



Greening the Built Environment

Recommendations of the Saint Paul Environmental Roundtable

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Overview

Why Is What We Do With Our Buildings and Environment Important?

Why are we concerned as citizens about the types of buildings that are designed and constructed in the City of Saint Paul? Buildings, in their design, construction and operation consume vast quantities of energy and have tremendous impacts on our local environment and planet.

- Every day the worldwide economy burns an amount of energy that the planet required 10,000 days to create. Between 40 and 50% of that is used in the United States.
- In America -the world’s largest energy consumers and a country in which there are more registered drivers than there are voters - the building and construction industry uses over 50% of the nation’s primary energy and 60% of the nation’s electricity. We use 16% of the world’s fresh water. We

- contribute over 30% of the nation's greenhouse gas emissions and generate 40% of the nation's solid waste.
- From 1975 to 1995 – the space of one generation – the world lost 30% of its natural wealth of forests, wildlife and marine and freshwater species.
 - Every single living system on this planet is in decline and the rate at which they are declining is increasing. Don't take our word for it – ask the National Union of Scientists. They've been saying this repeatedly for the last 20 years plus.
 - Increasing material recycling to 60% could be the equivalent of 315 million barrels of oil per year. (This would equal having NO cars on the road in the nation for 40 days out of the year. None.)
 - The first cost of a building represents only 6-8% of its total cost over its lifetime. 92% of a building's cost is devoted to its operation and maintenance. The cost of people working inside that building is between 100 and 150 times that of the building itself. If we can make our buildings more energy efficient, easier to operate and maintain, and keep our people healthier and more productive, we can save enormous amounts of money – enough to pay for the cost of the building many times over.
 - Sustainably designed, high performance buildings are those that, through their siting, orientation, design, construction, and operation, are highly energy efficient, have lower operating costs, are better for the environment in broad and specific terms, and promote whole health for their users and occupants with measurable results.
 - Climate sensitive design using available technologies in the US could cut total energy use by 60% in commercial buildings, reduce material and water use, reduce waste and save owners, companies and our government billions of dollars every year in maintenance and operating costs, assessments, fees and taxes.

Sustainable Design offers a way to balance our continued growth and development with goals for the healthy ecology and well-being of our community and the planet, allowing us to create safe objects of long term value. It is an integrated, holistic way of designing and operating buildings that mitigates the negative impact our buildings have on the environment. Buildings should not make us, our land, our water, or our air, sick.

We have the ability to change the way in which buildings behave. We can do that through better design. Buildings can become better environmental performers and the City of Saint Paul has the opportunity to join cities such as Portland, Seattle, Chicago, Austin, New York and many others to become environmental stewards through the

introduction of Sustainable or Green Building Requirements and Practices for all new and existing construction within the City.

Here's the good news – this doesn't need to cost more. There are certainly strategies that if selected can add cost to a project, most notably those dealing with renewable energy systems. However, most of the strategies found within the sustainable design guidelines offered for consideration here are readily available, "off the shelf" items that do not add additional cost to a project. A sustainably designed building – depending on the strategies employed - will allow savings of 30-50% or greater of a building's annual operating costs through the use of more efficient systems and equipment. These savings represent millions of dollars over a building's lifetime, capital that can be saved or spent elsewhere. These cost-savings can be easily predicted early in the design process and the performances measured during occupancy of the building.

The costs to incorporate these strategies and highly efficient systems can vary. For most projects, if one is already doing a quality building, there really are no additional costs to institute many sustainable design strategies, or, at most, 1 – 4% additional first costs. The payback period for these systems is generally 3 –7 years.

Sustainable design strategies include more than just energy efficiency concerns. The recommended guidelines include topic areas relating to neighborhoods and sites, water efficiency, materials and resources, indoor environmental quality and waste. Utilizing the collection of these strategies will help improve exterior air and water quality and can lead to social and societal improvements as well.

Caution: This is not business as usual. We need to think.

Sustainable design is a holistic, interdisciplinary process that is not satisfied with single strategies. Simply using less energy in a building doesn't necessarily mean that we've done better for the site, the neighborhood or made our homes and workplaces healthier. Installing carpet with recycled content in it is a good thing to do in and of itself, but doesn't help save a lot of energy or make a building easier and less expensive to maintain. In order to be truly effective, one must look at and use a collection of strategies that impact each other and work together to provide deeper, stronger solutions that are beneficial to everyone and everything. We are not separate from nature.

