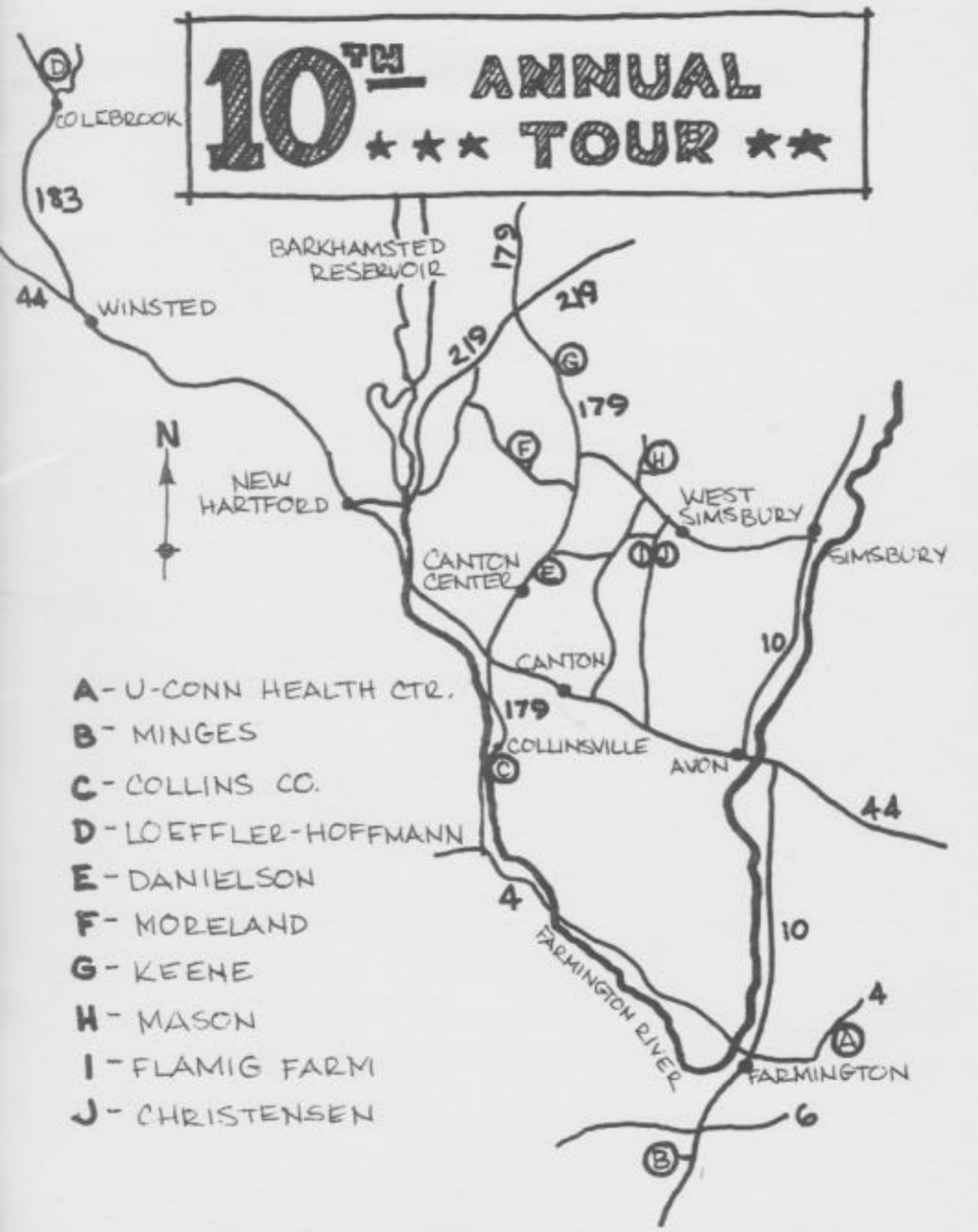
TICKET BOOKLET NO. 509



TENTH ALTERNATE ENERGY HOUSE TOUR

NOON - 5 PM MARCH 1, 1986
SNOW DATE MARCH 2

PACE SCIENCE ADVISORS

William Burch, Ph.D.
Yale Forestry School

John Charde, M.D.
Lakeville

Richard Goodwin, Ph.D.
Botany
Connecticut College

Rudolph E. Haffner, Ph.D.
Biology
Hartford College for Women, Trinity

Charles Prewitt, Ph.D.
Chemistry
Eastern Connecticut State College

George Rumney, Ph.D.
Geography
University of Connecticut

Donald Scroggin, Ph.D.
Chemistry
New Haven

Gregory L. Stone
Geophysics
Canaan

Jay William Stryker, Ph.D.
Physics
University of Massachusetts

Betsy Woodward
Meteorology
Lyme

TENTH ANNIVERSARY ALTERNATE ENERGY HOUSE TOUR

SPONSORED BY

P.A.C.E., INC. (People's Action for Clean Energy)
Farmington Valley Chapter
101 Lawton Road
Canton, CT 06019

SATURDAY, MARCH 1, 1986

(Snow Date: Sunday, March 2, 1986)

Changes will be announced on WTIC

Noon to 5 p.m.

TICKETS*

$6.00 (Members free). Tickets may be ordered by sending a check to:

P.A.C.E., Inc.
171 Huckleberry Hill Road
Avon, CT 06001

or may be purchased after February 8 at:

... West Hartford - Clapp & Treat (Farmington Avenue)
... Farmington - The Epicure (Route 4)
... Avon - Herbs and Whey (Old Avon Village, Route 44)
... Simsbury - Clapp & Treat (Hopmeadow Street)
... Canton - (101 Lawton Road, 693-4377)
... Canton - Village Health Food Center (Canton Village, Route 44)
... Canton - Roaring Brook Nature Center (Gracey Road)

*P.A.C.E. reserves the right to limit ticket sales. No refunds or rainchecks.

TOUR INFORMATION may be obtained by calling:

