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ON THE COVER: The small scale of many historic districts encourages pedestrians and bicyclists, contributing to a more sustainable community.
PHOTO BY FORT COLLINS CONVENTION AND VISITORS BUREAU
Integrating Historic Preservation and Sustainability at the Local Level

PATRICE FREY

Welcome to the Summer 2012 edition of Forum Journal. This issue brings together a diverse collection of articles that highlight progress in all corners of the country in advancing the integration of historic preservation and sustainability goals.

While sustainability considerations may not be a main concern right now in national policy discussions, the issue is still very much a priority in many communities throughout the United States. Cities of all sizes are embracing sustainability for myriad reasons—for example the belief in an obligation to help minimize climate change impacts, and the desire to help homeowners and other building owners save money on energy bills.

Going beyond the single building approach, cities are also embracing sustainable placemaking because they see it as a competitive advantage, helping to attract and retain key demographics that are especially important to a city’s economic success, including college students, well-educated workers, and entrepreneurs. The preference of these groups for living in vibrant, walkable neighborhoods is increasingly well known, and has been discussed at length by Richard Florida and other urban thought leaders who stress the connection between a rich built environment and attracting talented people.

Older buildings and historic preservation serve as the foundation for the creative, lively neighborhoods that give cities a strong sense of place and identity—and thus a competitive boost. Yet all too often the role of older and historic buildings in sustainable urban areas is overlooked, and in some instances older buildings are even demolished as part of a community’s sustainable planning efforts.

In addition to attracting people to more compact, walkable neighborhoods, there are other sustainability advantages associated with older buildings. The National Trust’s Preservation Green Lab released a study earlier this year, entitled The Greenest Building: Quantifying the Environmental Value of Building Reuse, which finds that in almost every case, the reuse of existing buildings results in fewer environmental impacts over their life span compared to demolition and new construction. Even when comparing building

The restoration of the Emerson School in Denver by the National Trust demonstrates that older buildings can be retrofitted to serve as models of sustainable design.

PHOTO BY JIM LINDBERG
rehabilitation to new, more energy-efficient construction, the value of building reuse still provides near-term opportunities to reduce negative impacts, such as those that contribute to climate change.

But as *The Greenest Building* demonstrates, reusing buildings alone isn’t enough to satisfy environmental responsibilities. The study finds that the greater benefit comes from reusing and retrofitting an existing building. Such retrofits help to conserve the earth’s resources and reduce climate warming emissions—worthy objectives to be sure—but they also directly serve preservation goals: greening buildings helps owners save money, makes these buildings more attractive investments, and secures their survival over time.

The importance of reusing existing buildings and retrofitting them for improved environmental performance is at the core of the National Trust’s *Building Sustainable Communities* Preservation Priority. These priorities are designed to address high profile, cross-cutting preservation issues of importance to the saving of historic places and the growth of the preservation movement in America. Through the Sustainability Priority in particular, the National Trust is working to encourage key decision makers for the built environment—including local policy makers and developers—to integrate building reuse and retrofits as a central element of their sustainable development strategies. Forum members—as preservation experts on the front lines working with these decision makers every day—have an extremely important role to play in helping local decision makers “connect the dots” between historic preservation and sustainable placemaking.

The articles in this issue are intended to help Forum members understand the latest thinking and current practices relating to the integration of sustainability and historic preservation. In this edition of *Forum Journal*, you will find excellent examples of communities working to integrate sustainability with their existing historic preservation goals—and vice versa. Such progress can be seen in the green preservation guidelines recently developed by Oklahoma City and New Orleans. Both communities have developed locally appropriate guidelines that

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**GREENING BUILDINGS HELPS** owners save money, makes these buildings more attractive investments, and secures their survival over time.

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A new study from the National Trust Preservation Green Lab found that the reuse of existing buildings results in fewer environmental impacts over the building’s life span compared to demolition and new construction.
help building owners understand how they can integrate green technologies into their rehabilitation projects in ways that do not compromise the character of historic buildings.

The rehabilitation of the Emerson School in Denver has provided the National Trust with the opportunity to “walk the talk” about green building and preservation. Read more in Jim Lindberg’s article about how the National Trust has rehabilitated this 1885 former school to serve as a permanent, historic, and visible home for the National Trust’s Denver Office and its local nonprofit partners, Historic Denver, Inc., and Colorado Preservation, Inc.

You will also read about noteworthy activity taking place at the neighborhood level. Across the country, district-wide greening approaches are becoming increasingly popular, since the process of greening one building at a time can be quite slow compared to working at a district-scale. Tom Osdoba’s article on the potential integration of district energy into older and historic neighborhoods illustrates exactly how such a neighborhood-level focus can help transition entire neighborhoods to more a sustainable fuel source, thus permitting buildings to reduce their carbon emissions at a much larger scale than might be accomplished by a one-by-one building approach.

Wayne Donaldson’s article on the North Park neighborhood in San Diego illustrates a different and equally exciting kind of district-based approach to sustainability, one that is embedded in Main Street. In developing and embracing a local sustainable development plan, North Park offers a terrific example of the potential to integrate Main Street’s principles of sustainable economic development and historic preservation with efforts to create a more environmentally friendly community. As Donaldson notes, the sustainability plan is “intended to further strengthen and broaden the district’s competitive position as a desirable destination for new businesses,” and, as such, is likely to inspire other Main Street communities that are also looking to strengthen their economic core.

“Sustainable communities” means many things to different people and its definition continues to evolve. In her article, Rachel Bowdon of the Preservation Green Lab takes a look at the building blocks of sustainable communities and discusses how historic preservation is an integral component of each of these blocks.

Kimberly Koole’s review of Stephen Coyle’s Sustainable and Resilient Communities: A Comprehensive Action Plan for Towns, Cities and Regions, reminds us that while we can point to many successes, too often planners and others still overlook the role of preservation in sustainability-related endeavors. It will take all of us working together at the national, state, and local level to help cement this connection. But as this edition of Forum Journal demonstrates, we’re off to a good start.

PATRICE FREY is the director of Sustainability for the National Trust for Historic Preservation.
District Energy and Existing Neighborhoods

TOM OSDOBA

Heating systems that serve multiple users have been in place since the days of ancient Rome when they were used to provide hot water for the city’s steam baths. Since then, cities have relied on various forms of district-wide systems to provide services for residents. With the availability of electricity in the early 20th century, many cities built power stations close to city centers and constructed district-wide heating systems.

In the last 30 years, however, investment in district energy has declined, and district energy systems have all but disappeared from our communities.\(^1\) As new power plants became ever larger and were built outside of cities, many systems were shut down. Today, however, cities are again looking at district energy as a critical part of their energy futures. This article will explore what district energy has to offer, and how it will become increasingly important to our communities.

**WHAT IS DISTRICT ENERGY?**

In its simplest terms, district energy is a shared system for providing heating, hot water, and cooling to a cluster of buildings. Building owners participate in district energy because it is more efficient, gives them access to better energy-producing technologies, and provides superior service to stand-alone systems in their own buildings. Just as an electrical grid provides a network for transmitting electricity, district energy provides a thermal network for transmitting heating and cooling services.

Some cities have had large district heating systems in place for a long time. In Washington State, Seattle Steam has been providing heating services to the city for 120 years. New York City has a very large system that has served a sizable area of Manhattan for decades. In the 1970s, Toronto connected five separate, smaller systems in order to build a larger system that could take advantage of cleaner, more efficient energy supplies. In St. Paul, Minn., a group of building owners came together on their own in response to the energy crisis in the late 1970s and created a system that could help insulate them against future energy price shocks.

District energy can help cities improve the performance livability and affordability of their neighborhoods. At the same time it delivers value to building owners by improving energy efficiency and developing clean, renewable forms of energy for the heating, hot water, and cooling needs of buildings.

**CHALLENGES**

However the successful implementation of district energy can be challenging. Because most neighborhoods consist of buildings with multiple private owners, a municipality needs to invest time, and possibly public resources in developing district energy. District energy can also
be a hard sell: the benefits are less than tangible and often are not visible in the short term. Furthermore, it is hard for the average citizen to see a direct impact. Many times an institutional disconnect between cities and developers/building owners means that municipalities cannot justify making long-term investments, nor do they have easy access to financing that can accommodate the longer-term economic payback.

Recently, many cities have begun taking another look and are finding that district energy offers a real opportunity to address their energy challenges. Whether they are championing strategies to secure energy supplies, to insulate themselves from price instability, or to reduce greenhouse gas emissions, these cities recognize district energy’s ability to do all three of these things simultaneously.

This growing interest reflects an understanding of the limits of the traditional energy delivery mechanisms that rely on the energy performance of individual existing buildings. Due to their size and configuration, many existing buildings in urban areas are too small in scale or were designed in such a way that they cannot take advantage of some of the dramatic energy-efficiency features or on-site renewable energy options available to new construction.

Also, individual buildings are unable to tap into the many cleaner sources for thermal energy. An investment in a waste heat recovery system or a biomass facility, for instance, is usually going to be impossible for a single building, and it becomes an option only when a central facility is designed to harvest that energy for use by many buildings.

**MANY CITIES HAVE** begun taking another look and are finding that district energy offers a real opportunity to address their energy challenges.

To illustrate these points, consider what steps a building owner in an existing building must take to reduce greenhouse gas emissions to very low levels (i.e., 80 percent or more below the building’s current levels). Conventional technologies—the use of insulation, weather stripping,
Citywide policies and infrastructure improvements that encourage and support district energy offer practical solutions to several critical urban priorities—power generation, storm water management, waste water reclamation, and urban agriculture.

