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From the Editors

Green building is a topic of growing interest for a variety of professionals from architects and builders to planners and engineers. Green building seeks to promote energy efficient, environmentally responsible, and cost-effective buildings that improve the health of their occupants through the use of innovative building materials, architecture, energy sources, and urban design. We hope this issue improves your understanding of green building within the context of urban planning.

Introducing the green building theme of this issue of CPJ is Chris Wedding, a Ph.D. candidate in Environmental Sciences and Engineering at UNC-Chapel Hill, whose article defines and evaluates green building. In particular, he discusses the Leadership in Energy and Environmental Design (LEED) certification program. Next, renowned planner Randall Arendt discusses the shortcomings of the not-so-green building practices and the regulations that govern contemporary housing subdivisions. Kelly Lowry, a recent graduate of the UNC Department of City and Regional Planning (DCRP), reviews the Cleveland Eco-Village, focusing upon green building in the context of urban infill and affordable housing. Her case study provides a good example of one city's efforts at implementing green building. Next, Isaac Savage of Home Energy Partners discusses ways to increase the perceived value of homes through high performance building practices and describes how developers and planners can facilitate green building. We also present an interview with Giles Blunden, a Carrboro architect and proponent of "co-housing" and building green. A green building feature by Holley Henderson highlights the Interface, Inc. Atlanta showroom as a LEED-CI pilot project achieving Platinum status.

We conclude this issue by honoring the winner of the DCRP 2004 Best Master's Project Award, Robynn Moraites. An excerpt from her Master's project describes how historic rehabilitation can spur economic development in North Carolina.

As ever, we invite readers to respond to our content and design. We are considering expanding or shifting to a web-based format, and we value any comments readers may have concerning this idea. Also, our readers are encouraged to submit articles for publication in future issues. Thank you for your interest and continued support.

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Department of City and Regional
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Green Building:

What Is It and Why Should Planners Care?

Christopher Wedding, LEED-Accredited Professional

Green building is on the rise and many planners are paying attention to the potential environmental, financial and economic benefits, including reduced energy and water costs, enhanced worker productivity, better health conditions, and reduced liability. This article provides an introduction to green building by defining green building and explaining the U.S. Green Building Council's LEED guidelines, addressing the specific benefits and costs of green building, discussing the various criticisms and weaknesses of LEED, and proposing how LEED and green building may be of interest to those involved in transportation planning, community development, economic development, and environmental planning.

Senior scientist for the Natural Resources Defense Council Rob Watson claims that “buildings are the worst thing that we do to the environment” (Watson 2003). The EPA reports that the construction and building industries account for 1/3 of all environmental impacts in the United States (EPA 2001). According to the U.S. Green Building Council (USGBC), buildings in the U.S. account for 65.2 percent of all electricity consumption, 30 percent of greenhouse gas emissions, 12 percent of potable water use, and 136 million tons of construction and demolition waste annually (2.8 pounds/person/day). Globally, buildings account for 40 percent of raw material use (USGBC 2004a). By combining the residential and commercial sectors and including the portion of the industry sector used to operate industrial buildings as well as the “embodied energy” of industrial buildings, Ed Mazria, architect and author of the *Passive Solar Energy Book*, calculates that buildings actually account for 48 percent of total energy use and 46 percent of total carbon dioxide production in the U.S. (Hawthorne 2003). With such dramatic environmental impacts, it seems prudent to consider build-

ing designs in a discussion of environmental planning and sustainable development.

Defining and Rating Green Buildings

Green building, a relatively new trend in the building industry, is defined in many ways: high performance building, healthy building, biomimetic building, natural building, and bioclimatic architecture. High performance building design may focus on improved worker productivity or more efficient energy and water use. Healthy building may focus on the use of products that don't release harmful compounds, such as volatile organic compounds (VOCs), into the indoor environment.

Chris Wedding is a Ph.D. candidate at UNC-Chapel Hill in the Department of Environmental Science and Engineering and the Department of City and Regional Planning. His graduate work focuses on performance metrics for urban green developments—sustainable building practices and brownfield redevelopment. With experience at the North Carolina Solar Center and the Office of Sustainability at UNC Chapel Hill, he is an accredited professional with the U.S. Green Building Council's LEED rating system.

Natural building, on the other hand, refers to designs such as straw-bale construction (see Figure 1), underground homes, or cob building.



Figure 1. Example of straw-bale construction used in the Berea College Eco-village in Berea, Kentucky.
Photo courtesy of Ann Hartell.

Environmental Building News, a leading source of information for architects and builders in this market, partially defines green buildings as those that:

- renovate old buildings;
- re-develop brownfields instead of developing new green space;
- manage storm water with detention ponds and porous pavement;
- orient the building to maximize southern exposure to utilize passive solar heating;
- cluster buildings to minimize paved areas;
- use native plantings;
- increase efficiency and insulation in order to minimize or eliminate HVAC systems;
- model the energy performance of a building to optimize HVAC systems;
- use salvaged materials;
- use solar water heating;
- install task light and day lighting;
- save water with efficient plumbing designs and fixtures;
- install Energy Star appliances; and
- integrate planning and design so that all professionals involved in the building can maximize green construction (*Environmental Building News* 2003).

The Energy Star Program, a partnership between the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy (DOE), and the U.S. Green Building Council's Leadership in Energy and Environmental Design standards (often referred to as the LEED guidelines) are two ways in which these definitions are becoming standardized. Energy Star essentially certifies buildings with superior energy performance—typically a 40 percent savings in energy compared to conventional buildings. As of January 2004, Energy Star ratings accounted for almost 1400 buildings in the U.S., totaling nearly 325 million square feet. This total includes 791 offices, 375 public schools, as well as supermarkets, hospitals, and hotels. To earn the label, buildings must achieve a score of greater than 75 out of 100 on the EPA's 100-point national energy rating scale as well as conform to industry standards including indoor air quality. Through partnerships with 8000 private and public organizations, Energy Star helps save businesses, consumers, and organizations \$8 billion in energy costs per year (EPA 2004).

The LEED guidelines are the most widely accepted definition of green buildings. LEED was developed by the USGBC, which is a consortium of 4,600 member organizations and companies with a stake in green building. These organizations include building product manufacturers, building owners and managers, insurance and financial firms, design firms, contractors, environmental groups, utilities, universities, and governments. The LEED guidelines, specifically LEED-NC (new construction), were developed for the DOE,

Energy Efficiency, and Renewable Energy's Office of Building Technology, State, and Community programs. The intent was that LEED be applied to commercial, institutional, and multi-story (greater than four stories) housing complexes to improve the environmental and economic performance of buildings using "established and/or advanced industry principles, practices, materials, and standards." LEED committees serve as the third party certifying party (USGBC 2001).

This rating system consists of a much broader scope than simply energy use and indoor air quality like Energy Star. The LEED-NC guidelines are focused on a whole-building, life-cycle perspective. These guidelines serve as an indicator system for rating how well a building creates a healthy indoor environment and reduces its impact on the environment among other benefits. LEED-NC is broken down into 6 sections, each with corresponding points. The following sections are listed in order of total points per category, i.e., the list indicates priority:

- 1) Energy and Atmosphere – 17 points,
- 2) Indoor Environmental Quality – 15 points,
- 3) Sustainable Sites – 14 points,
- 4) Materials and Resources – 13 points,
- 5) Water Efficiency – 5 points, and
- 6) Innovation and Design Process – 5 points. The maximum score is 69, and various levels of certification are possible: 26 points earns a building the status of Certified, 33 qualifies for Silver, 39 obtains Gold, and 52 or more receives Platinum certification.

For more details on the LEED point system, go to the web site: www.usgbc.org and look for the links to LEED Green Building Rating System documents.

Various Versions of LEED

In addition to LEED-NC, other versions of LEED are being developed, or have been recently completed, to include other sectors of the construction industry.

When completed and marketed, these new versions will cover a much larger percentage of the construction and building industry. These include existing buildings (LEED-EB), commercial interiors projects (LEED-CI), core and shell projects (LEED-CS), homes (LEED-H), and neighborhood development (LEED-ND). While the first of these new systems addresses primarily building methods, the latter are concerned more with site selection and the principles of New Urbanism. Currently, the USGBC, the Congress for New Urbanism, and the Natural Resources Defense Council are working to create a consensus-based rating system in consultation with professionals around the country. LEED-ND will focus on the Smart Growth Network's ten principles of Smart Growth; the guidelines will promote mixed-used developments and mixed housing types, in addition to other related foci already present in the existing LEED-NC, such as proximity to mass transit, proper site selection, and support for bicycle and carpool travel. The goals of LEED-ND include the following:

- revitalization of urban land;
- decrease in land consumption;
- decrease in vehicle-miles traveled;
- improved air quality;
- decrease in polluted stormwater run-off;
- design of communities with mixed-incomes; and
- walkable communities (USGBC 2004c).

Who's Practicing Green Building?

There is little doubt that the construction of (and renovation to create) green buildings is on the rise. From 2000 to 2004, over 168 million square feet of commercial building space has either been registered or certified with the USGBC's LEED certification program (Banham 2004). In total, LEED boasts 137 total certified projects and 1,640 total registered projects in 50 states and 13 countries for a total of nearly 200 million gross square feet. California leads the way with 260 registered projects, followed by Pennsylvania with 101, Washington with 90, Oregon with 85, and New York with 80. North

Carolina has 38 projects in the pipeline. The University of North Carolina at Chapel Hill accounts for two of those projects—the Carrington Nursing School addition, which will include a green roof, and the Botanical Garden Visitor Education Center, shown in Figure 2, which is shooting for the LEED Platinum level of certification (USGBC 2004b).



Figure 2. North Carolina Botanical Gardens Visitor Education Center, a proposed LEED-NC Platinum Building. *Image courtesy of Chris Wedding.*

There are other signs that green building is gaining momentum. While it is to be expected that progressive cities like Portland, Oregon implement green building policies, the fact that conservative departments, cities, and states are also adopting LEED guidelines shows broad-based approval for this new trend. The following is an abbreviated list of agencies, states, municipalities, and private sector businesses that are using LEED as a guide or mandate on their building projects:

- U.S. General Services Administration;
- U.S. Department of Interior;
- U.S. Environmental Protection Agency;
- U.S. State Department;
- U.S. Air Force, Army and Navy;
- the states of California, Connecticut, Maryland, Illinois, Maine, New Jersey, New York, Oregon, Pennsylvania, and Washington; and
- the cities of Los Angeles, Seattle, Portland, Atlanta, Berkeley, San Francisco, Chicago, Dallas, Arlington, and many more (Templeton 2004).

What are its Costs and Benefits?

The benefits of green building generally include the following:

- 1) reduction in negative impacts on ecosystems and natural resource bases;
- 2) reduction in operating and maintenance costs;
- 3) enhancement of building marketability;
- 4) increase in worker productivity; and
- 5) reduction in possible liability for indoor air quality problems (USGBC 2001).

William Browning, Founder of Green Development Services at the Rocky Mountain Institute, states that green building strategies can increase occupant performance by 6 percent to 16 percent (USGBC 2003). Because office workers' salaries are by far the largest business expenditure (compared with rent, utilities, repair, etc.), improvements in this domain have far-reaching impacts on profits (Hawken, Lovins, and Lovins 1998). Portions of the *Sustainable Building Technical Manual* illustrate this relationship well (see Figure 3). A study by the California Energy Commission confirmed these benefits. Call-center workers located in rooms with views to the outside and daylight processed calls 6 percent to 12 percent faster and performed 10 percent to 25 percent better on tests of mental function and memory compared to their secluded counterparts. In addition to worker productivity, daylighting has been shown to in-

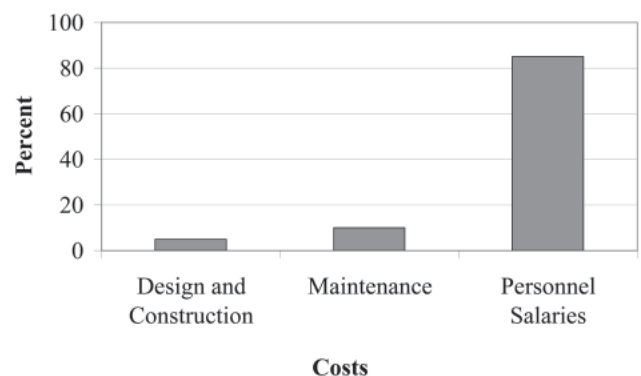


Figure 3. Thirty-year cost of a building. *Image courtesy of Chris Wedding.*

crease sales by up to 40 percent compared to traditionally lit retail locations (Heschong Mahone Group, Inc 2004).

Water efficiency is another benefit of green building methods. Conservation measures can easily reduce water usage by 30 percent compared to the standards set by the 1992 U.S. Energy Policy Act; even greater savings can be achieved when compared to buildings that pre-date this act. According to the USGBC, for a 100,000 square foot office building, low-flow fixtures with automatic controls could save 1,000,000 gallons of water per year, assuming 650 occupants using an average of 20 gallons per day (USGBC 2001).

Additionally, some architects have suggested that a synergy exists between green building and historic preservation. That is, both are concerned with conservation (Solomon 2003). One example includes the reuse of the shell and structure of a building, which reduces construction and demolition waste while preventing the extraction, processing, and transportation of new building materials. However, contention exists in certain areas; for example, the use of historical decorative versus energy efficient options. These issues are often relevant to abandoned, contaminated properties with standing buildings, as is often the case with brownfield properties.