Not all of this is easy. This is not business as usual and requires us to think and act differently than we have been – not always significantly, but differently none the less.

Not every strategy and solution will work or be affordable for every project. An environmentally sound design process involves the development of a series of environmental strategies or options that are reviewed and analyzed in detail for specific applicability, first cost, life cycle cost, long-term environmental impact, energy conservation and pre-construction and post-construction emissions. These should then be prioritized and the selected strategies integrated into the building's design and support systems.

RECOMMENDATIONS TO ACHIEVE GREENING THE BUILT ENVIRONMENT

Recommendation #1: Establish Building Guidelines

WE RECOMMEND the city create, establish or adopt a set of building guidelines that are environmentally and economically sound for all new construction, major renovations and existing buildings within the city.

There are at least two ways in which the city can approach this recommendation:

a. Establish Sustainable Building Guidelines.

Create a process through which experts in the sustainable design industry work with the City to create sustainable design guidelines for new and existing buildings. The consultant team should consist of architects, civil, mechanical and electrical engineers, landscape architects, ecologists, comparative energy modelers and a cost-planning/financial analyst at minimum. The panel the City convenes should include representatives from The Mayor's Office, Planning and Economic Development, Code Enforcement, Public Works, BOMA, Labor Unions, Chamber of Commerce, Banking and Lending Institutions, Developers, Contractors and the Design Build Institute.

The guidelines created should holistically consider the entire planning, design and construction of our places and buildings while balancing environmental, economic and community impacts, costs from a value driven view point (first cost and ongoing operation costs) and Life Cycle benefit analysis.

b. Utilize Existing Guidelines.

There are a number of guidelines already in use and accepted within the design and construction professions. Utilizing one or any of these guidelines and rating systems

will enable a sense of parity and be easier for the industry to incorporate into their design and development process. It may also make sense for the City to adopt one guideline as a standard, but also allow other “pre-approved equals” to satisfy the requirements.

Example: Perhaps the Minnesota Sustainable Building Guide becomes the City standard. People wishing to use the Green Communities or LEED Guidelines instead, for whatever reason, could do so without penalty.

Suggested Pairings of Guidelines to Project Type:

- **New Construction and Major Renovations:**

Offices, Schools, Commercial or Multi-Family Housing: Minnesota Sustainable Building Guide (B3), OR, Leadership in Energy and Environmental Design Guidelines and Rating System (LEED-NC v2.2) for New Construction or Manor Renovations.

Retail: B3 Guide OR LEED – Retail Application Guide

Core and Shell: B3 Guide OR LEED-CS

Commercial Interiors: B3 Guide OR LEED-CI

Laboratories: LEED – LABS Application Guide or Labs 21

Mixed-Use, Neighborhood or Urban Design: B3 or LEED-ND or SITESS

Single Family Homes, Duplexes, Twin Homes or Town Homes: LEED-Homes, or MN Green Communities

- **Existing Buildings:** B3 or LEED-EB

Steps to Achieve this Recommendation

1. Convene a Team of Experts to Facilitate the Creation or Adoption of Guidelines:

The team/panel should consist of architects, civil, mechanical and electrical engineers, landscape architects, ecologists, comparative energy modelers and a cost-planning/financial analyst at minimum. Also to be included are representatives from city administration, city staff, Code Enforcement, Public Works, BOMA, Labor Unions, Chamber of Commerce, Banking and Lending Institutions, Developers, Contractors and the Design Build Institute.

The guidelines created should holistically consider the entire planning, design and construction of our places and buildings while balancing environmental, economic and community impacts, costs from a value driven view point (first cost and ongoing operation costs) and Life Cycle benefit analysis.

This team or some semblance of it should reconvene a minimum of once a year for the first three years after the building guidelines have been established in order to measure the success of the implementation of the guidelines and to make updates and revisions as needed.

2. Establish Environmental and Economical Performance Baselines.

a. The benefits of building in this way need to be clearly stated and measurable. The minimum standard allowed (code or permitting requirements perhaps) should become part of the building baseline – both in terms of the environmental performance as well as economic considerations.

Any individual or entity who may request assistance (financial or otherwise) from the city should be required to demonstrate exemplary performance beyond the baseline standards.

b. Understand that there are some additional up front costs (they should generally be minimal – in the range of 1-4% - depending on the strategies inherent in the design) when doing high performance buildings. The developers do not always see the financial benefits gained from implementing these decisions (many of the savings and benefits are derived from long term operational cost savings. Consider assisting developers to bridge the gap between the baseline and the proposed solution.

c. The baseline may in part be market driven (There is a cost difference between vinyl flooring and wood flooring.) The city should not pay more for wood flooring if the market demands wood flooring. Wood flooring in and of itself does not make a project “green”. The cost difference between wood flooring and sustainably harvested wood flooring is minimal – and supply driven.