**Pioneers in District Energy**

Several recent district energy projects are worth highlighting. In Canada, a number of new systems have been built in large cities like Vancouver and in smaller communities such as Kamloops, BC. Now such activity has started to move south into U.S. cities.

Boise, Idaho, is looking at expanding its downtown system. The city uses geothermal energy to heat buildings in the central city and is working to expand the system to include the Boise State University campus.

In Portland, Ore., as part of the renovation of the architecturally significant Veteran’s Memorial Coliseum, an old heating system will be removed and the facility will connect to a nearby facility to support its heating and hot water.

Seattle is starting a new wave of district energy work and hopes to build on Seattle Steam’s long history of service in the central city core. To do this, the City will build hot water loops to reach neighborhoods adjacent to the existing steam system. These new loops will connect to and use existing heating capacity from the already established Seattle Steam system. This approach will help insulate building owners against energy price fluctuations and offer very clean energy.

A pilot project in Seattle’s Capitol Hill and other weatherization measures—can usually reduce energy usage by 50 percent at best. Further reductions in greenhouse gas emissions require the transition to cleaner sources of fuel. Without a district-oriented approach, every building currently using natural gas boilers for heating would need to identify and switch to a source of energy with lower greenhouse gas emissions. Such an undertaking would be expensive and take a lot of time, since each building owner has already invested in his or her heating equipment, and the life cycle of those investments varies.

In cities trying to boost energy efficiency and reduce carbon emissions, focusing on community-wide performance offers a better alternative. Building owners can combine their demand for greener energy and share infrastructure across property boundaries. District Energy St. Paul, which was created in response to the energy crisis of the 1970s, heats more than 185 buildings and 300 single-family homes and cools 100 buildings in downtown St. Paul and adjacent areas.

**Photo by Chris Gregerson**

District Energy St. Paul, which was created in response to the energy crisis of the 1970s, heats more than 185 buildings and 300 single-family homes and cools 100 buildings in downtown St. Paul and adjacent areas.

PHOTO BY CHRIS GREGERSON
neighborhood will use new energy data analysis tools to help building owners understand district energy’s potential. Building owners are able to see precisely how energy use and their costs could be affected through a district system. Such tools are vital to efforts to create new district energy systems because they allow building owners to see why district energy offers them real value.

St. Paul, Minn., is looking to expand its existing system in tandem with the construction of a new light rail line, creating an opportunity to extend the system several miles along a redeveloping commercial, mixed-use corridor. If successful, the system will be able to capture waste heat from a paper recycling plant, offering very clean and affordable energy to buildings on the system. The construction of this extension should be invaluable to the existing buildings along the corridor, where new development will be seeking to achieve higher levels of energy performance.

The small community of West Union, Iowa, has begun construction of a system to serve buildings in its historic downtown, enabling the owners of many small, older buildings to get low-cost, efficient energy. This project is being done in partnership with the City’s Main Street program, and has received substantial grant support thanks to its innovative approach to helping existing buildings become more efficient and switch to low-carbon energy sources.

**COMING SOON TO A NEIGHBORHOOD NEAR YOU**
District energy is expected to grow in the coming years as cities seek to provide long-term, efficient, and affordable energy to building owners as a way to reduce carbon emissions. Building owners themselves can expect cost savings and improved energy performance.

**Benefits to the community**
- A platform for clean, efficient energy performance
- Access to new sources of capital for energy investments in existing buildings
- Long-term risk management of energy costs
- A neighborhood-based model for addressing many emerging challenges, such as water, storm water management, etc.

**Benefits for building**
- Energy cost savings and price stability
- High-performance buildings capture market premiums
- Improved levels of service through utility service model
- Opportunity to upgrade technologies or switch to cleaner energy

**THE IMPORTANT ROLE OF CITIES**
Cities have a unique and essential role in developing district energy projects. First they can establish a neighborhood-scale utility model, which allows communities to make decisions about capital investments, risk management, and technologies. These community decisions often differ from those decisions made by individual building owners or large utilities. Second, cities can play a direct role in attracting financing. Successful district energy projects have used city bonds as part or all of the significant capital financing needs. Both Nashville and Toronto used revenue and general obligation bonds in tandem to raise the necessary capital for infrastructure and energy plant construction. The use of municipal bonds can be an important factor for decisions by
federal, state, and private investors, who look to municipal support as a key indicator of the city’s priorities and capacity for fostering district energy.

In addition, cities are in a unique position to facilitate system development when they make other key infrastructure improvements, such as replacing sewers or water pipes. Given the large capital cost of installing pipes to distribute hot or cold water throughout the planned service area, installing those pipes in tandem with other construction work can save significant amounts of money, and ensures the district energy system will be cost-effective to building owners. These opportunities not only help reduce costs significantly, but also create momentum for the system to expand over time.

Local jurisdictions (depending on specific structure and authority) can also set policies to help level the playing field for profitable district energy development. They can regulate building energy performance policy and exercise land-use controls to regulate and encourage connections to district energy systems. Some cities won’t have the political will and/or financing capabilities to develop systems, but they may have other tools to encourage development of systems by others and to secure a strong customer base and sufficient energy load to make private capital investments less risky.

City leadership is needed throughout the long-term process of creating district energy systems and should include strategic vision, stakeholder engagement, policy priority, and management capacity. This is especially true in neighborhoods with existing buildings, where the timing issues with respect to aggregation of demand requires cities to play a critical coordination role. In light of the long-term nature of district energy, cities need to begin crafting strategies, policy proposals, and infrastructure development plans today, with future district energy systems in mind.

**THE FUTURE OF DISTRICT ENERGY**

With all the uncertainty about energy policies, the one certainty is that they will continue to change. Driving forces include climate change, a desire for less reliance on fossil fuels (especially imports from unstable countries), and strong economic benefits that can come with greater energy efficiency and widespread deployment of clean, renewable energy technologies. In the future, the use of...
energy that contributes to greenhouse gas emissions will become increasingly expensive. Buildings that rely on these energy sources face higher energy costs and will be well served by greatly improving their efficiency and finding cleaner forms of energy. However, investments in building efficiency and cleaner forms of energy are likely to be financed less by individual building owners and more by new finance models that leverage capital from public and private sources that are interested in the returns available from clean energy systems.

District energy is emerging as a platform for migrating entire communities of existing buildings to systems that use less energy and can tap into cleaner forms of energy over time, all at lower costs than would be possible for individual buildings. A shift in scale from individual buildings to neighborhood districts is essential for communities to make investments in improved community-wide performance. This neighborhood-scale approach applies to a range of urban infrastructure services and resources, from urban food production and water treatment to smart grid technologies. District energy’s reliance on owner cooperation, aggregation of demand, and mutual service could also serve as the model for these other services and infrastructure projects.

District energy requires holistic thinking about neighborhoods, with clear policy approaches that support the collaboration of building owners, utilities, and government agencies to achieve efficiencies and reduce energy use and greenhouse gas emissions on a larger scale. The more a city can integrate district energy into its long-term plans and strategic objectives, the more likely that systems can be integrated into existing neighborhoods when opportunities present themselves. FJ

Preservation Green Lab

The Seattle-based Preservation Green Lab is a program of the National Trust for Historic Preservation and has become a strong champion for district energy in keeping with its role of helping existing buildings address energy use issues. The lab has produced a primer for cities (http://www.preservationnation.org/issues/sustainability/green-lab/additional-resources/District-Energy-Long-Paper.pdf) interested in pursuing district energy that highlights some key points, such as:

- Understanding the need to assemble the combined energy demand from a neighborhood of buildings;
- Identifying policies that cities need to consider to improve the success of the system;
- Engaging building owners early and often.

This attention is part of an emerging shift toward looking beyond individual buildings and recognizing the inherent value of contiguous buildings for improving the performance of our built environment.

For more information, go to: http://www.preservationnation.org/issues/sustainability/green-lab/

TOM OSDOBA is a social entrepreneur and strategic advisor through his consulting practice, Tao Strategies. He has worked extensively on energy issues over the past decade, leading district energy work in several cities, and shaping new business models and financing tools for clean energy.

1  www.districtenergy.com/about/story.html
Green Lessons: Things We Learned at Emerson School

JIM LINDBERG

It was an offer we couldn’t refuse. In 2007 a Denver nonprofit organization, Capitol Hill Senior Resources, Inc., called to say that it would like to give a historic school to the National Trust for Historic Preservation—centrally located, free of debt, and with the promise of an endowment for maintenance. The only conditions were that we must preserve the building in perpetuity and keep it in 100 percent nonprofit use.

Were we interested? Absolutely. At 20,000 square feet, the Emerson School was just the right size to realize a long-desired vision: the creation of a permanent, historic and visible home for the National Trust’s Denver Office and our local nonprofit partners, Historic Denver, Inc., Colorado Preservation, Inc., and Downtown Colorado, Inc.

Implementing this vision would require a substantial rehabilitation of the 1885 school. But that opened the door to opportunity as well. Through our work on the Emerson School, we could show how older buildings can be retrofitted to serve as models of sustainable design. It was a perfect fit: a free historic building, a vision for its future, and the opportunity to “walk the talk” about green building and preservation. A five-year “schooling” in green rehabilitation was about to begin.