Overall, green buildings are financially attractive. Table 1 shows the total financial benefits (per square foot) less the initial premium over a 20-year period. An up-front investment for green techniques of 2 percent of construction costs can generate benefits in energy, operation and maintenance, and water savings, as well as gains in productivity, equal to a total ten times the initial investment over a 20-year period. This is a conservative estimate because most buildings last much longer than 20 years, although some components, such as mechanical systems, may need upgrading or replacement (Kats 2003).

Table 1. Total financial benefits of green building.

Costs and Benefits of Green Building 20-Year Net Present Value (NPV) (Per Square Foot)	
Energy Value	\$5.79
Emissions Value	\$1.18
Water Value	\$0.51
Commissioning Value	\$8.47
Operations and Maintenance	
Productivity and Health Value	\$36.89
Certified and Silver	
Productivity and Health Value	\$55.33
Gold and Platinum	
Minus Green Cost Premium	\$(4)
Total 20-year NPV	
Certified and Silver	\$48.47
Gold and Platinum	\$67.31

Source: Kats, G. 2003. *The Costs and Benefits of Green Building*.

The most recent study on the costs of green building indicates that green buildings don't have to cost more than conventional structures. A study conducted by the Davis Langdon Adamson cost consulting company shows that based on initial budget estimates and final construction costs, the majority of the 61 buildings studied achieved LEED certification without any additional funding. Those that did require additional funds for more expensive items like photovoltaic panels typically only need up to 3 percent of the initial budget. The analysis also indicated that costs per square foot for LEED buildings fell into the existing range of costs for buildings of similar program type (Davis Langdon 2004). A study by the Brendle Group concluded that the premium for LEED-certified buildings was less than 1 percent, for Silver and Gold certification less than 2.1 percent, and for Platinum the premium approached 6.5 percent (The Brendle Group 2004).

This small premium for a green building is not necessarily universal. The Chicago Center for Green Technology, for example, which is more of a demonstration project, exceeded costs for a comparable building by 30 to 40 percent (Trumbull 2004).

The Davis Langdon Adamson study also discusses some of the factors that add to the extra potential costs for a green building. These include:

- 1) the demographic location—rural versus urban;
- 2) the bidding climate and culture;
- 3) the local and regional design standards, codes, and initiatives;
- 4) the intent and values of the project—the owner’s dedication from the beginning;
- 5) the climate—heat and humidity, for example, limit passive cooling potentials;
- 6) the timing of implementation—integrating systems early in programming is cheaper than adding on later;
- 7) the size of building; and
- 8) the point of synergies (i.e., can more than one green building goal be achieved with the same building material or method?).

The authors state that the most significant variable is the bidding climate and culture. The bidding pool of knowledgeable contractors may be small and, therefore, limit competition and drive up prices. Additional costs may result from the documentation of steps taken to achieve LEED requirements, the application of indoor air quality construction protocols, scheduling delays to implement post-construction building flush-outs, the risk and learning curve of unfamiliar green practices, and responsibility of ensuring that a project earns LEED certification (Davis Langdon 2004).

A final benefit derives from public image. According to Nigel Howard, USGBC’s vice president and head of the LEED program, companies building green can distinguish themselves as ethical organizations. With so much scrutiny over a company’s environmental activities, this association may increase the demand for a firm’s products or services. Thomas Leppert, chairman and chief executive officer of The Turner Corporation, a national general builder that in 2003 completed more than \$6 billion worth of construction, claims that “green

is the new corporate color” (Banham 2004). With the rising popularity of green building, many are realizing that the real question is not “What does it cost to build green?” but rather “What does it cost to not build green?”

Criticisms of LEED

The LEED rating system still faces several challenges. Some of the common criticisms are highlighted below:

- All credits essentially receive the same weighting. That is, a building project can earn a point towards certification by redeveloping on a former brownfield or by using only low-VOC paint throughout the interior of the building. The reader will quickly understand that these two credits require vastly different amounts of time, planning, and money to obtain.
- Earning a credit does not always transfer into direct benefits to or reduced impact on the environment. For example, a building may achieve Sustainable Site credit 4.3 by installing special refueling stations for alternative fuel vehicles to meet 3 percent of the total parking capacity at a site. This does not necessarily mean that users of that building will own or use alternative fuel vehicles, and, therefore, achieving this credit does not translate into real reductions in air pollution related to the use of gasoline-powered vehicles.
- LEED is not the end all in defining green buildings. At the 2004 Annual USGBC conference in Portland, Oregon, some speakers presented a slogan that made others a bit uncomfortable: “If it’s not LEED, it’s not green.” Clearly the argument here is that while LEED has done an excellent job of defining green building and increasing its share in the market, there have been and will be buildings that meet many of the goals of green building without receiving actual certification.

- LEED does not give enough attention to the context of a building. Sustainable Sites credit 2 may be a case in point. The goal of this credit is to reward projects that encourage bicycle commuting. However, if a site is located on a highway or bypass where bicycles are not allowed by law, achieving this point has nothing to do with the owner or designer, but perhaps with the state department of transportation.
- LEED is full of trade-offs which can counteract the efforts and goals of a variety of credits. Two examples illustrate this effect. First, a project may aim for incorporating rapidly renewable materials into the design and specify bamboo flooring with enthusiasm. However, doing so contradicts the credit for locally produced materials—since bamboo is produced in China—and adds to negative transportation-related externalities. Another example deals with the credit for giving occupants control over their thermal environment. While this may make them more comfortable and enhance their productivity, certain users will surely use excessive heating or cooling and accordingly negate attempts to achieve the credit for energy efficiency.
- LEED documentation adds another level of paperwork and bureaucracy to the already complex process of developing a site and building a new structure. The time, and, therefore, the money spent on documenting that proper actions were taken to achieve the said credits are unappealing to owners and developers.
- LEED offers no credit based on the relative size of a building. While the decision for how much space a building program requires is totally in the hands of the owner/developer, it can be argued that unnecessarily large buildings (i.e., relative to actual need) consume a great deal more resources in both materials and energy. Consequently, these projects should somehow be characterized as more wasteful and environmentally unfriendly.

Why Should Planners Care About Green Building?

While the upcoming LEED-ND will address a multitude of planning goals, the version of LEED most used today (LEED-NC) addresses many objectives often discussed in the planning community. Table 2 on the following page illustrates a variety of credits relevant to four subsections of city and regional planning: 1) transportation planning, 2) community development, 3) economic development, and 4) environmental planning. The lists are by no means comprehensive and the ability of each credit to reach the goals of each of these subsections listed above is subject to interpretation for each site.

As the table indicates, there are many reasons why planners should be aware of and in support of green building efforts in their communities. Reaching for LEED certification has its limitations, but it serves as one way to create public and market awareness for the environmental, financial, and social benefits inherent in many green building methodologies. As the USGBC's motto goes: "Build green. Everybody profits." Green building may only account for 5 percent of the building market now, but LEED has only been around since 2000. Most agree that not only is it here to stay, but one day, we won't need LEED—green building will be the norm. Then we'll be shooting for some higher standard—buildings that are net exporters of energy, buildings that change color with the seasons to gain or shed heat, building sites with greater biodiversity than their natural surroundings. LEED is a useful guide, but it's only a stepping stone.

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Table 2. LEED credits and their relationship to various planning interests.

Potentially Relevant LEED Points	Discussion of Relevance
Transportation Planning Focus	
SS Credit 4.1: Public Transportation Access	Promotes mass transit.
SS Credit 4.2: Bicycle Storage and Changing Rooms	Supports healthy, non-polluting modes of transport.
SS Credit 4.3: Alternative Fuel Vehicles	Encourages transportation options with reduced health impacts.
SS Credit 4.4: Parking Capacity	Promotes carpooling, vanpooling, and reduced parking capacity.
MR Credit 5.1: Locally Manufactured Materials	Serves to reduce transportation-related negative externalities.
MR Credit 5.2: Locally Harvested Materials	Serves to reduce transportation-related negative externalities.
Community Development Focus	
SS Credit 2: Urban Redevelopment	Rewards infill development.
SS Credit 3: Brownfield Redevelopment	Encourages environmental remediation, removes of urban blight, provides jobs, and reduces health risks.
EA Credits 1, 2, 3: Optimize Energy Performance, Renewable Energy, Additional Commissioning	Facilitates economic efficiency with smaller percentage of monthly expenses going towards utility bills. Promotes energy independence. This leaves more funds available to support other municipal programs.
EA Prerequisite 1: Fundamental Building Systems Commissioning	Facilitates economic efficiency with smaller percentage of monthly expenses going towards utility bills. This leaves more funds available to support other municipal programs.
MR Credit 1: Building Reuse	Supports the preservation of cultural and historical heritage.
MR Credit 3: Resource Reuse	Supports the preservation of cultural and historical heritage.
MR Credit 5: Locally Harvested and Manufactured Materials	Sustains the local economy.
Economic Development Focus	
SS Credit 2: Urban Redevelopment	Rewards downtown redevelopment. Discourages inefficient greenfield development. Spurs ancillary development.
SS Credit 3: Brownfield Redevelopment	Replenishes tax base (e.g., property, sales, income). Creates jobs. Spurs ancillary development.
SS Credit 4: Alternative Transportation	Reduces need for street/road expansion and maintenance. Ultimately frees up funds for other municipal projects.
EA Credits 1, 2, 3 and Prerequisites 1: Optimize Energy Performance, Renewable Energy, Additional Commissioning, Fundamental Building Systems Commissioning	Reduces operating expenses and frees up money for other investments.
MR Credit 5: Locally Harvested and Manufactured Materials	Promotes jobs and businesses in local area.
IEQ Credits 1-7: Carbon Dioxide Monitoring, Ventilation Effectiveness, Construction IAQ Plan, Low-Emitting Materials, Indoor Chemical and Pollutant Source Control, Controllability of Systems, Thermal Comfort	Attracts high-level tenants and building owners who value optimal spaces for workforce. Reduces social health costs through building-related illness and lost productivity through morbidity.
IEQ Credit 8: Daylight and Views	Attracts high-level tenants and building owners who value optimal spaces for workforce.
Environmental Planning Focus	
SS Credit 5: Reduced Site Disturbance	Rewards developments with minimal impact on the area surrounding the building footprint.
SS Credit 6: Stormwater Management	Encourages stormwater retention and on-site treatment.
WE Credits 1, 2, and 3: Water Efficient Landscaping, Innovative Wastewater Technologies, Water Use Reduction	Promotes reduction in water demand and decrease in waste water generation. Lessens load on water infrastructure.
MR Credit 1, 2: Building Reuse, Construction and Demolition Waste	Reduces waste going to landfill, thereby extending its useful life.
MR Credit 3, 4: Resource Reuse, Recycled Content	Leads to reduced consumption of natural resources and decrease in pressure on landfills.
MR Credit 6: Rapidly Renewable Materials	Facilitates the preservation of non-renewable materials as well as those that require greater time to harvest.
MR Credit 7: Certified Wood	Supports sustainable forest practices, i.e., only those certified by the Forest Stewardship Council (FSC). Contributes to more protected water supplies.
Notes: SS = Sustainable Sites; EA = Energy and Atmosphere; MR = Materials and Resources; IEQ = Indoor Environmental Quality; WE = Water Efficiency	

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Flawed Process, Flawed Results, and a Potential Solution

Randall Arendt, FRTPI

This piece is an adaptation of a speech given by Randall Arendt, FRTPI, on April 21, 2005, at the Conservation Based Development Conference in Asheville, North Carolina. The conference was sponsored by the Forestry and Environmental Outreach Program of NC State University.

Ever wonder why the vast majority of subdivisions look so much alike, despite the fact that they are built in such varied landscapes (forest, meadow, field) and on different terrain (flat, rolling, steep)?

The simple answer is that most of them are designed generically, in “cookie-cutter” style, with very little regard to the special natural or cultural features that give many properties their distinctive character.

In most towns, subdivision design regulations have never evolved beyond the basic stage where code requirements focus on a few mundane but important points (soil suitability, wetlands, floodplains, street paving, stormwater management) and a few mundane but rather unimportant points (street frontage, lotline setbacks, lot area).

The sad reality is that most townships do not require subdivisions to consist of anything more than houselots, streets, and drains. And that approvals are forthcoming more or less automatically as long as applicants bring

in plans showing houselots with the minimum required size and frontage, and avoid areas that are inherently unfit for building (wetlands, floodplains, etc.). When community standards are set so very low, developers typically respond with the least imaginative designs, for nothing more is asked of them.

Even in towns which understand that lot size and density are best treated as completely independent variables (controlling density directly so that lot sizes may be trimmed to produce quality open space), subdivision regulations typically suffer from four fundamental flaws, which are reflected in flawed designs.

The first flaw is that most local ordinances fail to require

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that applicants submit detailed surveys or inventories of their site features, beyond those few which would render property unbuildable (wetlands, floodplains, steep slopes), and ditto for maps depicting the subject parcel's surrounding context.

Second, most municipalities do not require Planning Board members to walk the land at any time during the process, essential to understanding any property, and fail to involve abutters in the process until 95 percent of the work has been completed, which is both insulting and counter-productive.

Third, many codes typically require highly detailed design drawings at the so-called Preliminary Plan stage, involving tens of thousands of dollars expenditure by developers, as the very first submission. Understandably, developers are not inclined to discard such plans, even when better ways to design the development are pointed out to them.

