

Gas Piping Information

General Gas Pipe Information

Gas piping systems shall be designed and installed to meet the minimum standards set forth in Chapter 12 of the California Plumbing Code.

Gas Pipe Material For Exterior Buried Piping Systems

The following pipe material types may be used in exterior buried piping systems: wrought iron or steel (galvanized or black), yellow brass or approved PE (polyethylene) pipe.

Gas Pipe Sizing

Size of gas piping per Table 1215.2(1) through 1215.2(36). Maximum delivery capacity of cubic feet of gas per hour. (BTU demand / 1100 = CFH).

- For Schedule 40 Metallic Pipe, use Table 1215.2(1) on page 4 of this handout.
- For Polyethylene (PE) Plastic Pipe, use Table 1215.2(20) on page 5 of this handout
- For CSST (corrugated stainless steel tubing), refer to and provide a copy of the manufacturer's gas sizing table(s). CSST piping shall be installed by a qualified installer only and per the manufacturer's specifications.

Gas Pipe Underground

- Metallic gas piping shall have eighteen (18) inches of earth cover and protected from corrosion by approved coatings or wrapping materials. [CPC 1210.1.1]
- PE gas piping shall have eighteen (18) inches of earth cover with a tracer that complies with one of the following:
 - A product specifically designed for that purpose.
 - Insulated copper conductor not less than 14 AWG (one end of the tracer tape or wire shall be brought above-ground at a building wall or riser)

[CPC 1210.1.1 and 1210.1.7.2]

- Aluminum alloy pipe shall not be used in exterior locations or underground. [CPC 1208.5.2.4]

Inspections

- Upon completion of the installation, alteration, or repair of gas piping, and prior to the use thereof, the City of Roseville shall be notified that such gas piping is ready for inspection. [CPC 1203.1]
- Before any piping is concealed, during inspection, a pressure test of not less than ten (10) pounds per square inch for not less than fifteen (15) minutes with no perceptible drop in pressure is required. [CPC 1203.2]
- Inspections:
 - Gas Test/Rough Plumbing
 - Building Permit Final

Condition 'A': New *dedicated* gas line installation for a single new appliance or a new single piece of equipment:

New dedicated pipe connection made at gas meter and routed to the new appliance or piece of equipment. Provide information in the spaces provided on the Gas Piping Schematic form.

Condition 'B': New gas line added to an existing piping system:

Provide a plumbing schematic of the existing gas piping system and include all NEW piping to appliances/equipment. If the capacity of the existing system is determined to be inadequate for the additional appliance/equipment, the existing system shall be enlarged to meet code compliance, or separate gas piping of adequate capacity shall be provided. [CPC 1208.1.1]

On the plumbing schematic, label **each section** of pipe (**separately**) with the following:

- Label all piping segments to indicate if they are existing, new, or existing to be replaced.
- Indicate pipe length in linear feet (both vertical and horizontal runs).
- Indicate pipe diameter (in inches).
- Indicate material of pipe (i.e. Sch 40 Metallic Pipe, Polyethylene, CSST, etc).
- Show and label location of appliances/equipment and provide their individual BTU ratings.
- Indicate maximum gas line length from gas meter to furthest gas piping outlet in the gas piping system.

**CPC TABLE 1208.3.1
APPROXIMATE GAS INPUT FOR TYPICAL APPLIANCES
[NFPA 54: TABLE A.5.3.2.1]**

APPLIANCE	INPUT (Btu/h approx.)
Space Heating Units	
Warm air furnace	
Single family	100,000
Multifamily, per unit	60,000
Hydronic boiler	
Single family	100,000
Multifamily, per unit	60,000
Space and Water Heating Units	
Hydronic boiler	
Single-family	120,000
Multifamily, per unit	75,000
Water Heating Appliances	
Water heater, automatic storage	
30 to 40 gallon tank	35,000
Water heater, automatic storage	
50 gallon tank	50,000
Water heater, automatic instantaneous	
Capacity at 2 gallons per minute	142,800
Capacity at 4 gallons per minute	285,000
Capacity at 6 gallons per minute	428,400
Water heater, domestic, circulating or side-arm	35,000
Cooking Appliances	
Range, freestanding, domestic	65,000
Built-in oven or broiler unit, domestic	25,000
Built-in top unit, domestic	40,000
Other Appliances	
Refrigerator	3,000
Clothes dryer, Type 1 (domestic)	35,000
Gas fireplace direct-vent	40,000
Gas log	80,000
Barbecue	40,000
Gaslight	2,500