693-0422
693-4377
693-4813

PLEASE READ CAREFULLY

This Anniversary Tour celebrates ten years of energy tours. Included in this year's list are five of the most popular buildings that have appeared on previous tours. Five new buildings are also part of this deluxe package! Please choose your buildings with care. It is impossible to visit every building, so select the ones that most interest you.

Thank you for coming. The members of P.A.C.E. deeply appreciate the cooperation of each of the home and building owners. Their willingness to share their privacy and experience is very gratifying. We hope to minimize the work and trouble that a house tour can cause the donors.

1. Please dress informally. Some walking will be necessary. Low boots and warm clothes are recommended. The tour is being held in March so that the heating systems can be seen in operation.

2. RIP OUT THE TICKET PAGE AT THE BACK OF THE BOOK. HAVE EACH SECTION READY AS YOU ENTER EACH BUILDING.

3. EACH TICKET HAS A RED NUMBER ON IT. THAT NUMBER WILL TELL YOU WHERE TO START. THEN COMPLETE THE TOUR IN ORDER.

   Suggested starting points, if applicable:
   Tickets 1-100 - Begin at Building A. (Then go to B, etc.)
   Tickets 101-200 - Begin at Building B. (Then go to A, etc.)
   Tickets 201-300 - Begin at Building D. (Then go to G, F, etc.)
   Tickets 301-400 - Begin at Building J. (Then go to I, H, etc.)
   Tickets 401-500 - Begin at Building C. (Then go to E, etc.)
   Tickets 501-600 - Begin at Building D. (Then go to C, etc.)
   Study your ticket descriptions before you begin.

