

Sustainable Stewardship: Historic Preservation's Essential Role in Fighting Climate Change

**Richard Moe
President, National Trust for Historic Preservation**

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It will come as no surprise to you that the subject of my remarks this evening is historic preservation. What may be a surprise is that I intend to argue that historic preservation has an essential role to play in fighting what may be the greatest crisis of our times – climate change.

There's no more appropriate or impressive place to talk about this subject than this building. Montgomery Meigs' Pension Building outlived its original function decades ago. Incredibly, there was talk of demolishing it for a while – but wiser heads prevailed, and the building was given new uses. Today, having reached the ripe old age of 120, this architectural and engineering marvel is still here for all of us to enjoy, learn from, and be inspired by.

The story of the National Building Museum encapsulates what historic preservation is all about: When you strip away the rhetoric, preservation is simply having the good sense to hold on to things that are well designed, that link us with our past in a meaningful way, and that have plenty of good use left in them.

Preservation in America has embraced that philosophy for more than 150 years now. It began when a woman named Ann Pamela Cunningham launched a national crusade in the 1850s to save Mount Vernon from demolition. For most of the next century, preservation focused on saving and restoring iconic buildings.

Around the middle of the twentieth century, “economic benefit” became preservation's new watchword. The National Trust's Main Street program was created to restore economic vitality to deteriorated downtowns by emphasizing the historical and architectural features that set them apart from the typical suburban strip mall. The concept of adaptive reuse came into prominence, and tax incentives were developed to encourage owners to renovate and reuse older buildings instead of demolishing them. It was all about dollars and cents.

This trend led inevitably to an emphasis on preservation's role in supporting and enhancing social values. Today, we understand that maintaining tangible contact with our past strengthens the sense of stability and continuity that is essential in a healthy society, so we make the preservation of familiar landmarks a key component in the revitalization of neighborhoods and communities that are attractive and livable. It's all about bringing us together, encouraging us to recognize the shared heritage that defines and unites us as a nation and a people.

These shifts in focus over the past century-and-a-half show that preservation is a dynamic, vibrant movement. Some things haven't changed: We're still saving iconic buildings – including icons of modernism such as Mies van der Rohe's Farnsworth House and Philip Johnson's Glass House. Our work is still rooted in a respect for history. But today, more than ever before, it is as much concerned with building the future as with holding on to the past.

This concern with the future is at the core of the new phase that preservation is entering right now: As growing numbers of people are worried about climate change, the degradation of the environment, and our relentless consumption of energy and irreplaceable natural resources, it is increasingly apparent that preservation has an essential role to play in any effort to deal with the environmental crisis that looms over us. Because it necessarily involves the conservation of energy and natural resources, historic preservation has always been the greenest of the building arts. Now it's time to make sure everyone knows it.

It's all about sustainability.

Up to now, our approach to life on this planet has been based on the assumption that “there's plenty more where that came from.” With our environment in crisis, we have to face the fact that there may not be “plenty more” of anything – except trouble. In the face of that realization, we're challenged to find a way of living that will ensure the longevity and health of our environmental, economic, and social resources.

The latest report from the UN Intergovernmental Panel on Climate Change was released a few weeks ago, and it is deeply sobering. The report states that “warming of the climate system is unequivocal” and is the result of human activities.

The United States is a big part of the problem. We have only 5% of the world's population, but we're responsible for 22% of the world's greenhouse gas emissions that are the leading cause of climate change. Much of the debate on this subject usually focuses on the need to reduce auto emissions. But according to the EPA, transportation – cars, trucks, trains, airplanes – accounts for just 27% of America's greenhouse gas emissions, while 48% – almost twice as much – is produced by the construction and operation of buildings. If you remember nothing else I say tonight, remember this: Nearly half of the greenhouse gases we Americans send into the atmosphere comes from our buildings. In fact, more than 10% of the entire world's greenhouse gas emissions is produced by America's buildings – but the current debate on climate change does not come close to reflecting that huge fact. The message is clear: Any solution to climate change must address the need to reduce emissions by being smarter about how we use our buildings and wiser about land use.

I'm not so naïve as to believe that preservation represents the way out of this environmental crisis. But I do believe that historic preservation can be – and must be – a key component of any effort to promote sustainable development. Indeed, preservation is sustainability.