AN AMERICAN SCHOOLHOUSE
Built of solid masonry, two stories tall, with a prominent hipped roof, the Emerson School is a classic American schoolhouse. Thousands of similar structures can be found in neighborhoods across the country. The Emerson School was designed by Colorado’s first master architect, Robert Roeschlaub, who became well-known for his designs for educational institutions. In 1893 he exhibited a portfolio of school plans at the World’s Columbian Exposition in Chicago.

The Emerson School served as a Denver public school for nearly 100 years, finally closing in 1979. It was rescued from possible demolition by a coalition of community organizations, which came up with a plan to reuse the school to house social service agencies. Classrooms were renovated to create office space, and the building functioned as a nonprofit center for the next 29 years.

FUNDING THE REHABILITATION
In 2010 the title to the Emerson School was transferred to the National Trust. Prior to the transfer, we completed our due diligence on the property and selected an experienced local project
team, including a real estate developer, architect, and general contractor.

During this period we evaluated a number of financing scenarios, including the possibility of using both the federal rehabilitation and energy-efficiency tax credits. Although we ultimately could not use tax credits due to a condition in our endowment agreement, our analysis showed how transaction costs (legal, accounting and financing) can significantly reduce the benefit of the historic preservation credits for small projects like ours. Increasing the historic preservation tax credits from 20 to 30 percent for projects under $5 million, as the current CAPP Act legislation proposes, would address this issue. We also saw how combining historic preservation and energy-efficiency incentives, as the CAPP Act also proposes, would make the credits even more effective.

Without tax credits, our financing consisted of grants (including a critical $500,000 sustainability initiative grant from the Colorado State Historical Fund), donations, and a loan, with a leasing plan that included our preservation partners, one current tenant, and additional tenants yet to come.

“ECO-CHARRETTE” ESTABLISHES VISION AND GOALS

Shortly after taking ownership of the Emerson School, we convened an “eco-charrette” to generate ideas for how to green the Emerson School. This full-day brainstorming session brought together representatives from several green building organizations in the Denver area, along with our local preservation partners and the project team.

The eco-charrette produced an ambitious vision: to make the Emerson School a “net zero” building by 2030. By then we hope to be operating the building entirely with energy produced on site. This vision

The renovation of the Emerson School in Denver, Colo., allowed the National Trust Western Office the opportunity to “walk the talk” about green building and preservation.

PHOTO BY JIM LINDBERG
became a touchstone for the project and influenced many decisions in the months that followed. For example, we knew we wanted to reach net zero, so we decided to invest in a geothermal field (see below for more details), but put off installing solar panels. Solar panels are essential to achieving energy self-sufficiency—all of the net zero projects completed so far have them (and half have geothermal fields as well). But solar panels can be added later. For our project, we decided that it made sense to wait until efficiencies improve, costs go down, and additional funds become available.

A short-term goal from the eco-charrette proved equally important. We agreed to seek a 50 percent reduction in energy use by 2013, using national standards for comparably-sized office buildings as a baseline comparison. Charrette participants came up with a long list of measures to reach this target. But our limited rehabilitation budget required tough choices. As our project team considered these alternatives, we evaluated our options against three criteria: energy savings, impact on historic character, and cost. Agreeing about the potential energy savings of one measure versus another proved particularly difficult. Although we ultimately hired an energy modeling consultant to help calculate these savings, bringing that expertise onto the team earlier would have aided decision making.

New analytical tools being developed by the National Trust’s Preservation Green
Lab should help make this process much easier and less expensive in the future.

Below are descriptions of the major energy saving and sustainability approaches that we implemented at the Emerson School, along with some observations about how and why we made these decisions.

**Plugging the Leaks**

It is no secret that many older buildings leak. And plugging those leaks is one of the simplest ways to improve energy efficiency. Our first strategy was to evaluate the exterior envelope of the Emerson School to identify areas where performance could be improved. A University of Colorado graduate student equipped with an infrared camera documented air leaks around windows and doors and in the ceiling between the second floor and the attic. The thick masonry walls of the school provide a substantial thermal barrier, so we decided against adding insulation there. While a new layer would have minimally improved insulating values, it would have covered up original interior plaster finishes. Wall insulation would also reduce the ability of the thick masonry to passively absorb, retain, and release heat energy during the winter. Adding insulation to the attic floor was an easy, inexpensive solution.

For the windows, we chose a comprehensive restoration approach. More than 100 original 1885 windows were removed, taken to the general contractor’s shop, fully restored, and re-installed. The result is a set of tighter fitting, operable windows that will last for many years to come. These windows are single-pane, however, so the comfort of workers sitting near them remains a concern. We are still exploring two options that could be added later to further enhance performance: storm windows and window film. A soon-to-be-released national windows study from the Preservation Green Lab documents how storm windows and window film technology have both improved in recent years. The emergence of these improved technologies illustrates the benefit of making conservative choices (restoring our irreplaceable original windows instead of replacing them) that leave options open for future technological improvements.

**Uncovering the “Original Green”**

Architect Stephen Mouzon has coined the phrase “original green” to capture an idea that is intuitive to most preservationists: Old buildings have sustainability in their DNA. The location, form, materials, and detailing of older structures all
work together to mitigate the impacts of climate. Typical original green features might include broad eaves, retractable awnings, balconies, and porches to block the hot summer sun. Tall windows, transoms, skylights, and courtyards allow daylight to brighten interior spaces. These and many other proven strategies evolved over generations of building practice. Unfortunately, the convenience and (until recent decades) low cost of fossil fuels allowed architects and builders to discard many of these commonsense traditions during the 20th century.

Our approach at the Emerson School was to restore these original green features wherever possible. For example, we restored and reconnected two central ventilation chimneys that Roeschlaub included to exhaust “foul air” from each classroom. Closed off many years ago, these chimneys (along with windows that open) are now once again part of the Emerson School ventilation system, with enhancements that allow us to capture heat in the winter and to exhaust built-up heat in the summer.

Lighting is another example. Artificial lighting consumes between 25 and 35 percent of the energy needed to operate the typical commercial office building. That is why changing light fixtures and bulbs to high-efficiency compact fluorescents and LEDs (light-emitting diodes) is usually at the top of the list of easy ways to reduce energy costs. We did that.

Even greater savings come when the demand for artificial lighting is reduced. In a newer building this may be difficult, but in many historic buildings the solution is to look back at what the original designer intended. Electric light wasn’t available in Denver in 1885, so the architect arranged the high-ceilinged classrooms so that daylight streamed in through tall, double-hung windows and over the left shoulder of each student to illuminate their papers (all students were expected to be right handed!). As part of the rehabilitation, we removed dropped ceilings, pulled off plywood window covers, and knocked down 1980s office partitions so that daylight could once again fill the classrooms and penetrate into reopened central lobbies.

It should be noted that after removing every pink and mauve fragment of the 1980s office space, we did go back and add some new partitions of our own. We located the new private offices along interior walls, each with a window into open common areas along the exterior window walls. And we didn’t discard all of those 1980s materials. Almost every interior

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**STEPS TO GET EMERSON SCHOOL TO NET ZERO RESOURCE CONSUMPTION BY 2030**

- Install highly efficient solar panels and solar shingles everywhere we can.
- Install a solar domestic hot water system.
- Switch to low-energy appliances and office equipment.
- Install storm windows and add insulating window film.
- Monitor our consumption carefully, share the results, and encourage building users to conserve.
- Capture and reuse rainwater from on-site drainage.
- Learn what others are doing to get to net zero and implement the best ideas we can find.
office door was re-purposed in our new layout, saving thousands of dollars and reducing the use of new materials.

In space planning for office rehabilitations, the decision about whether to create private or shared workspaces is critical. Open plans typically allow for greater use of daylighting and more efficient heating and cooling. Current trends suggest that a move toward virtual offices and shared common spaces is underway, but many workers still prefer private offices. Emerson School incorporates both arrangements, and so far, both seem to be working. Task lighting can be added for individual work areas if needed, and high-efficiency fixtures provide room lighting on dark winter afternoons and at night. A final element of our lighting approach is the use of both automated and manual lighting controls, with all but exit lighting in a default “off” mode. We found that vacancy (not occupancy) sensors work best in occupied spaces, automatically switching off lights that are accidentally left on.

**Going Underground with Geothermal Heating and Cooling**

Not every historic building component is a model of sustainable design. For example, many older HVAC systems perform poorly and waste energy. Major rehabilitations provide an opportunity to address these shortcomings. This is often where new technology makes the most sense for older buildings. Highly efficient heating and cooling systems now include concepts such as radiant floors and panels, chilled beams (water cooled ceiling panels), and geothermal fields. For our new system, we took advantage of the fact that the Emerson School sits on a large site. This allowed us to bury a geothermal field under the parking lot north of the building. Ground source geothermal systems use the constant 55-60 degree temperature of the earth to moderate the temperature of the water that is used to heat and cool the building. The earth acts as a source of heat for the water in winter and a sink for dumping heat in the summer. The transfer of heat to and from the earth requires a fairly large amount of piping, buried either horizontally or vertically. The Emerson School geothermal field consists of 30 vertical bore holes, spaced 20 feet apart and each 300 feet deep.

Geothermal technology is relatively simple, long-lasting, low maintenance, and cost effective. Payback on the incremental cost of the Emerson School geo-
thermal field over a conventional system is estimated to be less than 10 years. Schools are ideal candidates for geothermal systems, because they are often surrounded by playgrounds and parking lots. Court-houses are another excellent fit. In Texas, for example, a dozen historic courthouses have incorporated geothermal systems as part of recent grant-funded rehabilitation projects. Geothermal systems are also well suited to owners with a long-term commitment to their properties, such as governments and nonprofits.