3. Require the Use of the Guidelines to Be Part of the Permitting Process.

a. Don't call the guidelines “green” or “sustainable”, thereby making them appear to be extra or ancillary – simply establish them as a normal part of the process.

b. Make it a requirement that in order to build in Saint Paul, in order to obtain a building permit, projects must demonstrate minimum compliance with the building guidelines.

c. Make compliance measurable – while LEED certification may not be the goal, it does allow for an objective 3rd party verification of a building's performance within stated goals and requirements. This helps “hold one's feet to the fire”. The City of St Paul

may benefit from developing a way to require objective 3rd party verification of a developer's claims as a requirement for either permitting or receipt of financing, etc.

Referenced here is an example of a green building ordinance from the City of Pleasanton, CA

<http://www.ci.pleasanton.ca.us/pdf/greenbldg.pdf>

An index of their documents is located at:

<http://www.ci.pleasanton.ca.us/business/planning/index.html>

They are looking at updating the ordinance by adding residential development. See info at:

<http://www.ci.pleasanton.ca.us/business/planning/green-bldg-info.html>

4. Provide Incentives for Developers to Go Beyond Minimum Requirements and Provide Projects with Significant Environmental Benefits.

a. Faster Approval/Permitting Process

The faster a developer or building owner can navigate through the approval process and get a project to market, the less carrying costs they will bear. This improves their bottom line. Find a way to make the approval process faster when projects meet certain green building standards. This may be difficult to balance - as claims by building owners as to their project's green or environmental benefits and performance will need to be verified.

b. Tax Incentives (additional financing, tax reduction over first few years)

Any project seeking TIF money will need to meet green building standards. Simple. High performers should be eligible to receive additional financing at reduced rates or reduced tax rates for the first 1-3 years after completion of construction. These savings can flow directly to the building owner's bottom line, help pay for additional commissioning or otherwise reduce any increase in project costs due to "green components".

c. Greater FAR Incentives

A goal common to all the guidelines is to increase density and retain/improve open space (this is also a "hot topic" at many neighborhood group meetings – where density is seen as anathema to quality living environments). If developers (residential or commercial) meet sustainable design goals then perhaps the city could allow them greater density through FAR (floor area ratios) increases allowing the developer to get more "product" to the market – allowing for greater profit potential at a lower cost.

d. Reduce or Eliminate SAC and WAC Charges

The city should institute a policy that charges building owners for the amount of sewage conveyance (both storm and sanitary) they use and a flat charge to access potable water. If owners demonstrate that their building will use less water and produce less sewage through on site water conservation, management and treatment strategies – owners should see the benefit of implementing those strategies by a reduction or elimination of their sewer and water access charges.

e. Rebates

Who doesn't like a good rebate?

5. Find and Work with Synergetic Partners

Work with the Greater Minnesota Housing Fund to incorporate its "Minnesota Green Communities" practices into the City of Saint Paul's affordable housing projects. Minnesota Green Communities will support the production of affordable homes with markedly reduced energy costs and greater environmental air quality, among many other environmental benefits.

6. Educate City Staff

As with any new policy or set of requirements, education of City staff will be required to enable and enforce effective use of the guidelines. This education will be necessary to ensure that all staff and approach the requirements in a similar fashion. Alternatively or additionally, create a position or department to specifically deal with sustainable design issues and management of projects and process.

7. Provide Resource Information to the Public

Develop an Informational Clearinghouse or Portal Website to provide developers, builders, architects and other design professionals with current information and case studies to sustainable design issues. This can be as simple as a page with web links to other sources of information or something tailored specifically for the City of Saint Paul.

8. Encourage the Use of Renewable Energy.

As a means to promote the use of renewable energy sources, the City may consider providing an additional incentive for those projects incorporating on-site renewable energy sources (solar photovoltaic, solar hot water or wind energy). This could be done in conjunction with State and Federal tax rebates and other incentives.

Recommendation #2: Improve Energy Efficiency of Existing Buildings

WE RECOMMEND the city improve the energy efficiency of all existing buildings and housing within the city.

