



Building the Next Generation

MARYWOOD UNIVERSITY
Jane Jacobs Collegiate Consortium
Retrofit Housing RH | 04 April 2023



GLACIER JANE

Project Summary

Glacier Jane envisions a zero-energy revitalization of Mariners' Camp at Girl Scouts' Camp Archbald, where urban activist Jane Jacobs trained her powers of observation on the riparian ecology surrounding Ely Lake. In 1938, Mariners' Camp was constructed for a teenaged troop on the north shore of a 45-acre glacial lake and boasted the first floating cabin ever built for the Girl Scouts of the USA. Today, Mariners' Camp includes three pontoon platforms, two of which have floating cabins, a separate troop house with attached latrines, a standalone outhouse, water station, platform tents, and campfire circle.



Floating on the pristine waters of Ely Lake as they slowly flow into nearby Meshoppen Creek before joining the north branch of the Susquehanna River enroute to the Chesapeake Bay, Glacier Jane will serve as a living laboratory for water research. Its gardens – planted with native species on the roofs, hanging from the railings, floating in the water, and terracing the landscape – will integrate with the dense lily pads and vegetation ringing the sunny side of the lake and with the surrounding shade of the evergreen forest to filter chronic acid rainfalls and nitrate-laden, stormwater run-off. In addition to improving the water quality of the Chesapeake Bay, Glacier Jane will also extend the Girl Scouts' focus on combining observation, self-reliance, and harmonious living with hands-on, STEM educational activities.

Project Data

- Location:** Brooklyn Township, PA, USA
- Climate Zone:** 6A
- Lot Size:** 288.5 acres (Camp Archbald); 0.36 acres (Mariners Camp)
- Bldg. Size:** 1,544 ft² (total); multi-structure
- Occupancy:** 16 (96.5 ft²/person)
- Const. Cost:** \$826/ft² (w/ reclamation)
- Energy Performance:** HERS 27 (average); HERS -30 (w/ renewables)
- Average Utility Cost:** \$0/month
- Carbon Emissions:** 0 tons CO₂e/ft²/yr

Technical Specifications

- R-values:** R-52 (wall); R-80 (floor); R-60 (roof); R-7.5 (windows w/shutters)
- HVAC system:** ERV + geo-thermal
- PV system:** 8 kW (per cabin)

Design / Industry Partners

- Girl Scouts–Heart of Pennsylvania
- Center for the Living City
- Marywood University (architecture)
- Johnson College (manufacture)
- Penn State Extension (watershed)
- Richard Pedranti Architects
- Greenman Pedersen, Inc.

Design Strategy

Our living laboratory goals are to improve **access**, **education**, and **habitat** within the aquatic and riparian ecologies of Ely Lake for two target markets – Girl Scouts, both Mariners and younger scouts, and off-season renters, many are themselves former scouts. After reclaiming all viable materials and assemblies from the existing structures, new materials and systems are consistent with the ethos of Camp Archbald – simple, rustic, grid-independent – and capable of being maintained by the Girl Scouts themselves – self-reliant, self-learning and resilient.



Project Highlights

Combining access, education, and habitat goals at Camp Archbald, Glacier Jane will carefully integrate the latest technologies without taking away from complete immersion in nature – orienting its inhabitants with a positive, thoughtful lifestyle highlighting their presence on earth.

Architecture—Glacier Jane will integrate with the camp environment – its trees, vegetation, intermittent streams, soil structures, wildlife, and rustic buildings. While reducing the overall shoreline footprint, universal access to the campsite, buildings, laboratories, and furnishings will be made possible through efficient space planning, unique, transformable insulative wall/window assemblies, and immersive living.

Engineering—In order to achieve Plius ZERO REVIVE-eligibility with carbon-neutral construction, Glacier Jane will renovate existing buildings at Mariners' Camp with the addition of ultra-efficient, enclosure layers created with reclaimed and regenerative materials, balanced HVAC (ERV), water management, and renewable energy electrical systems. Easily accessible, such technology will be discreetly tucked into laboratory cabinet walls.

Market Analysis—There are two target markets for Glacier Jane – Girl Scouts, mainly during the summer months seeking an authentic, low-tech, hands-on camp experience, and off-season renters with varying requirements for residential comforts. In addition to cookie sales, increased rental income and zero-utility costs at Mariners' Camp will further reduce managerial and camp-wide operational costs removing socio-economic barriers for all girls.

Durability and Resilience—With two cabins on water, Glacier Jane will control moisture/mold within the ultra-insulated thermal envelope and interior spaces with marine-grade materials, ventilation, and dehumidification. Grid-independence, conservative engineering, and exemplary stormwater management will overcome risks of falling trees, freezing temperatures, damaged pontoons, adverse economic events, and potential manmade disasters from regional fracking spills and natural gas pipeline leaks.

Embodied Environmental Impact—Removing one floating cabin will reduce the shadow footprint by one third allowing riparian plants to regenerate, while creating additional floating gardens to absorb nutrients and other contaminants from the water. The removed cabin will also provide materials for the other additions and renovations dramatically reducing new materials requirements for off-site, near-zero waste construction of envelope panels, window/door assemblies, and cabinetry.

Integrated Performance—Given its remoteness and regular, weather-related grid disruptions, Glacier Jane will be grid-independent by incorporating passive design principles of cross and stack ventilation and seasonal solar shading/heating, reducing energy consumption using Plius ZERO REVIVE standards including IECC 2012 enclosure, EnergyStar v3.1, DOE Zero Energy Ready Home standards, and providing adequate storage for onsite solar and wind energy.

Occupant Experience—Universally accessible, Glacier Jane will improve the health and well-being of its inhabitants by immersing in nature, opening to the sights and sounds of the lake and forest, and providing comfortable indoor and outdoor spaces for observing, exploring, storytelling, kayaking, fishing, cultivating, cooking, and cleaning camp.

Comfort and Environmental Quality—Glacier Jane will adhere to EPA's Indoor AirPlus standards for indoor air quality. Fully interactive, a touch screen panel and other indicators will alert the occupants to engage with passive, diurnal and seasonal strategies for acoustics, ventilation, and aperture insulation.

Energy Performance—Lake and forest buildings will generate and store energy independently to eliminate the need to connect overhead wires. Floating cabins will generate energy using PV panels integrated with solar heated water for maximum efficiency in the winter. Forest buildings will incorporate three vertical wind turbines and a closed loop geo-thermal exchange. Each building has with its own ERV system to provide fresh air and control humidity.