Geothermal systems like ours drastically reduce or eliminate the need for fossil-fuel powered boilers and chillers. This is important, since we want to generate all of our own power on site by 2030. Electricity is still needed for geothermal systems to run various water pumps and air distribution fans. That’s where solar power will come in.

Connecting to the Neighborhood
A building can’t be truly green if the only way to get there is by private automobile. Like many historic buildings, the Emerson School benefits from its location in a historic neighborhood that was built before the auto age. Capitol Hill is Denver’s densest residential area. An amazing range of houses, apartments, small businesses, schools, transit, and other public services can be found nearby. A man who attended Emerson School in the 1950s told us how his family lived in an apartment building across the street to the south of the school and his parents operated a retail business across the street to the west. Home, school and work—all within a 150-foot radius!

This tight-knit historic fabric survives today, but it has a few holes and tears. Fast-moving traffic on one-way streets, surface parking lots, convenience stores, drive-through restaurants, and featureless apartment buildings have made some blocks unappealing to walk along. In re-landscaping the Emerson School site, we looked for opportunities to repair the pedestrian environment of our block. With the help of a private donor, we added new fencing, lighting, shade trees, shrubs, and perennials. We also removed 10 surface parking spaces and added a new bike share station. When it is installed this fall, the bike kiosk will provide a transportation alternative for building tenants and visitors and will bring an estimated 80 neighborhood residents to the property each day to check out and return bikes. A busier, more attractive pedestrian environment will help reconnect the Emerson School to the surrounding neighborhood.

Initial Observations about LEED
After much debate about the costs and benefits, we decided to pursue LEED (Leadership in Energy and Environmental Design) certification for the project from the US Green Building Council. We are seeking LEED Gold, but have not yet completed the process. Once the project is certified, we will share more detail about our LEED experience on the www.PreservationNation.org blog, as we have previously. In general, we found no major conflicts between LEED certification requirements and the Secretary of the Interior’s Standards. The biggest disconnects were in the Materials and Resources category of the LEED rating system. As many preservationists have pointed out, the LEED rating system does not sufficiently recognize the environmental benefits of whole building reuse. We also missed credits by removing (and recycling) almost all non-structural interior walls, despite the fact that this step was essential
to our effort to re-establish both the historic character and original passive green features of the building. Finally, we found that it helped our leasing efforts to be able to say we were seeking LEED certification. Partly as a result of this commitment, two natural resource conservation groups signed on as building tenants.

**TIME WILL TELL**

We moved into the Emerson School in March 2012. With only a few months of operation under our belts, we are still struggling to master new lessons about building operations and management. How can we better engage our tenants to achieve energy savings? What do we do about the homeless who sleep in the garden? How do we manage after-hours use? Many of these questions are both challenging and interesting—even the ones about parking. There is always more to learn at the Emerson School. FJ

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**Green Lessons Learned**

1. Assemble a design and construction team with experience in both preservation and green building.

2. Convene an eco-charrette to set a long-term vision and goals for energy conservation and sustainability.

3. For major rehabilitations, consider including an experienced energy modeling consultant to test and evaluate alternative energy conservation approaches.

4. Restore historic windows and enhance their performance with storm windows or film if necessary.

5. Uncover, reuse, and enhance “original green” features, such as the use of daylight, natural ventilation, and shading devices.

6. Plan for the possibility of adding new conservation features and improved technologies later.

7. Use light sensors or switches with vacancy sensors, not occupancy sensors, for daylighted spaces.

8. Use a ground or water source geothermal heating and cooling system if your site and budget allows.

9. Reuse existing materials and fixtures wherever possible to save money and minimize use of new resources.

10. Hire a third party commissioning agent to verify that all building systems are designed and properly installed to meet project goals.

11. Look for ways to strengthen neighborhood connectivity and encourage alternatives to auto use.

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1 For more information go to http://www.preservationnation.org/information-center/sustainable-communities/sustainability/green-lab/
Sustainable and Resilient Communities: A Comprehensive Action Plan for Towns, Cities and Regions by Stephen Coyle, AIA, LEED AP, CNU is an insightful and well-thought-out manual for municipalities in need of some soul-searching into their planning methodology. A co-founder of the National Charrette Institute with more than 30 years of architecture, planning, and urban design experience, Coyle delivers a literary piece providing detailed insight on a planning process that is economically viable and environmentally focused. Yet I found the preservationist within me asking one question over and over—what about the historic buildings and neighborhoods? As a society we cannot develop sustainable and resilient communities without drawing upon, learning from, and referencing the historic nuclei found within every community.

Sustainable and Resilient Communities commences with a thought-provoking foreword by Andrés Duany, notable architect, accomplished author, and co-founder of the Congress for New Urbanism. Duany accurately asserts that Sustainable and Resilient Communities does not serve as a silver bullet to fix decades of poor planning, nor is it intended to. Rather, the book serves to lead local officials, planning professionals, and municipalities into more cognitive and altruistic choices. The emotions arising from Duany on the topic of urbanism are palpable as he enumerates previous planning horrors, beginning with the boom of single-use zoning, continuing with Eisenhower’s interstate system tearing through cities, and concluding with the vast emptiness left behind by once-glorious Olympic Parks and World’s Fair sites. This journey through the ghosts of planners past lays the groundwork perfectly for the necessity of Coyle’s writings.

The book is designed as a how-to kit for everyone from small-town planners to large-scale regional authorities in the development of economically and environmentally healthy, habitable, and resilient communities. The author begins by breaking down the built environment into two camps. The first, and visibly faulty, camp is that of the conventional/high-carbon community whose lifeline depends upon the automobile, cheap gasoline, and affordable tract housing. The second, and obviously virtuous, camp is the resilient/low-carbon community abundant with multi-modal transit, mixed-use development, and renewable energy sources.

The conventional/high-carbon and resilient/low-carbon categories are dis-
Stephen Coyle’s new publication on creating a sustainable community guides the reader through the development of economically and environmentally healthy, habitable, and resilient communities.

which organically developed on a compact, multi-purpose, pedestrian scale.

The majority of the book is devoted to seven key focus areas of the both high-carbon and low-carbon environments: transportation, energy, water, natural environment, food production, solid waste, and economics. Accomplished guest authors wrote the chapters on each focus area and provide expert guidance on turning conventional/high-carbon communities into resilient/low-carbon communities.

A case could be made for preservation practices in each of Coyle’s focus areas, however the author doesn’t make these connections until the “Action” sections at the end of each chapter. These sections highlight topical real life examples many of which relate to historic preservation. In particular, common threads exist between Coyle’s definition of a sustainable and resilient community and historic city centers in the “Action” segments on “Transportation and Livable Communities,” “Downtown Revitalization,” and “Parking—When Less is More.”

In one example, Coyle draws parallels between “Downtown Revitalization” recommendations and the proven principles of the National Trust for Historic Preservation Main Street Center®. He notes that both recognize the challenges that underutilized land, vacant properties, limited housing stock, and absence of a strong commercial presence bring to a community struggling to bring back its downtown. Despite this, Coyle fails
to highlight the strengths that historic properties themselves can bring to the table in revitalization efforts. The author overlooks the possible financial incentives available through grants or tax credits, the inherent sustainability of rehabilitating an existing building over new construction on undeveloped land, and the sense of place achieved through the revitalization of historic downtown corridors.

Preservationists will find the early chapters of Coyle’s book most helpful, especially those focusing on the development of a sustainability plan, components of the physical built environment, and the review of the regulatory environment. Coyle’s sections devoted to “Green Renovation,” “Form Based Codes,” and “Transfer of Development Rights,” although brief, will benefit local officials, preservation planners, and residents working to incorporate their community’s historic resources into a municipal sustainability plan.

Coyle’s division of American planning practices into the classes of conventional/high-carbon and resilient/low-carbon is not a novel concept among preservationists and urban planners. While Coyle dives into the minutiae required to achieve a resilient/low-carbon community on almost every level, we have seen these perspectives in the past. In 1961 Jane Jacobs made the argument for defined and districted communities complete with all necessary services and built on the pedestrian scale in her *The Death and Life of Great American Cities*. In her work, Jacobs attacked the separation of uses by planners of the 1950s and 1960s and accuses those same planners of deserting cities in favor of automobile-based urban renewal and sprawl. The practice of single-use zoning and urban renewal is top on the planning horrors listed by Duany and later criticized throughout *Sustainable and Resilient Communities* by Coyle.

Similarly James Howard Kunstler’s *Geography of Nowhere*, which followed roughly 35 years later, builds on Jacob’s early predications to document the disembodiment of our cities and towns by our addiction to automobiles. Fast forward 25 years more, and Coyle makes a similar argument. For the last 50 years scholars have been trying to tell us the same thing: The best neighborhoods are designed on the scale of the residents, are built to a level of density allowing for a compact radius of necessary services, and can provide multi-modal transportation sources. It is disheartening that some are still not listening.

