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Brave New House

By: Wendy Skinner

December 15, 2004

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Shelter meets an essential human need, and while there is a big difference between a sheet of plastic stretched between two trees and an exurban faux Victorian with three-and-a-half baths, the quality of our shelter tends to relate directly to what we can afford. Yet for many, the mention of "affordability" in housing either conjures up worrisome images of Chicago's Cabrini Green and other low points in the design of human dwelling places, or fits a model of the provision of housing as a social service.

A growing group of planners, architects and builders are developing fresh ideas for creating shelter, both new and rehabilitated, that will absorb less of our earnings and non-renewable resources. With these ideas come new adjectives - such as sustainable, inexpensive and flexible - to supplant the bias-laden "affordable."

Jason Demarest, a partner at Tallman & Demarest Architects, LLP, is among those who would like to replace the term "low-income housing" with "low-cost housing." The distinction is important because it implies broader market availability and more demographically mixed neighborhoods. People who buy low-cost housing may do so with the help of mortgage subsidies and low-interest loan programs, others by downsizing and others simply because they prefer to - but the means and reasons for choosing a low-cost home is no one's business but the buyer's.

Factors that make a home affordable include location, type of construction, size, materials and energy efficiency. Location is a significant variable. Merely living in Tompkins County comes at a premium. One way to better afford a home is to live in Cayuga, Cortland, Chemung, Seneca, Schuyler or Tioga County. According to the new Tompkins County comprehensive plan, median rents in

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READER POLL

Last Week's Question: Is Ithaca a good place for same-sex couples to raise children? Seventy-three percent of respondents answered "yes" and 27 percent answered "no"

This Week's Question: Should the City of Ithaca have more affordable housing available?

Yes

No

[view results](#)

2000 in neighboring counties ranged from \$466 to \$521 a month, compared to \$611 (\$580 excluding student rentals) a month here. Median home prices in 2003 ranged from \$75,000 to \$90,000 across the county line, compared to \$134,000 here. (The average sales price of all homes in Tompkins County in October 2004 was \$160,000, according to Ithaca College's economic indexer Elia Kacapyr.)

Recent census studies have shown that something like 13,000 people "in-commute" to Tompkins County, driving here not only from the immediately adjacent counties but from all over central New York. Census data indicates that median incomes of the commuters are only slightly lower than those of resident workers, and while no one has determined exactly why all these people choose to travel rather than move here, housing cost is high on the list of suspected reasons.

Type of construction also contributes to affordability. Pre-built, or manufactured, housing is a major low-cost option. Manufactured housing primarily refers to conventional single- or double-wide factory-built homes, complete with interior finishes, that are attached to a steel chassis and shipped to the site. About 10 percent of Tompkins County's housing stock consists of manufactured housing.

The advantages of manufactured housing include a low up-front cost due in part to lower labor costs, standardized design and volume discounts on materials, as well as good quality control because walls and other elements are built indoors. A major disadvantage is the rigidity of the design that precludes innovations that might save money and energy in other ways. The rectangular box design of manufactured homes is determined to no small degree by highway width. Because double-wides arrive in two pieces, a connecting wall down the middle is requisite.

Better Homes, Different Homes

Smaller size and less expensive materials obviously reduce the cost of a dwelling, and more attention is being paid to installing energy-efficient appliances in new homes of any type, but Demarest and his colleagues argue that it's time to rethink every aspect of an affordable house, including design, labor, energy source and orientation to the sun. The team, which includes architect Noah Demarest (Jason's brother) and technical designer Glynn Bebee, is gearing up for presentation of a prototype house -possibly suitable for the regional or national manufactured housing industry - that offers greater affordability over the long term.

Looking at the life-cycle costs of housing, which includes the monthly cost not only of a mortgage but of energy consumption and home maintenance, is crucial to acceptance of a new model of affordability. The firm is actively casting about for the solution to creating individual houses that will cost less than \$100,000 for new construction and that will have much lower operating costs than most options currently available. This "whole house" approach is being used in other communities to break clear of the high-profit contractor model, where initial costs are kept low at the sacrifice of long-term savings.

The team is experimenting with designs that incorporate the efficiencies and reduced need for materials of the geodesic dome, A-frame and other less common styles - but that look enough like the conventional idea of a house to have market acceptance. The market segment they are focusing on first is rural residents who want independence and privacy, as well as affordability of both housing and energy costs. Jason Demarest anticipates that the rural model will be adaptable to a more urban environment, especially as urban residents begin to reject non-sustainable lifestyles.

