Water Heater	See Manufacturer's Specifications		

* See manufacturer's specifications or the Rating Plate attached to the appliance for the exact usage.

**See UPC Appendix Table E-3 for multiple lot mobile home parks.

Bold: most common residential uses (225 CFH combined + FAU)

Note: Cubic Feet per Hour (CFH) x 1000 = BTU capacity; 10,000 BTU=10 CFH

Additional information can be obtained by calling our Information Inspector's voice mail at: (408) 535-3555 and leaving a detailed message, or by visiting our website at: <http://www.sanjoseca.gov/building/> or <https://www.sjpermits.org/> > Building Home

Sizing Worksheet

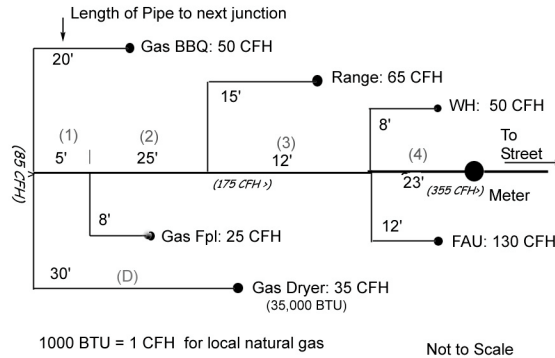
Table 12-3: Size of Gas Piping (Low Pressure) CFH

Pipe Size (inches)	Maximum Length of pipe section in Feet											
	10	20	30	40	50	60	70	80	90	100	125	150
1/2	174	119	96	82	73	66	61	56	53	50	44	40
3/4	363	249	200	171	152	138	127	118	111	104	93	84
1	684	470	377	323	286	259	239	222	208	197	174	158
1-1/4	1404	965	775	663	588	532	490	456	428	404	358	324
1-1/2	2103	1445	1161	993	880	798	734	683	641	605	536	486
2	4050	2784	2235	1913	1696	1536	1413	1315	1234	1165	1033	936
2- 1/2	6455	4437	3563	3049	2703	2449	2253	2096	1966	1857	1646	1492
3	11,412	7843	6299	5391	4778	4329	3983	3705	3476	3284	2910	2637

1. Maximum Delivery Capacity of Cubic Feet of Gas per Hour (CFH) of IPS Pipe carrying Natural Gas of 0.60 Specific Gravity, based on a Pressure Drop 0.5 inch Water Column. 10,000 BTU= 10 CFH Divide Watts by 293 = CFH
2. 1/2" and 3/4" pipe is most common residential size (in bold), with 1" to 1-1/4" at the meter. May install larger meter to allow for future pool heater.

Sample Sizing Chart

1. Furthest Outlet: 23+12+25+5+30= 95'
>> use 100' column Table 12-3
2. Sizing Pipe for Demand per 100' col:
(D) 35 CFH = 1/2"
(1) 35+50 = 85 CFH= 3/4"
(2) 85+25 =110 CFH = 1"
(3) 110+65=175 CFH =1"
(4) 175+50+130=355 CFH=1-1/4"
Meter: Use 1-1/4" or 1-1/2"
3. Sizing Branches by length of run:
Dryer (furthest-see above)
BBQ (50 cfh; 86' 90') =1/2"
Fpl (25 cfh; 68' 70') =1/2"
Range (65 cfh; 50') =1/2"
WH (50 cfh; 34' 40') =1/2"
FAU (130 cfh; 35' 40') = 3/4"



Sizing Worksheet

Diagram

1. Furthest Outlet (feet) : ____ + ____ + ____ + ____ + ____ + ____ = ____ ft
2. Use Table 12-3 Column for ____ feet (round up, circle above)
3. Section sizes from Furthest to Meter; (divide BTU's by 1000 for CFH)
Furthest: _____ CFH = ____" pipe (1/2" typ.)
(1) ____ + ____ CFH = ____ CFH = ____" pipe
(2) ____ + ____ + ____ = ____ CFH = ____" pipe
(3) ____ + ____ + ____ = ____ CFH = ____" pipe
(4) ____ + ____ + ____ = ____ CFH = ____" pipe

Min. Meter Size = ____; to Use: ____

4. Branch sizes- mark on diagram per Table 12-3 (SFR: 1/2" typ.)