



DEPARTMENT OF COMMUNITY DEVELOPMENT SERVICES

Community Development Services

m e m o r a n d u m

TO: Mayor Laurel Lunt Prussing and Members of the City Council

FROM: Elizabeth H. Tyler, AICP, Director, Community Development Services

DATE: April 24, 2008

SUBJECT: Sustainable Urbana: An Approach for Strategic Planning

Introduction and Background

In the midst of dramatic global climate change, increasing consumer demands, and the depletion of available affordable resources, as indicated by the City Council, it is timely and beneficial for the City of Urbana to undertake strategic planning and implementation for sustainability. Sustainability is a framework rooted at the nexus of the environment, society, and the economy. It is a planning tool intended to meet present needs without compromising the ability of future generations to meet their own needs.

Many cities and countries throughout the world have recognized the importance of addressing their environmental footprint in order to be more financially sound and to ensure a high quality of life throughout the long-term future.

For over 30 years, the City of Urbana has exhibited an understanding of the importance of minimizing its impact on the environment for ecological, social, and economic benefits. This understanding has been shown through a number of efforts including, being a charter member of the Tree City USA program, maintaining and expanding the U-CYCLE recycling program since 1986, including goals related to sustainability in the Urbana City Council Common Goals Initiative, established in 2005, and becoming one city among 829 that have signed the U.S. Mayor Climate Protection Agreement, which establishes a commitment to meet or beat the Kyoto Protocol target within each city and to urge the state and federal government to enact policies which do the same.

Council member Bowersox began a Sustainability Discussion and Initiative in April 2007. Since this initial discussion, Council members and staff have embarked in brainstorming and researching ways to become sustainable. In August 2007, city staff prepared a Sustainable Urbana Report, which compiled contributions from Council members and staff, and examined 14 areas of the City's operation. The report described objectives, achievements, opportunities, and challenges in a variety of areas. Since the creation of the Sustainability Report, it has become clear that a plan of action is necessary to meet the City's goal of being sustainable and to meet or

beat the Kyoto Protocol target.

The attached Sustainable Urbana Approach for Strategic Planning (Exhibit A) builds on the Sustainable Urbana Report presented to City Council in August 2007. The Approach frames Urbana's Sustainability Initiative within the context of other City plans and achievements. It identifies objectives, provides ideas for an implementation strategy, describes a future course of action and a basis for additional public involvement. This Approach is a step towards ensuring that Urbana has a strong economy, a healthy environment, and a vibrant, safe community for current and future generations. However, additional research and planning is needed to create a systematic strategic plan for incorporating sustainable practices into the City's standard operating procedures, with the eventual goal of fostering community-wide strategies for sustainability.

Discussion

Strategic Planning

Effectively addressing the growing issues related to environmental, social, and economic health requires a dedicated and systematic approach which incorporates these considerations into the criteria used in decision-making. A Strategic Plan will assist the City in achieving its goals to reduce Urbana's environmental footprint and increase its ability to meet its needs without compromising the ability of future generations to do so.

While Urbana has made significant accomplishments under the umbrella of sustainability, these have resulted largely from individual uncoordinated initiatives. The challenge that lies before the City is to institutionalize sustainable practices into our municipal organizational structure and programming. Applying sustainability evaluations and overseeing successful implementation – both internally and externally throughout the city – is a significant operational and philosophical shift. The breadth of such a change impacts operations spanning from the purchase of office supplies to capital projects and maintenance activities to policy decisions. Creating a Sustainability Strategic Plan will assist in determining priorities and procedures. A Strategic Plan will provide guidance as the City takes responsibility for the impacts of its operations and works to create a livable sustainable community with a high quality of life.

The implementation of immediate efforts towards sustainability, while producing quick results, may not produce long-term sustainability and could potentially incur unnecessary financial costs. However, establishing a strategy for the way the City will change its everyday operations and policies to be environmentally, socially, and economically sensitive will foster better and more efficient results throughout time. This strategy will include evaluation criteria (see Chapter 5 in Exhibit A).

There are many materials and tools to assist municipalities in undergoing strategic planning for sustainability. Additionally, there are many cities that have succeeded in doing so. The following documents are attached and provide a framework for integrating an awareness of

resource consumption and environmental consequences into municipal procedures:

- *Handbook for Urban Sustainability Chapter 17: Process for Implementing a Municipal Sustainability Plan* by D.J. Vanier (Exhibit B)
- *Sustainability Planning Guide for Illinois State Agencies* by the Illinois Green Governments Coordinating Council (Exhibit C)
- *Toward a Sustainable Community: A Toolkit for Local Government*¹ (excerpt as Exhibit D)
- *Policy Guide on Planning for Sustainability*, by the American Planning Association (Exhibit E).

Examples of Strategic Planning for Sustainability

Other cities have planned and implemented strategic plans for sustainability. Successful examples include, Madison, WI; Seattle, WA; Portland, OR; and Corvallis, OR. Other comparable cities in the initial planning or implementation stages include, Town of Normal, IL and North Hampton, MA.

Goals and Critical Issues

Identifying critical issues and establishing goals are part of the strategic planning process. Two priority areas that have been identified are energy and water. Global climate change is currently considered the most serious global threat. The Climate Protection Agreement, signed by Mayor Prussing, sets a goal for the community as a whole. The City is taking the first step towards reducing greenhouse gas emissions to 7% below its levels in 1990 by collecting baseline data. Further strategies to achieve this goal are needed. Additional partnerships and initiatives are needed to expand this effort to the community as a whole. Water is seen as the upcoming most critical issue facing the world. Further identification of critical issues and goals is needed.

Recommendations

Because preparing for success requires strategic, comprehensive planning, staff recommends that we continue to evaluate the procedures used in other municipalities and collaborate internally to create a comprehensive process that is suitable for the City of Urbana. The attached Approach for Strategic Planning begins to outline methods that can identify short, medium, and long term actions for implementation, tracking and monitoring progress, and reviewing and revising the strategic plan regularly. However, more time is needed to create a strategic plan.

Additionally, if it is the will of the City Council to extend the Sustainability Initiative beyond the City as an institution, a significant public involvement and education effort should be undertaken.

¹*Toward a Sustainable Community: A Toolkit for Local Government*, written by Gruder, Haines, Hembd, MacKinnon, and Silberstein http://www.naturalstep.ca/documents/SustainabilityToolkit_000.pdf

The following, taken from Chapter 6: Recommendations in the Approach for Strategic Planning, describe possible actions which can lead the City into a strategic process for developing a sustainability plan.

