CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY
Planning, Building and Code Enforcement

GAS LINE AND PIPING INSTALLATION - REQUIREMENTS AND WORKSHEET

A mechanical or plumbing permit is required to install or alter gas piping, followed by inspection. Plans are usually not required.

HOW TO GET A PERMIT & INSPECTION

Download the permit at www.SJPermits.org (saves $48) or submit a Building Permit Application following the instructions for Simple Projects at www.sanjoseca.gov/BuildingPermitServices. Schedule the inspection at SJPermits or call 408-535-3555 for scheduling assistance. Gas-sizing calculations may be required at time of inspection to verify that the gas piping is sized according to minimum code requirements — see the Worksheet on page 3.

For questions regarding permits, codes, inspections or plan review, leave a message and we'll respond within two business days: Email us at Infoinspector@sanjoseca.gov or leave a voicemail at 408-535-7641.

INSTALLATION REQUIREMENTS

REFERENCE: National Electric Code (NEC) Section 210. Electrical receptacles must conform to this code.

Unions (inline couplings)	Unions are NOT permitted in a gas piping system EXCEPT: ▪ Unions are allowed downstream of appliance shutoff valves, meter locations, and immediately downstream of building shutoff valves. ▪ Use right/left couplings and nipples in lieu of unions in all other locations.
Metallic gas piping	Metallic gas piping is NOT allowed outdoors or within 6 inches of the ground. Exception: Piping with factory coating with approved materials is acceptable for burial in the ground.
Flexible gas connectors	Appliances and UPC-approved flexible gas connectors from the gas pipe to the appliances must be sized and installed according to code requirements and manufacturer specifications.
Firecaulking	For factory-built fireplaces - Firecaulk the gas pipe tightly where the pipe penetrates the exterior surface of the fire chamber, and firecaulk at any penetrations through a garage or any fire-rated wall. The interior void must be filled with fiberglass insulation or mineral wool.
Shutoff valves	Shutoff valves are required in the gas piping system ahead of all gas appliances, and must be: ▪ Accessible and must not leak. ▪ Must be in the same room and within 3 feet of the appliance, except: - Shutoff valves may be within 6 feet of a gas dryer or freestanding oven. - Shutoff valves for log lighters may be within 4 feet of a fireplace opening. ▪ Fireplace shutoff valves must be installed outside the firebox.
Pipe support	Pipe support is based on the size of the pipe and protects pipes from damage: **UPC Table 12-2**

Size of Pipe	Pipe Support Distance (max.)
½"	6'
¾" to 1"	8'
1-¼" or larger - horizontal	10'
1-¼" or larger - vertical	Every Floor

continued>

INSPECTION REQUIREMENTS

- All new piping must be inspected before being covered.
- 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 scheduling the inspection.

GAS TEST REQUIREMENTS PER UPC 319, UPC 1204.3.2

Note: Test gauge requirements have changed slightly from prior requirements and policies.

- 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 shutoff 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 that meets these standards:
  - Gas piping shall stand a minimum gauge pressure of: *10 pounds per square inch*
  - Test gauge must be accurate to 1/10 of one pound
  - Test gauge must have a maximum pressure range of: *twice the test pressure applied*
  - Test must hold: 15 minutes minimum with no perceptible drop in pressure while the Inspector waits.
  - Welded piping and pipes holding gas at over 14 inches water column pressure shall be tested at minimum 60 psi using a gauge with 1 psi increments for at least 30 minutes.

UPC Table 12-1: Average Gas Use
Cubic Feet per Hour (CFH) x 1000 = BTU capacity
10,000 BTU = 10 CFH

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.

** Most common residential uses (225 CFH combined + FAU)

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

SIZING WORKSHEET

INSTRUCTIONS. Using Table 12-3 and the Example Diagram, on a separate sheet, diagram your locations of gas appliances and the needed lengths of gas piping. Then, referencing your diagram, fill in the Sizing Worksheet.

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

Pipe Size (inches)	Columns Show Maximum Length of Pipe Section (feet)											
	10	20	30	40	50	60	70	80	90	100	125	150
½	**174**	**119**	**96**	**82**	**73**	**66**	**61**	**56**	**53**	**50**	**44**	**40**
¾	**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
1-¼	1404	965	775	663	588	532	490	456	428	404	358	324
1-½	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- ½	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

Table 12-3 shows 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

Most Common Residential Size is bolded. ½" and ¾" pipe are the most common residential size with 1" to 1-¼ " at the meter. For a future pool heater, install a larger meter.

Use the red column number that is large enough to accommodate the total footage.

a + b + c + d + e

1. Furthest Outlet (in feet) [ ] [ ] [ ] [ ] [ ] = total feet: [ ]

From Table 12-3, use the red column number that is large enough to accommodate equal to or the next higher number.

2. Sizing the Pipe for Demand per Table 12-3, using red column #: _____

- For each labelled length of pipe on your diagram, sequentially add CFH capacity (see Example Diagram).
- First Entry (D): Does not involve addition so a zero is entered in the second column.
- Last Entry (4) calculates the Meter Size: Add the CFH for WH and FAU

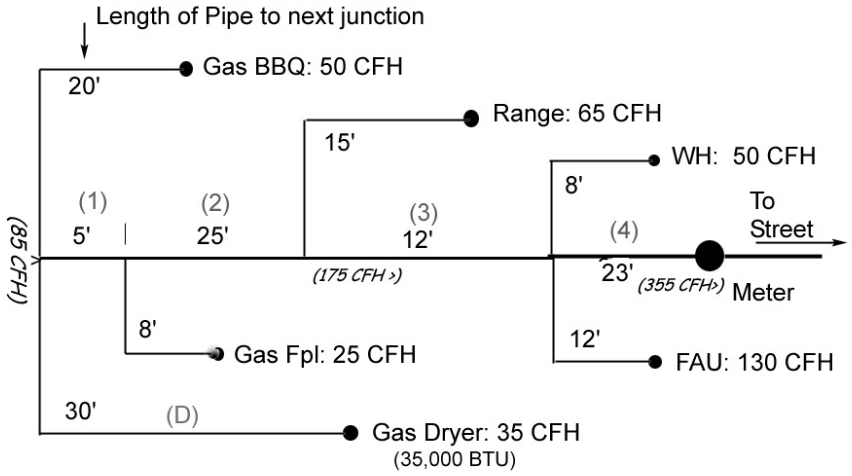
Label of Pipe Length	Length	+ Length	= CFH	Enter Pipe Size
(D)		0		
(1)				
(2)				
(3)				

Total Pipe Demand	+ WH CFH	+ FAU CFH	= TOTAL CFH	Enter Meter Size

EXAMPLE DIAGRAM

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; ~~85'~~ 90') =1/2"
   Fpl (25 cfh; ~~68'~~ 70') =1/2"
   Range (65 cfh; 50') =1/2"
   WH (50 cfh; ~~31'~~ 40') =1/2"
   FAU (130 cfh; ~~35'~~ 40') = 3/4"



1000 BTU = 1 CFH for local natural gas

Not to Scale