

# 35 LAWRENCE STREET

PORTSMOUTH, NH



## LEED-H Platinum

Size: 1460 sq.ft.

Bedrooms: 1+ Bathrooms: 2

Architect / Designer: Marc Batchelder & Cheryl Parker

Builder: Little Green Homes, LLC

## WHAT MAKES IT A NET-ZERO?

### STRUCTURE

- Passive solar design with south facing windows
- Timber frame post & beam
- Walls and roof constructed of Structurally Insulated Panels (SIPs) - R40 Roof, R-26 Walls

### HEATING AND COOLING

- Custom radiant floor heating beneath finished floor
- 20kW Electric boiler
- Vermont Casting Encore high-efficiency wood stove
- Use of a Heat Recovery Ventilator (HRV) to for air circulation and to pre-heat incoming air

### ELECTRICITY

- 3.15kW Photovoltaic system with individual micro-inverters
- Energy Star appliances

### WATER HEATING

- Evacuator tube solar thermal heating with Purist pump station
- Low flow faucets and shower heads
- Dual flush toilets (0.8 / 1.6 gpf)

### SUSTAINABLE FEATURES

- Minimal amount of conventional turf
- 80% of materials used for construction from 500 mile radius
- 80% of construction debris recycled
- Low VOC materials, paints, adhesives and sealers
- Fly-ash concrete
- Reclaimed and recycled materials throughout the house

### RATINGS

- EPA Energy Star rated house with a HERS index: 32
- Blower door tested at 270 CFM

## DETAILED SPECIFICATIONS

### STRUCTURE

- Timber frame post & beam construction made from Eastern White Pine harvested in Maine. Reclaimed white oak braces from a Pennsylvania barn, and Douglas Fir exterior frame for porch
- Roof and walls constructed of Murus Structurally Insulated Panels (SIPs) - R40 Roof (6-1/2") - R26 Walls (4-1/2")

### EXTERIOR FEATURES

- PV System:
  - (18) Suntech 175w PV panels - 3.15kW system
  - (18) Enphase microinverters
- Solar Thermal System (Domestic):
  - 85 Gallon Marathon electric hot water heater
  - Purist Solar Pump Station
  - Seido 16 evacuator tubes collector
  - Minimum R4 insulation on all hot water and solar loop piping

### INTERIOR FINISHES

- Flooring:
  - Reclaimed eastern heart pine (1st flr) from a New York barn - Carlisle Flooring, NH.
  - Bamboo (2nd flr) - Environmentally preferable product.
  - Sheldon Slate tiles (mudroom) from Vermont query?-
- Kitchen / Pantry Cabinets:
  - Reclaimed Lyptus - Environmentally preferable product
- Countertops:
  - Chelmsford granite from Massachusetts
  - Reclaimed bowling alley from Pittsfield, NH on island.
- Exterior Doors:
  - Therma-Tru with insulated core
- Windows:
  - Andersen 400 series (u-values 0.33 to 0.28)
- Appliances: (All Energy Star compliant - if available)
  - 18.1 cu. Ft. Kenmore refrigerator (393 kWhr/yr)
  - Kenmore dishwasher (320 kWhr/yr)
  - Maytag washer (211 kWhr/yr)
  - Maytag dryer - electric
- Paint:
  - Benjamin Moore - Aura - VOC = 47.1 g/L
- Fixtures:
  - Baths - dual flush toilet (0.8 / 1.6 gpf), 1.5gpm faucets, 1.75gpm shower heads
  - Kitchen - Kohler cast iron sink (100% recycled cast iron)
- Interior Lighting:
  - Sea Gull Lighting - Energy Star products

### OTHER PRODUCTS USED

- Brick: Morin Brick Company - Old Port brick from Maine
- Drywall: National Gypsum, made in Portsmouth, NH
- Glues and Adhesives: Liquid Nails - VOC = 32 g/L
- Spray Foam: Great Stuff - All cracks and holes
- Decking: Trex - Made of recycled plastic bottles and byproducts from woodworking operations
- Roofing: Sheffield Metals standing seam - 25% recycled content, Initial Solar Reflectance (ISR) = 0.33, Solar Reflectance Index (SRI) = 33

### GENERAL DESIGN

- Orientated within 5 degrees of solar south
- Majority of windows on south side for passive solar gains
- Heat-loss calculation estimates a 27,000 btu heat source is needed
- EPA Energy Star rated with a HERS index of 32

### MECHANICAL SYSTEMS

- Heating System:
  - Vermont Castings Encore wood stove - 0.7g/hr emissions (lowest in the industry) w/ direct air intake from exterior of the house
  - Radiant floor heating in basement and 1st floor, no heat on 2nd floor.
  - Argo 20kW electric boiler 68,240btu
- Cooling System:
  - None
- Ventilation System:
  - Venmar Solo 2.0 Heat Recovery Ventilator (HRV) with timer controls in both baths

### EXTERIOR FINISHES

- Exterior Lighting:
  - Reclaimed porch lights from James Hall at UNH
  - Custom door lights handmade from The Copper House in Epping, NH
- Siding:
  - Maibec pine clapboard - Factory pre-painted all four sides with two coats of Cabot paint. Pine was harvested from Maine and Quebec.
- Concrete:
  - Concrete mix design with high quantity of fly ash and locally harvested aggregates.

### FUTURE PLANS

- Rain water harvesting system

### THIS HOUSE MADE POSSIBLE BY:

Architect / Designer: Marc Batchelder and Cheryl Parker  
Builder: Little Green Homes, LLC  
Timber framer: Maine Post & Beam  
Heating / Plumbing: Stelter Plumbing  
Solar (PV & DHW): SEA Solar Store  
Electrical: Batchelder Electric  
Wood Stove / Chimney: A Merrie Sweep  
Painting: Minute Men Painters  
Ventilation: Key Heating & Cooling  
Foundation Construction: Thomas Cox Construction  
Flooring: Carlisle Wide Plank Flooring  
Material Supplier: Ricci Lumber  
Cabinet Supplier: Area Kitchen Centre  
LEED Rater: The Jordan's Institute

Countless hours of help from friends and family.