- Establish a green ribbon “Sustainable Urbana Commission” with members representing residents, business, University, utilities providers, and environmental stakeholders. This commission could act as a steering committee for the process of creating a Sustainable Urbana Strategic Plan.
- Expand the internal City “Green Team” to include all city departments and assist in furthering the implementation of the Sustainability strategic plan and in developing new ideas.
- Complete the Sustainable Urbana Strategic Plan. A community-wide input process is needed to generate ideas for collaborative programs and other citizen-initiated projects. Receiving consultations from professionals in the field of municipality sustainability efforts may assist in facilitating an integrated sustainability plan for the community as a whole. Professions working with The Natural Step, eco-municipalities, or the American Planning Association may offer assistance.
- Establish baseline energy consumption for internal City operations. Set realistic short-term and long-term goals to reduce the City’s energy consumption and emissions.
- Model carbon emissions for the entire populace of Urbana. The Mayor’s Climate Protection Agreement calls for a seven percent improvement from 1990 emissions levels. Since that data may not be available, the City should establish a baseline from the earliest accurate data available. From this modeling the Strategic Plan will set numerical goals to cap Vehicle Miles Travelled and cap Single Occupant Vehicle trips.
- Implement programs and projects identified in the Strategic Plan to meet objectives such as reducing use of disposable shopping bags.

There are a few manuals available to help the City establish its sustainability plan. The Sustainable Urbana Commission, working with the expanded internal Green Team should evaluate these guides and adopt a process to establish the Strategic Plan. Below is an outline of one such process, taken from the Handbook on Urban Sustainability:

1. Statement of intent-developed by Council
2. Select timeframe for the implementation of Plan
3. Create a Sustainability Commission
4. Commission develops and proposes Sustainability Plan
5. Identify overall goals
6. Select sustainability alternatives

7. Identify sustainability assets and liabilities
8. Identify regulatory support
9. Develop sustainability education plan
10. Select indicators to evaluate goal attainment
11. Select metric for Life Cycle cost analysis
12. Select implementation projects
13. Develop and recommend budget for plan
14. Council approves plan
15. Monitor and validate plan

The Climate Protection Agreement sets a goal for the community as a whole. The City of Urbana is taking the first step towards reducing greenhouse gas emissions to 7% below its levels in 1990, and additional partnerships and initiatives are needed to expand this effort to the community as a whole. Partnerships and collaborations will assist in meeting the goals of sustainability. Partnerships to build upon include: the Center for Neighborhood Technology, the Sierra Club, the Green Building Council, the University of Illinois, local utility providers, and the cities of Champaign and Savoy.

It is important to bear in mind that incorporating sustainability practices will be an on-going and long term process – not a single individual project. As time progresses the City will have implemented many actions identified in this Strategic Plan, and an updated plan, with new objectives and focus areas should be created.

City staff requests that the City Council provide direction regarding the Urbana Sustainability Initiative.

Prepared by:

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- Attachments:
- Exhibit A: Sustainable Urbana: Approach for Strategic Planning
 - Exhibit B: *Handbook for Urban Sustainability Chapter 17: Process for Implementing a Municipal Sustainability Plan*, D.J. Vanier
 - Exhibit C: *Sustainability Planning Guide for Illinois State Agencies*, Illinois Green Governments Coordinating Council
 - Exhibit D: Excerpt from *Toward a Sustainable Community: A Toolkit for Local Government*, Gruder, Haines, Hembd, MacKinnon, and Silberstein
 - Exhibit E: *Policy Guide on Planning for Sustainability*, American Planning Association



Sustainable Urbana

Approach for Strategic Planning

DRAFT



April 2008



Acknowledgments

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- Appendix B: 2005 Comprehensive Plan Goals
- Appendix C: Waste and Recycling Background Information and Survey
- Appendix D: Councilmember Bowersox Sustainable Urbana Initiative Proposal
- Appendix E: Mayors Climate Protection Agreement



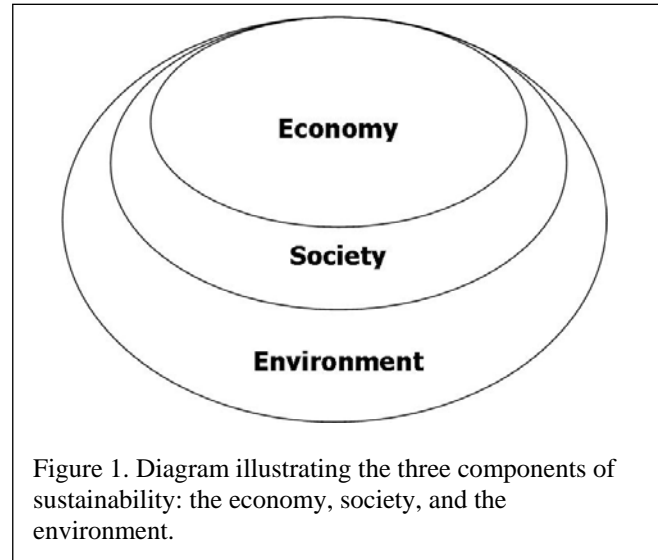
Chapter 1. Introduction

Background

Context of Sustainability

Sustainability is an increasingly popular topic in the United States, and with good reason. Dramatic global climate change and increasing consumer demands resulting from ever increasing global populations, are altering ecosystems and the availability of limited resources upon which we rely. The Bruntland Commission (United Nations 1987) brought forth this definition of sustainability: “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” However, a more contemporary definition of sustainability is simply “Meeting present needs without compromising the ability of future generations to meet their own needs.” Sustainability is a philosophy that recognizes that we must change past short-term fragmental thinking and actions and initiate long-term holistic approaches understanding that we live in an interconnected world and our actions, individually and as a whole, can improve rather than degrade our global environment.

It is common to associate sustainability with natural resource management or conservation, however, the scope is much broader. There are three fundamental elements of sustainability: the economy, society, and the environment. Figure 1 illustrates this relationship. Within each area, a complex web of interrelations exists. Thus, sustainability is inter-disciplinary and synthesizes knowledge from all fields of natural, social, and physical sciences, as well as fine and liberal arts and applies an analytical review against these interrelations that compromise the fundamental elements.



Many cities and countries throughout the world have recognized the importance of balancing consumption demands with available resources by cultivating innovative systems that reduce environmental impacts, improve societal culture, and foster a strong economy while meeting the needs of communities. By recognizing that the economy is a system built and supported by society and by recognizing that the cultures and systems of society are built upon the foundation of the environment, we can understand the importance of preserving the environment from which all else emerges.

Sustainability in Urbana

For over 30 years, the City of Urbana has practiced an understanding of the importance of preserving the environment for ecological and social and economic benefits. A charter member of the Tree City USA program, established in 1976 by the National Arbor Day Foundation, Urbana is recognized as the leading community in Illinois for maintaining a strong urban forest that preserves the quality of air, water, soil, and community aesthetic. There are more than 3,000 communities participating in the Tree City USA program. With 30 Tree City USA designations, the state of Illinois has the second highest number of communities participating in the program.

Another significant environmental initiative in Urbana is the U-CYCLE recycling program. The U-CYCLE residential curbside program started in 1986, is one of the first in Illinois. In 1999, the program expanded to provide on-site recycling services to include all multi-family buildings. In 2005, it was estimated that over 12,000 tons of material per year was recycled or recovered for composting. This is a diversion rate of 32% which exceeds the State's goal of 25%. In the last 20 years, U-Cycle has recycled 25,000 tons of commodities, reducing greenhouse gas emissions by 21,500 metric tons of carbon dioxide (equivalent to carbon dioxide emissions from burning 2.4 million gallons of gasoline).