Fourth, layouts are typically prepared by people trained in recording site data, street, and drainage issues (surveyors and engineers), but who have little or no expertise in the field of landscape architecture or neighborhood design.

The solutions are four-fold: (1) require a detailed Existing Resources and Site Analysis Map of the property and a Context Map of the immediate area, (2) conduct a Site Walk with all officials, staff, and abutters from the outset, (3) require an inexpensive conceptual Sketch Plan (or Master Plan) as the first layout document, and (4) require that these Sketch (or Master) Plans be prepared by a landscape architect or physical planner. Following this procedure allows all parties to understand what is important about the property, and to begin a process that is collaborative and consensual, instead of adversarial and combative.

Based on the work I have done at the Natural Lands Trust over the last fourteen years in the state-wide Growing

Greener: Conservation by Design program (supported primarily by the Pennsylvania Department of Conservation and Natural Resources and Department of Community and Economic Development and the William Penn Foundation), and in Rhode Island over the last five years (supported by the RI Department of Environmental Management), the reforms which I recommend often begin with updating local subdivision regulations to include the above-mentioned items, which are described below in greater detail.

A. Context Maps

The Location Map required in most ordinances should be expanded in scope and content so that staff and Planning Board members may acquaint themselves with the resources and development patterns near the development site at an early stage of the process. This kind of understanding is critical to planning for improved buffers and open space connections, and minimizing developmental impacts in the neighborhood. To minimize the cost involved, this expanded item (re-named as a Context Map), would show only data that can easily be reproduced from published sources such as aerial photographs, USGS topography sheets, FEMA floodplain maps, tax maps, and USFWS wetlands maps. These maps and photos should then be reproduced by the applicant's engineer to the same scale (1 inch = 400 feet), showing reviewing officials the location of natural features and development patterns on properties within one-half mile of the development site (just five inches on the map).

B. Existing Resources/Site Analysis Plan

The Existing Resources/Site Analysis (ER/SA) Plan provides a greater amount of essential information than is typically required in most regulations, thoroughly documenting the location of a large variety of site features. It is typically prepared by a landscape architect for the developer, and is sometimes based on recommendations from historic preservation specialists and/or

conservation biologists. Such information enables the site designer, the developer, and municipal officials to make much better-informed decisions.

The ER/SA Plan, which should be required from the outset, tells reviewers virtually everything they need to know about the property in terms of its noteworthy natural and cultural features. Drawn to a scale of one inch equals 100 or 200 feet, it reflects a deep understanding of the site so that even the location of noteworthy trees or tree groups, laurel or rhododendron stands, unusual geological formations, vernal pools, or the depth of the public viewshed can be identified.

Regarding locations of specific features (including trees), the use of Global Positioning Systems (GPS) technology makes their documentation relatively easy and inexpensive. A growing number of communities routinely require that plans show the location of every tree greater than a given diameter, and that these trees be identified by species on the drawing. With respect to the diameter at which a tree becomes noteworthy, I recommend girths related to specific species, such as 4 inches for Eastern redbud or flowering dogwood; 6 inches for a holly, sassafras, or water beech; 10 inches for a wild cherry; 12 inches for a red or white oak; 14 inches for a tulip poplar; and 16 inches for a sycamore.

In this way, reviewers can identify those parts of woods that are more worthy of conservation and “designing around” (which trees to hug and which to let go). However, I would not require this information for trees growing in areas that would not be disturbed because of their location within proposed conservation areas.

In addition, I recommend identifying farmland soils by productivity class, locating vernal pools and their associated upland habitat areas (essential in the life-cycle of salamanders and other woodland amphibians), plus views into the property from public roads or highways, to enable those important considerations to be properly evaluated.

In the absence of sewers, another key factor is data on soil suitability for septic sewage disposal, to locate the very best soil available on the entire property. Septic systems need the deepest, best-drained soil that can be provided, and those areas must be “designed around” just as carefully—and from the very beginning—as any of the “Primary Conservation Areas,” so they may be reserved for sewage treatment and effluent disposal and not be carelessly covered by foundations, driveways, or streets. To maximize the amount of open space, I typically locate septic drainfields (either shared or individual ones) off-lot, in easements under conservation meadows, neighborhood greens, and ball fields.

If officials agree that these items are necessary and should be submitted at some point during the subdivision application process anyway, it doesn’t increase the applicant’s costs for them to be required up front where the important information they provide can be of the greatest use (helping to avoid wasting money on plans that do not take these features fully into account). I feel that this is the most important document in the subdivision design process, as it provides the factual foundation upon which all design decisions are based.

C. Site Walk

Because it is impossible to completely understand a site only by examining a two-dimensional paper document inside a meeting room, it is essential that most Planning Board members, Conservation Commission members, and staff walk the property with the ER/SA Plan, to take the full measure of the proposed development site, and to help them determine which site features are most worthy of “designing around.” I also encourage officials to invite abutters to this advertised site meeting, where information will be collected and input solicited, but where no decisions will be made. I have found that abutters greatly appreciate being included from the outset, and that they are usually much less inclined to fight a process which includes them from the very beginning.

Without the benefit of experiencing the property in a three-dimensional manner at a very early stage in the process, it is extremely difficult for staff and officials to offer informed suggestions as to the preferred locations of conservation areas and development areas, and to evaluate the proposed layouts. In my view, such site walks should definitely become a standard operating procedure, and part of the job description for all Planning Board members (except those with physical disabilities). Officials who choose not to attend Site Walks, and who do not have good reasons to miss them, should be offered other ways in which they might serve the community—because (in my judgment) they cannot serve it well without walking potential development sites. In many towns this is a new concept, and it is often a “hard sell” among local officials who are already very busy with many other matters. However, I maintain, it is simply not possible to make an informed decision without experiencing the site in question. Local officials who take their first site walk with a detailed site analysis map in hand, meeting the applicant, his or her site designer, and abutters in a casual and informal way, tell me they wouldn’t think of missing this critical part of the process ever again.

Regarding timing, I suggest walking the site with the applicant even before the Sketch Plan is prepared, if possible, so that the applicant may receive critical input before he/she prepares that conceptual layout.

I usually end the site walk with an informal design session, where the significant natural and cultural features (from the ER/SA Plan) are identified and “designed around,” with house sites being positioned in proximity to these special features to add value to all homes.

D. Sketch (Master) Plan Overlay Sheet

Apart from the Existing Resources/Site Analysis Plan, the Sketch Plan is perhaps the second most important document in the entire subdivision process. This is the step where the overall concept is outlined, showing

areas of proposed development and areas of proposed conservation. I recommend that the Sketch (Master) Plan be required to be prepared by a landscape architect or physical planner working with a civil engineer. Under this approach, surveyors and engineers would continue to perform all of the usual surveying and engineering tasks—and could end up working even more hours (such as in locating significant trees and rock formations). However, the conceptual design and layout should definitely be handled by the landscape architect or physical planner as a supplemental team member called in for this special service.

The Sketch (Master) Plan should be drawn to scale on white tracing paper or on a clear overlay sheet to be lain on top of the ER/SA Plan so that everyone can clearly see how well (or how poorly) the proposed layout avoids conservation lands with resources that have been ranked highly on the priority list contained in the subdivision regulations. Ideally, the proposed development “footprint” on the Sketch (Master) Plan should dovetail and not intrude upon with the resources documented on the ER/SA Plan. This section of the code should also provide more criteria for staff or Board members to follow, so that everyone knows the parameters for evaluating the Sketch (Master) Plan. The review process for Sketch (Master) Plans should identify and document their shortcomings, which should then be communicated to the applicant, so that these deficiencies can be corrected prior to submitting the detailed, expensive Preliminary Plan.

Under most state planning enabling acts, municipalities can pass along to the applicant the reasonable review costs of consultants including the physical planner or landscape architect to walk the site, conduct the site analysis, and review the site plan, thereby launching the developer in the right direction. Developers with whom I have worked are often skeptical of the value of this approach until they try it once.

It is essential that a conceptual step such as this occur before the applicant spends large sums on preparing the substantially-engineered drawing that typically constitutes the Preliminary Plan. After agreement is reached at this stage, the applicant moves to the Preliminary Plan, with the full benefit of the site analysis, site visit, and concept review to prepare him for the next stage where serious engineering money is spent.

E. Four-Step Design Approach

I believe that the most effective methodology for producing conservation subdivision layouts that are responsive to the site and which preserve value-adding features, begins by determining the open space as the first step. If this is done, and if the regulations also require that a significant proportion of the unconstrained land be designated as open space, it is nearly impossible to produce a truly inferior or simply conventional plan, particularly if that open space is closely related to a Town-wide Map of Potential Conservation Lands in the Comprehensive Plan. The logical second step, after locating the preservation areas, is to select house locations, with homes positioned to take maximum advantage of that protected land in neighborhood squares, commons, greens, playing fields, greenways, farmland, or forest preserves.

The third step involves “connecting the dots” by aligning the streets and trails to serve the new homes. Drawing in the lot lines, Step Four, is the least significant part of the process.

One of the greatest weaknesses of most current “cluster” regulations is that the open space is not defined in this manner, and therefore tends to become a collection of whatever bits of land that have proven difficult to develop. The other common failing of such provisions is that they often require deep perimeter buffers around the proposed development (as if it were a gravel pit, junkyard, or leper colony), a practice that inadvertently leads to very poor layouts in which a substantial

percentage of the total open space is consumed by this excessive separation (particularly needless when new single-family homes are being “buffered” from existing single-family homes).

The combined influence of the expanded Context Map, the Existing Resources/Site Analysis Plan, the Site Walk, the Sketch (Master) Plan overlay sheet, and the four-step design approach makes a significant difference in the way that sites are approached by developers, their engineers, and local officials, and in the quality of the resulting layout of conservation areas, houselots, and streets.

Readers interested in learning more about this approach are referred to *Conservation Design for Subdivisions: A Practical Guide to Creating Open Space Networks* (Island Press, 1996) and its sequel *Growing Greener: Putting Conservation into Local Plans and Ordinances* (Island Press, 1999). They may also download an 18-page booklet describing this process, from the internet, at www.natlands.org (see the “Resources” listing at the end of this article for details).

Resources

1. Scott Millar, Administrator
RIDEM Sustainable Watersheds Office
401-222-3434
Web site with several excellent downloadable publications: www.state.ri.us/dem/programs/bpoladm/suswshed/Pubs.htm
2. Randall Arendt, FRTPI, Conservation Planner
Ordinance Assessments, Conceptual Site Designs
E-mail: rgarendt@cox.net
Website: www.greenerprospects.com (for bio, publications info, etc.)

3. Tony Lachowicz, AICP, Ordinance Consultant

Ordinance Revisions

E-mail: tonylz@cox.net

4. Growing Greener Program Summary booklet

Downloadable at www.natlands.org/categories/article.asp?fldArticleId=65

The Cleveland Eco-Village Case Study:

Connecting Green Affordable Housing and City Planning

Kelly A. Lowry, M.R.P.

Combining renovation with innovation, the Cleveland Eco-Village has dealt with the two distinct needs of an urban community: affordable housing and sustainable development. Green building emerged as their nexus: as a way to provide mass amounts of urban housing in a sustainable, inexpensive, and eco-friendly manner.

In Cleveland, Ohio during the mid 1990s, a group of inspired individuals began laying the groundwork for an inner-city infill and redevelopment project which would follow the principles of green building. The project, known as the Cleveland Eco-Village, was located in West Cleveland's Detroit Shoreway neighborhood and was initiated by a partnership between EcoCity Cleveland, a non-profit think-tank, and Detroit Shoreway, a community development corporation.

The effort to build the Cleveland Eco-Village occurred concurrently with a large-scale effort to redevelop many of Cleveland's poorest neighborhoods. The Cleveland-area environmental and citizen groups, which were under tremendous pressure to produce as many housing units as possible, began to question the sustainability of conventional-style development. In particular, they realized the need to provide for energy-efficient housing that would allow residents to save on utility bills. Additionally, the Regional Environmental Priorities Project (REPP), an initiative of the Case Western Reserve University, had ranked suburban sprawl and out-migration from the urban core as the most serious environmental

problem facing Northeast Ohio. This issue placed the Detroit Shoreway neighborhood in prime candidacy for a neighborhood revitalization effort that could both save the neighborhood and address the greater regional issues outlined by REPP (Gillespie 2003).

EcoCity Cleveland began researching the feasibility of an Eco-Village in Cleveland as a tool to reduce sprawl and attract people back into the city by creating a healthy, attractive, urban neighborhood. Dr. Wendy Kellogg, an associate professor at Cleveland State University, was hired to conduct the study (Gillespie 2003).

To determine the best site for the Eco-Village, EcoCity Cleveland, along with Wendy Kellogg, met with a variety of stakeholders including: staff of non-profit

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housing organizations, staff of the city's departments of Planning and Community Development, neighborhood development funding organizations, architects, and transit specialists. The group sought to determine which Cleveland neighborhood would be the best location for the development. Kellogg developed a survey that was sent out to all of the neighborhood-based development groups in the city, inviting groups to nominate sites for the Eco-Village. With a long list of possible sites and neighborhood partners, EcoCity Cleveland used the following criteria to narrow down the choices:

- proximity to transit (presence of Regional Transit Authority Rapid station or bus lines or potential for bike/pedestrian facilities);
- presence of vacant land for development;
- diversity of population (percent minority, income levels, education levels);
- neighborhood economic status (moderate income, need for employment, small business/commercial areas);
- existing community resources (presence of active organizations and churches, health services, recreational programs, funding for programs like the Federal Empowerment Zone);
- physical characteristics (condition of housing stock, affordability of housing, presence of brownfields needing environmental remediation);
- environmental activities (for example, participation in lead-abatement programs, urban gardening, green space planning);
- community development organization (technical capacity, including quality of past projects and the ability to be a partner in an Eco-Village project); and
- interest in an Eco-Village among the community development organization, other neighborhood institutions, and residents.