4. Begin the tour at noon if possible. Time is limited, so visit the buildings that most interest you.

5. Remove your shoes or boots before entering each house.

6. Do not touch anything.

7. Keep lines moving in crowded areas.

8. Ask questions in a positive manner. Be sure comments are also positive as the house owners may be present.

9. This is not a bus tour. Please try to save energy by carpooling if possible.

10. Please follow parking directions and obey parking signs. P.A.C.E. is not responsible for illegal parking. Do not park in driveways or in front of them. Do not park going against traffic.

11. New Englanders can take advantage of a variety of passive and renewable energy alternatives, including conservation. Many buildings on this tour use at least three of these options.

12. Free materials, interesting books, and brownies will be available at the Flamig Farm Store. All profits are used for educational purposes.

Note: The brownies are made by Lorraine Langlois of PICNIC (Pine Meadow).

BUILDING A

UNIVERSITY OF CONNECTICUT HEALTH CENTER (NEW!)

FARMINGTON

LOCATION: 263 Farmington Avenue. At the intersection of Routes 4 and 10 in Farmington Center, travel east on Route 4 for two miles. The Health Center is located on the right. Go to the academic entrance and follow the tour sign to the Environmental Control Center.

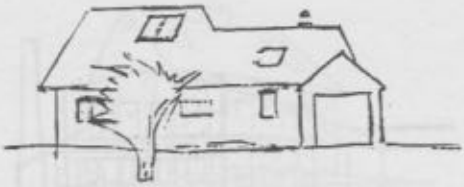
PARKING: Park in lot.

TOUR SCHEDULE: 12 noon, 1 p.m., 2 p.m., 3 p.m., 4 p.m. mini-tours will be given by David Elliott.

HISTORY: The University of Connecticut Health Center has undertaken several large energy management projects in the last few years. Ethylene glycol-filled heat recovery loops were installed on 13 blowers and 12 exhausters. Steam-to-hot-water heat exchanges were installed on hot water heating and domestic systems. The steam was supplied by a recently converted dual fuel 600 HP low pressure system boiler to replace electrally generated hot water. A new 150 HP medium pressure boiler was installed to replace electric steam generators supplying steam to the hospital's Central Sterile Supply Department and the cafeteria.

To monitor and control all of the systems, a direct digital control Energy Management System was installed. The system includes 77 remote micro-processors tied into a central computer control system. The system provides electrical demand control, enthalpy control, HVAC control, and some lighting control. The tour will show the operation of each of these systems as well as an explanation of its function.

SPECIAL NOTE: Energy management systems for the home, which automatically lower and raise temperature, are now available. A recommended one is Digistat, a product of American Stabilis, Inc., and available from New Energy Resources (658-0639).



BUILDING B

THE MINGES HOUSE (1980 TOUR!)

FARMINGTON

LOCATION: 35 Farmstead Lane. Beginning in Farmington Center, turn south on Route 10 and proceed for two miles, passing the Silo Restaurant on the right. Go through the traffic light and turn right at the second street past the light. The Minges' home is the third house on the right.

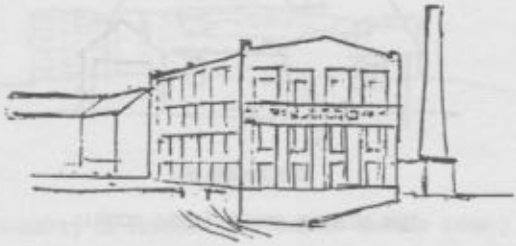
PARKING: Park only on the right (north) side of the street. Do not block any driveway.

HISTORY: This charming "recycled" house was built in 1943 and spent the first 36 years of its life as a conventional one-story, 1,400-square-foot Cape-style home. Energy usage was over 1,700 gallons of oil per year.

Blue and Peg Minges' initial renovation added 740 square feet of living space, doubling the volume of enclosed and heated area. A total insulation approach that extended from below grade, up the walls, and over the entire roof raised the R-values, reduced infiltration, and cut fuel consumption by 65%. Increasing south-facing glass, adding solar collectors for domestic hot water, and opening up the interior of the house for airflow also contributed to this tremendous energy saving.