Since the late-1970s, farmers from the region gathered to provide local produce to citizens. The City of Urbana's management of the Market at the Square began in the late-1990s and has led to continued to growth in size and popularity. Now, almost thirty years after its inception, from mid-May through mid-November, the public has access to fresh, local produce from Illinois farmers and handmade arts or crafts from Illinois artisans at the Market at the Square. In addition to nurturing personal health, the produce at the Market exemplifies a more sustainable model of food production. The Market supports organic farmers, as well as others using organic or "natural" methods; these farmers use a method of farming that does not contribute to the environmental hazards associated with the use of pesticides and over-use of fertilizers. Because the vendors at the Market must be based in Illinois, the energy used to transport food to the Market is minimal in comparison to the "food miles" used to ship produce from around the world. Additionally, the vendors at the Market create jobs for local residents, addressing both environmental and economic sustainability.

In 2005, the Urbana City Council established a Common Goals Initiative. Many of the goals assist in achieving a sustainable quality of life in Urbana. A complete list of the goals and objectives is attached (Appendix A). The goals include the following:

- Promote Public Safety
- Strengthen Urbana's Economic Development Program
- Create an energetic, vibrant downtown that provides needed services to the city.
- Preserve Neighborhoods and Promote Rental Safety
- Implement the 2005 Comprehensive Plan
- Reduce Urbana's Environmental Footprint and Waste Stream/Expand Recycling
- Promote Diversity and Non-Discrimination
- Increase Affordable Housing
- Create an Affordable, Energy-efficient Model Neighborhood

- Get Urbana Bicycling
- Create a Public Arts Program
- Recruit and Retain Top Quality Staff
- Review City Code
- Handle Council Business Efficiently
- Encourage Intergovernmental Cooperation

Several of these goals reduce the City’s impact on the environment. Reducing Urbana’s environmental footprint and waste stream/expanding the recycling program, creating an affordable, energy-efficient model neighborhood, and getting Urbana bicycling will generate significant changes in the physical, built, and social environment of Urbana. Achieving these goals will provide examples of success, efficiency, and increased physical health for both the residents and the environment.

Much progress has been made toward these Council Goals through various planning initiatives. A Neighborhood Conservation District (NCD) ordinance was adopted in the fall of 2007. The ordinance allows residents or neighborhood associations to design a Conservation District specifically tailored to their needs. This tool will help promote reinvestment in Urbana’s established neighborhoods. The NCD ordinance is just one of the planning efforts focused on promoting infill development. Urbana is actively participating in numerous infill projects, and encourages these types of developments with economic incentives or other assistance. Recent projects that the City has participated in include the Crystal View Townhomes (mixed-income development), Gregory Place (campus mixed-use projects), the Stratford (downtown mixed-use development), the Denny’s Request for Proposals (downtown mixed-use development), Five-Points and Gateway Shoppes (retail redevelopments), and the Carle Foundation Hospital’s recent and planned expansions.

Another City-sponsored project is a new “green community” which is expected to be built in 2009. The City is creating an affordable, ultra-energy-efficient neighborhood on Kerr Avenue. The neighborhood’s design was drawn up by one of the nation’s leading green design firms, Farr Associates. The City will donate land and provide some infrastructure for this model neighborhood. Another Urbana neighborhood, the West Urbana Neighborhood, was named in 2007 by the American Planning Association as one of the nation’s best for its walkability and character. This neighborhood is comprised of historic single-family homes and a mix of families and university students.

Urbana was named in the Top 10 on *Country Home* magazine’s list of the best green cities in America in 2007.

In April of 2007, Councilmember Brandon Bowersox initiated a discussion on sustainability with City Council members which generated a list of potential ways to reduce Urbana’s environmental footprint. Additionally, Councilmember Bowersox proposed a motion to direct staff to hold similar brainstorming sessions, add suggestions to the list compiled by the City Council members, and briefly perform a rough, initial assessment of the feasibility of each

suggestion. The Sustainable Urbana initiative presented to City Council is attached (Appendix D).

In May of 2007, Mayor of Urbana, Laurel Lunt Prussing, signed the U.S. Mayor Climate Protection Agreement. Almost one year later, there were 829 Mayors who had signed the agreement, including 29 from Illinois cities such as Chicago, Aurora, Normal, Moline, Rock Island and several other suburbs. The agreement declares the City's commitment to meet or beat the Kyoto Protocol target within each city and to urge the state and federal government to enact policies which do the same. The Kyoto Protocol calls for a 7% reduction in greenhouse gas emissions from 1990 levels by 2012. Achieving this commitment will be a significant challenge. The full Climate Protection Agreement is attached (Appendix E).

During the following four months and working with City Council's input, City Department Heads held brainstorming sessions within each department and compiled a list of possible ways to reduce Urbana's environmental footprint. Upon completion of the list, Department of Public Works Assistant to the Director, Barb Stiehl, created a Sustainable Urbana Report, in August 2007, with contributions from many staff members, which examined 14 areas of the City's operation. The report, presented to the Urbana City Council on August 13th, 2007, described goals, achievements, opportunities, and challenges in the following areas:

- Municipal buildings
- Energy Efficiency and Renewable Energy
- Fleets
- Infrastructure and Transportation
- Landscapes and Open Space
- Regional food system
- Outreach and Education
- Procurement
- Land Development
- Boneyard Creek
- Water
- Waste and Recycling
- Building and regulation
- Incentives

In February, 2008, the Mayor of Urbana, Laurel Prussing convened a public forum entitled, "Sustainability: What You Can Do". This event was sponsored by a variety of organizations and governments in the region, including the American Association of University Women, City of Urbana, City of Champaign, Champaign, County Farm Bureau, AmerenIP, State Representative Naomi Jakobsson, Champaign-Urbana Mass Transit District, Champaign County Regional Planning Commission, and the Village of Savoy. Presenters addressed issues of sustainable agriculture, waste management and conservation, and next steps for Urbana. This public forum exemplified the desire and usefulness of community-based discussions on Sustainability.

This document presents an approach for a Sustainable Urbana Strategic Plan, building on the report presented to City Council in August 2007. The Approach for Strategic Planning explains Urbana's Sustainability Initiatives within the context of other City plans and achievements. The Approach establishes goals, provides an implementation strategy, and describes a future course of action and a basis for additional public involvement to ensure that Urbana has a strong economy, a healthy environment, and a vibrant, safe community for current and future generations. Additionally, it assists the City in meeting its goal to reduce greenhouse gas emissions to 7% below 1990 levels by 2012.

