

Is it easy to get green?

A look at access to sustainable design in Philadelphia

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What avenues are open for everyday Americans to incorporate sustainable design into their places of residence? Many studies of sustainable and green design consider well funded projects, designed by notable architects, with publicity in mind. LEED certification, in some ways, acts as a trophy piece for green projects to include in their brochures and portfolios. I am interested in the accessibility of sustainable design, particularly concerning energy. With that in mind, I have pursued several local people and projects that may hint at the possibilities and obstacles for Americans of average means to benefit from some of the claimed benefits of green building techniques.

A new home owner, Ben Harris, has recently become acutely interested in the promise of green design. Despite being well insulated, his newly renovated home has three exposed faces, opening it to the rigors of Philadelphia's long winter. His experience with his former rental conditioned him to consider his options. "I was paying over 500, 600, 800 dollars a month last winter [2004-2005] and now they are saying that the gas bill has gone up 30%. So my interest [in sustainable design] is primarily because of economics."¹

Interest in solar water heating and passive solar design led Harris to do research, but the task appeared to be daunting. The amount of available information and consultation available specifically for northeast city projects has appeared limited in Harris' early searches. Internet leads seemed to dead end before any real information and hard facts were revealed: "The US Dept of Energy is like a children's book for redesigning and green building but it doesn't give links to anyone in your area that will help you. No links to contractors, to loans, to people who will help."² Books were often decades old and appeared unnervingly simple and low budget in design. Norman Skurka's "Design for a Limited Planet," published in 1976, is one of the more promising

¹ Harris

² *ibid.*

examples of applicable information. “All it seems to take is glass and rock,” Harris mused, before explaining the contradictory advice he began to receive from contractors. The first handful of builders he spoke to all intoned that adding a greenhouse that could collect solar heat in winter would be a high end project, not feasible on an economical budget.³

Undeterred, Harris and a friend, Jeff Zamoff (who has recently bought an empty plot on which to build), began to ask their banks and mortgage counselors about construction loans. But even with well established lines of credit, they reached another impasse. There did not appear to be any loans for designs that were vastly alternative to what financial institutions were accustomed to appraising. For a home equity loan intended for his solar addition, Harris’ bank representatives wanted to know what it would be worth when it was built. But to establish this value, three comparative checks had to be run of properties within 5 miles that had sold with similar features. To protect their investment, banks specified that experienced contractors with well established portfolios and million dollar insurance policies be hired out. This led right back to the earlier problem of established contractors’ lack of experience with green design. While apparently on everyone’s minds, sustainable building techniques are still a relatively unknown quantity. Harris’ willingness to experiment was blocked by builders, lenders and the inability to find an experienced voice on the matter. In Philadelphia, in 2005, the infrastructure for residential green building has not yet been established.

Ben Harris is interested in utilizing solar water heating and sun oriented roofs and windows. Among the books he consulted, one described a slanted solar roof that continued to collect heat through a Tennessee ice storm. Meanwhile, his newly rehabilitated home had most of its southern facing windows walled up, only to be moved onto the frigid north face. A disconnection between his research and conventional building practices has led him to become frustrated at local utility companies and government services. “There’s no money in educating people on how not to use fossil fuels,” he explains. “We are being extorted by the utilities and the gas markets. All the

³ *ibid.*

public utilities have huge sums of money for alternative energy research but the results are not easily found or used.”⁴

The unease surrounding the winter of 2005 appears to be widespread. A recent City Paper ran a cover story on the approaching economic challenges of staying warm. Interestingly, the article begins by profiling a self proclaimed “energy nerd”: a man whose studies have led him to incorporate many solar oriented features. The article moves on to the impending crisis that the city faces when close to 25,000 homes will probably lack utilities during the coming season. Last year, over 340,000 Philadelphians received federal funding through the Low-income Home Energy Assistance Program (LIHEAP). In most cases, the help was a meager \$300 (Ben Harris’ 2004 request for LIHEAP aid had been rejected), hardly enough to cover one month. Additionally, lower predicted temperatures threaten to push the already inflated gas bills to a likely 50% inflation of what they were last year. (Philadelphia’s natural gas cost increase over the last 6 years is cited at an astounding 500 percent!) For the short term, energy conservation and home insulation appear to be the only hopes of keeping many households utilities from getting cut.⁵

The home heating problem is central to discussions of sustainable residential construction in the northeastern United States. In 1984, a non profit organization used HUD grants to commission the design and construction of 23 adjacent row homes on the 1500 block of Thompson Street in North Philadelphia. The architects incorporated passive solar design at no extra cost to the low-income single family units that were built. Energy efficiency, south facing windows with trombe walls, clerestory windows and limited northern exposure added up to cost saving benefits of over two thirds of comparable, non-solar designs. In the mid 1990s, the energy efficiency was still performing at the same high rates. The fact that this model was not duplicated on a wide scale is attributed to the vanishing funds available for home building in poor inner cities during the late 1980s. However, it is probable that low gas and electricity rates created no urgency for mainstream construction to push energy conservation.⁶

