

UNITED STATES OF AMERICA

OG-300 LOCAL ANNUAL SOLAR WATER HEATING SYSTEM PERFORMANCE

System performance at several geographic locations in the United States corresponding to climate zones as established in ASHRAE 169 is provided below. Ratings are determined using weather data, solar irradiance and water supply temperature over a period of one year for the specific locations listed below. Ratings for locations in California and Hawaii are provided on separate state maps on the following pages.



USA			
Location	Climate Zone (ASHRAE 169)	Solar Fraction (SF _A)	Annual Energy Savings (kWh)
AK - Anchorage	7	0.26	1390
AZ - Phoenix	2B	0.80	2820
CO - Denver	5B	0.51	2380
FL - Tampa	2A	0.65	2220
GA - Atlanta	3A	0.53	2160
MA - Boston	5A	0.41	1870
MO - St Louis	4A	0.46	2000
MT - Helena	6B	0.40	1980
TX - Dallas-Fort Worth	3A	0.59	2260
WA - Seattle	4C	0.36	1650
WI - Milwaukee	6A	0.38	1820

STATE OF CALIFORNIA

OG-300 LOCAL ANNUAL SOLAR WATER HEATING SYSTEM PERFORMANCE

System performance at several geographic locations in the state of California corresponding to building climate zones as established by the California Energy Commission (CEC) is provided below. Ratings are determined using weather data, solar irradiance and water supply temperature over a period of one year for the specific locations listed below.



State of California			
Location **	Climate Zone (ASHRAE 169)*	Solar Fraction (SF _A)	Annual Energy Savings (kWh)
CCZ 1 - Arcata	7	0.39	1800
CCZ 2 - Santa Rosa	6B	0.54	2330
CCZ 3 - Oakland	3C	0.53	2300
CCZ 4 - Sunnyvale	4C	0.57	2410
CCZ 5 - Santa Maria	5C	0.57	2470
CCZ 6 - Los Angeles	3B	0.59	2320
CCZ 7 - San Diego	3B	0.59	2330
CCZ 8 - El Toro	3B	0.62	2470
CCZ 9 - Burbank	3B	0.62	2530
CCZ 10 - Riverside	3B	0.65	2550
CCZ 11 - Red Bluff	3B	0.60	2370
CCZ 12 - Sacramento	3B	0.60	2440
CCZ 13 - Fresno	3B	0.65	2590
CCZ 14 - China Lake	3B	0.69	2610
CCZ 15 - El Centro	3B	0.80	2730
CCZ 16 - Mt. Shasta	7	0.49	2250

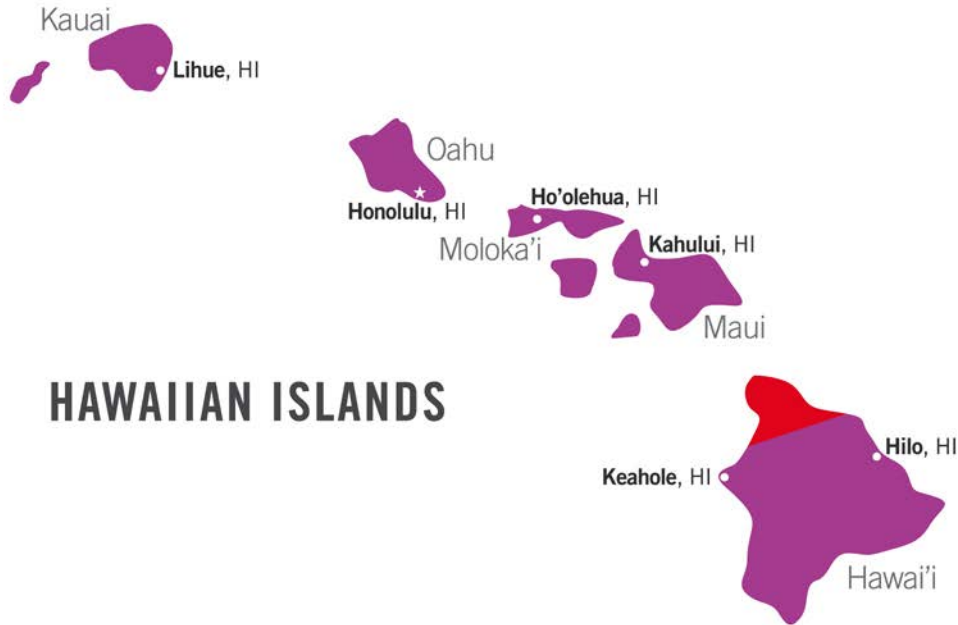
* Climate zones are as established in ANSI/ASHRAE 169, Climatic Data for Building Design Standard.

** California Building Climate Zones and representative cities are established by the California Energy Commission for use in the CA Title 24 Energy Efficiency Standards

HAWAIIAN ISLANDS

OG-300 LOCAL ANNUAL SOLAR WATER HEATING SYSTEM PERFORMANCE

System performance at several geographic locations in the Hawaiian Islands corresponding to climate zones as established in ASHRAE 169 is provided below. Ratings are determined using weather data, solar irradiance and water supply temperature over a period of one year for the specific locations listed below.