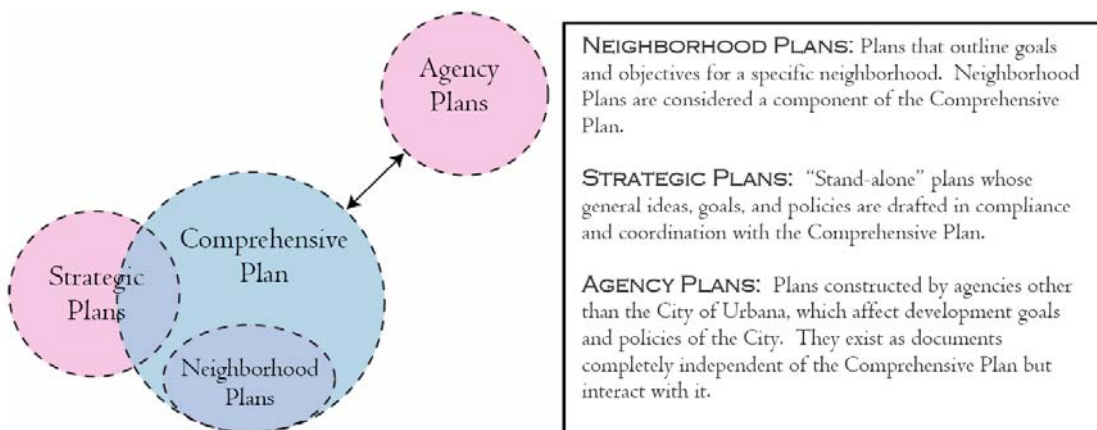


Chapter 2. Existing Plans

Planning Context

The Sustainable Urbana Approach is the synthesis of existing goals, procedures and strategies related to sustainability from various City plans, programs, and policies. The Approach is adapted from the 2007 Sustainable Urbana Report compiled by the Public Works department. The Sustainable Urbana Report provided an initial snapshot sustainable accomplishments, challenges, and opportunities. The original content of the 2007 report has been rearranged to provide a clearer picture of the many categories that fall under the sustainability umbrella. The next step is to take this Approach and use it to create a Sustainable Urbana Strategic Plan.

A Sustainable Urbana Strategic Plan will interact with other City documents as part of a “System of Plans”. This diagram taken from the 2005 Comprehensive Plan shows how the system of plans works.



The Comprehensive Plan is a primary document that articulates the City’s goals for future development. The Comprehensive Plan is supplemented by several other strategic, neighborhood, and agency plans. Neighborhood plans outline how residents want their immediate areas to grow and develop, and are officially considered part of the Comprehensive Plan. Agency plans are created by external entities, but may include policy or development implications within the City. Strategic plans focus on specific areas or districts (such as Downtown Urbana), projects or policy venues (such as historic preservation). Strategic plans are informed by the Comprehensive Plan, but remain separate documents. As a strategic plan, the Sustainable Urbana Plan outlines the ideas, goals, and policies the City will pursue to promote sustainability.

2005 Urbana Comprehensive Plan

The Comprehensive Plan provides the framework for planning and development in and around the City. The Comprehensive Plan “describes goals and objectives for existing and future development in the City, as well as the steps necessary to achieve these goals.” Sustainability is a key theme throughout the Comprehensive Plan; from the Vision Statement on page one through the last page of Implementation Strategies. Four cornerstones make up the foundation of the plan: Quality of Life (the elements that make Urbana a unique and desirable community in which to live, work, shop and play.), Sensible Growth, (the opportunities for our community to prosper, grow and remain sustainable now and in the future), Services and Infrastructure (the programs and infrastructure needed to allow the community to grow and improve the quality of life for all its residents), and Mobility (the elements for keeping Urbana accessible to everyone by promoting a safe, multi-modal transportation system with high-quality and efficient infrastructure). These four cornerstones are addressed in the Vision Statement, which states:

Urbana is a diverse, progressive community comprising a mosaic of unique neighborhoods. It benefits from exceptional housing opportunities, schools, parks and businesses and from being the seat of government for Champaign County. Urbana’s values are personified by its cultural diversity, small-town feel, tree-lined streets, historic downtown, civic amenities and as the home of the University of Illinois. Urbana will promote healthy, balanced growth while preserving its community heritage. Appropriately designed infill development will be encouraged to help revitalize the built urban environment, while new growth areas will be developed in a contiguous, compact and sustainable manner.

Several of the Goals and Objectives from the Comprehensive Plan are also directly related to sustainability, covering a multitude of topics such as sensible growth, energy conservation, providing access to affordable housing and transit, and increasing the amount of trees in the City, just to name a few. A complete list of Goals and Objectives relevant to this plan is provided in Appendix B.

The implementation of Comprehensive Plan Goals and Objectives is described in the Future Land Use Maps and the Implementation Program. Future Land Use maps show the compact, contiguous development pattern called for in the Comprehensive Plan, as well as the preservation of natural spaces and agricultural lands. Notes on the maps call out proposed locations for multi-use trails and specific development goals, such as the Orchard Downs site redevelopment, which is to include elements such as “provisions for community open space and links to open space amenities”.

The Implementation Program lists policies, action strategies, and coordination strategies to implement the Comprehensive Plan Goals and Objectives. These 87 items are divided into short-term and long-term time frames, and responsible internal City departments as well as external agencies (if applicable) are identified.

Consolidated Plan

The 2005-2009 City of Urbana Consolidated Plan addresses the housing and community development needs of the City as well as those of the Urbana HOME Consortium, which is comprised of the City of Urbana, the City of Champaign and unincorporated Champaign County. The Grants Management Division of Community Development Services is responsible for implementing the strategies outlined in the Consolidated Plan which are completed through programs provided in the Annual Action Plan.

The Department of Housing and Urban Development (HUD) allocates Community Development Block Grant (CDBG) and HOME Partnership program funds annually to the City for implementation of the Consolidated Plan strategies. While the primary focus of the Consolidated Plan is on housing and providing for the needs of lower-income families, there are several aspects of the plan that are directly related to sustainability. One of the major barriers to providing adequate housing to local families is increased housing costs, which includes ever rising utility costs. The Consolidated Plan provides for programs that are intended to reduce utility costs by making homes more efficient. One such program involves emergency assistance to low- and moderate-income households for the replacement of furnaces or water heaters when these appliances break down with new, energy efficient models. Other programs provide housing rehabilitation assistance including the installation of new roofs, insulation, energy efficient windows and doors in homes that have fallen into disrepair as a result of deferred maintenance.

In addition to addressing energy-efficiency, the Consolidated Plan outlines programs designed to reduce or eliminate environmental hazards. There is a section that analyzes the quantity of lead-based paint in the City, and outlines strategies to test for and remove lead-based paint from older homes. The City also sponsors a neighborhood clean-up program, which helps to mitigate accumulation of junk and debris in yards, garages and basements. Residents take household junk to a designated drop-off site where metal objects are separated and recycled. While, environmentally hazardous wastes such as paint and chemicals are not accepted, residents receive information of how and where to properly dispose of those materials.

Finally, the Consolidated Plan encourages the direct construction of energy-efficient housing by the City. The City has recently donated land and assisted financially with the construction of two passive-solar energy-efficient homes by e-co lab, a certified local community housing development organization. The City is also requesting proposals from developers to produce an entire neighborhood that will be affordable and extremely energy-efficient located on Kerr Avenue, west of Cunningham Avenue.

