Based upon the actual number of collectors to be used, compute the Solar fraction (SOLAR FRACTION):

$$\text{SOLAR FRACTION} = \frac{0.70 \times \text{NO. COLLECTORS}}{\text{NUMBER}} = \frac{0.70 \times \text{(Step 7a)}}{\text{(Step 6c)}} = \text{SOLAR FRACTION (7c)}$$

If the solar fraction (Step 7c) is less than 0.65, the collector array is undersized. Consider either adding another collector or using a different model/size collector.

This procedure has several constraints:

1. The procedure is valid only for Florida
2. The procedure is based on sizing solar systems to provide between 65% and 75% of the heating load; i.e., a solar fraction of between 0.65 and 0.75. A solar fraction of 0.7 is estimated to be optimum for most installations and, in particular, for solar collectors with a tilt angle of approximately 20º -25º (mounted parallel to the 4-in. -12 or 5-in-12 pitched roofs that are common in Florida). The 20º - 25º collector tilt angle provides for an aesthetic installation and meets 100% of the hot water needed in summer and 50% in winter. Systems can be sized to maximize lifetime saving by providing a larger solar collector that will produce a solar fraction of 0.9 or higher. *At high annual solar fractions however, the production and waste of excess heat during the summertime needs to be considered. To minimize collector size for high annual solar fractions, the collectors can be installed at a tilt angle of between 40º* and *40º*. Optimization of these types of systems is beyond the scope of this simplified sizing procedure. To achieve this solar fraction, the collectors will need to be installed at a tilt angle of between 40º and 50º
3. The hot water delivery temperature of 122ºF in step 3 was obtained by FSEC from analysis of two years of actual experimental data. The 122ºF delivery temperature is consistent with Florida Law, which requires that hot water thermostats be set no higher than 125ºF. It is also consistent with electric water heater energy consumption data as measured by Florida Power and Light Co.

   Automatic dishwashers may not clean dishes very well at 122ºF. However, most dishwashers have a cycle that Uses an electric element in the dishwasher to boost water temperature to about 140ºF.

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