One prototype design the team is perfecting has short outside walls (knee walls) to reduce the cost of materials, combined with a tent-like roof. A dormered entryway pays homage to more typical house design. Much of the structure's strength is based on a triangle, which allows for a large interior space. Orientation to the sun and skylights provide natural heat and light to save energy costs.

Among the techniques for reducing costs is to design according to standard material sizes to eliminate the need for cutting, which leads to simplifying house design to more basic overall geometries, explains Bebee. Open floor plans save on interior wall costs. Pre-built panels or modular units that can be fitted together

on-site save overall costs.

"We're incorporating all of our experience to look for new solutions to affordability," said Bebee. "We're also embracing the fact that factory housing, modular components, larger building elements and faster processes are key." At issue, says Bebee, is whether people actually want "vinyl boxes in bland colors" or whether they are willing to consider something new.

Demarest questions a prevalent marketing mantra that assumes consumers prefer watered-down versions of more elaborate and expensive styles over alternative designs. He faults the housing industry for not being more adventuresome. "The industry does very little to explore and propose alternatives that would do a better job of informing the marketing studies," he said.

The team made a presentation of two small-area (around 1,000 square feet) floor plans to families in a focus group brought together by Better Housing of Tompkins County earlier this year. The families favored an open floor plan with few right angles over a conventional bungalow floor plan with small, square rooms. Demarest believes that this type of consumer education and visualization will help reverse industry thinking.

Demarest recognizes the challenges of revolutionizing affordable housing. He also harbors a personal conviction that drives him to seek solutions. He remembers being a kid on the school bus and seeing hordes of children pour out of what seemed impossibly small mobile homes. "The options for these families were extremely limited. I knew, even as a kid, that there had to be something better."

Whole House Approach

Many of the materials and capabilities for better inexpensive houses are already here, but according to housing researchers at the Partnership for Advancing Technology in Housing (PATH), "it can take 10 to 25 years for a new housing technology to achieve full market penetration." PATH is a small but important federal agency that works to speed up needed changes in how houses can be built.

The agency advocates for whole house design and the application of systems engineering, in which the various systems in a house - the structure, the insulation and the mechanical, electrical and plumbing systems - are designed to fit together efficiently for an overall high-performance result. An example is the relationship between the thermal envelope of a building and the size and type of heating and cooling equipment. If the shell is well-insulated and the windows are of high-quality, then the heating and cooling system can be scaled down.

The high-profit development model generally seeks savings in the structure with less concern for appropriate sizing of the mechanicals and even less for the inhabitants' long term energy use. The typical manufactured home, as well as multi-unit residential construction, ignores the known efficiencies of using sunlight. Building the structures with larger, south-facing windows to absorb heat and light in winter, and a longer roof overhang to protect those same windows in the summer allows for far less fuel use. The placement of the building on the lot to gain the most from this free solar bounty is still largely overlooked.

A Vision for Change

This idea of putting the value in a home up front in order to save money and energy resources over the life span of the building needs widespread acceptance among planners, lenders and developers. PATH researchers note that builders are resistant to change, which they often perceive as risk. Innovations will need the backing of consumers, government and the lending industry.

The increasing cost of energy may be the needed impetus for change. The Department of Housing and Urban Development is one of many sources that report heating oil prices that are projected to go up nearly 40 percent this year. The cost of propane is forecast to jump by 26 percent and natural gas by 23 percent.

The growing awareness of the need to cut fossil fuel consumption for the health and sustainability of the planet may also influence change.

Tompkins County Planning Director Edward Marx said he thinks his local planning colleagues are open to new thinking. County planners have been meeting with Cornell University planners since late summer, and Marx said

affordable housing - and not just the conventional solutions - is a main topic of discussion. Marx thinks that lenders and federal housing programs are beginning to hear the life-cycle message. "It's a pretty sound argument that people will be better able to pay their mortgage if funders help them get into housing with low energy costs," Marx said.

This new funding approach can also boost the local economy because much of the money we spend on fuel and energy leaves the state. "Every dollar not spent on heating and cooling is more likely to be spent in the community," he said.

Stacey Crawford, director of rural affordable housing provider Better Housing for Tompkins County, and Paul Mazzarella, head of Ithaca Neighborhood Housing, are both open to new possibilities. They each feel that while some of their clients may be attracted to more conventional-looking designs, new designs that save money and offer more flexible floor space could catch on.

"We need a vision," Demarest said, "to guide a new direction for design for low-cost housing." Bebee added, "There are no right or wrong answers or designs for affordable housing, only best current options." The goal now should be to put into effect those best current options.

Wendy Skinner is an environmental writer for the Ithaca Times and acting chair of Sustainable Tompkins.

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