Capital Improvement Plan

The Capital Improvement Plan (CIP) lists the public improvements the City has tentatively planned over the next ten years. Many of these projects contribute to the overall sustainability of Urbana. The installation of bicycle lanes promotes non-automotive transportation. New traffic

signals use energy-efficient LED lights. Improvements to storm water systems help improve water quality. The CIP is where many projects from the Comprehensive Plan or Consolidated Plan are brought to fruition.

Transportation Plans

There are also a number of transportation-related plans that impact the sustainability of our region's mobility. The Champaign Urbana Urbanized Area Transportation Study (CUUATS) prepared a Long Range Transportation Plan for Urbana, Champaign, and Savoy in 2004. The Plan lists several goals based on Federal TEA-21 principles, many of which foster a sustainable environment:

Goal 1: Compact development and economic vitality will be principal considerations of the transportation planning and implementation process.

Goal 5: All transportation system users will have convenient, multi-modal access to all parts of the urbanized area and will travel with increased mobility during peak traffic hours.

Goal 6: To provide facilities for alternative modes of transportation in order to decrease the number of vehicles on our roadways.

Goal 7: Provide a user-friendly, integrated regional transportation system that supports accessibility and promotes desirable social impacts.

Goal 8: All transportation system users in the urbanized area will have access to a network of transportation modes and infrastructure that maximizes connectivity between origins and destinations and the modes used to travel between them.

The Urbana Bicycle Path Master Plan was recently adopted as a part of the Comprehensive Plan. This plan provides a roadmap of what the City can do to encourage and improve bicycling as a mode of transport in Urbana. Issues addressed include:

- Public Input on preferred routes, bicycling issues, and recommendations
- Existing data on physical features in the built environment that affect bicycling
- Explanation of Recommended Bikeway Types
- Bicycle Level of Service (BLOS) modeling explanation and results
- Recommended Locations for Bikeway Treatment
- Photo renderings of existing streets and paths with Bikeway Treatment
- Street plans for bicycle facility inclusion on upcoming roadway projects
- Cost estimates for Bikeway Treatment
- Implementation Strategies, including non-construction methods

The Champaign County RPC has completed a Greenways and Trails Plan to link natural spaces, recreation paths, and transit corridors county-wide in a healthy manner. This plan adopts

universal design standards to be used for paths and trails across Champaign County. The Champaign-Urbana Mass Transit District is undertaking a Mobility Implementation Plan (miPlan) to address how the region's transit systems will grow in the future. MiPlan focuses on future alternatives to reduce single-occupant vehicle trips. These alternatives range from increased bicycle use and carpooling to more efficient bus routes to land use issues. The plan argues for Mobility Enhanced Developments, made up of higher-density, walkable nodes that combine jobs and housing with easy access to transit.

Other Plans

There are several other plans produced by the City and other local agencies that affect sustainability in Urbana. The Lakeside Terrace Redevelopment Plan guides the development of the Crystal View Townhomes as an energy-efficient, mixed-income residential property. The Boneyard Creek Master Plan lays out the redevelopment of the creek as a naturalized area with a multi-use trail component. The University of Illinois is completing a plan for the redevelopment of Orchard Downs as a sustainable community. The U of I also has a sustainability program called Building a Lasting University Environment.



Chapter 3. Accomplishments

Accomplishments

The City of Urbana is beginning to initiate efforts to establish policies and procedures to provide a framework for incorporating sustainability into the City's organizational structure. As an example of these efforts, in January 2008, the Public Works Department created a Green Team, that is beginning to look at sustainable measures that can be incorporated into Public Works activities. The mission of this Team is:

To promote, educate and lead our department to initiate change in perceptions, policies, and practices by addressing environmental impacts and needs, and committing to take action to improve and enhance the relationship between our department and the environment.

The Public Works Green Team members include: Rod Fletcher, Environmental Manager; Brad Osterbur, Transportation Engineering Technician; Kate Brickman Levy, Administration; Jason Arrasmith, Environmental Control Officer; Erik Hagerman, Maintenance Worker Concrete Section; Larry Fredrick, Fleet Manager; Courtney Rushforth, Recycling Coordinator; Brad Bennett, Civil Engineer; Vince Gustafson, Building Maintenance; and Peggy Staske, Engineering Technician.

The Public Works Green Team is a model of institutional involvement that furthers the development of creative and contextually acceptable sustainability efforts. Expanding the Green Team to include other departments will further enhance the City's ability to operate sustainably.

The following entries, from the Sustainability Report in 2007, describe the City's accomplishments related to sustainability in the internal operations of the city in a variety of areas.

Energy Efficiency and Renewable Energy

1. Joined Champaign County consortium to seek sources for electricity to reduce overall costs for citizens in Urbana.
2. Prepare Council packet information by copying on both sides of paper thus reducing the amount of paper used.
3. Place Council agendas, minutes and other packet information on-line to reduce paper use.
4. Banned smoking within City Facilities.

Waste and Recycling

Zero Waste

1. Since the inception of the residential and multifamily recycling programs, over the last 20 years, some 25,500 tons of commodities have been recovered which has resulted in a reduction in greenhouse gas emissions by approximately 21,500 metric tons carbon equivalent (MTCE) and an energy savings of approximately 470,000 million BTU's.
2. The city annually provides fall and spring collection of leaves for composting.
3. Urbana residents have had access to six, one day Household Hazardous Waste events since 1987. The last event was held in 2006, and is funded through IEPA grants that are received about every 2-3 years. A funding request is currently on file with IEPA.
4. Tire collection events, also funded by IEPA, are held about every other year.
5. Electronics collection events have been held every year since 2005, with the 2007 event recovering 72,000 pounds.
6. In 2005, Urbana's waste diversion rate was estimated to be at least 32%, including recycling and composting activities throughout the city. This exceeds the State's goal of 25% and is just below USEPA's 2008 goal of 35%.
7. Have created/maintained the only financially self-sustaining municipally operated Landscape Recycling Center in the State of Illinois.
8. Established a community resource for recycled garden products that has returned over 50,000 cubic yards of recycled landscape material to community landscapes in the last 7 ½ years.

Construction and Demolition Debris

1. Since there are no formal reporting requirements of contractors for the quantity of materials that are recovered from either new construction or demolition activities, it is difficult to arrive at reliable recovery estimates for this sector. Local recovery efforts are primarily occurring in demolition activities - such as recycling of concrete and metals. Appendix C contains a detailed analysis of waste and recycling in Urbana, as well as a case study of Portland, Oregon's efforts to increase recycled waste.

Commercial Business Recycling

1. Paper, OCC, and aluminum are the three most commonly recycled commodities by businesses as indicated from survey results. However, the range is extensive, including used oil, tires, grease, post industrial steel, and plastics, just to name a few. It is estimated that at least 25% of materials generated from the commercial sector is recycled, and if composting is included at least 50% is diverted from landfills. Appendix C Contains survey data from local businesses, determining the current extent to which waste is being recycled.