I go back to Duany’s foreword, and agree—Coyle’s work is impressive and will be beneficial to many municipalities, but it is no silver bullet. While articulate and methodical in his directives on transportation, energy, water, natural environment, food production, solid waste, and economics, his lack of analysis of historic preservation’s role is particularly disappointing. Again I ask: What about the historic buildings and neighborhoods? It is not enough that these communities and
their role in creating resilient and sustainable communities are addressed as a side bar or passing thought. How can our historic neighborhoods, which seem to embody all the characteristics so eagerly sought by the author, not be a mandatory consideration? Have they not proven themselves resilient in the face of urban renewal? Doesn’t their multi-use zoning and compact density count as principles of sustainability? Absolutely. These characteristics should be recognized as an important component of Coyle’s resilient/low carbon community planning.

Preservationists should read Stephen Coyle’s *Sustainable and Resilient Communities: A Comprehensive Action Plan for Towns, Cities and Regions*, if for no other reason than to insert themselves into the conversation. They should take a collaborative approach and identify how preservation can part of the solution. They should identify areas where preservation can become part of the process in developing a local sustainability plan, highlight the sustainability of historic neighborhood design, and remember that many new construction mixed-use developments are an attempt to re-create what already exists in many historic downtowns. Through these efforts, comes the recognition that some of our most resilient and sustainable communities are the ones already built. FJ

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Over the last ten years, the greater North Park community and the North Park Main Street business district have experienced a new economic and cultural renaissance, emerging as one of the most progressive and exciting urban villages in San Diego. It all got started in 1998 when North Park Main Street (NPMS) declared itself an Arts, Culture & Entertainment District. Since then, a new professional class of artists, designers, musicians, architects, writers, entrepreneurs, and lively cultural events have turned North Park Main Street into a widely recognized creative community.

Today, the community continues to forge new ground as it works to become California’s first sustainable Main Street community—both economically and environmentally.

**THE NORTH PARK COMMUNITY**

North Park is located in the central portion of the city of San Diego within five miles of the downtown area and adjacent to Balboa Park. North Park is roughly 1,466 acres in area and has a population of approximately 40,500 people residing in about 22,000 dwelling units.

North Park Main Street was established in 1996 as a Business Improvement District whose boundaries center on two primary commercial corridors—University Avenue and 30th Street. North Park Main Street’s goal is to promote the revitalization of historic commercial districts supporting small, independently-owned businesses.

In addition to the Main Street program, North Park’s commercial corridor along University Avenue is one of five sites designated as Pilot Villages under San Diego’s City of Villages program. This innovative city program helps to build sustainable communities by promoting development that mixes housing, retail, jobs, schools, and civic uses within walkable communities that have ready access to transit. The immediate access to buses and the light-rail trolley allows residents and visitors to experience commercial corridors and unique shopping experiences without having to spend time searching for a parking spot.

**CREATING A SUSTAINABLE MAIN STREET**

The California Office of Historic Preservation oversees the California Main Street program in partnership with the California Main Street Alliance (CAMSA), a nonprofit entity. As state historic preservation officer and a native of San Diego, I challenged North Park
to become California’s first sustainable Main Street Community. Community leaders took on the challenge, and in 2009 they initiated California’s first Sustainable Main Street program.

First, they brought together a group of local stakeholders, which included transportation planners, environmental advocates, energy conservation experts, green building consultants, farm-to-table restaurateurs, elected officials, business owners, utility companies, and residents working with volunteer professionals under the leadership of North Park Main Street staff. This group came up with the following goals and objectives for the program:

- Maintain the cultural and historic integrity of the built and social environment.
- Increase resource efficiency and conservation within the district.
- Increase internal community connectivity.
- Provide a setting for a sustainable green economy.

The initial planning group also decided that guiding principles should include supporting the environment, strengthening the local economy, and promoting social equity. As a result, they came up with the following key program objectives:

- Create a demonstration project that can serve as a model for other communities.
- Maintain cultural/historical integrity by strengthening the existing historic fabric of North Park and shaping new investment to enhance the physical setting of this unique urban village.
- Increase resource efficiency by reducing the carbon footprint of the district, conducting energy audits, promoting efficiency of water use, and reducing the district’s contribution to the waste stream.
- Promote a sustainable green economy by increasing opportunities for local employment, production, and commerce while increasing the diversity of goods and services available.
- Promote mobility by increasing the efficiency and ease of transit, encouraging active transportation, and improving accessibility for residents and visitors alike.

The Sustainable North Park Main Street program calls for the preservation of historically significant and contributing structures, emphasizing the reuse of materials and business practices that require less energy and waste. These principles provide an opportunity to grow North Park Main Street around a shared vision of localism, historic preservation, and environmental stewardship. By making North Park Main Street a center of sustainability, community leaders hope to strengthen and broaden the district’s competitive position as a desirable destination for new businesses, thereby
Community leaders hope to make North Park Main Street a desirable destination for new businesses by making the district a center of sustainability.

PHOTO BY TIM HARDY, WWW.SHOTBYHARDY.COM

fulfilling Main Street’s core mission of architectural and cultural preservation through economic development.

FROM VISION TO IMPLEMENTATION PLAN

An extended design development process led to a Vision Plan, which was widely distributed and presented in two community gallery showings, with associates present to clarify the proposal and collect feedback from community representatives. The next step was to create a Sustainability and Implementation Plan based on the Vision Plan. The Sustainability and Implementation Plan refines the photos and visionary drawings of North Park, using them as a basis for diagrams with explanatory notes describing the possible interventions in very practical terms. Possible interventions included the following actions:

- Increasing the width of non-historic sidewalks.
- Improving shading and softening landscaping while filtering and decreasing the amount of rainwater that goes to the public storm drain system.
- Generating renewable energy on site by maximizing use of roofs and parking structures while providing rebates and incentives for residential and non-residential property owners.
- Providing public open space, vest-pocket parks, and event gathering spots at street edges, alleys, and other developable land contributing to the greening and social vitality of the community.

The Sustainability and Implementation Plan has a number of uses. It will help Main Street staff educate and inspire building owners and business people about how they can participate in and support the broader vision of a Sustainable North Park Main Street. By demonstrating the separate components of a sustainability program, the plan can also be used to generate interest in potential
funders to support plan components. And finally, by illustrating the vision of coordinated infrastructure investment in the public areas, the plan serves as a handbook for public agencies and advocacy groups who oversee and implement public works.

The Sustainability and Implementation Plan was also designed for other California Main Street communities to use as a model for their own Sustainable Main Street program. The publication, whose appendices serve as both technical manuals and ongoing records of the accomplishments of the district, is also meant to be a living, growing document to which additional interventions, digital building models, incentives, completed projects, or community proposals may be added.

A unique feature is how the plan looks at five different historic buildings that illustrate sustainable solutions while retaining their historic integrity and maintaining their sense of place within the community.

San Diego’s Historic North Park Main Street District acts directly as a catalyst for sustainable development of the North Park community and as a model to explore the potential of implementing various sustainable strategies in both the public and private realms.

**FUTURE STEPS**

Full implementation of this plan demands a series of programmatic elements, some of which could be financed as discrete components. In the long run, however, the success of this effort will depend on North Park Main Street exerting a strong coordinating role among these various efforts. Here are some of the program components envisioned by the plan:

- An advisory committee charged with

**Franklin, Tenn., Adopts Sustainability Program**

Another Main Street community, Franklin, Tenn., has made great strides in developing and implementing a sustainability program. The city held workshops on sustainability to get citizens involved in drafting a Sustainability Action Plan. Volunteers formed committees to develop goals for the action plan. These goals included waste reduction, establishing guidelines for more sustainable building practices, and encouraging urban development that promotes mixed-use, high-density development, among others.

Another initiative, the Live Green Partners Program, recognizes businesses that are taking steps to green their operations. Business owners can choose among a wide variety of activities to cultivate a culture of sustainability in their business practices. This may be as simple as printing double-sided documents or switching to biodegradable materials for carryout containers. To read more go to http://www.preservationation.org/main-street/main-street-now/2011/may-june/green-revolution-in-franklin.html?%20Tennessee
strategic planning, monitoring, and recording progress of the implementation plan.

- A three-dimensional digital model of the district (already created) and detailed models of five focus buildings. Future enhancements of the district model include additional building models, with emphasis on North Park’s historic structures.

- Community-based GIS support to enable the district to map current conditions and monitor program performance.

- Internship programs for students in urban studies, architecture, and environmental studies. Interns can continue to model the district’s historic buildings, develop Historic American Building Survey drawings, provide design solutions, develop and maintain tracking tools, participate in community meetings, and develop outreach materials.

- Technology to support the digital modeling and graphic capabilities of the program and an interactive website to allow full accessibility to the program’s resources.

- A coordinated effort to get community input and provide outreach to building owners, business operators, prospective developers, and government agencies.

- Secure dedicated funding for a Sustainable North Park Main Street program coordinator to implement the program. This staff member will act as a resource and outreach coordinator, actively pursuing and facilitating efforts by both private and public sectors to implement the components of the plan.

- Development of a special Benefits District to help implement the public right-of-way portion of the plan by providing maintenance and operations support for green infrastructure components.

CONCLUSION

Through the extraordinary and exemplary action of the community, the Sustainability and Implementation Plan for North Park Main Street has shown that projects of this scale and complexity can be achieved where there is passion and commitment. The locally-driven efforts of community volunteers, coupled with professional consultants, government entities, private companies, and nonprofit organizations, can continue to enhance the economic and cultural renaissance of the greater North Park community.

MILFORD WAYNE DONALDSON, FAIA, is the California State Historic Preservation Officer. He is also chairman of the Advisory Council on Historic Preservation.

