Two-story home built in Wilkinsburg, PA as part of MHI's Urban Design Project.

Two-story home built in Wilkinsburg, PA as part of MHI's Urban Design Project.
The two-story home built in Wilkinsburg became the model for the second home built in Washington. It was decided that instead of concrete slab construction (as was used in Wilkinsburg) this model would have a full walk-out basement, which would also be heated.

This single-story house was built by joining two 14' wide by 52' long units side by side on a concrete block foundation. Once the units were in place, the roof was hinged up to a 7-in-12 pitch. The bulk of the house was factory-built and erected on the lot with conventional set-up methods. Site-built construction (the front porch) adheres to DOCA standards. The two-story house was constructed in a similar way, although the stacking arrangement of the sections on this small site allowed a bit more room for maneuverability around the house.

Initial reaction from the community was less than enthusiastic. Once the house was finished and open for view, public response was far more favorable. In fact, the one-story house sold within a few days of completion.

Advance notice of 48 hours (and a permit) was required to close the street for setting the home, but was not obtained. This resulted in overtime expenses and delayed construction time. Although contingency expenses were allocated at 5% of construction costs, actual cost overrun was closer to 7.5%. On future projects, it may be advisable to provide a fairly detailed listing of the manufacturer’s responsibilities, so as to avoid any confusion as the project proceeds.

Getting everyone on the same page from the outset (either contractually or by some other means) should be given a high priority during the planning stages of future projects.

In Louisville, hard cost savings were anticipated, but not realized on the first home. The developer is confident that the four additional units planned will come in at a cost savings as compared to site-built. Three of those homes will be single story designs and a fourth will be two-story. This project required a change to the local zoning ordinance to define manufactured homes with permanent foundations, a minimum roof pitch of 4-in-12, and approved building materials as being eligible for placement in residential districts.
Housing Type
Detached single family homes on infill urban lots

Technology and Design
Manufactured components
Single- and two-story HUD-Code homes
On-site work
Perimeter foundations of crawlspaces, basements, and porches

Traditional home features
Varied window size and trim, wide corner boards, decorative porches with contextual detailing, steep roof pitches

Project Size
Wilkinsburg, PA 4 homes
Washington, D.C. 2 homes
Louisville, KY 4 homes

Zoning
Wilkinsburg, PA
Single-family home
Washington, D.C.
Single-family home, factory-built housing is not addressed in local zoning
Louisville, KY
Single-family home, with change in zoning ordinance and prescribed elements of a design palette

Inspection coordination
Louisville, KY
Foundation, side porch, electrical and plumbing inspected by the city of Louisville

Financing
All Conventional mortgages

Manufacturer
Wilkinsburg, PA
New Era Building Systems, Inc.
Washington, D.C.
Schult Homes Corporation
Louisville, KY
New Era Building Systems, Inc.

Developer
Wilkinsburg, PA
ACTION Housing, Inc.
Washington, D.C.
Marshall Heights Community Development Corporation
Louisville, KY
Neighborhood Development Corporation

Designer
Susan Maxman and Partners, Ltd., Architects
This Native American Reservation is located near
Rapid City, South Dakota. Pine Ridge Reservation's remote location and severe need for
affordable housing made manufactured homes a clear choice. Ultimately a mix of 300 new site-
built, modular, and manufactured homes is expected to be constructed. This project came
about through the Shared Visions initiative of HUD Secretary Andrew Cuomo, in close coordi-
nation with tribal leaders across the country, to develop a model for promoting home ownership
among American Indians. At the Pine Ridge Indian Reservation, the Oglala Sioux Tribe
Partnership for Housing, Inc., a non profit organi-
zation, was formed to act as the developer for
the project. As part of HUD's efforts at Pine
Ridge, a PATH (Partnership for Advancing
Technology in Housing) program demonstration
project, the houses will contain an assortment of
PATH technologies, which can be found on the
PATH website (www.pathnet.org). The plans were
developed by Archambault & Company with
assistance from Steven Winter Associates, Inc., on
the design parameters of manufactured homes.
The plans were fine tuned to work with the home
manufacturing and delivery process. The devel-
poped designs are three- and four-bedroom, two-
bath homes of approximately 1,288 square feet,
with overall dimensions of 28'x48'. The homes
were and will continue to be set on permanent
foundations of either basements or crawlspaces
and have the option of site-built decks and/or
detached garages. Initially the land for each unit
will be leased from the tribe. Two manufacturers
were selected from qualifications and proposals
submitted to the Oglala Sioux Tribe Partnership,
each meeting specification and performance cri-
teria. At HUD's Shared Vision conference on July
7, 1999 President Clinton toured one of four
manufactured homes installed at the
Reservation.
**Housing Type**
Detached single-family homes on suburban lots

**Technology and Design**

*Manufactured components*
Single-story HUD-Code homes; chassis accommodates basement stair perpendicular to long axis of home; chassis recessed to accommodate perimeter foundation; hinged roof

*On-site work*
Perimeter foundations of both crawlspaces and basements, decks and detached garages, insulated crawl spaces

*Traditional home features*
Overhangs of 12" at eaves and side walls; upgraded shingles, low-e windows; "residential" grade door casings, jambs and hardware; drywall; "residential" grade cabinets, sinks and plumbing.