Since the first PACE tour, insulated shutters have also been added as well as another 200 square feet of bath and dressing area. The coal stove, rated at 17,000 BTU/hour will help to keep the home at 68°F.

Designer: Blue Minges (Blue Sun), Farmington



BUILDING C

THE COLLINS COMPANY (1980 TOUR!)

COLLINSVILLE

LOCATION: The company is located in the center of Collinsville on the east side of Route 179.

PARKING: Park in the lot adjacent to the Collins Company near the old Collinsville railroad freight station, across the street from the Miner Lumber Company office.

TOUR SCHEDULE: 12 noon, 12:30 p.m., 1 p.m., 1:30 p.m., 2 p.m., 2:30 p.m., 3 p.m., 3:30 p.m., 4 p.m., 4:30 p.m.

HISTORY: If you are interested in the potential of hydropower, water turbines, and a fascinating historic setting, don't miss this stop.

Every half hour a tour will view the forebay, dam, spillways, watergates, canal, tailraces, boiler house, and a turbine of the classical New England mill-type, hydroelectric power generation facility still producing clean energy for the Collinsville Company.

Visitors will tour the Obermeyer Water Turbine Manufacturing Company's testing laboratory where devices for measuring water flow rate and pressure and turbine speed and torque provide information for reliable performance guarantees on Obermeyer turbines of various unique designs. Henry Obermeyer is making the turbines for the Colebrook Dam hydropower station.

PACE

FOUR-STAR

HOME

* * * *

BUILDING D

THE LOEFFLER-HOFFMANN HOUSE (1984 TOUR!)

COLEBROOK

LOCATION: Old Colebrook Road. Take Route 44 west from Winsted. Turn north onto Route 183. At the intersection of Routes 183 and 182, turn right onto Old Colebrook Road. Drive approximately 9/10 mile. The Loeffler-Hoffmann home is on your left.

PARKING: If there is a lot of snow, park only on the house side of the road. Please obey parking signs.

HISTORY: If you have not seen this house, we strongly recommend that you visit this PACE award-winning home. Many improvements have been made since the 1984 tour. This owner-built, Hartford Courant-featured house was used as a model for the Solar Mortgage Subsidy Program guidelines for the State of Connecticut. Behind its charming traditional simplicity and esthetic lines is a carefully calculated plan for a holistic environmental lifestyle for this husband-wife owner-builder team.

ENERGY FEATURES: The traditional 28' x 36' house is nestled against pines on the north and oriented to true south with an unobstructed southern exposure. A garage buffers approximately half of the north wall. The north-facing inside rooms include closets, bathrooms, a laundry room, and an air-lock entry. The living areas face south. A carefully calculated overhang on the second floor blocks sunlight during summer months, and a second one will be built for the first floor.

Winter sunlight penetrates the south glazing far into the rooms, heating a large mass of tiled floor on slab and the fieldstone chimney. Heated air is allowed to flow upstairs through a partially open stairwell and through two operable floor grates, assisted by two small wall fans, if necessary.

The open first floor plan enabled a simpler building technique, efficient use of space, and easy heating and cooling. Heating is assisted by a centrally located coal stove. Coal expenditure for last winter's heating season was $180 (2,700 square feet of living space).

Fanatics about insulation and stopping air infiltration, the Loeffler-Hoffmanns stapled a new product called Tyvek to the plywood sheathing under cedar clapboards. This significantly reduces air infiltration, which is important because the efficiency of fiberglass can decrease if there is any air moving through it.

They pushed 6" of fiberglass into the 6" walls. Over this they nailed 1" sheets of foil-backed rigid foam and closed the seams with foil tape. Sheetrock was nailed on top.

Between rafters there is 12" of fiberglass and 2" of dead air space to allow air circulation to gable louvers. The walls of seldom-used rooms, such as baths, entry, and laundry room, were insulated against sound and heat loss. It is more efficient to isolate those rooms and heat them separately when needed.

