

PATH

PARTNERSHIP FOR ADVANCING TECHNOLOGY IN HOUSING

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

Ecological Design at Barrington Hills Cooperatively Owned Manufactured Home Community

TECHNOLOGY HIGHLIGHTS:

HUD-Code Manufactured Homes

ENERGY STAR® Homes

Passive Solar Design

Renewable Energy Sources

Ecological Site Design

Community Open Spaces

“Green” Building Materials

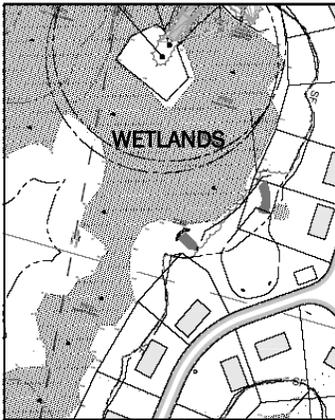
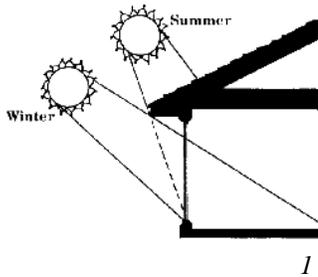
In the early 1970s, a cooperative mobile home park named Barrington Oaks was developed in Barrington, New Hampshire under a zoning variance. At that time, only half the site was developed. Unlike communities where zoning variances expire within a year or two, this housing variance has remained in force. Now the second half of the project will be developed as a leased land community of HUD-Code manufactured homes.



Southern New Hampshire is one of the 10 communities nationwide in the greatest need of affordable housing. Working with PATH and local environmental groups (including the Jordan Institute and the Society for the Preservation of New Hampshire Forests), the New Hampshire Community Loan Fund (NHCLF) is balancing high standards of environmental responsibility and construction with a very tight budget. The community of approximately 44 homes (primarily three-bedroom) and a community center will be environmentally sensitive, respecting and protecting the wetlands in the surrounding site. Houses will qualify for ENERGY STAR® Home certification.



Each house will use PATH design strategies to meet the desired energy conservation goals. While the basic budget for extra-cost PATH technologies is limited, NHCLF plans to solicit corporations, foundations, and other non-profit organizations to support specific energy-saving and green products and systems to reduce the total cost of the house for the home owner. For example, the Public Service of New Hampshire may provide a local rebate if the homes meet ENERGY STAR® criteria. Organizations statewide have expressed interest in supporting a high level of sustainability and efficiency of affordable housing. Barrington Hills will serve as a pilot project for a series of high-quality, cooperatively owned manufactured home communities planned for construction in New Hampshire.



Planned Advanced Technologies

The Barrington Hills HUD-Code homes will rely on passive design techniques to enhance energy efficiency and sustainability. For example, by carefully siting the homes to take advantage of seasonal sun changes, energy conservation and home comfort can be optimized without the need of selecting more costly advanced technologies and products.

Energy Efficiency

The demonstration house will incorporate passive solar design in its orientation and site planning to cut heat gain by orientating the house so that overhangs and landscaping provide summer shading and minimizes exposure to the west (1). This orientation facilitates future solar energy installations via orientation, roofline, and wire chases. To maximize the efficiency of the house, the design of the floor plan and window schedule is optimized for passive solar gain on the south exposure and shade on the east and west exposures. North windows for natural daylighting will cut the cooling load of the house. Solar powered lighting will be used in a percentage of the exterior yard lighting to reduce the utility installation and operating costs.

Site Design

Good site design should enhance the sense of community and preserve existing ecological features. Designers plan to create open spaces for community gardens and communal spaces while preserving natural wetland habitats on the site (2). At Barrington Hills the design intent is to create a community where it is easy to bike and walk: foot and bike paths will connect units with each other and with the neighboring community while still maintaining privacy.

The goal of site design is to reduce the overall impact of the development by minimizing impervious paved surfaces. Doing so will reduce the heat island effect and limit storm-water run-off. Where impervious surfaces are necessary, shading with deciduous trees helps control heat and adds aesthetic value. Other site design strategies include:

- Plantings selected to minimize fire danger;
- Drainage designed to maximize groundwater recharge;
- Buildings oriented for advantageous solar gain and access to daylight;
- Parking and paths planned for summer shading and winter ice melt.

Material Selection

The project team intends for Barrington Hills to be a “green,” sustainable development. PATH explored the use of certified forest products, which come from sustainably managed forests. The designers chose engineered wood products for the larger structural elements to replace large dimensional sawn lumber with smaller, fast-growth lumber. Local materials and products from local vendors will be given preference, as will durable/low maintenance materials and products with high recycled content. The use of vinyl will be avoided, along with other products that contribute to ozone depletion or contain high levels of VOCs (volatile organic compounds).

Conclusion

New Hampshire Community Loan Fund (NHCLF) intends for the Barrington Hills project to serve as a sustainable model for future NHCLF developments, and to inspire others to emulate the project. PATH involvement, providing state-of-the-art consulting, is an important factor in achieving energy efficiency and sustainable materials on a modest budget. The project presents an opportunity for PATH to make a significant contribution and to be featured as key contributors to the project’s success.

Cooperative ownership

eliminates most of the problems that go along with land-lease communities, where lessees are typically vulnerable to arbitrary practices by the owner, and where the lack of land ownership tends to inspire poor maintenance. With cooperative communities, the “tenants” are the owners, and are more likely to take pride not only in their own properties, but in those of their neighbors.