Greening Design Guidelines in New Orleans and Oklahoma City

INTRODUCTION
Preservation commissions across the country are taking a fresh look at their preservation guidelines in light of rapidly evolving changes in energy-saving technologies. And many are finding that they can be part of the solution, rather than simply an obstacle. Two cities—New Orleans and Oklahoma City—have recently completed an overhaul of their preservation guidelines. Both have incorporated sustainability directly into the document. For example, energy-saving technologies, such as the installation of solar panels, are no longer frowned upon, and if substitute materials are needed, owners are encouraged to consider long-lasting materials with earth-friendly manufacturing processes. To find out more about how to incorporate sustainability guidelines in your community, read Developing Sustainability Guidelines for Historic Districts by Noré V. Winter, available from amazon.com.

NEW ORLEANS: NEW GUIDELINES PROVIDE ACCESSIBLE LINK TO PRESERVING NEW ORLEANS’ DIVERSE HISTORIC BUILDING STOCK
DANIELLE DEL SOL

The City of New Orleans and its diverse population of residents and property owners have been through a lot in the past 36 years. Now a unique set of design guidelines that seamlessly fold sustainability into other design considerations is giving homeowners the information they need to make informed decisions about rehabilitating and retrofitting their historic homes to become more environmentally sustainable.

As the gifts of a tropical environment, such as hurricanes, flooding, termites, and subsidence (when the ground shifts as it absorbs water and then dries out) continue to challenge the city’s significant stock of Creole cottages, iconic wooden shotguns, and Italianate double-galleried townhomes, the staff at the Historic District Landmarks Commission (HDLC), continues to work to help protect the city’s priceless structures.

To ensure that owners of historic properties in the city’s 14 historic districts clearly understand how to achieve the best possible conditions for their building, the HDLC relies on a comprehensive set of design guidelines that lays these standards out for the more than 14,000 structures under its jurisdiction.

But until last summer, the guidelines that set these rules fell far short. Homeowners living within New Orleans’ historic districts were required to have all work done to the exterior of their house (visible from the street) approved by the HDLC, but understanding exactly what work required review was difficult. According to HDLC Chairman Jesse LeBlanc, the previous set of design guidelines was bulky and virtually inaccessible: an all-text tome geared to design
and preservation professionals and not always user friendly. Furthermore, the old guidelines offered little help on how to incorporate green technologies into rehabilitation projects.

An overhaul of the guidelines was due. The commission hired Dominique Hawkins, AIA, partner and managing principal of Preservation Design Partnership, LLC, to write new, user-friendly design guidelines for the residents of New Orleans’ historic districts.

Hawkins started her research in summer 2009, consulting with HDLC staff and other organizations, city agencies, developers, architects, and players in the design field, and exploring the city, taking thousands of photographs and talking to homeowners.

The 250-page City of New Orleans Historic District Landmarks Commission Design Guidelines debuted in summer 2011 to provide just what the HDLC and the community were looking for: a streamlined set of guidelines for homeowners that set out how to make repairs and maintain their historic properties. The guidelines introduce a new, three-level rating system, and also provide perimeters for new construction within historic districts.

They also address sustainability issues. LeBlanc said: “We made them [the guidelines] environmentally sensitive, too, to incorporate the use of new building materials and new green technologies in historic homes.”

Hawkins notes that she hesitated to make the guidelines too reliant on existing technology. She explained that “green” technologies are evolving at such a rapid rate that any document intended to be “timeless,” should not set perimeters for technologies that will surely soon be obsolete. “Solar panels, for example, were a big part of the discussion because every year they keep getting thinner and more powerful,” she said. “So I talked more about where panels go on a building, referencing how close to the street and far from the ridge and eave so that the guidelines can anticipate new technology.”

Plus she had her audience to consider. In design guidelines Hawkins has authored for other cities, she has addressed the issues of sustainability and green technologies in different ways, depending on the historic district and its property owners. “Some communities are very attuned to issues of sustainability. There I included information on a range of things such as low-V.O.C. paints, tips on not using salt on driveways in icy conditions, non-harmful insecticides to use in yards—none of which was under the purview of the historic district, but that audiences in those communities wanted to know.”

When Hawkins started New Orleans’ guidelines in 2009, there weren’t a lot of design guidelines available at that point that addressed sustainability specifically. Given the scope and audience, it was decided pretty quickly that information on sustainability and green technologies should be integrated within the document as opposed to being a separate chapter or appendix.
“Ultimately, I wanted to gear the guidelines toward the user,” she continued. “Most users, if they’re trying to replace windows, they’re not going to start by looking in a sustainability section.” But, if within the window section readers are informed that saving their old wood windows and caulking around the edges will save them money on their energy bills while also preserving the historic integrity of their home, “that’s a pretty good reason to save their old windows,” Hawkins said.

She also steered clear of creating a separate section solely on all things “green” because sustainable building and restoration methods are not just trendy—they’re smart economically and environmentally, and therefore will simply become common practice as the years progress. “Although sustainability is a buzz term at the moment, in five years it’s going to be like ADA—we all know it’s there, and we all follow the guidelines,” she said. “As time goes on we’ll continue discussions on what solar panels are best, etc., but building materials and their appropriateness need to be integrated within a good design.”

Plus, she worried that such a specific section devoted to sustainability would rub some people the wrong way. “Some may perceive a sustainability section as rather elitist,” she said. “By making people think about these issues in terms of problem solving, it allows the discussion of, ‘Hey, maybe this is an option for me, for my property, that solves my problem but as a sideline might be environmentally appropriate.’”

Issues of sustainability and green technologies are referenced most heavily in three specific sections of the new guidelines: Roofing, Windows and Doors, and Site Elements. Hawkins encourages interested residents to paint their rooftops white, or a metallic color that reflects sunlight, if they aren’t visible from the street, as is the case for many of the industrial structures in the Warehouse District neighborhood.

For solar panels, Hawkins structured the language with the understanding that solar film is becoming thinner in profile every year. “So we basically just said, ‘if you’re installing something akin to a solar panel on your roof, keep it off the eave, ridge, and keep it a certain distance back from the street, parallel to the roof’s surface.’”

For windows, there is ample discussion in the guidelines on improving operation...
and air infiltration, and on solar heat gain and loss. The guidelines explain how to improve the thermal efficiency of windows and what types of storm windows are appropriate. “The guidelines also suggest using salvaged windows in lieu of modern replacement windows, but we never explicitly state that saving things from a landfill is good. We tried to minimize the preachy quality of the document.”

Finally, site considerations that address sustainability efforts within the guidelines include specifications to minimize the amount of paving and recommend using permeable paving when possible.

In all, the compilation of the guidelines was “a massive undertaking,” LeBlanc said. But he and others on staff and in the community couldn’t be more pleased with the results; LeBlanc is helping Hawkins apply for national awards for the guidelines, which he says, “given the feedback we’ve gotten since they’ve come out, are, in my humble opinion, probably the best set of guidelines in the U.S. for historic districts.” HDLC Executive Director Elliott Perkins agrees. “They’re a valuable tool for the public, and not just for people in the local historic districts, but for anyone who owns a house in this city.”

The guidelines are available digitally for download or for sale as a paperback on the HDLC’s website, www.nola.gov/residents/hdclc.

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OKLAHOMA CITY’S GREEN GUIDELINES: COMBINING HISTORIC PRESERVATION DESIGN REVIEW AND SUSTAINABILITY POLICY

CATHERINE MONTGOMERY, AIA AND PHIL THOMASON

Many engaged in the administration of historic preservation ordinances are familiar with the common complaints of property owners who are required to follow their city’s design guidelines when proposing to modify their property. Some of the most common complaints have to do with requirements to retain historic fabric, including those “old leaky wood windows that make my energy bills so high.”

Oklahoma City’s planning department took these complaints to heart when it began a rewrite of the city’s existing historic preservation guidelines and standards, and decided to completely integrate sustainability principles into the new guidelines.

Oklahoma City’s first locally zoned historic district was established in 1969. The City became a Certified Local Government in 1991 and adopted the Secretary’s Standards for Rehabilitation as its basic and only tool for making design review decisions. In 2003 the planning department created specific and detailed guidelines and standards tailored to Oklahoma City. At this time the city contained about 3,500 properties in nine, locally

PHOTO COURTESY OF THOMASON AND ASSOCIATES.
zonned districts. With project funding in place, the city moved forward with the “GREEN” Guidelines revision project in August 2010.

“Greening” Our Guidelines—The Scope of Work

A consultation team first reviewed other guidelines that had been prepared to include explicit sustainability standards and guidelines. Team members contacted all of the SHPOs across the country, the National Trust for Historic Preservation, and the National Alliance of Preservation Commissions to survey which communities had joined these approaches together in one document. Their study concluded that an example of what the city desired to accomplish had not yet been completed and that this project would be one of the first in the country to fully integrate sustainability standards with rehabilitation guidelines.

The final format of the new guidelines, (informally known as “GREEN Guidelines”) includes four major chapters: Introduction and Background, Site and Landscape Considerations, Alterations, New Additions and Stand Alone Construction.

Chapter One includes new sections on the relationship between historic preservation and sustainability and a section that illustrates and identifies historic passive energy conservation measures that remain appropriate today. Each section of each chapter is introduced with a graphically separated box that presents a policy statement followed by a related statement for design justification and a related statement for sustainability justification. For example, the section on Doors and Entries notes that original doors should be retained and preserved. It then goes on to explain that the original doors help convey the style and period of the building (design justification) and that their reuse preserves old-growth fabric (sustainability justification). The guidelines also note that doors can be made air tight through...
proper weather stripping and the addition of storm doors.