During framing, they insulated inside all door and window headers and behind interior walls and corner blocking. The spaces around window and door frames, all plates and sills were also insulated. These are trouble spots notorious for heat loss, and few builders bother to insulate these areas.

The foundation and cement slab under the tile floor were insulated with 2" of foam and a vapor barrier.

Plumbing pipes and electrical boxes on exterior walls were kept to a minimum to follow code. Wiring runs through notched studs on exterior walls so as not to disturb the fiberglass batts. Minimum baseboard heat was installed to comply with bank finance specifications. So far it has never been used.

Two low-power air-to-air heat exchangers run continuously in the winter, bringing in fresh air preheated by the exhausted stale air.

Two 4' x 10' Novan solar collectors, selected by HUD as the best domestic hot water solar panels, were also installed. They are connected to a 120-gallon storage tank. Electric bills average $39 per month in total.

Windows and sliding glass doors are double-glazed. They are fitted with insulated shades.

Designers: Peg Loeffler, Greg Hoffmann
Architect: Richard Kenyon
Solar Consultant: Joel Gordes.

SPECIAL NOTE: The plans for this house are available through Greg Hoffmann Carpentry, Inc. (379-1200).

BUILDING E

THE DANIELSON HOUSE (1977 TOUR!)

CANTON CENTER

LOCATION: 263 Cherry Brook Road. From Canton Center, travel about one mile north on Route 179 (Cherry Brook Road). The Danielson house is on your right (east side).

PARKING: Park only on the east side of Route 179. Do not block driveways, please.

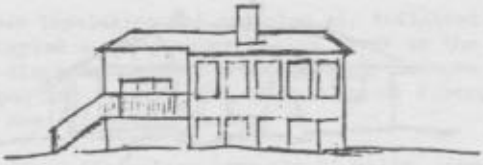
HISTORY: This cozy and comforting home is a favorite PACE tour feature. Esther and Bill Danielson have made many changes in their sunny, 2,100-square-foot, passive solar home in the last ten years. The airtight Lange wood stove now heats the downstairs, while a Lange cook stove provides heat for upstairs warmth and nearly all the cooking, plus hot water for dishes and washing from November through April. Together the two stoves consume three cords of wood annually.

Two solar panels heat all hot water from May through October and pre-heat water for the remainder of the year. Insulated exterior shutters on all north, east, west and some south windows are a recent addition.

A large number of south-facing windows provide solar heat and earth-berming on the north side of the house provides insulation. The Danielsons use about 50 gallons of fuel oil a year for winter showers and for heating the house while they are away on occasional weekends.

Other energy-related features include indoor and outdoor clotheslines (There is no dryer or dishwasher), a cold cellar for storage of garden produce, and goats, chickens, and ducks for milk, eggs, and garden fertilizer.

Architects: Roger Clarke and Dick Swibold
Solar Installers: Sunrise Solar Services, New Hartford



BUILDING F

THE MORELAND HOME (NEW!)

NORTH CANTON

LOCATION: 7 Robbin Drive. From Canton Center, travel north on Route 179 for about three miles to Wright Road. Turn left and follow Wright Road for about one mile to Ann Lane. Turn right and then bear left onto Robbin Drive. The Moreland home is the first house on your right.

PARKING: Please do not block any driveway or access areas.

HISTORY: This unique and extremely pleasant 2,800-square-foot house is a passive solar, three-level "reverse salt box" on a south-facing slope (14° SW). The primary heat sources are a 254-square-foot, two-story sunspace entry with a six-inch heat storage slab floor and a brick chimney for mass, a 52-square-foot direct gain area in the tiled dining room, and a basement Vermont Castings Vigilant stove. Although the average daily interior temperature is 64°-75°, the electric baseboard backup heating system is never used. Electricity for all other needs averages $70 a month for a family of 5 people.

The house has a center staircase with an open balcony to maximize airflow into the bedrooms. The cathedral ceiling area was minimized to prevent heat trap problems.