The connection between historic preservation and sustainability is not a new concept. It's something that many people in the preservation community have believed and talked about for

many years. They understand that preservation is “the ultimate recycling.” As long ago as 1980, before the word “sustainability” came into widespread use, the National Trust issued a Preservation Week poster that featured an old building in the shape of a gas can – a reminder that reusing an existing building, instead of demolishing it and replacing it with a new one, is one good way to conserve energy.

Much has changed since that poster appeared 27 years ago. The stakes have gotten much higher. Climate forecasts, meteorological reports, population growth projections, rising energy costs, dwindling reserves of water and fossil fuels, even the daily news headlines – they all warn us that we can’t wait any longer for “somebody” to figure out what to do. The “somebody” we need is us, and the need is clearly urgent.

The challenge is to help people understand that preservation, by its very nature, is sustainability. I intend to address that challenge this evening by sharing my views on what I believe is preservation’s essential role in fostering development that is environmentally, as well as economically, sustainable.

The key phrase is “sustainable stewardship.”

The retention and reuse of older buildings is an effective tool for the responsible, sustainable stewardship of our environmental resources – including those that have already been expended. I’m talking about what’s called “embodied energy.”

Here’s the concept in a nutshell: Buildings are vast repositories of energy. It takes energy to manufacture or extract building materials, more energy to transport them to a construction site, still more energy to assemble them into a building. All of that energy is embodied in the finished structure – and if the structure is demolished and landfilled, the energy locked up in it is totally wasted. What’s more, the process of demolition itself uses more energy – and, of course, the construction of a new building in its place uses more yet.

Let me give you some numbers that will translate that concept into reality.

- According to a formula produced for the Advisory Council on Historic Preservation, about 80 billion BTUs of energy are embodied in a typical 50,000-square-foot commercial building. That’s the equivalent of 640,000 gallons of gasoline. If you tear the building down, all of that embodied energy is wasted.
- What’s more, demolishing that same 50,000-square-foot commercial building would create nearly 4,000 tons of waste. That’s enough debris to fill 26 railroad boxcars – that’s a train nearly a quarter of a mile long, headed for a landfill that is already almost full.
- Once the old building is gone, putting up a new one in its place takes more energy, of course, and it also uses more natural resources and releases new pollutants and greenhouse gases into our environment. Look at all the construction cranes dotting the Washington skyline, and consider this: It is estimated that constructing a new 50,000-square-foot commercial building releases about the same amount of carbon into the atmosphere as driving a car 2.8 million miles.

- One more point: Since 70% of the energy consumed over a building's lifetime is used in the operation of the building, some people argue that all the energy used in demolishing an older building and replacing it is quickly recovered through the increased energy efficiency of the new building – but that's simply not true. Recent research indicates that even if 40% of the materials are recycled, it takes approximately 65 years for a green, energy-efficient new office building to recover the energy lost in demolishing an existing building. And let's face it: Most new buildings aren't designed to last anywhere near 65 years.

Despite these surprising statistics and many more like them, we persist in thinking of our buildings as a disposable – rather than a renewable – resource.

A report from the Brookings Institution projects that by 2030 we will have demolished and replaced 82 billion square feet of our current building stock, or nearly 1/3 of our existing buildings, largely because the vast majority of them weren't designed and built to last any longer.

That much demolition will create a lot of debris. If we didn't recycle any of the building materials, we'd be left with 5.5 billion tons of waste. That's enough debris to fill almost 2,500 NFL stadiums.

How much energy will it take to demolish and replace those buildings? Enough to power the entire state of California – the 10th largest economy in the world – for 10 years. On the other hand, if we were to rehab just 10% of these buildings, we would save enough energy to power the state of New York for well over a year.

Instead of focusing on generalities, let's look at a specific building – like the one we're in right now.

It's estimated that the National Building Museum contains about 1.5 million bricks. When you consider how much energy it took to make all those bricks, plus how much it took to manufacture the other materials, then transport them to this site and put them all together in this marvelous structure, the total embodied energy in this building is the equivalent of nearly 2 million gallons of gasoline. If we assume the average vehicle gets about 21 miles to the gallon, that means there's enough embodied energy in this building to drive a car about 42 million miles.

All of that energy would be wasted if this building were to be demolished and landfilled. What's more, the demolition itself would require the equivalent of more than 8,700 gallons of gas – and it would create nearly 11,000 tons of waste.

It all comes down to this simple fact: We can't build our way out of the global warming crisis. We have to conserve our way out. That means we have to make better, wiser use of what we've already built.