EcoCity Cleveland selected the area of the Detroit Shoreway neighborhood near W. 65th and Lorain Avenue because of its “potential for transit-oriented development, a vibrant mix of residential and commercial

uses, and a combination of new development and rehab of existing buildings” (Gillespie 2003). Furthermore, Detroit Shoreway Community Development Organization had a reputation for being one of the most capable non-profit groups in the city. However, before any steps could be taken, EcoCity Cleveland sought to gain broad-based acceptance throughout the community for the Eco-Village.

The first few months of the project planning process were spent with staff of Detroit Shoreway. The organization's staff was already very familiar with its focus neighborhood, as they had been working to introduce the project to block clubs, Ward 17 Councilman Timothy Melena, local church leaders, and other neighborhood organizations. EcoCity Cleveland and Detroit Shoreway received a positive response from the public, so they decided to sign a formal partnership agreement and begin looking for funding. EcoCity Cleveland obtained a grant from the Katherine and Lee Chilcote Foundation for development of an Eco-Village plan, and Detroit Shoreway received a grant from the city's Cityworks program. The partners hired City Architecture—a local planning and architecture firm specializing in environmentally-sensitive design—to create the development design. Throughout the development of the Eco-Village, the community held various meetings that helped the project to achieve positive and inclusive change.

The one major obstacle was that the Eco-Village was planned to span within a quarter mile radius of a Rapid Transit stop in the neighborhood. The transit stop, at the time of the planning process for the Eco-Village, was deteriorating and widely known as a dangerous area within the neighborhood. Early in the development of the Eco-Village, the city announced the imminent closing of the neighborhood's transit stop. The announcement to close the station resulted in a strong outcry by residents and neighborhood organizations. Officials responded by keeping the station open.



Figure 1. Cleveland Eco-Village Rapid Transit Station. *Photo courtesy of Kelly Lowry.*

Today, the Eco-Village features twenty of Cleveland's first green townhomes, a four million dollar rapid transit station with green features (see Figure 1), a straw bale garden shed on the community garden site, two independently-built green homes, a designated footpath that weaves throughout, Cleveland's first school to incorporate solar panels, and large scale green space improvements (see Figure 2). The project has attracted assistance from the local U.S. Green Building Council (USGBC) affiliate, the Cleveland GBC, and the U.S. EPA. Construction has been supported by the City of Cleveland and other sources.

Green Rehab in Eco-Village

The Eco-Village stands "as an opportunity to realize the promise of urban life in the most ecological way possible" (Gillespie 2003). Oregon Housing and Community Services' "Green Building Source Guide" points out that in a development that aims to implement green



Figure 2. From top: community garden with straw-bale garden shed, stair access to transit platform, and newly constructed green building transit station. *Photos courtesy of Kelly Lowry.*

principles, “a team member should be available to add a sustainable perspective to relevant discussions and decisions” (Barnett 2002). Jim LaRue, local residential green building consultant with the Green Building Coalition has served that role for the Eco-Village since they first began developing housing, both new and rehab. He has conducted research for the Eco-Village, located contractors and suppliers that shared their vision, and has evaluated products and services of others who have come forward claiming to be green (LaRue 2004).

LaRue served as consultant on one particularly interesting project in the Eco-Village: the Ecovation, or green rehab of a drafty, dark, cramped 1916 bungalow. The Cleveland Housing Network, a low-to-moderate income housing advocacy organization, purchased the house with the goal of renovating it within the context laid out by the Eco-Village: “in an environmentally responsible way.”

The renovation focused first on making the 1,172 square-foot house more energy efficient with the use of cellulose insulation, upgraded windows, and low-VOC foam to fill in air leaks. Duct work in the exterior walls was moved to the interior walls of the house to cut down on heating and cooling loss. The square footage, insulation levels, and windows were all calculated carefully to determine the appropriate size energy efficient HVAC system, a measure that is often overlooked in conventional building. The HVAC unit, which is four times more efficient than the standard 20-year-old ones, is a sealed combustion design that brings in fresh air from outside, an important feature in a tightly sealed house. A tubular skylight, which does not produce heat, was placed above the stairwell, and the wall was opened up halfway to create a light-well to take advantage of day-lighting.

The work on the interior made use of recycled wood from inside the house, as well other new recycled products. An office or spare bedroom was carpeted with car-

pet squares from one of two companies in the country that take back their own product and re-use all of it. The tile in the bathroom is composed of more than 50 percent recycled material, and the new drywall installed is composed of paper that is 98 percent recycled and gypsum that is 100 percent recaptured. The kitchen cabinetry is composed of wheat straw and sunflower seed husks, a strong alternative to particleboard that contains formaldehyde. The cabinets are covered with a maple veneer derived from hardwood certified by the Forestry Stewardship Council. The water-efficient toilet, which was donated, only uses 1.4 gallons per flush. The kitchen sink is made from dust left over from the production of other granite products. The rear detached garage, which was unfixable, was rebuilt with a south-facing oriented roof for future possibility of photovoltaic panels (Taxel 2004).

The buyer of the Ecovation will have access to assistance through the Cleveland Housing Network’s Homeward program in the form of tax abatement and a reduced interest rate. The relatively low prices of the Ecovation house (\$135,000) and the Eco-Village townhouses (roughly \$200,000) are intended to lead to economic diversification of the area.

Spreading the Word

Eco-Village coordinators have been walking door-to-door to share information about the new green additions in order to help those in the neighborhood understand how they could apply green building principles to their own homes. LaRue believes that “once [the residents] learn about the energy savings and health benefits, they will be more interested. We will be focusing on those families who are just above the income level that would make them eligible for various programs.” There is talk of collective purchasing of building materials and services to make green building endeavors less costly. “Our goal is to help folks prioritize work so they are getting the most for the money they spend” (LaRue 2004). Resident Kevin Borowiak believes that due to the resi-

dent meetings, the signage on the buildings, the press, and word of mouth communication, approximately 85 percent to 100 percent of the residents of the area are aware of the Eco-Village (Borowiak 2004). According to Mandy Metcalf, Eco-Village coordinator, there are increasingly “more people in the neighborhood who not only know about the Eco-Village but who are really excited about environmental issues—meaning both new people who have moved in and existing residents who have been inspired” (Metcalf 2004).

The Eco-Village is not without concerns. LaRue explains that “one of the biggest headaches for existing residents is that building new housing and renovating old raises property values, which raises taxes. If you are paying more taxes, then you have less money to spend on maintaining and improving your home” (LaRue 2004). However, the Eco-Village, as a sustainable redevelopment tool, does have an environmental edge which can be used to create and maintain affordability through the greening of housing, perhaps making up for the market shift that is bound to occur. The words of Greg Watson, executive director of the Dudley Street Neighborhood Initiative in Roxbury, Massachusetts, ring true for a project like the Cleveland Eco-Village: “If you cut your home heating bill 30 to 40 percent, that’s money in your pocket, and that’s a form of economic development. That’s a very powerful concept. That’s one that you have some control over...Economic development certainly means jobs and job creation, but if you can also find ways to cut your costs of living, especially around energy and food, in many respects that’s almost like getting a raise” (Pitcoff 1999).

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Building Value with Building Science:

High Performance Green Building in the Housing Industry

Isaac Savage

Green building concerns environmentalists, planners, and builders alike. The energy efficiency of a building—its “performance”—can add real and perceived value to a property. Tight construction, attention to the “building envelope,” and proper ventilation can make a home less expensive to operate and thus more attractive to the consumer. The Energy Star program, similar to LEED, sets the standard for designing and implementing these high performance, energy efficient buildings. Planners and developers can assist in this process by setting the stage for a future of greener home-building practices.

In relation to the housing industry, the term “green” may mean many things: solar panels, recyclable decking, locally harvested lumber, etc. While all of these products could be considered green, it is important to remember that green comes in more than one shade. A new shade of green has hit the market recently—building performance. Much like the measurement of embodied energy in a specific product, building performance looks at the big picture, the total effectiveness of the whole building.

Principles of Building Performance

Whether dealing with an existing home or building new, the basic principles of home performance are the same. The goal is to create a living environment that is healthy, efficient, durable, and comfortable. Building scientists across the nation agree that the most influential element of “comfort” for a building occupant is the radiant surface temperature of the surfaces inside the building. For example, in a room that has a poorly insulated cathedral ceiling, the temperature of the ceiling (the sheetrock) may, in the summer, reach in excess of

120 degrees, causing it to act as a radiant heater for the rest of the room. Regardless of how much air-conditioning is pushed into this room, it will never feel comfortable—because there is a huge radiant heater overhead, constantly heating the space and the homeowner. The key is to create a building envelope that “maintains” the comfort. The HVAC system controls the temperature and relative humidity of the air, while the building envelope maintains it.

The Building Envelope

There are two elements to the building envelope, the air barrier and the insulation. Both must be properly installed in order for the envelope to function as intended. The air barrier refers to the layer of the wall that creates the “pressure boundary” that separates the inside of the building from the outside of the building. The air barrier

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must be continuous. Buildings with serious air barrier issues will lead to high utility bills, polluted indoor air, moisture introduction into the wall assembly, and uncomfortable living environments. The other component of the building envelope is the insulation and the proper installation of the insulation. The insulation must be installed so that it is in contact with the sheetrock in all locations in order to perform as intended.

A high performance, energy efficient home is inherently tightly constructed. A tight building envelope is what keeps the conditioned air inside the envelope and keeps the pollutants out of the living space. The idealistic goal, in regards to efficiency, is to have a home that is 100 percent air tight, preventing random air movement throughout the house (drafts) while also leading to lower utility bills.

Fresh-Air Introduction for Healthy Living Environments

Fresh air ventilation will soon be mandated by code. So, home builders have begun incorporating green building and high performance building to protect their clients early. Another form of ventilation mandated by code is the foundation vent. Foundation vents have historically been included in building codes to allow moisture that originates from the ground (under the house) to escape through holes in the foundation. But, the U.S. Department of Energy (DOE) and building scientists across the nation now agree that vented crawlspaces are not a good idea. With a properly sealed crawlspace, vents are not needed, and in most cases, they introduce more moisture than they remove.

Most builders consider the crawlspace to be “outside” of the building envelope. But, the crawlspace should be considered part of the living environment. A healthy crawlspace should be well sealed in order to protect the building’s durability, indoor air quality, and energy efficiency (to review scientific studies on sealed crawlspaces, visit www.crawlspaces.org).

Affecting the “Perceived Value” of Housing

The ability to sell the concepts of efficiency, healthy indoor air quality, and building durability (resistance to mold/moisture) has become a necessity in order for builders to keep up with competition, to protect or build a reputation, and ensure client satisfaction. This differentiation is an important aspect of being successful in the industry. As the housing industry is being taken over by huge corporate builders, the only way for the not-so-large builder to stay in business is to differentiate, to add value to what they do.

By incorporating building science into their homebuilding process, builders have been able to dramatically improve their public image, reduce their operating costs (reducing call-backs), and increase customer satisfaction by providing homes that cost homeowners less to operate, have superior indoor air quality, and are more comfortable.

Energy Star: A High Performance Building Program

The program with the most recognition from local Home Builders Associations is the EPA’s Energy Star program. The Energy Star program is designed to guarantee a high performance home to the end user through a simple process that, when implemented correctly, will allow builders to seamlessly integrate these new steps into their existing building process. Houses built to these standards are being demanded by buyers and embraced by progressive builders and developers who wish to provide superior housing to deserving clients and differentiate their companies from the competition. This homebuilding program requires that every qualified home meet strict guidelines for home performance and be verified as such by a third party. The third party also analyzes the plans before construction begins, trains the builder and trades-people, identifies potential problems during the construction of the home, and tests the house using a variety of high-tech diagnostic tools. With this

third-party knowledge and support, buyers recognize the added value of high performance housing, giving the builder a powerful edge in building a high performance reputation.

Perhaps the most important reason to include building science in the building process is the reduced liability for building companies. With mold and moisture claims increasing, new practices like conditioned crawlspaces and spray-foam insulations, and the increased awareness of such issues and technologies by the general public, homeowners are demanding high performance homes. High performance building is the future of the housing industry. High performance development will be the next step. With the ever-increasing demand for green, efficient, healthy, comfortable homes, the opportunities for adding value to the development and the buildings themselves are endless. Those who take the first steps will be the industry leaders.

Planning for High Performance Building

Just as the construction methods of the actual building are beginning to make a difference in the way homes are marketed and valued, the way in which the land is prepared for the builder has a large effect as well. It would be easier to create a high performance building if the land was developed in such a way that the majority of the homes were sited for the implementation of passive-solar design. Also, much more green building would be accomplished if neighborhood guidelines required every home to be a “Zero Energy” home. Planners and developers have the ability to set the stage for the future of the housing industry, how homeowners interpret the value of housing, and how successful the builders will be in pushing for something new—something to differentiate themselves from their competition. This is something that planners and developer can easily facilitate, to the benefit of the builder and the perceived value of the development as a whole.