State of Hawaii			
Location	Climate Zone (ASHRAE 169)	Solar Fraction (SF _A)	Annual Energy Savings (kWh)
Hawaii Island - Hilo	1	0.56	1840
Honolulu - Oahu Island	1	0.69	2200
Maui Island - Kahului	1	0.71	2260
Hawaii Island - Keahol	1	0.67	2280
Lihue - Kauai Island	1	0.65	2120
Ho'olehua - Molokai Island	1	0.70	2240

CANADA

OG-300 LOCAL ANNUAL SOLAR WATER HEATING SYSTEM PERFORMANCE

System performance at several geographic locations in Canada corresponding to climate zones as established in ASHRAE 169 is provided below. Ratings are determined using weather data, solar irradiance and water supply temperature over a period of one year for the specific locations listed below. The local annual ratings are provided for a 243 L/day (64.3 gal/day) hot water load.



Canada			
Location	Climate Zone (ASHRAE 169)	Solar Fraction (SF _A)	Annual Energy Savings (kWh)
AB - Edmonton	5	0.37	1980
NS - Halifax	7A	0.33	1620
ON - Thunder Bay	7A	0.39	1900
QC - Quebec City	5	0.36	1850
MB - Winnipeg	7A	0.37	1990
AB - Calgary	7A	0.40	2120
BC - Vancouver	7	0.37	1700

CENTRAL AMERICA AND CARIBBEAN REGION

OG-300 LOCAL ANNUAL SOLAR WATER HEATING SYSTEM PERFORMANCE

System performance at several geographic locations in Central America and the Caribbean region corresponding to climate zones as established in ASHRAE 169 is provided below. Ratings are determined using weather data, solar irradiance and water supply temperature over a period of one year for the specific locations listed below.



Central America & Caribbean Region			
Location	Climate Zone (ASHRAE 169)	Solar Fraction (SF _A)	Annual Energy Savings (kWh)
USVI - Charlotte Amalie	1	0.78	2410
Puerto Rico - Roosevelt Roads	1	0.74	2290
Puerto Rico - Mercedita	1	0.76	2340
Puerto Rico - Aguadilla	1	0.76	2360
Barbados - Christ Church	1	0.78	2420
Costa Rica - San Jose	1	0.66	3030
Jamaica - Kingston	1	0.87	2680
Mexico - Monterrey	2	0.50	1890
Mexico - Mexico City	2	0.52	2360
Belize - Belize City	1	0.64	1980
Puerto Rico - San Juan	1	0.74	2290

PUERTO RICO SUPPLEMENT TO OG-300 30004355

This Puerto Rico Supplement provides OG-300 performance ratings for several locations in Puerto Rico and the US Virgin Islands under several daily hot water draws. These OG-300 annual solar fraction (SF) ratings apply to the use of the listed solar water heating system installed with or without a backup heater and are calculated using typical local weather data and water supply temperatures.



CAUTION – SOLAR-ONLY SOLAR WATER HEATING SYSTEMS (WITHOUT A BACKUP HEATER) MAY BE UNABLE TO MEET HOT WATER DEMAND UNDER CERTAIN WEATHER AND USAGE CONDITIONS.

SOLAR-ONLY SYSTEMS SHOULD NOT BE INSTALLED WHERE PROHIBITED BY LOCAL CODES.

OG-300 PERFORMANCE RATING:						
Annual Solar Fraction (SF_A) per Location, Configuration and Daily Hot Water Draw						
	Configuration	DOE Very Small	DOE Low	DOE Medium	SRCC OG-300	DOE High
Location	Backup Water Heater?	10 gpd	38 gpd	55 gpd	64 gpd	84 gpd
San Juan, PR	Yes	97%	94%	86%	74%	73%
Aguadilla-Borinquen, PR	Yes	98%	97%	89%	76%	75%
Mercedita, PR	Yes	98%	96%	88%	76%	74%
Roosevelt Roads NAS, PR	Yes	97%	94%	86%	74%	73%
Charlotte Amalie AP, USVI	Yes	98%	95%	89%	78%	76%
ALL LOCATIONS	No	100%	100%	100%	100%	100%

* DOE standardized draw patterns specified in 10 CFR 430, Subpart B, Appendix E, *Uniform Test Method for Measuring the Energy Consumption of Water Heaters* [ENERGY STAR Single-Family New Homes Caribbean Program Requirements, Version 3 \(Rev. 13\)](#) allows for the use of the "Low" or "Medium" DOE Draw pattern, depending on the building size.

Standard SRCC OG-300 performance ratings are based on a hot water draw pattern consuming 64.3 gallons per day (gpd). This Puerto Rico Supplement also provides performance ratings for the system for four other draw profiles published by the U.S. Department of Energy. They are labeled "Very Small", "Low", "Medium" and "High" and have total daily hot water consumptions of 10, 38, 55 and 84 gpd, respectively. The additional ratings are provided to support local incentive programs. The size and location of each specific project using this system should be used to determine the appropriate performance rating.

This system has also been evaluated in a solar-only configuration - without a backup heater. Solar-only systems may only be used where appropriate for the building, allowed by the manufacturer and permitted by local codes. Without a backup heater, solar energy is the only energy source used to heat the water delivered by the system. SRCC defines Solar Fraction as the percentage of the energy used to heat the water delivered by the system. Therefore, the Annual Solar Fraction (SF_A) for a solar-only system is 100% in all locations.

NOTE: The Solar Fraction does not show how well a solar-only system will meet the day-to-day hot water demand in a specific building. Without a backup water heater, this system may not be able to provide sufficient hot water at all times - depending on usage, weather and installation.