⁴ *ibid.*

⁵ Portnoy, p.22

⁶ www.eere.energy.gov

In the midst of this current heating crisis, Philadelphia's government has undertaken a vast revitalization campaign called the Neighborhood Transformation Initiative (NTI). Launched in 2001, NTI seeks to "revitalize neighborhoods...renew and strengthen entire communities, to ensure quality housing..."⁷ Lost in this equation has been the model of Thompson Street and the threat of utility bills to low-income residents. There are 26,000 vacant residential structures slated for demolition, with sets of a hundred-plus houses being built at a time. What point was Ben Harris missing when he lamented, "Why isn't this basic [sustainable] design being implemented with all the new houses that are being rebuilt?"⁸ Once again, the problem seems to rest with mainstream acceptance and knowledge of green design's viability as well as having the necessary infrastructure in place to design and construct green homes. One local firm has not yet been invited into NTI's plans, but appears ready to represent green design principles if given the opportunity.

Re:Vision Architects, formed in 2001, work as architects, consultants and advocates for environmentally sensitive planning and design. The firm has been involved in building nature centers, schools as well as residences that reflect light ecological footprints and try to maximize green design techniques for the benefit of children, community and environment. I sought out Scott Kelly, one of Re:Vision's partners, in order to make sense of the dilemma faced by Ben Harris and the movement for green construction. Kelly immediately explained the obvious point that 9 out of 10 architecture firms were not generally involved with residential design due to the usual budgetary constraints of builders and developers. Still, Re:Vision has had experience with residences outside of Philadelphia (Vermont, for example) with various Philadelphia residential projects currently in different phases of planning, construction and consultation.

Scott Kelly reinforced the notions that conventional construction, city government, and even the school district are not willing agents of change. Additionally, "too many of the people involved in building and planning are focused on money...not quality of life."⁹

⁷ www.phila.gov/nti

⁸ Harris

⁹ Kelly

The long term gains of energy conservation, and other major issues such as water run-off, were not able to compete with the short term appeal of standard economical design. This century's general fuel abundance led builders to not worry about sun orientation and climate suitability. Much like the botched design of Ben Harris' southern wall, "the engineer will work it out."¹⁰ Kelly down played criticisms of green features. Buffered row homes are ideally suited for front or back passive solar collection, he explained. But air infiltration and insulation remained highest on the list of energy priorities. Certain green design staples were not recommended by Kelly, such as green roofs, which were generally not suitable for wood frames. Others were touted as increasingly accepted among all architects such as sink aerators and low flush toilets. In fact, Kelly sited Philadelphia as having been selected for a U.S.Green Building Council pilot program designing LEED certification for homes.

Despite Re:Vision's impressive portfolio and willingness to work with low income populations, non profits and mission based organizations, there remains a disconnect between its work and the lack of city contracts for sustainable new housing. When I asked about Re:Vision's financial assistance and grant sources, Kelly could not discuss his firm's sources and connections for "green support." Could this be because of a limited pool of funding? While impressive, one firm does not constitute infrastructure, although a successful model seems to be in place, ready to make an impact and provide support for small projects.

With all avenues apparently blocked for the small time sustainable home designers and rehabilitators, I sought out one last site for answers. Word of mouth led me to the doorstep of West Philadelphia's "Ten Dollar House." The house was conceived in 2001. Over four years, a handful of young adults worked part time on an abandoned 3.5 story shell, creating an "off the grid" residential collective without the services of architects, grants, bank loans or large sources of income. "The Ten Dollar House" bears scrutiny for its insistence that will and collective effort can carry any project, including a sustainable home flying in the face of current obstacles against green building.

The very nature of the "Ten Dollar House" founders and residents appears to be rooted in sustainability. Prior to acquiring the home, the future owners had "squatted" in

¹⁰ Kelly

the building, which had remained abandoned and in neglect for 20 years. “Squatting” signifies the utilization of otherwise vacant property. When they approached the owner about acquiring the land, the owner saw his opportunity to rid himself of the fines and headaches that had grown around the deteriorating building. The agreed upon price was a nominal ten dollars. Much work was in store.

Four years of slow progress still find the “Ten Dollar House” far from completion. However, six people now reside within its walls, enjoying the benefits of solar heating, solar electricity, wood burning stoves, a garden composting system, egg laying hens, collective ownership and consensus decision making. Two house members run a long standing neighborhood bicycle shop and bikes seem to play heavily into the houses transportations options. West Philadelphia’s sedate traffic, compact street grid and proximity of necessary amenities create an environment extremely conducive for bike travel. Additionally, a trolley line stops right in front of the door of “Ten Dollar House,” ready to convey passengers to center city and transport connections. At a short walk is the availability of Philly Car Share.

