



COMMUNITY DEVELOPMENT DEPARTMENT

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C.B.O. Director

Administration-Building-County Surveyor-Engineering-Environmental Health-Fleet Services-GIS-Housing-Planning-Roads-Solid Waste

WATER HEATER WORKSHEET

48 W. Yaney Avenue, Sonora
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A. Calculate the required recovery rate in gallons per hour (GPH)

Skip to section B. (c) if using an instantaneous water heater.

- | (1) Plumbing fixtures | # of compartments: | Multiply by: | GPH: |
|---|--------------------|--------------|-----------------------|
| Utensil-washing sink | | | |
| Compartment size 24"x24"x12" _____ | | x 25 | = _____ |
| Compartment size 18"x18"x12" _____ | | x 14 | = _____ |
| Bar sink _____ | | x 6 | = _____ |
| Custom made*: [(length" x width" x depth") / 12'] x 7.48 x # of compartments | | | = _____ |
| <i>*These measurements assume that the inside of the compartment is measured, not the outside, and that average depth is used if it is not uniform.</i> | | | |
| Handwash sink (incl. restrooms) _____ | | x 5 | = _____ |
| Food Prep sink _____ | | x 5 | = _____ |
| Mop sink _____ | | x 15 | = _____ |
| Pre-wash sprayer _____ | | x 45 | = _____ |
| Waste enclosure * _____ | | x 15 | = _____ |
| <i>*Waste enclosure can be excluded from the calculation if water supply is being provided separately by the owner of a shopping center or mall.</i> | | | |
| (2) Obtain dishwasher hot water usage from manufacturer | | | = _____ |
| (3) Sum the numbers in the GPH column to get total | | | = _____ Total |
| (4) If only disposable utensils will be provided, then Total GPH x 0.8 | | | = _____ Total |
| | | | (disp. utensils only) |
| (5) Skip (4) if customers will be provided multiuse utensils. | | | |

This is the recovery rate, and the total gallons per hour of hot water (water at no less than 120°F) needed.

B. Calculate the Power Rating

- Determine the required rise. 120°F – unheated tap water temperature (°F) in your area = _____°F rise
- Determine the power rating for the type of water heater being installed.

Gas

- (a) For gas heaters, calculate the required BTUs.
 (GPH Total x °F rise x 8.33*) / thermal efficiency** = _____ BTUs

Electric

- (b) For electric heaters, calculate the required kW.
 (GPH Total x °F rise x 8.33*) / (thermal efficiency** x 3412 BTU/kW) = _____ kW

Instantaneous

- (c) For instantaneous heaters, calculate gallons per minute (GPM).
 (# _____ of handsinks x 1/2 GPM) + (# _____ of all other sinks*** x 2 GPM) + (_____ dishwasher GPM) = _____ GPM
 ***A 3-compartment sink counts as one sink.
 Multiply by 0.8 if customers will be provided with only single use utensils. 0.8 x GPM = _____ GPM

A recirculation pump is to be installed where fixtures are at least 60 feet from the gas or electric water heater. More than one instantaneous water heater may be needed per facility.

*8.33 is the weight of one gallon of water in pounds.
**Thermal efficiency can be found on the water heater's specifications sheets, or can be provided by the manufacturer.

Gallons Per Hour Delivery At Indicated Temperature Rise

KW	40°F	50°F	60°F	70°F
1	10	8	7	6
2	20	16	13	11
3	30	24	20	17
4	40	32	27	23
5	50	40	33	29
6	60	48	40	34
7	70	56	47	40
8	80	64	54	46
9	90	72	60	52
10	100	80	67	57
11	110	88	74	63
12	120	96	80	69
13	130	104	87	75
14	141	112	94	80
15	151	120	100	86
16	161	128	107	92
17	171	136	114	97
18	181	145	120	103
19	191	153	127	109
20	201	161	134	115
21	211	169	141	120
22	221	177	147	126
23	231	185	154	132
24	241	193	161	138
25	251	201	167	143
26	261	209	174	149
27	271	217	181	155
28	281	225	187	161
29	291	233	194	166
30	301	241	201	172
31	311	249	207	178
32	321	257	214	184
33	331	265	221	189
34	341	273	227	195
35	351	281	234	201
36	361	289	241	206
37	371	297	248	212
38	381	305	254	218
39	391	313	261	224
40	401	321	268	229
41	411	329	274	235
42	422	337	281	241
43	432	345	288	247
44	442	353	294	252
45	452	361	301	258
46	462	369	308	264
47	472	377	314	270
48	482	385	321	275
49	492	393	328	281
50	502	401	335	287

Gallons Per Hour Delivery At Indicated Temperature Rise

BTU (X 1000)	40°F	50°F	60°F	70°F
5	11	9	8	6
10	23	18	15	13
15	34	27	23	19
20	45	36	30	26
25	56	45	38	32
30	68	54	45	39
35	79	63	53	45
40	90	72	60	51
45	101	81	68	58
50	113	90	75	64
55	124	99	83	71
60	135	108	90	77
65	146	117	98	84
70	158	126	105	90
75	169	135	113	96
80	180	144	120	103
85	191	153	128	109
90	203	162	135	116
95	214	171	143	122
100	225	180	150	129
105	236	189	158	135
110	248	198	165	141
115	259	207	173	148
120	270	216	180	154
125	281	225	188	161
130	293	234	195	167
135	304	243	203	174
140	315	252	210	180
145	326	261	218	187
150	338	270	225	193
155	349	279	233	199
160	360	288	240	206
165	371	297	248	212
170	383	306	255	219
175	394	315	263	225
180	405	324	270	232
185	416	333	278	238
190	428	342	285	244
195	439	351	293	251
200	450	360	300	257
205	461	369	308	264
210	473	378	315	270
215	484	387	323	277
220	495	396	330	283
225	506	405	338	289
230	518	414	345	296
235	529	423	353	302
240	540	432	360	309
245	551	441	368	315
250	563	450	375	322

Water Heaters Installed In Parallel