Anthropologist Ashley Montague has said that the secret to staying young is to die young – but the trick is to do it as late as possible. All over the United States, people are showing that

old buildings put to new uses can stay young to a ripe old age. If that's not sustainability, I don't know what else to call it.

Still, too many people just don't see the connection. They don't yet understand that preservation must be an integral part of any effort to encourage environmental responsibility and sustainable development.

The UN report that I quoted a bit earlier, for instance, doesn't stress the importance of reusing the buildings we have. Similarly, most recent efforts by the green community place heavy emphasis on new technologies rather than on tried-and-true preservation practices that focus on reusing existing buildings to reduce the environmental impacts associated with demolition and new construction. The most popular green-building rating system, the Leadership in Energy and Environmental Design, or LEED program developed by the U. S. Green Building Council, was designed principally for new construction – underscoring the fact that words like “rehabilitation” and “reuse” haven't had much resonance in the green- building lexicon.

This emphasis on new construction is completely wrong-headed. The statistics I cited earlier tell us clearly that buildings are the problem – but incredibly, we propose to solve the problem by constructing more and more new buildings while ignoring the ones we already have.

Here's what we have to keep in mind: No matter how much green technology is employed in its design and construction, any new building represents a new impact on the environment. The bottom line is that the greenest building is one that already exists.

It's often alleged that historic buildings are energy hogs – but in fact, some older buildings are as energy-efficient as many recently-built ones, including new *green* buildings. Data from the U.S. Energy Information Agency suggests that buildings constructed before 1920 are actually more energy-efficient than buildings built at any time afterwards – except for those built after 2000. Furthermore, in 1999, the General Services Administration (GSA) examined its buildings inventory and found that utility costs for historic buildings were 27% less than for more modern buildings.

It's not hard to figure out why. Many historic buildings have thick, solid walls, resulting in greater thermal mass and reducing the amount of energy needed for heating and cooling. Buildings designed before the widespread use of electricity feature transoms, high ceilings, and large windows for natural light and ventilation, as well as shaded porches and other features to reduce solar gain. Architects and builders paid close attention to siting and landscaping as tools for maximizing sun exposure during the winter months and minimizing it during warmer months.

Unlike their more recent counterparts that celebrate the concept of planned obsolescence, most historic and many other older buildings were built to last. Their durability gives them almost unlimited “renewability” – a fact that underscores the folly of wasting them instead of recognizing them as valuable, sustainable assets.

I'm not suggesting that all historic buildings are perfect models of efficient energy use – but, contrary to what many people believe, older buildings can “go green.” The marketplace now

offers a wide range of products that can help make older buildings even more energy-efficient without compromising the historic character that makes them unique and appealing. And there's a large and growing number of rehab/reuse projects that offer good models of sustainable design and construction.

More recent buildings – especially those constructed between the 1950s and 1980s – pose a greater challenge. Many of them were constructed at a time when fossil fuels were plentiful and inexpensive, so there was little regard for energy efficiency. In addition, they often include experimental materials and assemblies that were not designed to last beyond a generation.

Today, these buildings make up more than half of our nonresidential building stock. Because of their sheer numbers, demolishing and replacing them isn't a viable option. We must find ways to rehabilitate these buildings and lighten their environmental footprint while still protecting their architectural significance. This is a challenge that preservationists and green-building advocates must face together in the coming years.

I believe that climate change is the defining issue of our time – and will be for a long time to come. What's at stake is nothing less than life as we know it on this planet. The fact that the threat is not immediate does not mean that it's not urgent. The experts tell us we have no time to lose. The debate is over, the facts are in, and it's time to act.

Today, most of the important and innovative work on this issue is being carried out by state and local governments and the private sector. Precious little leadership is being offered by the federal government, which isn't even doing much to promote and coordinate fundamental research.

Because this issue cuts across every social, geographic and political boundary, we simply can't hope to bring effective direction to it without strong national leadership. What we need is a federal effort, preferably at the cabinet level, incorporating a significantly strengthened Environmental Protection Agency and relevant parts of the Department of Energy and other federal entities. This new agency should be given a mandate that recognizes climate change as a threat to our survival as great as terrorism and that commits the nation to combating it with every resource available. It should be the environmental equivalent of the Department of Homeland Security.

One of the first and most important things that must happen is a thoroughgoing revision of current government policies that foster unsustainable development.