**Project Size**
300 homes are proposed, the majority of which are to be manufactured.

**Zoning**
Tribal land, typical zoning issues did not apply.

**Inspection coordination**
The Oglala Sioux Tribe Partnership for Housing, Inc. coordinated with HUD on inspections.

**Housing Price**
In the range of $60,000 to $70,000 depending on features and options

**Financing**
Conventional mortgages with federal subsidies

**Manufacturer**
Champion Enterprises and Wick Building Systems

**Developer**
Oglala Sioux Tribe Partnership for Housing, Inc.

**Designers**
Archambault & Company (architect), Steven Winter Associates, Inc. (consultant)

**Manufacturers Comments**
The systemization of procedures offered by the manufactured home industry gives us the ability to serve a wider range of customers than what we as an industry realize.
A factory-built house installed in Danbury, Connecticut, is a demonstration of what the future of affordable, manufactured housing can be. Dubbed NextGen (Next Generation of Manufactured Housing) the house is a prototype model built by New Era Building Systems, Strattanville, Pennsylvania. It blends energy conserving techniques and equipment with interior space efficiency and an exterior steep-roof profile that sets it apart from traditional manufactured HUD Code housing.

The idea for a NextGen house grew out of a Steven Winter Associates, Inc. (SWA) research project, funded by HUD, that explored ways to improve energy efficiency, affordability, and the design features of manufactured housing. The research resulted in a book: The Next Generation of Manufactured Housing: Design Phase HUD, 1998 SWA, which is available from HUD USER, 800-245-2691. The owner, the Danbury Housing Authority, placed the home on a small lot in a mixed single- and multi-family Danbury neighborhood. The attractive, wooded site required tree grubbing and extensive grading before site development occurred.

The NextGen house was designed by SWA with technical assistance from the New Era engineering staff. Product donations from Stanley, Owens Corning, and GE helped reduce costs. Also helping are HUD Code specialists Fabwell, Tamarack, and LaSalle-Bristol. New Era’s president, Elliot Fabri kept profit margins low, and Danbury Housing Authority’s contribution of land helped to reduce the final cost of the home.

The 28’ x 48’ home is entered from the street-front porch. Side and rear doors provide access to more private outdoor yard areas. The plan has two bedrooms and two baths downstairs with a third bedroom and unfinished attic storage space on the second floor. The kitchen and dining room are separated from the large livingroom by an open stairway. Adding a bath and fourth bedroom on the second floor gives this house special appeal for the owner-occupant with a growing family.

NextGen is built on a poured concrete stem wall, which provides a crawl space under the insulated floor. For additional dollars, the home buyer who wants more storage space can opt for
In both cases the exterior walls bear directly on the concrete foundations, which gives them greater wind and earthquake resistance and better resistance to pest infestation. This load-bearing exterior wall feature is gaining industry popularity for its overall durability, although it does carry a cost premium.

The NextGen home is comprised of two factory-built sections joined in the field. Energy-efficient appliances, lighting, windows, and high levels of insulation contribute energy saving that earn this home the EPA/DOE Energy Star label. The washing machine, refrigerator, and dishwasher appliances carry the Energy Star label for low energy use, and the front loading washing machine uses 40% less water than top loaders.

In this house, home heating comes from heat exchanged from the hot water heater instead of a furnace. Because the entire heating system, including ducts, is contained within the heated space of the dwelling, there are no duct losses to reduce operating efficiency. (A recent study by the Alternative Energy Corporation, Air of Importance, AEC, 1998, concluded that current HUD-Code homes had duct losses that averaged 40% of total heating costs.) Air quality is regulated by a mechanical ventilation system using continuous, low-velocity fans. Residents may boost ventilation levels when needed and the system returns to programmed levels once comfort is achieved.

The 12-in-12 roof pitch permits use of the second floor attic space for bedrooms and gives the home its traditional Cape appearance. The one-and-a-half story profile distinguishes it from almost any other HUD-Code home being built today. (There are two-floor stacking models in production but they are less space- and cost-efficient than the NextGen.) Aside from the architectural character, the NextGen tilt-up Cape provides more usable space under a single roof than any comparable manufactured home.

Housing Type:
Detached single family homes

Technology and Design
Manufacturing components
One-and-a-half-story HUD-Code homes
On-site work
Perimeter foundations, stairs and landings.

Traditional home features
Conventional residential roof, siding, doors and windows, railings and landscaping.

Project size
Single-family house

Zoning:
Single-family detached

Inspection coordination
By local building code officials and project manager.

Housing price
Base price without Energy Star features: approximately $52,000 delivered.

Financing
Internally funded; would qualify for conventional market financing if private venture.

Manufacturer
New Era Building Systems, Strattanville, PA

Developer
Danbury Housing Authority, City of Danbury, CT

Designers
Steven Winter Associates, Inc.

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First Floor Plan

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Second Floor Plan

NextGen

Danbury Housing Authority