Water

1. Sponsored the annual Boneyard Creek Community Day to install medallions on storm water inlets to keep residents from allowing harmful materials to flow into the storm sewer system. This event also entails collecting trash from the creek and removal of invasive plant material.

2. Retained consultant to prepare Beautification Plan for section of the Boneyard Creek from Springfield Avenue to University Avenue.
3. The City has successfully complied with the Illinois Environmental Protection Agency's Storm Water Permit Program for four years. Elements of the Storm Water Permit program include: public education and outreach, public participation and involvement, illicit discharge detection and elimination, construction site runoff control, post-construction runoff control, pollution prevention and good housekeeping practices. A copy of the City's annual storm water permit compliance report is posted on the City's storm water webpage.
4. Urbana's 13,000 street trees intercept 1500+ gallons per tree or 19.5 million gallons of rainwater per year (based on 2004 Minneapolis study). This benefit creates a substantial savings in storm water management and enhances Urbana's ability to meet the Federal Clean Water Act.
5. Held a symposium on the Mahomet Aquifer that addressed the limits to the aquifer with respect to ethanol plants and urban development.
6. Adopted ordinance to require erosion control in development.

Landscapes and Open Space

1. Converted majority of the City's flower beds from annual to perennial plantings to conserve water and labor.
2. Use water absorbing crystals in planters and hanging planters to hold moisture longer and require less watering.
3. Worked with the University of Illinois to develop a rain garden.
4. Established a tree protection ordinance to protect the City's street trees.
5. Sponsor leaf collection in the spring and fall and Christmas tree collection for Urbana residents and return this material to the community in the form of marketable garden products.
6. Assisted with neighborhood clean-up activities along Philo Road and other targeted areas.
7. Posted information for residents interested in building rain gardens on the City's storm water webpage.
8. Partnered with the Champaign County Design and Conservation Foundation to complete the Lincoln Avenue/I-74 entryway medians, and Champaign County Courthouse parking lot and entryway plaza tree planting.
9. Partnered with IDOT to complete a prairie like installation in the Cunningham median north of I-74.
10. Funded water line improvements for Victory Park for a community gardens project using CDBG funds.

Regional Food System

1. Market at the Square had encouraged residents to buy fresh food from local producers thus reducing the energy consumption required to ship food from other markets. Additionally, the Market worked with the Eastern Illinois Foodbank to encourage growers to donate produce that did not sell at the Market to the Foodbank. The Eastern Illinois Foodbank provides emergency food to the local population, which is part of the regional food system. It also cuts down on waste for the farmer. Approximately 15,000 pounds of food were collected from Market farmers in 2007.
2. Information on integrated pest management is posted on storm water webpage to encourage residents to reduce pesticide and herbicide usage.

Land Development

1. Adopted a Comprehensive Plan that encourages compact, contiguous development that is consistent with individual neighborhood goals.
2. Adopted a Long Range Transportation Plan that emphasizes the promotion of non-automobile travel.
3. Pursuing a model energy conserving community as a part of the Kerr Avenue development with the assistance of Farr and Associates.

Infrastructure and Transportation

1. Flashing lights operated by solar energy were installed on Windsor Road at Vine Street and on Springfield at Mathews.
2. Broken bricks from street and sidewalk reconstruction work were taken to Mid-America construction to be processed into landscape materials.
3. Asphalt and concrete are taken to Mid American Sand & Gravel for reprocessing into reusable materials.
4. Bricks from street and sidewalk reconstruction work are cleaned, sorted, stacked and resold to PACA.
5. Recycled asphalt and concrete are utilized for street and parking lot pavement construction and reconstruction.
6. Steel and aluminum from street signs and posts and other construction work are taken to Marco Steel for recycling.
7. Any appliances that are collected from illegal dumping are taken to Mack's Recycling.
8. Street millings are re-used to resurface alleys.
9. Light-emitting diodes were installed in all red and green traffic signals to reduce energy use.
10. Scottswood Area Storm Water Improvement Project utilizes a wetland to treat storm water at Weaver Park.
11. Obtained \$900,000 "complete streets" grant for Goodwin Avenue.
12. Established a Bicycle Master Plan Committee and Task Force. Developed and adopted a bicycle master plan to include the implementation of a bicycle network throughout the City.

Housing and Development

1. Have encouraged integration of green building features for City-sponsored projects, including Crystal View Townhomes, Denny's Redevelopment, Kerr Avenue Redevelopment, etc.
2. Funded two eco-lab homes featuring innovative "passiv" house design with minimal energy consumption.
3. Certified ecological construction laboratory as a Community Housing Development Organization and funded operational costs using HOME funds.
4. Included green building features as desirable design standards for planned unit developments.
5. The Fire Department provides carbon monoxide detectors for residents to minimize the risk of carbon monoxide poisoning in homes.

Building and Regulation

1. Developed new erosion and sediment control ordinance and manual of practice to reduce the impacts of construction on area streams, rivers, and lakes.
2. Adopted new energy conservation standards as a part of the International Code Series.
3. Amended the Urbana Zoning Ordinance to encourage sustainable Planned Unit Developments and to explicitly allow permeable pavement as an acceptable pavement surface.
4. Adopted Neighborhood Conservation guidelines to help encourage preservation and improvement of older neighborhoods.

Municipal Buildings

1. Reviewed building roofs to determine if the roofs could be converted to green roofs. The result is that the Fire Department and Civic Center are capable of being converted to green roofs. The City Building cannot be converted, but a white membrane was placed on the City Building roof to reduce cooling costs. Converting to green roofs will be considered as the roofs are scheduled for replacement, but when not feasible, white roofs will be installed.
2. Replaced incandescent light bulbs with compact fluorescent light bulbs in all of the City buildings to reduce energy usage.
3. Installed programmable thermostats in the Public Works Center to better control building temperatures.
4. Motion detector light switches have been installed in some rooms to turn off lights when no one is in the room. (For example, the copy room and some conference rooms at the City Building.)
5. An energy audit has been completed by the Illinois Waste Management and Research Center to determine ways the City can reduce energy and costs in each building. Recommendations in the report will be pursued.
6. Installed motion detector water faucets in two public restrooms at the City Building to reduce water usage.

Procurement

1. The City has an ordinance that requires the City to purchase recycled products when possible.
2. Office equipment purchases require the energy star designation.
3. Use recycled printer cartridges in office printers.
4. Recycled asphalt and concrete is specified in street and parking lot construction/reconstruction.