Let's face it – designing new buildings to be happier, more effective environmental stewards is important and an attractive notion and ideal. Equally important and more pervasive are the again buildings that exist within our community. Existing buildings have tremendous impact on our infrastructure and community use of resources. The continued operations and maintenance of buildings matters – and if we can reduce the energy and resources use in existing buildings by even a small fraction, we will be responsible for significant savings – both environmentally and financially, thereby lessening the

Steps to Achieve this Recommendation

1. Establish a Data Base for Energy Use on Buildings and Homes.

You can't improve what you don't measure. One way to improve energy efficiency in buildings is to provide comparative analysis relative to energy use for new and existing buildings. This enables facility managers, building owners and homeowners to compare their energy use with others and take corrective actions if their own energy use appears to be beyond average consumption and/or stated energy use goals.

The State of Minnesota is conducting the B3 Energy Benchmark Study wherein all public buildings in the State of Minnesota are tracking their energy consumption – normalized on a per square foot basis.

The City of Saint Paul can utilize this information when completed. The City could also consider conducting a similar benchmarking study for all privately owned buildings - both existing and new.

2. Find and Work With Synergetic Partners.

The of Saint Paul can work with Xcel Energy to promote their Energy Design Assistance Program (suitable for new construction as well) and Homesmart Program to provide information and resources for individuals seeking to improve the energy efficiency of their buildings or homes.

Additionally, the of Saint Paul should work with and assist the Neighborhood Energy Consortium (NEC) in the expansion and marketing of its Peak Performance Homes

Program, which is aimed at improving the energy efficiency and comfort of Saint Paul homes while lowering their heating, cooling and operating costs.

Recommendation #3: Net Zero Greenhouse Gas Emissions

WE RECOMMEND the city require that any new building receiving public financing or municipal bonds must result in net-zero increased energy use and greenhouse gas emissions over the life of the bonds or building.

Any new building project funded with municipal bonds needs to result in net-zero increased energy use and greenhouse gas emissions over the life of the bond or building. From a cost perspective, meeting the revenue/climate neutral requirement will mean that the building will have to be designed and built to operate in a very energy efficient manner (or have its energy needs met by renewable energy sources). Upfront investments in efficiency will be the cheapest way to reduce CO₂ from the operation of the building.

For the remaining energy use, greenhouse gas offsets will have to be purchased or acquired to negate the emissions. It would be up to the city or state to decide how to specifically deal with any CO₂ offset projects. Our preference is to require that the offsets be done within the bond issuer's geographic jurisdiction. So if St. Paul adopted the policy and was building a new building funded with bonds, the offset projects (eg. efficiency, fuel switching, renewable energy purchases/development, carbon storage/sequestration, etc.) would have to be completed inside Saint Paul, or, the State of Minnesota.

This requirement challenges city financed projects to not incur additional long term operational, financial and energy consumption burdens on the City of Saint Paul. The model resolution is tailored for cities that have signed on to the U.S. Mayor's Climate Protection Agreement – which has already occurred in the City of Saint Paul. How great is that?

For more information – The model resolution for cities is at:

<http://www.newrules.org/de/climateneutral.html>

Recommendation #4: Up Front Economic and Environmental Costs

WE RECOMMEND the city require that the true economic and environmental cost of development be paid for up front.

We do not pay for the true environmental (or economic) costs of our decisions and building practices during the design and construction period of any given building. The ongoing maintenance and operations of our buildings, places and communities have an inherent embodied energy within them. (A building located within the city, utilizing existing infrastructure has a lower embodied energy than the same building located outside the city limits utilizing no existing infrastructure.) Buildings that use less energy, take advantage of natural energy flows, support environmental practices and stewardship through their operations and provide for users and occupants health in broad and specific terms are better performers and cost us less as a society than those that do none of those things.

A modest proposal: The cost of obtaining a building permit will increase. Consider adding an environmental/societal impact fee for any building project of 10% of the value of construction. This fee can be waived/reduced if the project meets certain building standards:

- LEED CERTIFIED: Fee reduced to 5%
- LEED Silver: Fee Reduced to 2.5%
- LEED GOLD or Higher: Fee Waived

Recommendation #5: Revise Zoning and Code Requirements

WE RECOMMEND the city revise local zoning and building code requirements to work with environmentally sound building guidelines.

