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General Solar Thermal Specification

CARB has found that the least costly ways to reduce domestic water heating energy are efficient appliances and fixtures coupled with very efficient water heating equipment. For further energy savings – and to truly approach zero energy – active solar water heating systems are a viable choice.

General solar domestic hot water recommendations (single-family homes in freezing climates):

- Approximately 80 sq.ft. of flat plate collector. Evacuated tubes are also acceptable, but they may be excessive for domestic water heating only. Couple collectors with approximately 120 gallon solar storage tank. These can both be increased as appropriate for higher predicted loads.
- CARB recommends closed-loop glycol systems with DC circulator(s) powered by photovoltaic module(s) to minimize auxiliary electricity use.
- Auxiliary water heating should be separate from the solar tank. ONLY solar energy should heat the water in the solar tank; e.g. there should not be another coil or electric element to heat water in the solar tank.
- Piping runs to and from collectors should be minimized. Pipes should be insulated to at least R-5; higher recommended. At least 1-1/4" closed-cell foam rubber (Armaflex or similar with appropriate temperature rating).
- System should include heat dumps or other appropriate means to deal with excessive temperatures (and possibly pressures) during summer months when system reaches high-temp limit.
- Clear owner's manual for proper operation and maintenance.

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