Resources

For more information on this topic, please contact the author at 828-350-1155 or www.HomeEnergyPartners.com.

Interview with Giles Blunden, Green Architect



Giles Blunden is an architect in Carrboro, North Carolina. He is founder, designer, and resident of Arcadia, a co-housing neighborhood completed in 1997, two miles north of downtown Carrboro. Currently, Mr. Blunden is developing a second, similar neighborhood, called Pacifica, which is expected to be finished in mid-2006. Both Arcadia and Pacifica incorporate principles of Green Building in the development layout and housing construction.

CPJ: How would you describe Arcadia?

Giles: The main definer is something called “co-housing,” a model of development that uses a collaborative process, brought here from Denmark. The American version is different from the Danish, but they have similar attributes, such as parking on the outside [of the neighborhood], pedestrian access, clustering [of dwellings], a common house. There’s a lot more common space than private space. You have bits and pieces, but you must want to get it together as a whole set. It’s a reaction to standard sub-division patterns. The Eco-Village movement grew out of that, as well.

CPJ: What are some other co-housing developments?

Giles: There are about 75 of these neighborhoods around the country. They tend to be clustered and near universities, such as Amherst, Madison, Carrboro, Berkeley and Oakland, Seattle, and DC. There’s also a web site: www.cohousing.org.

CPJ: What aspects of Arcadia feature the precepts of green building?

Giles: From a neighborhood context, green building is a broad spectrum: energy, building materials, water use, [and] the indoor environment. This was a collaborative process—not driven by a developer building houses to sell, but by people choosing how they want to live. The people that choose to live here tend to make Green

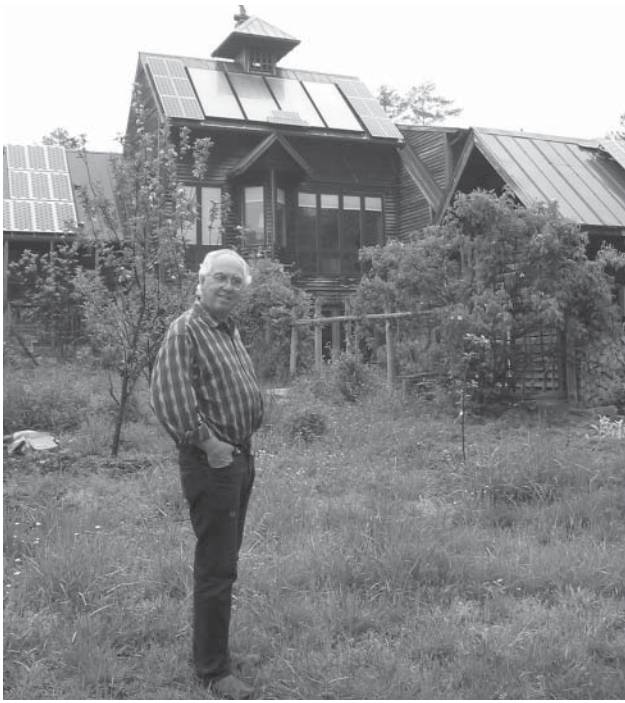
Building choices: solar, stormwater management, attention to materials used in the homes (tin roofs, recycled materials).

One of the main things is the land use pattern. This subdivision is 16.5 acres, zoned at half-acre density, so you can put 33 homes on all the lots. Instead of doing that, we clustered these homes on about five acres. By doing that, we preserved the most ecologically sensitive area of the site—a river that runs through it—and in the process preserved around eight acres of hardwood forest.

When people gather together, you can get more support for doing things out on the edge. For example, when I put photovoltaics on my house, one of my neighbors then put photovoltaics on his. It’s one of these cultural relationships. Part of it is just sharing information—do-



Arcadia community homes feature a variety of designs with green building elements. *Photo by Rawley Vaughan.*



From left to right: Mr. Blunden in front of his solar-paneled home; the Arcadia homes built with custom designs in close proximity to each other. *Photos by Rawley Vaughan.*

ing things in a group of people. It's not like going to class, but if someone is building a house, you share info with the next builder. Also, you figure out how to do things. There's a learning curve to the technology. So, when building houses, you do things right and you repeat it, or you can fix mistakes.

CPJ: What about LEED certification?

Giles: I'm a LEED-certified professional. Arcadia, though, was done before LEED. The residential component of LEED is almost done. LEED isn't one thing; there's a whole lot of things that go together. For example, it doesn't make sense to have photovoltaic cells and no energy-efficient refrigerator. [The commitment] goes from the site itself, all the way up through the building.

CPJ: What will be the differences between Arcadia and Pacifica?

Giles: The main difference is affordability, the price point. In Arcadia, they're all custom houses. With Pacifica, they're more the same, which makes it more affordable. While Arcadia is a combo of detached houses

and attached houses, Pacifica is a combo of detached houses and condominiums.

Also, Pacifica is more smart growth/infill development, so it's more bike/ped friendly. [Arcadia is] two miles north of the center of Carrboro, but Pacifica is just three-fourths of a mile out. So there's a conscious effort to encourage bicycle use, with bike infrastructure such as a storage area and an air pump.

It's also clustered better, with 46 units on five acres. Carrboro has a tool in its zoning ordinance that allows clustering. The ordinance allows you take the same number of houses and push them closer together.

I think the other thing that is interesting and wasn't meant to be planned, is that the security here is much higher than in a standard neighborhood. People are closer here, there's no anonymity. People think you have to live in a gated community, but with our pedestrian center, children are safe inside and people all know one another. When we first built Arcadia, the neighborhoods around it thought it was really weird. Some of them still do!

Call for Papers

**articles • opinion pieces • case studies
book reviews • artwork • project descriptions**

Carolina Planning, a student-run publication of the Department of City and Regional Planning at the University of North Carolina-Chapel Hill is celebrating the Journal's **30 year anniversary in the Fall!** In the Spring, the department will also be celebrating its 60th year of existence. In commemoration of these two events, *Carolina Planning* has a special issue planned which will include features from former CPJ editors, DCRP alumni, and departmental staff. It will also detail the upcoming events for the DCRP 60 year reunion.

We are seeking articles for the Spring/Summer and Fall/Winter issues. Manuscripts should be typed in MS Word and no longer than 15 pages. Please submit one copy via email or on a CD. Please include the author's name and contact information, a 2-3 sentence biographical sketch, and an abstract with the paper. If you have photos or images, please submit them in the best resolution possible, preferably 300 dpi. CPJ editors reserve the right to edit articles accepted for publication, subject to the author's approval.

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Submission calendar:

March 15 for Spring/Summer issue submissions

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We also accept submissions on a year-round basis

Carolina Planning Journal

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Celebrate 30 Years with the Fall Anniversary Issue!

Green Building Highlight:

Interface, Inc.'s Platinum-Certified Showroom

Holley Henderson

Interface, Inc., an Atlanta-based fabric manufacturer, has reinvented its pollution-intensive, petroleum-dependent manufacturing operation into a business that uses and promotes environmentally sustainable practices. The company manifested its greening with its first showroom and retail space in its headquarters city. Opened to the public in 2004, the showroom was designed and built with the goal of being designated a Platinum Project under the U.S. Green Building Council's (USGBC's) Leadership in Energy and Environmental Design for Commercial Interiors (LEED-CI) pilot program. There were rigorous criteria for achieving a LEED-CI designation in the pilot project. The showroom was the first project to achieve LEED-CI Platinum status.

The showroom, located within an urban renewal district in Midtown Atlanta, includes commercial and retail display space as well as offices and meeting rooms. This location, with both street-front and interior-building access, further maximizes the showroom's visibility and walk-in retail traffic. Since the showroom is a tenant improvement project, the direct impact on the site location was not the focus; however, selection of a building that was designed with good urban planning was a key factor. In selecting the appropriate building, the following considerations were taken into account using the LEED New Construction (LEED-NC) Rating System Site Category as a guideline: 1) Site Selection (e.g., location near a parking deck), 2) Development Density and Community Connectivity, and 3) Alternative Transportation (i.e., proximity to public transportation).

This Fall, the showroom will be a focal point during USGBC's annual Greenbuild Conference. For showroom details, visit www.interfacesustainability.com



The space utilizes florescent and metal halide lighting which significantly reduces the watts per square foot energy usage. *Photo by Brian Gassel, TVS.*



More than 30 percent of the furniture is re-used from local Atlanta furniture showrooms. This reduces the need for new materials to be manufactured and minimizes the use of fossil fuels in transporting goods to the project site. *Photo by Brian Gassel, TVS.*

Holley Henderson is principal of H2 Ecodesign, a sustainable design consulting firm that is a catalyst for eco-positive design in the built environment and global business strategy. For further information about the author, visit the web site: www.h2ecodesign.com.

Historic Rehabilitation:

An Important Economic Development Tool for North Carolina

Robynn E. Moraites, J.D., M.R.P.

Tax incentives for historic rehabilitation can promote central-city economic development around legacy sites that otherwise would go neglected under inexorable and institutionalized suburbanization. North Carolina has had some success with its historic rehabilitation tax credit, but it could learn from other states' experiences in improving this program.

A combination of social and economic forces, assisted in no small measure by government policies and programs, has produced a steady outmigration of population and business activity from urban areas, regardless of their size.¹ Left behind in the “surge to the suburbs” is a vast inventory of housing, commercial buildings, and, particularly in North Carolina, abandoned mills. A strong argument can be made that in an efficient capital market, uninfluenced by government subsidy, investment would naturally flow into the rehabilitation, reuse, and adaptation of these buildings.² Such is not the case, and demographic trends demonstrate that, for the most part, flight to the suburbs continues, as does continuing destruction of these properties. The pattern is well documented, and some North Carolina cities and towns resort to annexation as they struggle to maintain a viable tax base.

Tax incentives for the rehabilitation of income-producing historic properties cannot completely reverse demographic trends or restore fiscal solvency to abandoned cities.³ What they can do is provide, at the margin, a useful means to counterbalance the institutionalized policy

bias toward complete and total suburbanization. In addition, there are economic benefits of reclaiming these buildings and the infrastructure that supports them.

Estimates vary, but according to Don Rypkema, an expert urban renewal economist, the numbers are convincing. He reports that since 1976, and by the end of 1998, developers and business people in North Carolina used federal tax incentives for the rehabilitation of designated historic structures to rehabilitate 733 historic income-producing properties or projects, representing an estimated \$325 million in private investment.⁴ Downtown revitalization in the context of historic preservation during the same time period has led to 676 business expansions, 3,400 new businesses, 1,500 building rehabilitations, and (most importantly for the purposes

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of discussion here) 7,200 new jobs—representing \$450 million in new investment.⁵ Tourism is the second largest industry in North Carolina, employing 161,000 people and providing \$2.5 billion in annual payroll; the number one reported reason tourists visit North Carolina is the state's historic resources.⁶ In addition, historic preservation impacts related industries such as the crafts industry primarily in Western North Carolina, as well as the film industry.⁷

North Carolina's Historic Preservation Office (NCHPO) reports slightly different numbers. NCHPO reports that at least 4,162 housing units have been created or rehabilitated using the historic tax credit, and that many of the units are for low to moderate-income families.⁸ In 1997, the last year before the implementation of the new North Carolina tax credits, 23 projects were complete with rehabilitation expenditures totaling \$6,062,428. During the last three years (2000-02), the annual number of projects has averaged 115 (a 500 percent increase), with the annual investment averaging \$46.9 million (a 774 percent increase). Since 1976, 1,088 completed "certified rehabilitation" projects have been reviewed by the NCHPO involving \$483.3 million dollars in construction costs. NCHPO staff estimate that North Carolina's rehabilitation expenditures on income- and non-income-producing projects have created 20,000 new full-time jobs, have added \$1.06 billion dollars to the state's economy, and have added \$387.1 million dollars to the household incomes of North Carolina residents. Over 5,000 rental-housing units have been created or rehabilitated—many for low- to moderate-income families. It is critical to note that NCHPO reports that developers involved in these rehabilitation projects have indicated that the majority of projects completed under the income-producing tax credit program would not have been completed without it.⁹

Another critical benefit stemming from historic restoration is the cost savings realized by utilizing abandoned or under-used infrastructure. Federal tax incentives such as depreciation encourage new construction. Po-

tential environmental liability issues with older, existing sites encourage development on untouched suburban greenfields. Substantial government subsidies for expensive and increased highway construction make traveling to untouched suburban greenfields unproblematic. As a consequence of the interaction of these and other factors, sprawl has become a monolithic problem across the nation. While developers may initially invest in infrastructure, cities and counties are left to maintain new infrastructure, while existing infrastructure lays idle in central cities and business districts. Such infrastructure is called a "stranded investment."¹⁰ Companies like Carolina Power & Light have huge investments in powerlines and equipment already in place to serve existing buildings in downtowns and neighborhoods. When those facilities are used at a rate less than their capacity, the investment is considered stranded, that is, not able to provide a return commensurate to the capital initially invested in the equipment.

Abandoned buildings from a wide array of industries sit idle, unused, and draining local economies of tax revenue, as new development on the suburban fringe requires significant capital investment for new infrastructure. Historic areas have infrastructure already in place since they are primarily located in close proximity to travel arteries and central business districts.¹¹ In addition to generating revenue through increased job creation and promotion of tourism, historic rehabilitation curbs additional infrastructure costs to undeveloped greenfields, utilizes existing infrastructure, and increases potential future tax revenue from currently idle and unproductive properties.

