

## Balancing Function and Aesthetics

### Owner/Architect

Thomas

### Installation Date

February 2013

### The Building

114 Hamilton Street. A single-family, wood-frame, 1,000 SF home built around 1880, probably to house a local factory worker family. When the house was bought in 1998, it had not been inhabited for two years and not renovated in a number of decades before that. A full renovation was required.

### Motivation to Add Solar Hot Water

The homeowner, an architect, has long taken an interest in green building and energy savings. The owner completed a gut rehab of the building over several years in two major phases. New double-paned windows, full insulation, low-flow plumbing fixtures, installation of European low-energy and U.S.-made energy star appliances, strategic use of recycled building materials and conversion to a high-efficiency gas heating system all contributed to a tighter envelope and smaller carbon footprint through lower energy use and costs.



A Cambridge Energy Alliance presentation at a local Greenport Forum inspired the owner to take advantage of city, state and federal grants and tax credits to install a solar hot water system to realize additional energy savings and provide an opportunity to learn from the process in order to be able to encourage clients to do the same.

### Installation Process

The first step in the process involved an energy audit. Next Step Living did an assessment, suggesting some improvements, re-lamping the entire house with free compact fluorescent bulbs, and providing information about additional energy savings opportunities including NSTAR's MassSave program. The owner is considering participating in NSTAR's photovoltaics program which allows for excess electricity produced by the panels (installed free of charge on a lease basis, or bought outright) to be sold back to the NSTAR grid for use elsewhere.

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The owner elected to work with New England Solar Hot Water (NESHW) of Duxbury Mass. A representative made a site visit

and determined that the house orientation was ideal for a solar hot water system. A Wagner SECUSOL Compact solar hot water system was chosen based on available space and occupant water demands. This system is a “preheat” installation that works with the existing hot water heater acting as “back-up.”

The owner/architect certified that the roof could support the weight of the solar panel and worked with NESHW to determine the least invasive and most aesthetic way to introduce the new plumbing via the attic and through closets in the house, connecting ultimately to the insulated hot water tank in the basement.

NESHW took the lead in completing all applications and permitting and met with the Historical Commission for approvals. NESHW completed the entire installation process in one day with a crew of three. All went very smoothly.

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### Lessons Learned

It is important to work with the selected installer in advance to determine the best balance of function and aesthetics when introducing new plumbing into the building. An architect is also required to verify structural load strength and to sign off at the end of the project.

Paperwork can take longer than actual installation. If deadlines must be met, it is wise to start early. It is also important to find an installer who has experience working with the Cambridge



Building Department on similar projects – this can streamline the approvals process considerably. NESHW and the Cambridge Energy Alliance and were very knowledgeable, accommodating and helpful in arranging for this particular installation.

### Anticipated Savings

The equipment and installation of the system cost \$6,200. With grants from the Cambridge Energy Alliance and Mass. CEC as well as State and Federal Tax credits, the cost will be reduced to approximately

\$1,925. It is anticipated that the system will save enough gas to pay for itself after approximately five years. In the warmer months with longer daylight for example, all hot water can probably be obtained from the solar hot water tank alone.

### Initial Performance Data

As the installation is not yet three months old, no initial performance data is available