

# Energy and Space Efficient Design – Downtown 3-Story

This modern, sunny, functional three-story home was designed with supreme energy efficiency and space efficiency in mind.

Home designer Erik Lobeck said the vertical nature of the house was a direct result of collecting light from all angles and elevating for views that would not be attainable in a one-level design on the site. The utility bills have been extremely low with the highest bills this past winter at \$55 for natural gas and \$40 for electricity.

The architectural designer and homeowner worked together to select key contractors experienced in energy efficiency design. All subcontractors hired were from within Rount County.

## HOME FEATURES:

**Energy efficient design** – 30 percent more efficient than building codes with elements of passive house design.

**Energy efficient windows** - Argon-filled, triple-pane Intus brand European-made windows and doors with R6.6 insulation value.

**Energy efficient LED lighting** – including LED tape light at 1.5 watts per foot inside the blue treads of the free-floating, corner staircase made from wood, steel, glass and 3form translucent resin panels.

**Water-saving toilets** – European style, dual-flush wall-hung toilets.

**Energy Recovery Ventilation** -- Venmar brand ERV has variable speed motors for efficient electrical use, ERV brings in fresh air that is preheated inside the ERV by the outgoing warm and stale inside air.

**Efficient radiant in-floor hot water home heating** – with 96 percent efficient natural gas-fired boiler by Lochinvar that features a modulating output that makes it most efficient for combined use for hot water and room heat. PEX tubing in the concrete in the lower level and in WarmBoard on the main and upper floor.

**Efficient domestic hot water heating** – sidearm SuperStor water heater

**Energy Star rated appliances**

## SUSTAINABLE CONSIDERATIONS:

- In-fill development on existing lot in city
- Building footprint designed to save large front yard tree for shading
- 3-inch insulating foam board under concrete foundation and around building envelope
- All seams and crevices caulked, sealed or taped with European brand SIGA air sealant tapes
- All rooms have high level of daylighting and solar gain with exterior overhangs to prevent over-exposure
- Site studied for maximum seasonal solar benefit
- Attic insulation approximately R-50 value, wall insulation at R-30 value
- Reclaimed wood flooring from a 150 year old house in Providence, RI
- Relocated existing shed on lot to use as gardening shed
- Reclaimed cardboard packing materials to use as “lasagna” under yard soil
- Used surplus building material for garden furniture and garden edging