As the economic studies illustrate, historic preservation, particularly when combined with the use of historic income-producing tax credits, can be a very efficient mechanism to spur North Carolina's economic growth. North Carolina policy makers were on the front end of the curve when they adopted the current historic tax credit program in 1997. Several states, including South Carolina and Missouri, initially modeled their programs

after North Carolina's program. North Carolina's program was considered the best, or one of the best, and it has had notable success with its program. Now is an ideal time to implement refinements or targeted incentives that have been implemented elsewhere in order to build on this initial success and carry forward the momentum.

North Carolina has its own particular profile for rehabilitation investment tax credit projects. North Carolina's projects tend to be smaller than those occurring in other states.¹² The type of project is overwhelmingly residential, not commercial. The average estimated construction cost is \$430,000. The smallest projects, of which there are several, total \$6,000 and the largest project, Holly Inn in Pinehurst, totaled more than \$12.7 million.¹³ Only a few developers have rehabilitated more than one building. In North Carolina, the tax credit program has been largely a program for small and moderate business people and investors. Larger projects, however, have been completed in the last few years, and the average size is increasing steadily. Of the total rehabilitation projects existing as of December 31, 1999, 41 percent of the after-rehabilitation uses were residential, 35 percent office and commercial, and 24 percent mixed-use or other uses.¹⁴

Most of the rehabilitation investment tax credit activity in North Carolina has occurred where historic resources are concentrated: in older settlements on the coast, in Piedmont cities, and in early 20th century growth towns of the western region. Despite this concentration, however, tax credit projects have been located in 69 counties, distributing the benefits across the state.

The purpose of this paper is to examine possible initiatives or modification to the current statutory scheme that would facilitate more effective use of the state historic rehabilitation income-producing tax credit and encourage increased numbers of historic rehabilitation projects, thereby positively impacting North Carolina's economy. It is assumed that the reader is already famil-

iar with the operation of the federal tax credit program.

Overview of North Carolina's Historic Tax Credit Program

North Carolina's historic tax credit is available to offset against North Carolina income tax to taxpayers that are allowed a federal income tax credit under the federal Code for the Federal tax credit program.¹⁵ Like the federal program, the credit is allowed for qualified rehabilitation expenditures for a certified historic structure located in North Carolina. The amount of the credit is 20 percent of the expenditures that qualify for the federal credit. The credits are allocated in five equal installments beginning with the taxable year in which the property is placed in service.¹⁶ Any unused credit may be carried forward for the succeeding five years and the tax may not exceed the amount of taxpayer's North Carolina income tax liability reduced by all other credits allowed.

Effective for taxable years since January 1, 1999, a "pass through" entity (a limited partnership or limited liability company for purposes of discussion here) that qualifies for the credit may allocate it among any of its owners at its discretion as long as an owner's adjusted basis in the pass-through entity (as determined under the Code, at the end of the taxable year in which the certified historic structure is placed in service) is at least 40 percent of the amount of credit allocated to that owner.¹⁷ There are recapture and forfeiture provisions in place to facilitate long-term investment in rehabilitation projects.¹⁸

North Carolina modeled its historic tax credit program after the federal program. As a result, developers and investors have an easier time with extensive paperwork and record-keeping requirements for rehabilitation projects that meet both the federal and state certification criteria since the federal and state programs mirror each other.¹⁹ The opportunity to recoup additional costs through the state program for projects that qualify for both the federal and state credit provides a significant

incentive for both developers and investors.

In North Carolina, investors and developers can opt to disaggregate the federal credits from the state credits. Accordingly, a developer may find two separate investors for a project: a national investor for the federal credit and a local investor for the state credit. A national investor that does not have significant tax liability in North Carolina would probably only be interested in the federal credits, leaving the state credits available for a local investor.²⁰ Because local investors can invest in state credits alone, the structure of the state historic credit program, standing apart from the federal scheme, can have a significant impact on the type, amount, and size of historic rehabilitation projects.

As stated previously, the primary purpose of this paper is to examine possible initiatives or changes in the current statutory scheme that would facilitate greater and more effective utilization of the state credit program and encourage increased numbers of historic rehabilitation projects. In order to effectively analyze possible changes in the current scheme, it is important to understand how these deals are structured, since there is technically no market exchange in place.

Primary Investors and the Structure of a Historic Rehabilitation Tax Credit Deal²¹

In order to understand why historic rehabilitation tax credit deals are structured as they are, it is important to first acknowledge the impact certain tax code provisions have on taxpayers that could serve as potential investors in these deals.²² For example, the historic rehabilitation credit cannot be used to reduce liability for the alternative minimum tax; it is also subject to the passive activity loss prevention rules of Section 469 of the Code and the at-risk rules of Section 49 of the Code.

The alternative minimum tax (“AMT”) is an additional tax over and above regular income tax.²³ The idea underlying the AMT is to prevent taxpayers from avoiding

tax liability by using special tax benefits, tax shelters, or tax credits. The AMT rules determine the minimum amount of tax that a taxpayer within a certain income bracket should be required to pay. Many of the credits that are allowed when calculating regular income tax, such as historic tax credits, are not allowed when calculating AMT. The more credits claimed for regular income tax, the more likely it is that AMT payment will be required.

At-risk limitations limit an investor’s deductions to the amount at-risk—that is, money an investor stands to lose should an investment turn sour.²⁴ The initial sum considered at risk is the amount of cash and the adjusted basis of property contributed to the activity and/or amounts borrowed for which an investor is personally liable. An investor may not claim deductions for losses greater than these amounts invested.

The passive activity loss rules force an investor to segregate all income and losses into three categories: active, passive and portfolio.²⁵ Generally, these rules disallow deducting passive losses against active or portfolio income, even when an investor is at risk to the extent of the loss. Deductions for passive activity or related expenses may be claimed only to the extent that they offset income from all passive activities.

In order to avoid the passive activity loss rule and to claim any investment losses against active income, an investor must have “material participation” in an endeavor. Material participants must participate on a continuous and substantial basis. The material participation standard is difficult to determine, and the IRS provides several tests to help taxpayers determine their current participation levels.²⁶

Therefore, when stepping back to consider the Code provisions combined, in order for an investor in a historic rehabilitation tax credit deal to successfully use the credits, the investor must first meet a minimum tax threshold (after application of any credits), and then

may deduct only up to the amount directly at risk, provided the investor participates in the deal materially, not just passively. It is a rather tall order and restricts who can effectively claim the credit.²⁷ Accordingly, in North Carolina, a typical investor is a major corporate entity, although, in some cases, investors may be syndicated funds. Current purchasers of historic rehabilitation credit transactions are primarily financial services companies, particularly banks.

Usually, the on-the-ground developer of a historic project wants to utilize the historic rehabilitation credit as a source of financing for the project.²⁸ In order to do this, the developer would want to sell the credit to an outside investor while simultaneously retaining all of the economic benefits from the project. To accomplish this within the restrictions of the tax code and historic tax credit programs, the entity that has evolved for ownership of buildings eligible for the credit is either the limited partnership (LP) or the limited liability company (LLC) (hereinafter “partnership”). The changes recommended here are based in part on the structure of these deals and the allocation of profits and tax credits in these entities.

Comparative Analysis: Strategies Used in Other States that Promote Redevelopment

North Carolina has typically been on the forefront of innovative policy initiatives encouraging development. North Carolina policy-makers led the pack in 1997 when they enacted the current historic tax credit program. One of the ways to assess the effectiveness of North Carolina’s current tax credit program is to examine programs offered in other states. Such a comparative analysis offers differing perspectives as well as benchmarks to measure adequacy and areas for improvement. The analysis here will assume rational market actors who wish primarily to maximize profit. The further assumptions are: 1) the less the risk, 2) the easier it is to turn a property, and 3) the easier it is to enter and exit a deal, then the greater the program’s over-

all effectiveness and efficiency in reaching the goal of promoting redevelopment.

A comprehensive survey using several sources revealed that 22 states have programs designed to encourage historic preservation and redevelopment of older abandoned properties that do not involve state income tax credits, but instead involve property tax abatements.²⁹ Of the remaining 28 states, 10 do not have any type of financial or tax incentive for historic rehabilitation at all.³⁰ Of the remaining 18 states, 7 use some combination of property tax abatement and tax credit, and the remaining 11 states use some form of tax credit standing alone. The following analysis will focus on differing aspects of those 18 states that utilize some form of tax credit.³¹ The purpose is not to exhaustively compare those 18 states’ programs, but to select statutory provisions from among them that promote redevelopment, and to utilize economic data from those states where available. Greater focus is placed on southeastern states since North Carolina competes with southeastern states to attract business as well as tourism revenue.³²

States use varying strategies to promote redevelopment of historic properties and several factors influence how policy makers develop a program. As expected, the greater the positive economic impact that can be shown, as well as the greater number of historic resources within a state, the more willing policy-makers will be not only to support a tax credit program, but also to strengthen it once it is clear that the program is successful and effectuating policy goals. Indeed, North Carolina’s historic tax credit program has positively impacted the state’s economy. The critical inquiry for policy makers now is how best to build upon the successful foundation of the program to strengthen it and generate even more revenue for the state. The following five provisions are elements of statutory schemes from other states that North Carolina’s policy makers should consider implementing for the reasons given.

1) *Allow developers to realize the entire historic tax credit in the year the structure is placed in service*

In North Carolina, the current tax credit program restricts a developer to apply for historic tax credits in equal installments over a five-year period once the building is placed in service.³³ Investors must then also wait for the credit to pass through. As a result of the five-year restriction, developers in North Carolina wishing to finance a project can only obtain \$0.50 on the dollar for each tax dollar of credit.³⁴

North Carolina's five-year restriction is very unusual. Other states do not provide for a credit realization time restriction but rather allow the entire credit to be claimed either the year the building is placed in service or as the rehabilitation is carried out.³⁵ In Virginia, for example, the entire tax credit may all be applied in the year the building is placed in service.³⁶ As a result, developers in Virginia receive \$0.65 on the dollar for each tax dollar of credit because investors can use the credits immediately.³⁷ The time-value of money comes into play and Virginia's higher price reflects the value investors receive from the ability to use the credit immediately.³⁸ The fact that Virginia does not place a time restriction on when the credits may be claimed puts North Carolina at a competitive disadvantage.

National investors with substantial tax liability in both North Carolina and Virginia, if forced to select only one market for investment, would likely choose to invest in Virginia projects in order to receive the greater immediate tax benefit. In addition, developers in Virginia would likely be willing to undertake larger scale projects or take on riskier properties because they can secure greater up-front financing. The evidence indicates that North Carolina's historic rehabilitation projects are smaller than those in other states, and the timing of credit realization is part of the reason why. Eliminating the restriction would bring North Carolina into alignment with a majority of other states.

2) *Allow investors to use the historic rehabilitation credit to offset against other significant taxes in lieu of state income tax*

Some companies and certain types of business entities do not pay state income tax, per se. Instead, they pay some other form of tax. For example, premium tax is the tax that insurance companies pay for the premiums they receive. Insurance companies are not subject to franchise or income taxes once the premium tax is levied against them.³⁹ But North Carolina's historic tax credit is restricted to state income tax.⁴⁰ Insurance companies have enormous state tax liability in North Carolina, but the liability is premium tax, not income tax, so they are precluded from investing in historic tax credits.

While an investor can always offset federal tax liability, the appeal of investing in a rehabilitation project within North Carolina is greater for companies that have North Carolina tax liability. Currently in North Carolina, banks are the primary investors in historic rehabilitation credits because they have enough of the "right kind" of North Carolina tax liability to make investing worthwhile. Bank of America and the Community Affordable Housing Equity Corporation (CAHEC) are the primary investors in historic rehabilitation credit projects in North Carolina. Bank of America has enormous tax liability and passive income from its Charlotte headquarters. CAHEC is a non-profit corporation that specializes in organizing and managing low-income housing tax credit equity funds, and it has a historic credit program.⁴¹ BB&T and Wachovia have limited state tax liability and rarely invest in these deals. Thus, the universe of potential investors is small.

Unlike the situation with the five-year credit timing allocation, North Carolina is not in the minority as to the income tax restriction for offset purposes; many states allow offsets only for personal or corporate state income tax.⁴² Several states with highly successful programs, however, allow historic credits to offset several other forms of tax in addition to state income tax. By allow-

ing offsets to various forms of income from various types of industries, states open up entirely new markets of potential investors in rehabilitation projects. Developers in North Carolina experience difficulty in finding investors for projects because the current market is so restricted. By allowing credit offsets against one or two additional forms of tax liability, North Carolina policy-makers would open North Carolina's market considerably and put North Carolina in a competitive position for attracting private investment.

Virginia, North Carolina's economic competitor to the north, provides an exemplary model that promotes not only historic rehabilitation, but also business in general. Investors in Virginia's tax credits are not restricted to state income tax liability.⁴³ Investors may apply the credit against not only individual income tax,⁴⁴ but also against estate and trust tax,⁴⁵ corporate tax,⁴⁶ bank franchise tax,⁴⁷ insurance company tax (like a premium tax),⁴⁸ and any licensing taxes for telegraph, telephone, water, heat, light, power or pipeline companies.⁴⁹ Such a scheme allows companies with enormous state tax liability in various forms, like insurance companies and utility companies, to partner in historic rehabilitation deals.