Fleets

1. Two hybrid vehicles (EX02, MP01) and eight flex-fuel vehicles (CD08, EX04, PD20, PW01, PW54 and PW64) are currently in the City's fleet. Two parking enforcement patrol vehicles were recently replaced with hybrids as well.
2. Diesel equipment is currently fueling on an 11% bio-diesel blend.
3. Purchased a replacement rotary screw air compressor for shop operations that will require approximately 15% less energy to operate as compared to standard air compressors.
4. First draft of City-wide no-idling policy was sent out for department heads to review.
5. Three-year history of fuel usage was sent out to department heads for review. Will meet to set fuel conservation goals in the near future.
6. Compiled a list of all hybrid vehicles (with miles per gallon estimates) currently on the market that was distributed to department heads for their review to assist with decision making process for replacement vehicle purchases. E-85, compressed natural gas (CNG), and electric vehicle listings will follow.
7. Have approached MTD with a request for no charge or reduced rate bus fares for City employees. Representatives from MTD wish to discuss a more comprehensive approach.

Outreach and Education

1. The City held a recycling fair in October 2006 to celebrate the 25th anniversary of the City's recycling program.
2. The Environmental Management Division sends staff to elementary schools to discuss the importance of recycling.
3. The Engineering Division makes an annual presentation on storm water management to class at Urbana Middle School.
4. The Engineering Division created a brochure entitled, "You Are the Solution to Storm Water Pollution," to educate residents on steps they can take to improve the water quality of area streams, rivers and lakes. Brochures are distributed at various events and in the "Welcome to Urbana" recycling packets.
5. Public Works produced a popular statewide publication "Under the Canopy" that guides homeowners in creating personal greenspace around residential homes.
6. Public Works created a "How to Use Compost" flyer to promote community use of the Landscape Recycling Center's Garden compost product.
7. City Arborist maintains a public presence through regular PBS TV and radio appearances discussing tree and landscape topics.
8. Have utilized Landscape Recycling Center revenues to increase demand for recycled landscape products through marketing and advertisement. As of May 2007 the

Landscape Recycling Center garden product sales have increased 2217 cubic yards or \$15,650 over fiscal year 2006. These funds help subsidize the operation of the center.

9. City staff has attended various symposiums and events regarding sustainability.
10. Mayor facilitated a Sustainability Public Forum in February, 2008, which involved guest speakers from the University of Illinois Extension, Illinois Waste Management and Research Center, and the Urbana City Council. Nine regional organizations sponsored this community event.
11. An informational flier entitled “Urbana...Green before it was Cool” was mailed to all Urbana residents to introduce the concept of sustainability.



Chapter 4. Principles and Goals

Goals of Sustainability

The overall goal of sustainability is to create healthy economies, societies, and environments for current and future generations locally, regionally, and globally. With increasing demands on, and increasing costs for finite resources, the City recognizes the significance of its decisions regarding the use of natural, social, economic and human resources. The City also recognizes that decisions regarding these resources impact the natural environment, the community, and quality of life in Urbana.

Establishing a sustainable Urbana is an on-going, long-term initiative that will involve all City departments and influences many aspects of life. One significant component of the environment is the climate. The U.S. Mayors Climate Protection Agreement, signed by Urbana Mayor Prussing in May, 2007, establishes a commitment to meet or exceed Kyoto Protocol targets for reducing global warming pollution in the operations of the City of Urbana. The goal is to reduce global warming pollution levels to 7 percent below 1990 levels by 2012. This goal addresses the City Council Common Goal to Reduce Urbana’s Environmental Footprint. Suggested action items to meet this climate protection goal are included in the Agreement. These action items are described in Chapter 5: Implementation.

A sustainable society has been described in a framework for sustainability based on fundamental scientific principles used by municipalities and businesses internationally. This framework is called “The Natural Step Framework”. The Natural Step is an international organization with active organizations in Australia, Brazil, Canada, Japan, New Zealand, South Africa, Sweden, the United Kingdom, the United States, Italy and France. The Natural Step provides a practical strategic planning framework to help organizations make smart economic decisions while moving toward their sustainability goal. This framework uses the following four systems conditions as indicators of sustainability¹.

In a sustainable society, nature is not subject to systematically increasing:

1. concentrations of substances extracted from the earth’s crust;
2. concentrations of substances produced by society;
3. degradation by physical means; and
4. in that society, people are not subject to conditions that systematically undermine their capacity to meet their needs.

¹ *Toward a Sustainable Community: A Toolkit for Local Government*, written by Gruder, Haines, Hembd, MacKinnon, and Silberstein http://www.naturalstep.ca/documents/SustainabilityToolkit_000.pdf.

By working to achieve these four conditions when making decisions regarding the extraction of resources, the production of materials, the degradation of the environment, and the ability for people to meet their needs, Urbana will examine the environmental and social consequences of these decisions and be on a path towards sustainability. The American Planning Association, in a Policy Guide on Planning for Sustainability, offers the following guiding principles to assist in meeting the conditions of a sustainable society described above².

1. Reduce dependence upon fossil fuels, extracted underground metals and minerals;
2. Reduce dependence on chemicals and other manufactured substances that can accumulate in nature;
3. Reduce dependence on activities that harm life-sustaining ecosystems;
4. Meet present and future human needs fairly and efficiently.

Initial Objectives

The following objectives are taken from the 2007 Sustainable Urbana Report. They address how the City can become more sustainable in its operations, and how it can encourage others to do the same. These objectives are highly interrelated; each will stand on its own, but is supported by others. Each objective is followed by a commentary describing its intent and how it relates to the four conditions and guiding principles of sustainability.

Energy Efficiency and Renewable Energy—Ensure City facilities are operated in a healthy, energy-efficient and environmentally conscious manner with other environmentally conscious entities.

This objective focuses on encouraging behaviors that will conserve energy and increase the healthiness of the immediate environment. It challenges employees and decision-makers to think before they act, and to ask how they can carry out essential tasks in a more efficient manner.

Waste and Recycling—establish effective recycling practices for every area of the City’s commodity/waste stream and ensure that City departments are setting the example for the rest of the City through their efforts.

This objective focuses on the reduction of resource consumption. Creating less waste and recycling instead of disposing of waste will reduce the dependence on minerals and metals, reduce dependence on man-made substances, help protect eco-systems and provide for future generations in an efficient manner.

Water—develop and implement a comprehensive approach to ensure that the City’s water resources are protected, improved and managed so that water can continue to sustain us.

² *Policy Guide on Planning for Sustainability*, American Planning Association
<<http://www.planning.org/policyguides/sustainability.htm>>.

This objective recognizes the vital role water plays in our environment, society, and economy. The Mahomet Aquifer is a resource that must be conserved and protected from contaminants. Reducing chemical accumulation in our waters will also serve to protect eco-systems.

Boneyard Creek—expand public access and recreational opportunities while enhancing the habitat for wildlife and supporting economic vitality along the creek.

This objective relates to the use of the Boneyard Creek as a natural amenity that can help decrease contaminants in runoff and act as a corridor for non-automotive methods of transit.

Landscape and Open Space—expand and maintain landscapes and open spaces while conserving resources, expanding ecological diversity and involving local citizens in their environment.

This objective is focused on preserving and enhancing topsoil, trees, and native plant species in order to increase air and water quality and to save energy in heating and cooling applications.

Regional Food System—support the production, distribution and marketing of locally grown, healthy foods and value-added products that are available, accessible and affordable year-round to all City residents and are produced in an environmentally sound manner.