The one-foot overhang on the south side of the house facilitates summer cooling, while the unique sunspace acts as a heat buffer, isolating the summer heat from the house while still admitting sunlight.

Outside air is brought in through a three-inch pipe for the basement stove and, in the future, a small stove in the living room.

The Solar Bank approved the house for a $3,800 subsidy and was a great help in offering energy-saving building ideas. This agency is highly recommended by the owners.

Solar Consultant: Joel Gordes, Winsted

SPECIAL NOTE: There is still money available at the Passive Solar Mortgage Subsidy Program at the Connecticut Department of Housing (1-800-842-0134).

BUILDING G

THE KEENE HOUSE (1977 TOUR!)

NORTH CANTON

LOCATION: 721 Cherry Brook Road. From Canton Center, travel north on Route 179 (Cherry Brook Road) for about six miles. The Keene home will be on the right (east) side of Route 179.

PARKING: Park on the east (house) side of the street. Do not block driveways, please.

HISTORY: This dramatic 2,200-square-foot house uses an active glass-paneled solar system. Hot air is collected in a duct that runs along the high ridge of the roof. The air is then blown into a rock bed from which it is sent through the house. Water is pre-heated in a tank in the rock bed.

Warmth is also created by the use of a wood stove (two cords per year) and a heatilator in the den fireplace, which sends heat upstairs.

The north window in the main room can be closed with a shutter, and the house is sited so that the wind literally bounces off the north hillside and moves up the roof. In the summer the air system works in reverse. Exhaust fans blow off the excess heat that has accumulated in the ridge.

Architects: Roger Clarke and Richard Swibold

BUILDING H

THE MASON HOUSE (NEW!)

WEST SIMSBURY

LOCATION: 18 Summerwood. From West Simsbury, travel northeast on Route 309 for about one mile. Turn right onto Highridge Road, and then take your first right onto Summerwood.

PARKING: Go to the end of the road and then turn around. Park beyond the Mason driveway on the left side of Summerwood facing out toward Highridge. Do not park as you come in. Park only on correct side, and do not block any driveways. Be prepared to walk. (When you leave, do not turn right from Highridge onto Route 309. Instead, go left and then turn around to go north on Route 309.)

HISTORY: This exceptionally beautiful, 2,800-square-foot home combines a contemporary cedar clapboard exterior with a cozy, colonial interior. Built in 1983 of oak, ash, and tulip poplar from the owner's land, this modified post-and-beam structure has an open floor plan that maximizes the air flow potential within the house.

The house is framed with double fiberglass-insulated 2" x 4" walls on the east, north, and west elevations with 1½" of airspace between the walls. The south wall is 2" x 6" construction. The entire home is wrapped with one inch of extruded styrofoam with all seams duct-taped. Two inches of extruded styrofoam surround the foundation walls. The south wall is R-24; other walls are R-31, and the ceiling is R-44.

The 12' x 15' sunroom is tiled for heat retention and also acts as a front door airlock. (All entries have airlocks.) The sunroom fan moves heat to the basement, where it is used by an air-to-water heat pump that provides domestic hot water. Some of the master bedroom windows open on to the sunspace to allow added heating of that room. High, in-swinging windows allow summer cooling of the sunspace. (The home is heated primarily by a ground-water heat pump (water to air). A wood stove is the backup system (1½ cords of wood).

Windows and skylights are double-glazed with interior storm windows added.

Architect: Andrew Mason, with assistance from Richard Reinhart and Blue Minges
Builder: Andrew Mason

BUILDING I

FLAMIG FARM (NEW!)

WEST SIMSBURY

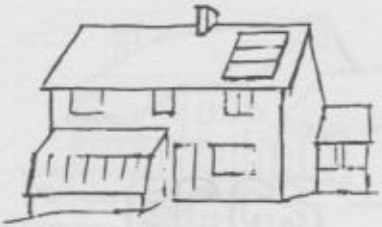
LOCATION: 6 Shingle Mill Road. From West Simsbury Center, take Route 309 north for 1/10 mile to West Mountain Road. Turn left and travel for about one-half mile. Flamig Farm is on your right on Shingle Mill Road.