The “Ten Dollar House” sits next to several vacant lots, a common sight in neglected neighborhoods. But past the first set of shrubs, reclaimed beds boast gardens with tomato plants, herbs and greens. Around the junky but friendly yard, obviously scavenged tables, benches and wood shape a shared space with



many inviting seats and conversation areas. The habit of scavenging extends into the house, where found objects are remodeled for utility or art. The ethos of the house is to reuse the discarded and restore function to the broken. The aesthetic of “Do It Yourself” (D.I.Y.) is the law of the land. In the backyard, a chicken coop is the daily source of eggs. On one of my visits, we took down the scaffolding that had been used to stucco the ancient, pockmarked bricks that the House had inherited. The scaffolding was borrowed from another West Philadelphia D.I.Y. builder...I caught hints of an infrastructure of mutual support and common cause, intent on moving toward green ideals and shared values.

The home itself is broken up into bedrooms, each under their varying degrees of construction and development. All other areas remain shared spaces. These are the areas that have wood stoves and are usually lit. The third floor dining room, at the summit of steps and hallways, remains the meeting place and heart of the “Ten Dollar House.” This is where consensus meetings take place to discuss needed work, house issues and future plans. Everyone contributes \$100 monthly to building costs and house costs. There are no electric bills, no gas bills and inexplicably, no water bills.

Above the kitchen/dining room is the attic that leads to the roof, the other major organ of the house. A thermo-siphoning tank rests just inside the roof door, collecting hot water from the solar water heater and patiently filtering out cold water to be heated. Future plans have a heat exchange coil wrapped around the kitchen stove for water to run through, maximizing the use of burning wood. The design is modeled after a house friend, another West Philly resident who has already experimented with the coils.

Past the water heater, four elegant solar panels point toward the south, soaking up energy. The myth of the bank breaking photovoltaic system is not valid here. Two panels were bought used, the other two were “a bargain.”¹¹ Without offering exact information, my host, Dave Onion, gives the impression that the panels cost less than a thousand dollars in total. This is the electric source of the entire house. There is no fridge and there is no drying machine. My host shrugs off the sacrifices as “not that big a deal.” “We eat things a bit more seasonally and things tend to keep longer in the winter. You realize what the necessary things are and what aren’t. You become very conscious about lights, electric heaters and toasters are a no-no.”¹² A shared computer provides solar powered internet access in the next room over from where we sit.

My question about the cost of the solar panel installation is answered when I see the battery room. Another “Do It Yourself” job. Nickel iron batteries retrieved from the telephone company’s most recent upgrade line the walls along with other used and found battery packs. Wires run everywhere: amp meter to charge controller (a regulator), from Direct Current to Alternating Current, down to the batteries. On an average sunny day, 500 watts are generated. I asked Onion if they looked into grants for more panels. “Yeah,

¹¹ Onion.

¹² Ibid.

we had the papers, but there were things that we were doing and no one really had time to follow up.”¹³ In a way, it epitomized the house: hands-on, humble, do it yourself, leery of bureaucracy, beautiful, original.

Many things promise to unfold in the near future for the “Ten Dollar House.” Dave Onion spoke briefly of considerations of putting the house under the arm of a land trust to ensure lasting integrity. However, no decisions were made and practical, consensus decisions would obviously be made when the moment arose. Scott Kelly had noted that, “the not durable is not sustainable...not beautiful, not sustainable.”¹⁴

In the face of rapid paced city development, disparate groups of people have been focusing on long term solutions rather than short term fixes. When faced with the immediacy of freezing to death, with elections always just around the corner, and with the need for money to be generated, city government and business appear locked into short term solutions. An architecture firm tries to show a new way, a forward thinking home-owner struggles to escape the status quo of the energy crisis and another group decides to take sustainability to unusual levels of sacrifice and self discipline. Whether well funded, seeking funding, or regardless of funds, all three groups seek a more mutually beneficial relationship with climate, rather than the life struggle facing those on the verge of losing their utilities.

¹³ *ibid.*

¹⁴ Kelly.

REFERENCES

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3. www.eere.energy.gov
U.S. Department of Energy: Energy Efficiency and Renewable Energy site with links to interesting case studies. Specifically:
<http://131.251.21.249/local/passive/PassiveSolarRowhouses.htm>
(Detailing the Thompson Street, Campbell-Thomas Projects in Philadelphia)
4. www.phila.gov/nti
Philadelphia Neighborhood Transformation Initiative: Housing maps and statistics and city plans for development and revitalization.
5. www.revisionarch.com
Soon to be updated homepage for Re:Vision Architects.

Interviews:

6. Ben Harris- Philadelphia homeowner investigating sustainable design options.
7. Scott Kelly- partner at Re:Vision architecture firm in Philadelphia.
8. Dave Onion- founding member of the "Ten Dollar House" in Philadelphia.