For decades, national, state and local policies have facilitated – even encouraged – the development of new suburbs while leaving existing communities behind. As a result, an ongoing epidemic of sprawl ravages the countryside, devouring open space, consuming resources and demanding new infrastructure. Look at nearby Loudoun County, for example, where pro-growth supervisors have already approved thousands of new homes, and are considering the approval of thousands more, in a semi-rural area underserved by roads and public services. Meanwhile, here in Washington – and in scores of other cities – disinvestment has left viable housing stock

abandoned and schools slated for closing in areas where infrastructure is already in place, already paid for.

It makes no sense for us to recycle newsprint and bottles and aluminum cans while we're throwing away entire buildings, or even entire neighborhoods. This pattern of development is fiscally irresponsible, environmentally disastrous, and ultimately unsustainable. To replace it, we need federal policy that directs growth to existing communities. You'll note I said "federal policy." While land-use planning has traditionally been a function of state and local government, it's an indisputable fact that where the federal government chooses to spend its money – our money – has a huge impact on local planning and development. We need federal policy that stops rewarding unsustainable development. We need policy that maximizes wise use of existing resources by enhancing the viability and livability of the communities we already have.

We have a choice: We can do nothing for a while longer – until the realities of climate change, the disappearance of irreplaceable resources, and soaring energy costs force us to take action. Or we can take steps now to develop a smart, sustainable development ethic and the policies that will support it.

Among other things, we need incentives to encourage reuse and energy upgrades in older buildings. Over the past ten years alone, historic tax-credit incentives have sparked the rehab of more than 217 million square feet of commercial and residential space – and in the process, saved enough energy to heat and cool every home in the six New England states for a full year. We must insure the continued availability of these tax credits, and expand their use in older buildings that are not necessarily historic but still re-usable. Equally important, we must provide similar incentives that will help private homeowners use green technology in maintaining and renovating their homes.

These federal actions should be complemented by steps at the state and local levels. Over the past few years, 29 states have enacted their own state tax credits to promote the reuse of historic buildings, and we need to see them adopted in more states. At the local level, we need building codes that allow flexibility and innovation in making existing buildings more energy-efficient.

Finally, we need to improve green-building rating systems to ensure that they recognize the importance of building reuse. Under the current LEED standards, for example, a new building can be certified "green" even if it's constructed outside densely populated areas; this kind of development amounts to "green sprawl," which is contrary to every principle of sustainability. Also, under the current LEED rating system, reusing 75% of an existing building core and shell is assigned the same value as merely using environmentally-friendly carpet.

The National Trust and others are working with the U.S. Green Building Council – at their invitation – to improve these and other points. It will take time, but I hope that we'll eventually arrive at a revised LEED rating system that accurately reflects the environmental benefits of "smart" locations and building reuse.

These public-policy steps are critically important, but we shouldn't wait for government to act. That's why the National Trust has launched its own Sustainability Initiative.

In addition to advocating the new policies we need, our Initiative will continue to gather reliable data on the comparative energy costs of rehab vs. building new. We'll work to refute some common misconceptions about energy efficiency in older buildings – to replace myth with fact, because the facts are on our side.

We'll also undertake a major outreach effort to inform everyone – especially architects, developers, property owners and policy makers – about the benefits of preserving and reusing older buildings. And we'll make our website a “best practices” resource for how to reduce energy consumption and use green technology in the rehab of older structures.

Finally, we'll take steps to integrate environmentally sound practices in the operation of historic sites across the country. Right here in Washington, for example, when the National Trust opens President Lincoln's Cottage to the public in February, the Robert H. Smith Visitors Education Center will be housed in a renovated historic building that is fully LEED-certified – a good example of how green practices and products can be employed in older structures without compromising their historic integrity.

Preservation has always sustained America. By protecting and enhancing the buildings, communities and landscapes that tell America's story, preservation allows us to maintain tangible contact with the places where our identity as a nation was established and our character as a people was shaped. By helping us understand the process that made us who we are, preservation gives us the confidence to become who we can be.

Over the years, as the focus of our work has evolved, we've demonstrated that preservation is good for the pocketbook as well as the soul. Now, in the face of unprecedented climate change, we're prepared to demonstrate that preservation is an essential tool for sustaining the environmental viability of the planet as well as the quality of life for ourselves and our children.

The National Trust for Historic Preservation has long played a leadership role in the responsible stewardship of America's past. Now we're ready and eager to play a similar role in the sustainable stewardship of America's future.