Several states in addition to Virginia provide investors the option to offset against other taxes. For example, Rhode Island allows offsets against personal income tax,⁵⁰ business corporate tax,⁵¹ franchise tax,⁵² public service corporation tax,⁵³ bank tax,⁵⁴ and insurance company tax.⁵⁵ Missouri offers offsets against income tax for individuals, corporations, partnerships, estates and trusts,⁵⁶ as well as taxes of financial institutions including banks, credit unions, savings and loans, insurance companies, and farmers' cooperative credit associations.⁵⁷

It becomes apparent at once that the pool of potential investors in historic rehabilitation projects in states like Virginia, Rhode Island, and Missouri far exceeds those in North Carolina. In order to increase the pool

of potential investors, North Carolina policy makers can simply include additional forms of tax liability in the current statute.

Some may become concerned that these credits deplete the state's treasury in a time when the state budget is already in bad shape, and allowing additional investors will deplete the treasury even further.⁵⁸ However, double dipping is not allowed under any state scheme; only one person, household, or entity may claim a historic tax credit. By allowing additional investors to enter the market, policy-makers will lay the foundation for more historic rehabilitation projects, which has been shown to increase revenue and jobs.

In the short-term, some may predict that state revenues will drop if North Carolina allows additional industries to capitalize on the credits. While a credit is a credit, regardless of who claims it, opening the market will pave the way for increased use of credits in amounts not currently contemplated. Evidence consistently shows, however, that the tax revenue generated from the reuse of once unproductive property far outweighs any short-term revenue losses.⁵⁹

Policy-makers in Missouri had such a concern, and the St. Louis Regional Chamber and Growth Association commissioned a study of the short-term and long-term economic impact of historic preservation. The study showed that the historic tax credit program generated \$1.78 for every \$1.00 of tax credit issued.⁶⁰ Moreover, the study found that developers must raise \$4.00 in private equity financing for each \$1.00 of tax credit issued.⁶¹ Researchers also noted that short-term losses are virtually irrelevant because the equity and financing must be raised and the rehabilitation of the property complete before a single credit is issued.⁶² Essentially, the building begins generating tax revenue once it is placed in service, and only when it is placed in service may a developer apply for the credits, thereby minimizing state revenue losses from issuing the credits.

While there is no published cost-benefit data on the North Carolina historic tax credit program, the federal program may prove a useful parallel for illustrative purposes. In fiscal year 1995, there were 529 historic rehabilitation projects representing investment of \$467 million.⁶³ The cost to the federal treasury was \$93.4 million.⁶⁴ Yet the increased revenue totaled \$124.25 million—significantly more than the revenue cost.⁶⁵ North Carolina's credit program is modeled closely after the federal credit program, so it is reasonable to assume a similar ratio or percentage of return. By allowing offsets to additional forms of tax liability, policy makers will strategically position North Carolina's program among the elite, encouraging business investment that the state might not otherwise realize.

Also important to this discussion is the idea of cost and benefit allocation. Many argue that these types of programs have costs that exceed benefits. Those that oppose these programs argue that economic analyses are flawed because they weigh assumptions too heavily to accurately predict revenue or economic impacts. Assuming *arguendo* that such is the case, there is still a strong argument for promoting these programs because of the benefit allocation.

In the example of the federal tax credit program, the federal government foregoes certain tax revenue in order to promote redevelopment. That redevelopment in turn directly benefits both state and local governments through increased local property tax revenue. Whether the federal government acts for the precise purpose of enriching state and local government is questionable but nevertheless irrelevant. The fact remains that state and local governments receive revenue from properties put back into service and on the tax rolls as a result of the federal credit. Such is also the case with a state credit. A state will temporarily forego revenue in the short term while local governments benefit almost immediately from economic stimulation in a once economically stagnant area.

Policy-makers should consider allowing offsets against other forms of income to diversify the historic tax credit investor base in order to stimulate and increase state and local tax revenue.

3) Eliminate or shorten the credit recapture period

Recapture provisions generally anticipate and are triggered by very different scenarios. For example, failure or closure of a property within five years of receiving a credit will trigger the recapture provisions. Modifications to a property that do not comply with the historic rehabilitation standards set by the Department of the Interior ("Interior") will also trigger recapture provisions if the non-complying modifications occur within five years of receiving a credit. Finally, sale of a property or sale of a certain percentage of interest in a property triggers recapture as well.

Recapture provisions can provide an efficient mechanism for risk allocation. On one hand, recapture provisions can promote more careful selection of projects in terms of market strength, since loss of tenants can lead to project failure, resulting in a loss of credits. Under such a scenario, the developer carries the risk of project failure and society is not left with a string of failed, abandoned projects and only a lack of revenue to show for it. On the other hand, developers currently cannot sell redeveloped projects because sale or transfer of a rehabilitated property during the five-year period after it is placed in service and the credits are claimed qualifies for recapture. In addition, developers currently carry an additional risk in the way the deals are structured.

Because investors in historic rehabilitation projects acquire interests in partnerships to obtain the historic rehabilitation credits, investors, as opposed to developers, are not concerned with receiving significant cash flow from a project.⁶⁶ An investor's principal concern is that projects remain viable for a period of at least five years in order to avoid recapture. Accordingly, a typical investor requires both a credit guaranty and a guaranty of

operating expenses for the project.

Eliminating, shortening, or modifying the recapture period would greatly reduce risk for investors, thereby making it easier for developers to obtain capital investment. It would also reduce a developer's personal risk in guaranty agreements. With reference to the assumptions outlined previously, the easier it is to enter and exit a deal, the easier it is to obtain credit, and the easier it is to turn a property, the more successful the reinvestment will be.

There is a split among the states regarding recapture with a majority including it. For example, New Mexico, Virginia, Missouri, Kansas, and Rhode Island, to name a few, do not include a recapture provision as part of their programs.⁶⁷ Colorado, Indiana, Michigan, Maine, and Vermont, however, all incorporate some form of the federal five-year recapture provision. Those states that include a recapture provision do not distinguish between scenarios triggering recapture, such as sale versus failure, when determining whether a developer is subject to recapture of credits.

As a general rule, property law and economics do not favor excessive restraints on sale and transfer of property. Neither do developers. Allowing developers to turn property easily and quickly frees up capital and enables them to delve into subsequent projects. Eliminating recapture gives developers greater flexibility in determining when to divest from a partnership after a completed rehabilitation. There is no evidence of abuse in those states that do not have a recapture provision. There is also no evidence that avoiding a recapture provision somehow encourages rehabilitated buildings to later be modified in unacceptable ways or shortens a rehabilitated building's useful life. It seems that once buildings are put back into productive use, they continue to be productive.⁶⁸

Recapture provisions also affect the value of the tax credit. The difference in price between the federal

credit and the state credit occurs because state taxes are deductible for federal tax purposes. Assuming the investor is in the 35 percent bracket, the tax credit at par is worth \$0.65. The NC credit is worth \$0.50 for two reasons. The first reason involves the five-year credit claim restriction, as discussed previously. The other key reason is that a recapture provision serves as a five-year holding period. Investors often hold the credits until the credits vest and are free from the possibility of recapture. Once again, the time value of money dictates that the longer an investor is required to wait to claim a credit, the less the credit is worth to that investor in terms of current dollar value.

North Carolina would encourage greater private investment and accelerate the productive reuse of numbers of blighted buildings by shortening, modifying, or eliminating the five-year recapture provision. For example, policy-makers could limit the scenarios that trigger recapture to situations where a project fails or where a developer made modifications that did not meet the standards set by Interior and, at the same time, eliminate recapture for transfer or sale of property. Under such a framework, developers still shoulder the majority of risk, but they have greater flexibility to sell a project than they do presently. In another modification example, policy-makers could reduce the recapture provision to three years, thereby maintaining the current risk allocation scheme, with developers shouldering the majority of risk, but reducing the risk slightly. Reducing the recapture period would also increase the current value of the tax credit.

The point is not to eliminate risk for developers or to shift the inherent risk completely to society, but rather to even the scales a bit to encourage development where it is not otherwise occurring. Policy-makers can be creative in crafting a recapture provision in order to maintain an acceptable risk allocation between society and developers. Shortening, modifying or eliminating the recapture provision is yet another tool available to strengthen the current historic tax credit program.

4) *Create a market for historic rehabilitation credits and make them fully transferable*

Rhode Island, Missouri, and Delaware lead the way as far as free market transferability of credits.⁶⁹ They each permit taxpayers eligible for historic tax credits to assign, transfer, or convey the credits, in whole or in part, by sale or otherwise to any individual or entity. The assignee then steps into the shoes of the original taxpayer and acquires the same offset rights; assignees are not limited in any way by the mere fact that they are assignees.

There are several benefits to adopting such a scheme. To begin, the greatest benefit would be that the structure of historic rehabilitation deals would change. Developers could develop a project without needing to partner with another institution to claim the state credit. Because the credits would be transferable in whole or in part, developers could sell the credits in smaller blocks to smaller investors who do not have enormous tax liability. In the alternative, a large investor, such as Bank of America, could sell smaller blocks of credits to smaller taxpayers. Investors would not be precluded from investing in these types of projects because of tax liability limits. In addition, because developers would have greater flexibility as to how to allocate credits, they may consider larger rehabilitation projects that at one time would have been out of reach due to the large burden of risk on a single investor.

Adopting such a transferability scheme in addition to some of the other recommendations would make North Carolina's historic rehabilitation tax credit program one of the most competitive in the nation. For example, combining transferability with immediate realization and no recapture provisions would allow developers to undertake larger, previously riskier projects and would attract a variety of small to medium size investors that had previously been excluded from the investment process. Businesses would be drawn to invest in these programs, creating a positive cash flow for the state stemming

from new tax revenue from rehabilitated buildings.

5) *Provide targeted incentives for abandoned mills*

North Carolina has a vast number of abandoned mills—mills that were once the heart of the now defunct North American textile industry. Almost every small town in North Carolina, and elsewhere in the South, had at least one cotton mill.⁷⁰ Most are now abandoned and dilapidated. Two hundred and thirty six mills closed in North Carolina between 1997 and 2002. While some are being put to alternative uses such as museums and concert halls, many are being destroyed, or their building materials sold off at premium prices.⁷¹ These mills represent the heritage of North Carolina, and many serve as a town's central architectural feature.

As discussed previously, but for the many governmental policies encouraging development elsewhere, private development would focus on reuse of these buildings and their supporting infrastructure. Policy-makers can use the historic tax credit as an effective means to target abandoned mills and promote their redevelopment and reuse. The current historic tax credit program does not target any one particular historic resource. If policy-makers want to target mill redevelopment, the low-income housing tax credit could serve as a good model for how to modify the historic tax credit to target mills.

Section 42 of the Code outlines the low income housing tax credit.⁷² Congress allocated special provisions for determining eligible basis in an attempt to provide incentives to target certain areas. Developers using the low-income housing tax credit are eligible for a 130 percent increase in eligible basis of a qualifying property provided that the building is located in either a qualified census tract (an area with a high concentration of low-income residents) or in a difficult to develop area (an area where development costs are exceptionally high).⁷³ By providing a 30 percent booster to basis in difficult to develop areas, Congress encourages development of low-income housing where it would otherwise never

occur.

Many policy-makers are already familiar with the low-income housing tax credit structure. Application by analogy to the historic tax credit program would not be difficult. For example, North Carolina could provide a 30 percent (or some other percentage) boost in eligible basis for the redevelopment of historic textile mills. Such an incentive would direct commercial development to these particular resources. The potential economic benefits of such a program would be widespread and would impact most small towns across the state, since mills are not concentrated in one area of the state. However, if applied as suggested, this approach would be complicated to implement because the basis determination would differ for federal and state tax credit programs.

Another simpler approach might be to increase the state income-producing credit from its current 20 percent of qualified expenditures for historic properties in general to 40 percent for adaptive redevelopment of mills. Such a change to the current scheme would create a greater incentive for private developers to specifically target abandoned mills. Moreover, for ease of use, the operational approach to claiming the credits would remain the same as is currently utilized.

One of the major economic challenges facing North Carolina is the growing economic disparity between rural and urban areas.⁷⁴ While North Carolina's major cities continue to experience an economic boom that bring high-paying jobs and a range of social and cultural amenities, most rural areas are in a state of economic stagnation or decline.⁷⁵ Rural economic development in North Carolina is a critical goal, and since most small towns have at least one mill, targeting mills for reuse likely would provide an economic boost to rural areas. A mill incentive would provide an equitable distribution of tax incentives and would not result in a concentration of rehabilitation only in larger cities.⁷⁶

Conclusion

Sprawl is on the rise. New construction continues at a staggering pace. Government policies encourage new construction on the suburban fringe and central cities are left depleted of tax revenue, supporting vast idle and under-used infrastructure. Historic resources are ignored, abandoned, and usually destroyed. While the numbers vary, economists have shown that historic preservation creates jobs, attracts tourists, increases governmental revenue, and brings in private investment at a 4:1 ratio. Policy-makers across the nation have awakened to the possibilities historic preservation may offer for curbing sprawl, maximizing stranded infrastructure investments, and promoting and maintaining livable, attractive cities and towns for both residents and tourists.

While North Carolina currently offers a historic rehabilitation tax credit that has received use, the tax credit can be stronger and can be structured to attract greater investment. Virginia is one of North Carolina's primary economic competitors and has a program that attracts greater private investment. Rhode Island and Missouri also have model programs that promote business and encourage private investment by making it easier for developers to solicit investors to rehabilitate historic properties. Some of those strategies could be employed in North Carolina to make its program more competitive today and encourage greater reinvestment.

