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Solar Hot Water for San Diego

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At the turn of the century (1900), solar hot water was in the ascendant in the U.S., but by the turn of the next century (2000), had virtually disappeared in the U.S. (Davidson, 2005). During this same period solar hot water had become a fact of life in Cyprus (95% of homes) and Israel (90% of homes). In San Diego a number of solar hot water systems were installed in the 1970s as a result of the price spike in oil from embargoes and the Iranian revolution and state tax credits. Today, a handful of systems are installed every year; and some older systems, primarily integrated collector/storage type (Bainbridge, 1981), are still operating.

The abysmally low rate of installation in San Diego is unfortunate, because no other place in America has better a climate and weather for solar hot water. Yet if we asked local residents about solar systems most people in San Diego would mention photovoltaic systems that are ten to twenty times as costly and one fourth as efficient as solar hot water systems.

Common sense and conservative economics would suggest that solar hot water should be installed on every home with good solar exposure in San Diego. This would save money and help reduce critical summer peak energy supply problems, reduce fossil fuel consumption, limit greenhouse gas emissions and limit nitrogen pollution problems (Bainbridge, 1997).

This paper explores several pathways that could lead to widespread installation of solar hot water systems on new and existing homes and commercial buildings. The key will be developing an efficient business model for retrofitting older subdivisions and commercial buildings, rather than the current custom installations of one house at a time. An innovative 'solar utility' could also find the best street orientations, best home layouts (least obstacles, shortest pipe runs) for minimal installation cost. They could then pop in 500 or 1000 integrated collector/storage solar water heaters a month (Bainbridge, 1981; Smyth et al. 2006). If the energy market was open and competitive this would already have happened. The utility or solar utility would also remove and replace heaters when homes needed reroofing at a modest cost, and provide regular checkups and performance tuning.

China provides a good model for the benefits of a more open energy market, and is now installing as many as 5 million solar water heaters a year with 5,000 companies and ten brands with annual sales over 100 million RMB (Martinot, 2006). For San Diego we might see one very large solar utility, or better yet, a competitive group of 5-10 companies each installing 10-50,000 systems a year. It is both possible and feasible.

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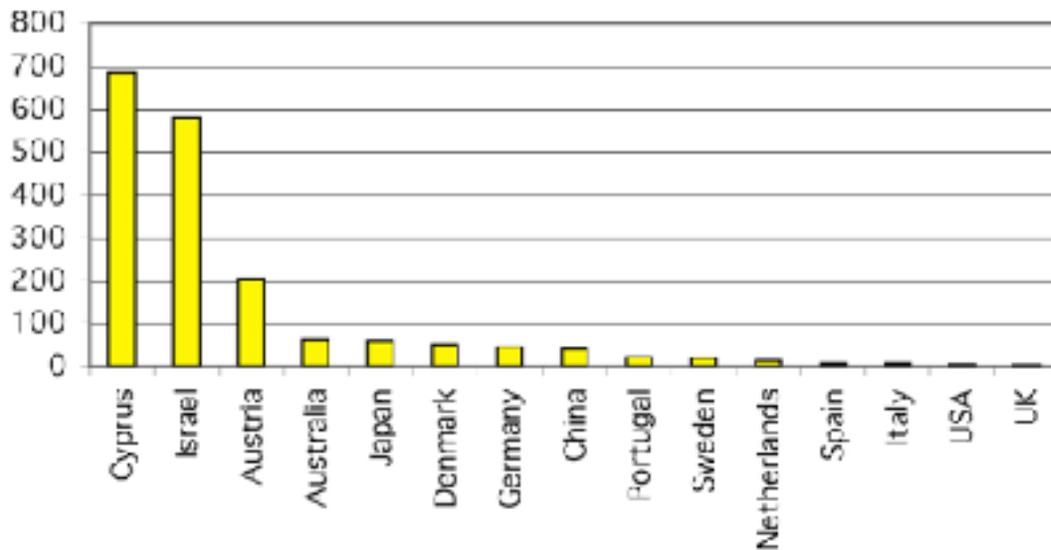
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Installed glazed solar thermal capacity m² per 1000 people in 2004



Solar thermal glazed collectors installed in 2004
m² (1000s)

Austria	183
Germany	750
Greece	215
Italy	58
Netherlands	26
Sweden	20
U.S.	18
China	15,000

All 2004 exc. China 2005

Source: ESTIF 2005, Davidson 2005, Martinot 2006

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