There are some zoning and code requirements that inhibit sustainable design practices. These issues have nothing to do with life safety requirements. Rather, many of the issues have to do with parking, size of streets, roadways and storm water management requirements. Others are more building and systems oriented and are focused on plumbing, HVAC or vapor barrier requirements. We encourage the City to revisit these requirements and make adjustments or provisions within the zoning and building code to allow for a more holistic and environmentally sound approach to some building practices.

Step to Achieve this Recommendation

Meet with State and Local Building Code Officials and Trades People:

Some of the current codes and ordinances inhibit alternative approaches and better environmental performance. This is most noticeable in certain areas of the zoning ordinance with respect to density and open space requirements, size of roadways, types of paving required; stormwater management, rainwater or graywater harvesting and alternative waste/plumbing solutions. Meet with state and local building code officials and trades people to determine win-win solutions for all parties involved.

Recommendation #6: Establish Common Metro Area Requirements

WE RECOMMEND the city work together with the City of Minneapolis and other metro-area counties/communities to establish common programs and requirements.

Rules, rules, rules. Everybody's got rules. It would be nice if they were the same from place to place to keep everyone on even footing and to minimize confusion and competition from city to city. A number of other communities and local government agencies are beginning to develop sustainable design guidelines and strategies for their communities (North Oaks, Roseville, Dakota County, Apple Valley, etc.). Establishing a common plan will help to minimize confusion between requirements of different communities.

Steps to Achieve this Recommendation

Meet with Other Local Government Agencies:

Meet with other local government agencies (city and county) to determine where similarities and synergies exist between current plans - proposing and making revisions where needed and appropriate (each city may have rationale for slightly different needs).

Thoughts and Resources

How to Begin?

When considering the types of Sustainable Design or Green Building Strategies to propose for the City of Saint Paul it is important to recognize that there are already a number of Sustainable Design Guidelines in existence and in use within the State of

Minnesota and the Nation. We propose that rather than recreating a new set of guidelines, the City of Saint Paul select an existing guideline or set of guidelines within which to work and make effective changes to the way buildings, developments, neighborhoods and community open space are conceived and made.

The guidelines most applicable and useful to be considered for use are the following:

LEED Sustainable Design Guide and Rating Systems

- LEED NC (Leadership in Energy and Environmental Design for New Construction and Major Renovations)
- LEED EB (Leadership in Energy and Environmental Design for Existing Buildings)
- LEED CS (Leadership in Energy and Environmental Design for Core and Shell)
- LEED CI (Leadership in Energy and Environmental Design for Commercial Interiors)
- LEED – Homes (Leadership in Energy and Environmental Design for Single Family Residential)
- LEED ND (Leadership in Energy and Environmental Design for Neighborhood Development)

For links to these guidelines, refer to the website www.usgbc.org (United States Green Building Council)

MSDG/MSBG

- Minnesota Sustainable Design Guideline
<http://www.sustainabledesignguide.umn.edu/>
- Minnesota Sustainable Building Guideline (B3)
<http://www.csbr.umn.edu/B3/>

NOTE: Because the State of Minnesota currently requires that any new building project receiving state funding or bond financing follow the Minnesota Sustainable Building Guideline (B3), it may be wisest to simply adopt this guideline as the standard for any commercial development project with a set of “approved equals” should individuals prefer to use other guidelines listed herein.

SITESS (Systems Integration Tool for Environmentally Sustainable Sites) draft rating tool.

http://host.asla.org/groups/sddpigroup/SITESS_Working_Draft_0826051.pdf

<http://host.asla.org/groups/sddpigroup/documents.htm>

Regional and local site sustainability issues are addressed for both site development and ongoing management of sites where buildings are a not a central feature or are not present.

(Currently being developed by the ASLA and Lady Bird Johnson Wildflower Center).

MN Green Communities: <http://www.greencommunitiesonline.org/minnesota/>

MN Affordable Green Housing Guide:

<http://www.greenhousing.umn.edu/guide.html>

Building Green: <http://www.buildinggreen.com>

Additional Notes

Any of the above guidelines are good in and of themselves – however, the City may wish to append to the guidelines several additional requirements such as:

- Requiring adequate physical space be provided in all buildings for the collection and storage of recyclable materials.
- Where available and applicable, projects connect to the Saint Paul District Energy System.
- That all projects seeking to satisfy renewable energy/green e-tag certificates do so from local sources wherever possible. Xcel's Windsource program provides local benefit and should be given preference over out of state providers when and wherever possible.
- Perhaps the City of Saint Paul could lead by example and enact key elements of the recommendations in their own buildings and operations.