For SI units: 1000 British thermal units per hour = 0.293 kW

CPC TABLE 1215.2(1) SCHEDULE 40 METALLIC PIPE [NFPA 54: TABLE 6.2.1(b)]^{1, 2}													GAS:	
													INLET PRESSURE::	
													PRESSURE DROP:	
													SPECIFIC GRAVITY:	
													NATURAL	
													LESS THAN 2 psi	
													0.5 in. w.c.	
													0.60	
PIPE SIZE (inch)														
NOMINAL:	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	5	6	8	10	12
ACTUAL ID:	0.622	0.824	1.049	1.380	1.610	2.067	2.469	3.068	4.026	5.047	6.065	7.981	10.020	11.938
LENGTH (feet)	CAPACITY IN CUBIC FEET OF GAS PER HOUR													
10	172	360	678	1390	2090	4020	6400	11,300	23,100	41,800	67,600	139,000	252,000	399,000
20	118	247	466	957	1430	2760	4400	7780	15,900	28,700	46,500	95,500	173,000	275,000
30	95	199	374	768	1150	2220	3530	6250	12,700	23,000	37,300	76,700	139,000	220,000
40	81	170	320	657	985	1900	3020	5350	10,900	19,700	31,900	65,600	119,000	189,000
50	72	151	284	583	873	1680	2680	4740	9660	17,500	28,300	58,200	106,000	167,000
60	65	137	257	528	791	1520	2430	4290	8760	15,800	25,600	52,700	95,700	152,000
70	60	126	237	486	728	1400	2230	3950	8050	14,600	23,600	48,500	88,100	139,000
80	56	117	220	452	677	1300	2080	3670	7490	13,600	22,000	45,100	81,900	130,000
90	52	110	207	424	635	1220	1950	3450	7030	12,700	20,600	42,300	76,900	122,000
100	50	104	195	400	600	1160	1840	3260	6640	12,000	19,500	40,000	72,600	115,000
125	44	92	173	355	532	1020	1630	2890	5890	10,600	17,200	35,400	64,300	102,000
150	40	83	157	322	482	928	1480	2610	5330	9650	15,600	32,100	58,300	92,300
175	37	77	144	296	443	854	1360	2410	4910	8880	14,400	29,500	53,600	84,900
200	34	71	134	275	412	794	1270	2240	4560	8260	13,400	27,500	49,900	79,000
250	30	63	119	244	366	704	1120	1980	4050	7320	11,900	24,300	44,200	70,000
300	27	57	108	221	331	638	1020	1800	3670	6630	10,700	22,100	40,100	63,400
350	25	53	99	203	305	587	935	1650	3370	6100	9880	20,300	36,900	58,400
400	23	49	92	189	283	546	870	1540	3140	5680	9190	18,900	34,300	54,300
450	22	46	86	177	266	512	816	1440	2940	5330	8620	17,700	32,200	50,900
500	21	43	82	168	251	484	771	1360	2780	5030	8150	16,700	30,400	48,100
550	20	41	78	159	239	459	732	1290	2640	4780	7740	15,900	28,900	45,700
600	19	39	74	152	228	438	699	1240	2520	4560	7380	15,200	27,500	43,600
650	18	38	71	145	218	420	669	1180	2410	4360	7070	14,500	26,400	41,800
700	17	36	68	140	209	403	643	1140	2320	4190	6790	14,000	25,300	40,100
750	17	35	66	135	202	389	619	1090	2230	4040	6540	13,400	24,400	38,600
800	16	34	63	130	195	375	598	1060	2160	3900	6320	13,000	23,600	37,300
850	16	33	61	126	189	363	579	1020	2090	3780	6110	12,600	22,800	36,100
900	15	32	59	122	183	352	561	992	2020	3660	5930	12,200	22,100	35,000
950	15	31	58	118	178	342	545	963	1960	3550	5760	11,800	21,500	34,000
1000	14	30	56	115	173	333	530	937	1910	3460	5600	11,500	20,900	33,100
1100	14	28	53	109	164	316	503	890	1810	3280	5320	10,900	19,800	31,400
1200	13	27	51	104	156	301	480	849	1730	3130	5070	10,400	18,900	30,000
1300	12	26	49	100	150	289	460	813	1660	3000	4860	9980	18,100	28,700
1400	12	25	47	96	144	277	442	781	1590	2880	4670	9590	17,400	27,600
1500	11	24	45	93	139	267	426	752	1530	2780	4500	9240	16,800	26,600
1600	11	23	44	89	134	258	411	727	1480	2680	4340	8920	16,200	25,600
1700	11	22	42	86	130	250	398	703	1430	2590	4200	8630	15,700	24,800
1800	10	22	41	84	126	242	386	682	1390	2520	4070	8370	15,200	24,100
1900	10	21	40	81	122	235	375	662	1350	2440	3960	8130	14,800	23,400
2000	NA	20	39	79	119	229	364	644	1310	2380	3850	7910	14,400	22,700

