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Photos courtesy of Tom Moore

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Dream House with a Silver Lining

Tom Moore's "Green Dream Home" is a tour de force in energy efficiency.

THERE IS NO simple solution for building an energy-efficient home, especially in a country setting. It is best to begin with a site planned to maximize solar exposure, with a true south-facing orientation. Builder Tom Moore's "Green Dream Home" in Underhill Center recently was awarded Leadership in Energy and Environmental Design (LEED) Silver certification, an acknowledgment of achievement from the U.S. Green Building Council. The "Green Dream Home" was designed with the best of three worlds in mind: comfort, energy efficiency, and detail. Moreover, it is, as Tom says, "totally integrated." That means Tom and his sons' company crafted everything—from wood ceilings, floors, and cabinetry to mirrors and vanities for compatibility in design, form, and function.

The family business was originally founded in 1967 as E.T. Moore Builder. Tom had worked with his dad since he was 15 years old, learning the arts of carpentry, construction, and fine cabinetry. When E.T. Moore retired from the building business, the company became Tom Moore Builder, Inc. Now Tom's two sons also work in the company. A dividend of the "Green Dream Home" was to have his dad as a next-door neighbor and able to watch

the daily progress. By March 2011, Tom was close to LEED Silver certification, with the supportive help of Penny Miller of Gardner Kilcoyne Architects and Li Ling Young of Efficiency Vermont.

The two-year project started in October 2009 and began with site preparation done the old-fashioned way: wood for construction was harvested from the land, producing 16,000 feet of lumber. The few commercially purchased materials used were engineered and kiln-dried lumber for walls, trusses, floor joists, and sheathing.

During August the next year, energy-saving components of the foundation, including AMVIC ICF forms and multiple layers of EPS foam underlayment beneath the basement floor, were assembled and construction began. Great care was given to the drainage stone and the vapor barrier in this process. Recycled wood was used for the footing forms and was recycled after use.

A double-exterior wall system went up during September, designed by Tom to accommodate insulation both on the



The long roof overhangs inherent in the design of the house serve two purposes: to maximize space for the solar panels that serve the home in the winter and to provide extra shade for cooling in the summer. Double-wall, double-insulated construction will yield savings in both heating and cooling (in fact, no air conditioning was installed, nor is it needed). Locally harvested Vermont hardwood was used in various parts of the house—in its custom-made cabinets and vanities, and in the furniture, all made by Tom Moore craftsmen.



In the kitchen, handsome cabinetry and a central butcher-block table showcase the woodworking talents of the Tom Moore team. Upstairs in the guest bathroom, wide pine floorboards, a ceiling made of tongue-and-groove hardwood, and more custom-made pieces of furniture complement the traditional look of a clawfoot bathtub.

Just the facts

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inside and outside. The first application of insulation was done on the outside using Demilec soy-based, closed-cell foam, applied in a four-inch layer by Building Energy, to insulate and air-seal the building. This double-wall, double-insulated construction resulted in a shell 13 inches thick, designed for cost savings in both heating and cooling. No air conditioning was planned or was necessary. Upstairs, in keeping with Tom's wish to keep the house as tight as possible, OSB sheathing panels were applied to the ceiling structure and taped. Then, an impressive 30 inches of loose-fill cellulose insulation was installed in the attic ceiling. The closed attic has louvers on each end and soffit venting along the eaves, with plywood rafter venting channels.

A Buderus high-efficiency modulating propane boiler with an exterior sensor was installed for the home's minimal heating demand. The house also has two backup electrical systems: one battery system for small outages and a generator for longer periods.

By October 2010, custom-made and recycled doors and triple-glazed Pella windows (featuring Tom's rustic Greek Revival trim detail) were installed. The

well had been drilled and a low-draw, three-phase water pump was online. Exterior wall insulation and natural wood sheathing were in place, and solar panels (both photovoltaic and domestic hot water systems) were neatly situated on the roof. Before interior walls for rooms went up, tongue-and-groove hardwood ceilings were installed and wide pine floorboards—some as wide as 22 inches—were glued and nailed down with old-style, cut nails. This unusual process meant that any subsequent moving of walls would be easily accomplished and would not interfere with the sealed structural envelope.

Come November, things had progressed far enough for testing for air leaks, using a blower door test, with smoke and a UV camera. Very few leaks were detected, but however small, these areas were caulked and sealed before the interior insulation process began.

During the winter months, stained-glass windows were installed between rooms and stairways were constructed using cherry and tamarack harvested from the site. Custom kitchen cabinets made by Tom's master cabinet-maker, Clark Sargent, and Tom's son, Lincoln Moore, were installed. Custom

furniture, including bedroom sets, vanities, bookcases, and built-in cabinetry, was put in place. Detailing pieces with inlaid wood, such as a maple leaf design set in tiger maple, has become a Tom Moore hallmark.

Architectural details, including an Otter Creek sun-sheltering awning for the deck and stone hardscapes by Set in Stone Hardscapes, put the finishing touches on the "Green Dream Home." In October 2011, Tom Moore Builder, Inc. achieved two prestigious accolades: Most Innovative Design Build and Energy Efficiency awards from the Northern Vermont Home Builders and Remodelers Association. The "Green Dream" finally came true when the LEED Silver certification was awarded in early November, recognizing the efforts of Tom Moore and his staff as leaders in the effort to protect our planet by using materials, energy, and resources wisely.

As owners of this special residence, affectionately called The Tree House, Tom and his wife Deb enjoy living in a home that expresses their values, and where they can also monitor the efficacy of the home's energy-related design components. **F**