Each numbered item that follows offers mandatory standards and permissive guidance that relate back to the policy and justification statements.

The most significant changes related to sustainability include:
- Encouraging the use of permeable paving materials.
- Emphasizing the use of fabric, wood or metal awnings even if they were not used historically.
- Encouraging the use of solar panels or solar shingles on back roof slopes as well as solar panels at ground level in back yards where they cannot be viewed.

The consultant team held public meetings, met with the preservation review committees, and neighborhood association representatives of the historic districts. The public input was important in adding the sustainability language into the existing guidelines. Following an extensive review process, the new “green guidelines” were adopted by the City Council and were made effective on August 1.

**Sustainability Gets Equal Billing**
The new “Oklahoma City Historic Preservation Design & Sustainability Standards and Guidelines” remain first and foremost, preservation guidelines. The educational introductory sections offer energy conservation solutions that have little or no effect on the exterior character defining aspects of individual buildings. The new format serves to emphasize the steps owners can take, including maintenance related work, that do not require any review either by staff or the commission. Because the document contains both requirements and recommendations, only those sustainability principles that are consistent with preservation principles have been encouraged. The guidelines recognize that technological advances have the potential to improve energy efficiency in older buildings and the installation of such features is encouraged as long as they are placed out of public view and do not detract from the building’s character.

The intent is to emphasize the importance of reducing the burden of discarded building materials on landfills by retaining existing materials as much as is practical. When replacement is required and substitute materials are preferred, owners are encouraged to consider long-lasting substitute materials with earth-friendly manufacturing processes that also maintain the visual historic character of the buildings and properties. These guidelines are anticipated to be useful to every owner of vintage homes in Oklahoma City, not just those who live within zoned historic districts.

To read the guidelines go to http://www.okc.gov/Planning/hp/green/RevisedGreenGuidelines2012-04-04.pdf. FJ

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PHIL THOMASON serves as principal of Thomas and Associates, a historic preservation planning firm in Nashville, and has authored more than 50 design guideline manuals across the country.
Preservationists instinctively get it—older and historic buildings, historic neighborhoods, and downtown Main Streets are, by definition, sustainable. But there are lots of definitions of sustainability out there, and preservation’s role is not always clearly understood or articulated. Yet, when the various building blocks of sustainable communities are broken down and examined in detail, it becomes clear that preservation of existing buildings plays a crucial role in creating sustainable communities.

**DEFINING SUSTAINABLE COMMUNITIES**

While the term “sustainability” does not have any single or agreed upon meaning, most definitions stem from the 1987 Brundtland Commission’s characterization of sustainable development: “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

At the United Nations 2005 World Summit, this definition was expanded to state that to “sustain” something requires the integration and reconciliation of environmental, economic, and social demands. These definitions, however, are often criticized as too vague or obtuse for real strategic action.

Given the difficulty of defining the term sustainability, defining the meaning of “sustainable communities” becomes even harder. After all, the term “community” can be characterized as either social and/or place based. However, since the vast majority of discussion and writing about sustainable communities focuses on “place” or “neighborhood,” it makes sense to define community as a body of persons living in a particular area with common social, environmental, economic, and political interests.

Combine this definition with the two definitions of sustainability and you get the following:

A “sustainable community” is one that meets the needs of the present without compromising the ability of future generations to meet their own needs by actively integrating common social, environmental, economic, and political interests together resulting in a bearable, equitable, and viable community.

This definition, not particularly useful for practical purposes, has led many individuals, organizations, and government agencies to develop their own definition. As a result, the phrase takes on a chameleon-like quality, conforming to the knowledge, values, and philosophy of the political ideology of the community in which it’s employed.

**LACK OF A COMMON DEFINITION BRINGS ADVANTAGES**

In some sense, the inability to universally define “sustainable communities” has
been beneficial and has allowed governments, organizations, and groups of individuals to mold the term to fit their particular needs and goals. For example, while most definitions of a sustainable community include social, environmental, and economic aspects, definitions differ in the methods and means in which to achieve the end goal. Further, most definitions tend to favor one of the three pillars over the other. For example, some definitions may place greater emphasis on the social and economic equity of a community. For example, the Local Initiatives Support Corporation defines sustainable communities as:

[P]laces that offer the positive environments needed to ensure that all residents of varied income levels are provided the opportunities and tools to build assets, to participate in their communities, and to become part of the mainstream economy. They are, in effect, the embodiment of both “community” and “development”—places where human opportunity and social and economic vitality combine with a continuous process of growth, adaptation, and improvement.4

Other definitions are more focused on the social and environmental viability of communities. The Maryland Department of Planning defines sustainable communities as follows:

They share a common purpose: places where people thrive to enjoy good health and create a high quality of life. A sustainable community reflects the interdependence of economic, environmental, and social issues by acknowledging that regions, cities, towns and rural lands must continue

Most definitions of sustainability include social, environmental, and economic aspects, although some definitions may place greater emphasis on one over the other.
into the future without diminishing the land, water air, natural and cultural resources that support them. Housing transportation and resource conservation are managed in ways that retain the economic, ecological and scenic values of the environment. And they are communities where the consumption of fossil fuels, emissions of greenhouse gases, water resources and pollution are minimized.5

THE BUILDING BLOCKS OF SUSTAINABLE COMMUNITIES
As shown by the examples above, sustainable communities share several common characteristics or building blocks which come under the umbrella of the broader economic, environmental, and social sustainability goals. These characteristics generally fall under the following categories: Land Use, Transportation, Green Buildings, Economic Development, Equity/Social Justice, and Placemaking. Each of these characteristics is discussed below.

LAND USE
A community’s long-term environmental, economic, and social sustainability depends on the composition of its natural and built landscape.

Sprawl
The unchecked sprawling development of the past half century has meant bad news on the sustainability front for many communities. Sprawl has led to ecological degradation, fiscal strain, and lack of social cohesion. One major cause of sprawl was the construction of the interstate highway system which allowed unlimited horizontal expansion of low-density, single-use development. Trans-
Formation of these sprawling areas into sustainable communities will involve densification, diversification, and the creation of neighborhood centers in their own right. Many terms used to define sustainable communities are rooted in reaction to the issues created by sprawl.

**Density**
The level of density is crucial to the success of a community. This level, however, is very rarely agreed upon. Economist Edward Glaeser believes there should be no restrictions—including historic preservation regulations—limiting the height or density of buildings. Others believe that tall buildings are damaging to communities because they can undermine neighborhood character and are typically less affordable than the buildings they replace. Somewhere in the middle are those who value the environmental and economic value of density, and understand that insufficient controls on density might have a detrimental effect on the social and cultural assets of a community. How a community views these issues will greatly affect the way in which it defines what it means to be a sustainable community.

**Rightsizing**
Over the past 40 years, many U.S. cities have lost a substantial percentage of their population due to the changing post-industrial economy. This has led to abandoned buildings, vacant land, and crumbling infrastructure. In response, many cities have recently turned to “rightsizing”: re-adjusting the built environment to account for current and projected population and development trends. For many communities, rightsizing has become a crucial and central component of its sustainability efforts. Yet some rightsizing measures can come with significant social costs; whole neighborhoods may have been torn down, and cultural assets demolished.

**TRANSPORTATION**
A community’s long-term environmental, economic, and social sustainability depends on the connectivity and accessibility of its transportation network.

**Connected, Walkable Neighborhoods**
Lowering greenhouse gas (GHG) emissions and stopping the cycle of global warming are priorities for most communities trying to achieve greater sustainability. In particular, many communities are trying to reduce automobile travel and encourage more pedestrian travel by ensuring that the community has direct, convenient routes for residents to walk within and between neighborhoods. In fact, creating well connected pedestrian networks is a key strategy of three of the five communities recently designated as sustainable by the Maryland Department of Housing and Community Development and

**CONNECTED, WALKABLE NEIGHBORHOODS** are not only seen as creating a sustainable environment, but also as a way to create social unity as people are more encouraged to interact with each other while on foot rather than when travelling by car.
necessary supporting infrastructure has become a frequent component of what makes up a sustainable community.

**EQUITY/SOCIAL JUSTICE**

**A community's long-term environmental, economic, and social sustainability depends on its ability to meet the diverse needs of all residents now and in the future.**

**Affordable Housing**

According to the Department of Housing and Urban Development, “the generally accepted definition of affordability is for a household to pay no more than 30 percent of its annual income on housing. Families who pay more than 30 percent of their income for housing are considered cost burdened and may have difficulty affording necessities such as food, clothing, transportation and medical care.”

The lack of affordable housing in many communities has meant hardship for millions of families across the country as they search for housing that is both affordable and in close proximity to jobs and education.

Many factors contribute to the lack of affordable housing, and proposed solutions include public subsidies, density bonuses, fee waivers, and tax credits. Some believe the solution is much easier—simply quit tearing down older and historic housing. As noted by real estate consultant Donovan Rypkema, “Homes built before 1950 disproportionately house people of modest means—the vast majority without any subsidy or public intervention of any kind... Affordable housing is central to social responsibility; older and historic homes will continue to provide affordable housing if we just quit tearing them down.”