The suggestions put forth are not intended to be used *carte blanche*. Doing so would shift the allocation of risk completely and unacceptably from developers to society. In fact, it would be unwise to adopt all suggestions together. Adopting all suggestions would not ensure the outcome espoused at the outset of this discussion, which is to promote greater historic rehabilitation as an effective and efficient economic development tool. While adopting all measures would promote greater historic rehabilitation, it also could encourage potential abuse, which would, in turn, likely drain the economy, creating an inefficient outcome. State and lo-

cal governments would forego revenue and likely have little to show in terms of percentage of overall success. Such a scenario does not serve the public interest.

Instead, the provisions outlined are meant to serve as benchmarks for ideas that could be incorporated selectively or partially. The adoption of just two or three suggestions would significantly alter the historic tax credit program as it currently stands and promote greater redevelopment without simultaneously shifting risk. Allowing the credit to offset against a wider array of taxes than just income tax is a highly recommended change, regardless of the other measures adopted. For example, increasing the amount of credit allowed for mill redevelopment and a transferability provision would likely revolutionize the projects undertaken throughout the state without shifting unreasonable risk to state and local governments.

Incorporation of some variety of these changes would benefit historic rehabilitation developers as well. Developers currently familiar with the system and involved in historic rehabilitation projects will likely expand their rehabilitation activities. As discussed earlier, North Carolina's projects tend to be smaller than those in other states. Developers may be willing to approach larger projects that they would have avoided otherwise. In addition, the greatest amount of rehabilitation has been residential. Modifying the program will shift the focus and encourage greater commercial redevelopment, which is at the heart of economic development. In the process, developers will receive tax benefits, but more importantly, they will be able to solicit a diverse pool of investors that bring needed private investment to the table. Developers who at one time were not interested in the historic rehabilitation market may become so, once risk is hedged and return marginally increased. Historic rehabilitation tax credit deals are sophisticated and highly risky; any changes that can be adopted to make deals easier and somewhat safer will further open the market.

It is time for North Carolina's policy makers to consider strengthening the historic tax credit program. Policy makers should study the effectiveness of historic rehabilitation tax credit programs in other states that have model programs, such as Virginia, Missouri, and Rhode Island. A close look at other states will reveal the advantages and disadvantages of incorporating the various modifications suggested here. These suggested modifications could be used individually or in tandem. The more they are strategically and thoughtfully combined together, however, the stronger and more competitive North Carolina's historic tax credit program will be. The stronger the program, the greater the private investment will be. The greater the private investment, the greater the economic benefit to the state and local governments and their residents.

Endnotes

1. Harry K. Schwartz, "Why Provide Tax Incentives?" *Preservation Law Reporter* (June 1996). (Reprinted with permission in Constance E. Beaumont, *Smart States, Better Communities, How State Governments Can Help Citizens Preserve Their Communities*, 94. National Trust for Historic Preservation (1996)).
2. Id.
3. This discussion focuses entirely on the income-producing tax credit and does not speak to the historic homeowner tax credit program also employed in North Carolina for rehabilitation of residential property.
4. Donovan D. Rypkema, "Profiting from the Past," *The Impact of Historic Preservation on the North Carolina Economy*. A publication of Preserve North Carolina. (1998).
5. Id.
6. Id.
7. Id. Rypkema reports that the craft industry employed 4,000 workers and artists in 1996 and added \$48 million annually to those household incomes. Consistently, the most effective sites from which to sell those crafts are western North Carolina's historic

- buildings in downtowns and on main streets. Rypkema also reports that the film industry has spent over \$4.6 billion in North Carolina since 1980 and that North Carolina's historic commercial areas and historic neighborhoods are a significant draw for that industry.
8. See North Carolina State Historic Preservation Office, *The Economic Impact of the Rehabilitation Investment Tax Credit Program in North Carolina*, available at www.hpo.dcr.state.nc.us/ta90nc.htm (December 31, 1999).
 9. *Id.*
 10. Donovan D. Rypkema, "Profiting from the Past," *The Impact of Historic Preservation on the North Carolina Economy*. A publication of Preserve North Carolina. (1997).
 11. Constance E. Beaumont, *Smart States, Better Communities, How State Governments Can Help Citizens Preserve Their Communities*. National Trust for Historic Preservation (1996).
 12. See North Carolina State Historic Preservation Office, *The Economic Impact of the Rehabilitation Investment Tax Credit Program in North Carolina*, available at www.hpo.dcr.state.nc.us/ta90nc.htm (December 31, 1999).
 13. *Id.*
 14. *Id.*
 15. See N.C. Gen. Stat. § 105-129.35(a). North Carolina also offers a credit for rehabilitating non-income producing historic structures (i.e. residences), but that provision is irrelevant for the purposes of discussion here. See N.C. Gen. Stat. § 105-129.36.
 16. See N.C. Gen. Stat. § 105-129.37(b).
 17. How these deals are structured is detailed in Section III.
 18. See N.C. Gen. Stat. § 105-129.37(c) and (d).
 19. Developers will still, however, have to deal with both federal and state agencies and departments for official historic designations and certifications in addition to both the IRS and the NC Department of Revenue.
 20. BB&T and Wachovia are two institutions that fall within this category of investors because they have limited state tax liability.
 21. A great deal of the following section has been excerpted and paraphrased from Kenneth A. Alperin, "Historic Rehabilitation Tax Credit—An Overview," *Historic Preservation Law*, sponsored by American Law Institute – American Bar Association Continuing legal Education and the National Trust for Historic Preservation (October 15, 2001).
 22. All potential investors in a deal involving historic rehabilitation tax credits are taxpayers. As such, the terms investor and taxpayer are used interchangeably throughout this section as needed.
 23. 26 U.S.C.A. §§ 55–59.
 24. 26 U.S.C.A. § 49.
 25. 26 U.S.C.A. § 469.
 26. 26 C.F.R. § 20.2032A-3.
 27. Harry K. Schwartz, "Why Provide Tax Incentives?" *Preservation Law Reporter* (June 1996). (Reprinted with permission in Constance E. Beaumont, *Smart States, Better Communities, How State Governments Can Help Citizens Preserve Their Communities*, 94. National Trust for Historic Preservation (1996)).
 28. The outside investor is obligated to make capital contributions to the partnership that owns the project. These capital contributions are typically based upon the amount historic rehabilitation credits anticipated to be available, with current prices for federal credits equal to approximately \$.90 per dollar of credit. So, for example, if a \$5,000,000 rehabilitation were conducted, the 20 percent historic rehabilitation credit would be \$1,000,000 and the capital contribution attributable to those credits would be approximately \$900,000.
 29. Sources include: Constance E. Beaumont, *Smart States, Better Communities, How State Governments Can Help Citizens Preserve Their Communities*, 114-23, National Trust for Historic Preservation (1996); State Tax Central available at www.statetaxcentral.com (a search engine designed to assist in identifying specific tax statutes in all fifty states); and searches for individual state statutes us-

ing Google and Westlaw.

30. There has been an increasing trend toward states adopting tax credit programs and some states are in transition. One report estimates that 45 states have some form of financial incentive for historic rehabilitation.
31. North Carolina is one of the states that combine both property tax abatement and a tax credit. North Carolina's property tax abatement applies only to locally designated landmarks. However, it is beyond the scope of this discussion to analyze the interplay between the two types of incentives.
32. The discussion here will not refer to Maryland's Historic Tax Credit. At the time this paper was written and researched there was a question as to whether Maryland would keep its historic tax credit program, which was slated to sunset in June of 2004. The Maryland credit program provides an excellent example of many of the ideas that will be discussed here.
33. See N.C. Gen. Stat. § 105-129.37(b).
34. There is no indication that the five year restriction increases the pool of potential investors given the AMT limitations because anecdotally it is known that there is a very small pool of investors in North Carolina. See Section IV(a)(ii) *infra*.
35. Examples of states include: Colorado, see Colo. Rev. Stat. Ann. § 39-22-514(7); Indiana, see Ind. Code Ann. § 6-3.1-16-13; Missouri, see Mo. Ann. Stat. § 253.557; New Mexico, see N.M. Stat. Ann. § 7-2-18.2; Rhode Island, see R.I. Gen. Laws § 44-33.2-3; Wisconsin, see Wis. Stat. § 71.07 (9m) and Wis. Stat. § 71.07 (9r).
36. See Va. Code Ann. § 58.1-339.2.
37. The difference in price between the federal credit (estimated by Kenneth Alperin to be \$.90 for every dollar of credit) and the state credit (a maximum value of \$.65 for every dollar of credit) occurs because state taxes are deductible for federal tax purposes. Assuming the investor is in the 35 percent bracket, the tax credit at par is worth \$.65.
38. The NC credit is discounted more than Virginia's for two reasons. First is the fact that the credit may only be claimed over a five year term. The other is that the VA credit has no recapture period, so there is no five-year holding period as there is with the NC credit. See discussion, Section IV(a)(iii) *infra*.
39. See N.C. Gen. Stat. § 105-228.5.
40. See N.C. Gen. Stat. § 105-129.37(a).
41. See CAHEC, General Information, available at www.cahec.com/geninfo.html (last visited January 4, 2004).
42. See, e.g., Colo. Rev. Stat. Ann. § 39-22-514 (limited to income or corporate franchise tax); Ind. Code Ann. § 6-3.1-16-6 (limited to adjusted gross income tax); Wis. Stat. § 71.07 (9m) and Wis. Stat. § 71.07 (9r) (limited to income tax); Utah Code Ann. § 59-7-609 (limited to income or corporate franchise tax).
43. See Va. Code Ann. § 58.1-339.2(A).
44. Va. Code Ann. § 58.1-320 et seq.
45. Va. Code Ann. § 58.1-360 et seq.
46. Va. Code Ann. § 58.1-400 et seq.
47. Va. Code Ann. § 58.1-1200 et seq.
48. Va. Code Ann. § 58.1-2500 et seq.
49. Va. Code Ann. § 58.1-2620 et seq.
50. R.I. Gen. Laws § 44-30-1 et seq.
51. R.I. Gen. Laws § 44-11-1 et seq.
52. R.I. Gen. Laws § 44-12-1 et seq.
53. R.I. Gen. Laws § 44-13-1 et seq.
54. R.I. Gen. Laws § 44-14-1 et seq.
55. R.I. Gen. Laws § 44-17-1 et seq.
56. Mo. Ann. Stat. § 253.550; Mo. Ann. Stat. Title X, Ch. 143.
57. Mo. Ann. Stat. Title X, Ch. 148.
58. This could be an argument to continue to require the realization of the credit to be allocated in equal installments over five years.
59. *An Economic Analysis of the Missouri Historic Preservation Tax Credit*, a study for the St. Louis Regional Chamber and Growth Association available at www.stlrcga.org/pdf/case.pdf (April 28, 2003).
60. *Id.*
61. *Id.*

62. Id.
63. Donovan D. Rypkema, "Profiting from the Past," *The Impact of Historic Preservation on the North Carolina Economy*, p. 7. 1997. A publication of Preserve North Carolina.
64. Id.
65. Id.
66. Much of the following section has been excerpted and paraphrased from Kenneth A. Alperin, "Historic Rehabilitation Tax Credit—An Overview," *Historic Preservation Law*, sponsored by American Law Institute – American Bar Association Continuing legal Education and the National Trust for Historic Preservation (October 15, 2001).
67. Rhode Island will revoke credits and recapture them if there is a material misrepresentation or if within 24 months after completion of the rehabilitation a taxpayer applies for tax-exempt status for the property. Applying for tax-exempt status after receiving a tax credit is essentially double dipping into tax incentives, of which Rhode Island makes tax payers elect and allows only one at a time under R.I. Gen. Laws § 44-33.2-6. See R.I. Gen. Laws § 44-33.2-3(d)(2) and § 44-33.2-3(e).
68. For a very interesting discussion on an alternative means of transferability of property to avoid recapture using mortgage credit certificates and developer pass-thru techniques, see Schwartz, *supra*, note 1.
69. See R.I. Gen. Laws § 44-33.2-3; Mo. Ann. Stat. § 253.557, Del. Code Ann. Tit. 30 § 1814.
70. Jonsson, Patrik. "Old Mills Hum with New Uses," *The Christian Science Monitor*, July 30, 2002. Available at www.csmonitor.com/2002/0730/p02s01-usgn.html, accessed March 2, 2004.
71. Id.
72. See 26 U.S.C. § 42.
73. 26 U.S.C. § 42 (d)(5)(C).
74. North Carolina Rural Economic Development Center, Inc., Early History, available at www.ncrural-center.org/about/history.htm (last visited February 16, 2004).
75. Id.
76. Typically historic rehabilitation projects are concentrated in urban areas, and such has been the case in North Carolina. North Carolina, however, is in a unique position because it has mills across the state. Despite a concentration in urban areas, tax credit projects in North Carolina have taken place in 69 counties and in all twelve congressional districts, spreading the benefits across the state. See North Carolina State Historic Preservation Office, *The Economic Impact of the Rehabilitation Investment Tax Credit Program in North Carolina*, available at www.hpo.dcr.state.nc.us/ta90nc.htm (December 31, 1999). Targeting mills for special redevelopment would continue to spread the economic benefits across the state.