For SI units: 1 inch = 25 mm, 1 foot = 304.8 mm, 1 cubic foot per hour = 0.0283 m³/h, 1 pound-force per square inch = 6.8947 kPa, 1 inch water column = 0.249 kPa

Notes:

¹ Table entries are rounded to 3 significant digits.

² NA means a flow of less than 10 ft³/h (0.283 m³/h).

CPC TABLE 1215.2(20) POLYETHYLENE PLASTIC PIPE [NFPA 54: TABLE 6.2.1(u)]*					GAS:		NATURAL	
					INLET PRESSURE:		LESS THAN 2 psi	
					PRESSURE DROP:		0.5 in. w.c.	
					SPECIFIC GRAVITY:		0.60	
PIPE SIZE (inch)								
NOMINAL OD:	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	3	4
DESIGNATION:	SDR 9.3	SDR 11	SDR 11	SDR 10	SDR 11	SDR 11	SDR 11	SDR 11
ACTUAL ID:	0.660	0.860	1.077	1.328	1.554	1.943	2.864	3.682
LENGTH (feet)	CAPACITY IN CUBIC FEET OF GAS PER HOUR							
10	201	403	726	1260	1900	3410	9450	18,260
20	138	277	499	865	1310	2350	6490	12,550
30	111	222	401	695	1050	1880	5210	10,080
40	95	190	343	594	898	1610	4460	8630
50	84	169	304	527	796	1430	3950	7640
60	76	153	276	477	721	1300	3580	6930
70	70	140	254	439	663	1190	3300	6370
80	65	131	236	409	617	1110	3070	5930
90	61	123	221	383	579	1040	2880	5560
100	58	116	209	362	547	983	2720	5250
125	51	103	185	321	485	871	2410	4660
150	46	93	168	291	439	789	2180	4220
175	43	86	154	268	404	726	2010	3880
200	40	80	144	249	376	675	1870	3610
250	35	71	127	221	333	598	1660	3200
300	32	64	115	200	302	542	1500	2900
350	29	59	106	184	278	499	1380	2670
400	27	55	99	171	258	464	1280	2480
450	26	51	93	160	242	435	1200	2330
500	24	48	88	152	229	411	1140	2200

For SI units: 1 inch = 25 mm, 1 foot = 304.8 mm, 1 cubic foot per hour = 0.0283 m³/h, 1 pound-force per square inch = 6.8947 kPa, 1 inch water column = 0.249 kPa

* Table entries are rounded to 3 significant digits.