PARKING: Park next to the Barn Salesroom or on the south side (barn side) of Shingle Mill. Do not park on West Mountain Road.

HISTORY: Nevin and Nord Christensen and their families are deeply concerned about the environment. Their work and lifestyles reflect this caring. The Flamig Farm salesroom, the new repair shop, and hay storage barn are all heated with solar energy and wood stoves. All vegetables are grown organically using no chemical fertilizer. Animal manure from the raising of chickens, lambs, and pigs is recycled into the gardens, as well as wood chips, leaves, and other organic materials.

Hot water for the salesroom is produced by a homemade system consisting of one solar panel and a heat exchanger on the wood stove. The brothers tend to buy used equipment and try to keep it in good repair, thereby saving many dollars as well as saving energy. There is even a team of Belgian draft horses for hayrides that may someday draw resurrected horse-drawn equipment.

SPECIAL NOTE: Be sure not to miss the deliriously delicious brownies and local cider that are on sale here! Browse about and enjoy PACE literature, fascinating books, and the Christensen's wonderful products in this homey and cozy salesroom. FUN!!!!



BUILDING J

THE CHRISTENSEN HOME (NEW!)

WEST SIMSBURY

LOCATION: 44 West Mountain Road. The driveway to the Christensen house is directly across from Shingle Mill Road and Flamig Farm.

PARKING: Park on the south side (barn side) of Shingle Mill Road. Walk down to West Mountain Road and cross it carefully! Then continue down the driveway to the house.

HISTORY: This attractive native wood home seems to spring up from the land that surrounds it. Built in 1982 primarily from trees cut on the farm, the home contains 1,920 square feet of insulated living space. There is a 240-square-foot greenhouse on the south side and a 350-square-foot porch on the northeast.

Walls are insulated with fiberglass to R-27; windows are triple-glazed casements. Basement insulation includes two inches of styrofoam on the outside walls and under the slab (R-10). At present, the ceiling has nine inches of fiberglass (R-27). There are plans to add nine more inches to bring it to R-54.

Domestic hot water is heated by a three-panel solar system using ethylene glycol and a heat exchange tank. Hot water is thermosiphoned into the tank whenever the wood cook stove is used. Electricity provides backup hot water.

Three cords of wood helped to keep the house quite warm last winter. There is no "conventional" backup heat source.

Future plans include finishing the greenhouse, which will then provide heat to the living space via a convection loop set up by opening a sliding glass door downstairs and a wall vent upstairs. More insulating, weather-stripping, caulking, and interior trim will help to complete the house so that two cords of wood will be sufficient.

Builder: Chris Eldridge, Harmony Builders, West Simsbury

"WE SHALL REQUIRE A SUBSTANTIALLY NEW MANNER OF THINKING IF MANKIND IS TO SURVIVE."

Albert Einstein

. . . . . .

P.A.C.E. is a state-wide organization whose members are working toward greater public support of energy conservation and energy alternatives which use benign technologies. Members are gravely concerned about the dangers of nuclear energy and its connection with nuclear weapons.

If you are interested in P.A.C.E. or in forming your own local chapter, please write to:

P.A.C.E., Inc.
101 Lawton Road
Canton, CT 06019

(693-4377)

Individual Membership (Includes Free House Tour Ticket)	$ 10.00
Family Membership (Includes Two Free House Tour Tickets)	15.00
Supporting Membership	25.00
Business Patron	50.00
Life Patron	100.00

All memberships and donations are tax-deductible.

. . . . . .

If your house, apartment or business uses alternate energy and you are interested in having it on one of our house tours, please call P.A.C.E. at 693-4377.

Drawings and Map by Esther Danielson