**Complete Streets**

In 2005 the National Complete Streets Coalition formed around the idea that streets should be for everyone. “[Complete Streets] are designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists and transit riders of all ages and abilities must be able to safely move along and across a street. Complete Streets make it easy to cross the street, walk to shops, and bicycle to work. They allow buses to run on time and make it safe for people to walk to and from train stations.” Many communities have applied varying forms of complete streets to their own neighborhoods. Complete streets not only offer health and safety benefits, but also environmental and economic advantages. Encouraging alternate modes of transportation while simultaneously providing the necessary supporting infrastructure has become a frequent component of what makes up a sustainable community.
In addition, proximity to jobs and education allows people to save money on personal transportation and cut down on air and water pollution. Thus, access to jobs and education not only benefits individuals, but the health and economic prosperity of the entire community.

**Access to Healthy Local Foods**

Rising food-related health issues (such as obesity and heart disease) and food security concerns have raised awareness of economic, social, and environmental issues associated with food access. Expanding access to healthy, fresh food by providing incentives or opportunities for grocery stores, farmers markets, or community gardens in underserved communities, has become a powerful strategy to address food-related health issues. Furthermore, supporting the locally-sourced

This weekly farmers' market in Baltimore, Md., brings fresh produce to city residents, helps to support the local and regional economy, and contributes to a sense of place and community. PHOTO BY BYRD WOOD

Access to Jobs and Education

A sustainable community is also often defined as one that ensures that jobs and education are easily accessible to all members of the community. Access to jobs and education often works in tandem with all other components of what defines a sustainable community. As people have better access to transportation, housing, and a better environment, communities begin to attract new jobs and opportunities for investment. In addition, proximity to jobs and education allows people to save money on personal transportation and cut down on air and water pollution. Thus, access to jobs and education not only benefits individuals, but the health and economic prosperity of the entire community.
food movement helps both the local and regional economy and contributes to a sense of place and community. Many communities consider access to healthy foods a defining component of their sustainability goals.

**Clean Air, Water, and Land**
The assurance of clean air, water, and land where residents live, work, and play is one of the most basic and mandatory components of what constitutes a sustainable community. To achieve this objective, communities need to understand the nexus between land use and transportation and how it affects air, water, and land quality.

**GREEN BUILDINGS**
A community’s long-term environmental, economic, and social sustainability depends on the efficiency of its new and existing building stock.

**Greening Individual Buildings**
Buildings account for 40 percent of greenhouse gas emissions in the United States. To effectively combat climate change, communities need to aggressively lower building emissions using green building strategies. Green buildings are designed to consume less energy, produce fewer emissions, protect occupant health, minimize waste, create jobs, and reduce the building’s overall impact to the environment. Many communities have adopted green building standards such as the U.S. Green Building Council’s Leadership in Energy and Environmental Design (LEED) rating system. For example, Houston, Tex., requires LEED Gold certification on new construction, replacement facilities, and major renovations of city-owned and large commercial buildings.

While new construction often gets the most attention in the green building industry, most communities that are committed to sustainability recognize that it is crucial to maintain and apply green technologies to existing buildings as well. It has been clearly demonstrated that a century-old home or early 20th-century warehouse can be just as efficient as new construction if properly retrofitted. As it becomes more widely recognized that greening existing buildings results in fewer environmental impacts than new construction, a growing number of federal and state initiatives have been developed to assist communities, including weatherization and energy efficiency programs, tax incentives, and other economic and policy mechanisms. Maintaining existing buildings and making them energy efficient cuts down on air, water, and land pollution, saves residents money and ensures the retention of community assets.

**District Scale Opportunities (district energy & district-scale retrofit programs)**
District energy refers to neighborhood-scale utilities that provide heating, cooling, and domestic hot water within a defined service area. Energy is generated at a central location by burning fuels such as natural gas, biomass or garbage, tapping ground source or geothermal energy, or capturing waste heat from industrial processes, sewers or power plants. District energy was common in the early days of the electric power industry when waste heat was captured from small electricity plants located close to city centers. During the latter half of the 20th century, the benefits of
ECONOMIC DEVELOPMENT
A community’s long-term environmental, economic, and social sustainability depends on its ability to capitalize upon its natural, social/human and built assets without compromising these resources for current or future generations.

Local Jobs and Businesses
A brief by the National League of Cities notes that “Sustainability is a fundamental component of building a strong community, not only in terms of the physical environment, but also for economic prosperity.” One of the most fundamental indicators of economic prosperity is the supply of local jobs and evidence of a strong and diverse local economy. Small community-based businesses, in particular, contribute significantly to local economies and overall community development due to their “local multiplier effect” (LMV). The LMV refers to how many times dollars are re-circulated within a local economy before leaving through the purchase of imported products. If enough local businesses exist in a community, the ripple effect can lead to an independently diverse and financially viable economic base while providing meaningful employment opportunities for citizens. Local governments can support and strengthen local businesses through various policy and tax mechanisms, actively supporting or establishing local business awareness campaigns, and by providing direct technical assistance. Further, local governments need to take the proper measures to ensure that economic growth is not to the detriment of the environmental and social needs of a community. After all, a community that is economically healthy but socially and environmentally unhealthy is not sustainable over the long term.

DISTINCT COMMUNITIES
A community’s long-term environmental, economic, and social sustainability depends on its ability to create and retain a sense of identity as well as foster the creative use of its cultural resources.

Cultural Resources and Placemaking
The conservation of cultural resources in a community helps to ensure a sense of place and create the social cohesion that is needed for a thriving, successful community. Such cultural resources include museums, music halls, and theaters, but they can also encompass broader aspects of the built environment such as areas with unique restaurants and shops, neighborhoods with distinct architectural styles, and public squares and outdoor meeting spaces. Creating, nurturing, and retaining cultural resources are often seen as vital to a community’s long-term sustainability as these resources are often the definers and animators of a community.

Cultural resources and placemaking features also contribute to a community’s “lovability.” As the noted urbanist Kaid Benfield explains, a community’s “lovability” ensures that residents will continue to invest in their neighborhood and that visitors will keep coming back. Without this lovability factor, it is difficult for places
to be sustainable over the long term. As Benfield notes: “In what possible definition of ‘sustainability’ can a place fit if it is not literally sustained? In order to sustain something we need to care.”

To ensure that a community’s distinctive features are retained, many communities incorporate community character strategies into their sustainable communities visioning.

**HISTORIC PRESERVATION—TYING IT ALL TOGETHER**

A community’s long-term environmental, economic, and social sustainability depends on its ability to preserve and foster its collective physical and cultural identity.

Preserving historic buildings is an essential means by which a community can achieve broader economic, social, and environmental goals, and preservation activities either directly or indirectly support each of the characteristics of sustainable communities described above. Yet there is much more work to be done to help communities recognize the connection between sustainable communities and historic preservation. Fortunately, research is increasingly available to help make the case.

**Environmental**

For example, in January 2012 the Preservation Green Lab, a project of the National Trust for Historic Preservation, released a comprehensive study examining the environmental impacts of new construction and building reuse. Assessing seven different building types in four climate zones, *The Greenest Building: Quantifying the Environmental Value of Building Reuse* found that in almost every case, the reuse of existing buildings results in fewer environmental impacts over their life spans compared to demolition and new construction.

Conserving buildings avoids the environmental impacts associated with new construction, prevents demolition waste from entering landfills, and reduces sprawl by encouraging the revitalization of our existing communities. Further, historic buildings are often much more energy efficient than more contemporary buildings due to siting considerations and materials. Communities increasingly view historic preservation as an important environmental strategy.

**Economic**

Preserving historic buildings also offers several economic advantages that serve as a catalyst for additional investment in communities. According to Heidi Garrett-Peltier, an economist with the Political Economy Research Institute at the University of Massachusetts–Amherst, repairing existing residential buildings produces roughly 50 percent more jobs than constructing anew. This is due to the labor-intensive nature of rehabs—manual labor accounts for 41 percent of the cost of rehabbing a building, but only about 28 percent of the cost of new construction.

In addition, reusing and retrofitting older buildings also stimulates the local economy; the labor tends to be hired locally and materials for historic rehabilitations are often purchased locally. Finally, there is increasing evidence that preserving historic buildings is essential to urban placemaking, which plays an important role in the economic competitiveness of cities.

**Social**

Finally cultural resource conservation plays a crucial role in creating vibrant,
socially connected, and thriving communities. In general, historic preservation projects involve a large number of community stakeholders, resulting in civic engagement and social interaction of all residents, resulting in greater social equity. Furthermore historic communities are typically compact, walkable places, with easy access to mass transit and services, resulting in a greater quality of life for all residents. More scientific data is needed, however, that explores the relationship between the conservation of older buildings and various socio-cultural community performance metrics, such as social connectedness and individual well being.

LOOKING FORWARD

The phrase “sustainable community” has evolved greatly over the past 25 years as individuals, communities, and organizations mold the term to fit their particular needs and goals. This term is likely to continue to be used in a way that suits disparate needs with little agreement on a precise definition. As long as social, environmental, and economic equity and viability remain a key component of the definition, however, this chameleon-like quality can be viewed as an opportunity rather than a limitation as we strive for a more sustainable future. FJ

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2 United Nations General Assembly (2005), 2005 World Summit Outcome, Resolution A/60/1, adopted by the General Assembly on September 15, 2005.
5 Maryland Department of Planning, Sustainable Communities Act of 2010: Sustainable Communities Tax Credit, 2010.
14 Preservation Green Lab, National Trust for Historic Preservation.