This objective meets all four of the City’s goals related to sustainability. It reduces the dependence on fossil fuels (and carbon emissions) by calling for more food to be produced locally, instead of being shipped here from California or Florida. It reduces chemical impacts on the environment by specifying organic foods which are produced without pesticides or fertilizers. It reduces dependency on activities that damage the ecosystem by reducing fertilizer runoff or conversion of natural habitats to farmland in areas such as South America. And it meets our needs fairly and efficiently; local goods are subject to stricter labor standards than those produced overseas.

Land Development—make Urbana a leader by promoting development that conserves resources, provides a healthy and comfortable indoor environment, is durable and minimizes costs over the life of the structure.

This objective is a counterpart to the Building and Regulation and Incentives objectives. Urbana must lead by example by ensuring projects it participates in meet our sustainability goals. The City should seek to explore all options to reclaim significant structures and build new projects that are energy-efficient and have a minimal impact upon the environment.

Infrastructure and Transportation—Develop green construction and operating procedures for all infrastructure.

This objective relates to how the City provides roads and sewers for public use. Roads and sidewalks can be re-designed to encourage alternative modes of transit, such as bicycling or

walking, thus reducing carbon emissions. Stormwater systems can be re-designed to allow more natural filtration by native plant species to increase the quality, and decrease the quantity of storm water runoff.

Housing and Development—stimulate demand for green buildings and green roofs by creating policies and incentives targeted to developers, building owners and managers, homeowners, insurance providers and financial community to facilitate adoption of green buildings, educate builders and the general public.

This objective strives for the same result as the Building and Regulation objective, but uses incentives rather than regulations to meet those outcomes. The end goal is to increase efficiency and lower the environmental impacts of private development within the City.

Building and Regulation—develop building codes, policies and regulations that promote sustainable developments.

This objective relates to structures and infrastructure built by the private sector. The idea is to create regulations and incentives that will encourage developers to consider more sustainable options when selecting sites, choosing building materials, offering more energy-efficient appliances, and remediating water runoff.

Municipal Buildings—Implement building design and construction methodology that is environmentally sensitive, healthy, productive, cost effective and energy efficient.

This objective is concerned with designing new City buildings and retrofitting our current facilities so that they consume less energy and provide a healthier environment for employees and visitors. This objective focuses on reducing dependence on fossil fuels and man-made chemicals that can accumulate in nature.

Procurement—strive to procure products with recycled material content whenever possible.

This objective requires employees to take sustainability into account when ordering and using consumables such as paper products and pens. Ordering recycled products and energy-efficient equipment will help reduce fossil fuel consumption and impacts on ecosystems (such as forests).

Fleets—Establish and promote operational policies aimed at creating and maintaining a fuel and energy efficient, environmentally responsible fleet and reducing automobile use by City employees.

This objective is aimed at reducing the transportation impacts of City operations. These impacts range from employees traveling to work, to police and parking enforcement vehicles that are in use all day to emergency response vehicles. In order to conserve fossil fuels and reduce carbon emissions, it is necessary to decrease the City's dependence on cars, and to lessen the impacts when vehicles must be used.

Outreach and Education—promote environmental awareness and stewardship among residents.

The City can play a key role in increasing awareness of issues related to sustainability by publicizing its efforts and encouraging and educating others.

Additional Objectives

The following additional objectives are derived from the Urbana City Council Common Goals Initiative and will assist in meeting the goal of sustainability.

Transportation—promote transportation options that assist in reducing carbon emissions and are accessible—get Urbana bicycling.

This objective assists in reducing carbon emissions and fosters conditions in which all people can meet their needs. This may be achieved through the establishment of commute trip reduction programs, incentives for car pooling, public transit, and bicycling.

Diversity and Non-discrimination—promote diversity and non-discrimination in hiring, contracts, public services and code enforcement.

This objective assists in ensuring no person experiences conditions which systematically undermine their ability to meet their needs.

Affordable Housing—increase affordable housing options and include energy-efficiency.

This objective assists people in meeting their need for shelter by providing housing at an affordable rate. Additionally, housing with high energy efficiency will reduce the energy costs for residents, further supporting their ability to meet their needs.

Intergovernmental Cooperation--encourage intergovernmental cooperation by continuing to build cooperative relationships with the University of Illinois, intergovernmental planning and development efforts with local governments, and joint utilities and franchise matters with the University and Champaign.

This objective will encourage cost savings and efficiencies. Additionally, there may be more opportunities to establish innovative means of providing resources in a way that supports the conditions of a sustainable society.



Chapter 5. Implementation

Evaluation Criteria

Establishing and implementing immediate efforts towards sustainability, while producing quick results, may not produce long-term sustainability and could potentially incur unnecessary financial costs. However, establishing a strategic plan to describe a way for the City to change its everyday operations and policies to be environmentally, socially, and economically sustainable will foster better and more efficient results throughout time.

One step in establishing a strategic plan for municipal sustainability entails collecting baseline data and evaluating input and outcomes of potential actions. Baseline data will establish an understanding of current practices and influences. Evaluating the input and outcomes of potential actions will assist in determining priorities and in making budgetary decisions.

The following evaluation criteria can be used to rank priorities and assist the City in meeting its goal of overall sustainability. Quantifiable measurements should be used to determine how each specific action ranks on a scale. An example of the evaluation matrix is below:

Action:	<i>Name of Implementation Opportunity</i>
Ranking	Criteria
	How does this rank using a cost/benefit analysis?
	How critical is the issue this is addressing?
	Is this an activity that contributes to a project already underway?
	To what extent does this reduce dependence on fossil fuels or extracted underground metals or minerals?
	To what extent does this reduce concentrations of chemicals and other manufactured substances?
	To what extent does this reduce dependence on environmentally damaging systems?
	To what extent does this increase the capability for current and future generations to meet their needs?
	To what extent does this reduce global warming pollution levels?
	TOTAL SCORE

Recording and tracking the implementation efforts as they are enacted will be instrumental in recognizing the outcomes of these efforts. Additionally, this will assist in measuring progress and improvements.

Implementation Opportunities

For each of the objectives, several opportunities for implementation were identified in the 2007 Sustainable Urbana Report. These opportunities should be seen as potential strategies to meet the objectives as presented in the previous section. Although all of the opportunities will contribute toward Urbana's overall sustainability, they cannot all be implemented immediately. In order to determine which opportunities offer the most "bang for the buck", proposed strategies should be evaluated by the criteria described above. In order to obtain an accurate evaluation, data should be collected and consulted to determine cost projections and environmental impacts. In addition to the opportunities described in the 2007 Sustainable Urbana Report, action items were suggested in the U.S. Mayors Climate Protection Agreement. The described action items relate to opportunities identified in the 2007 Sustainability Report and have been added to the opportunities below.

Energy Efficiency and Renewable Energy

Opportunities:

1. Inventory global warming emissions in City operations and in the community, set reduction targets and create an action plan (Climate Protection Action).
2. Encourage employees to turn off personal computers, printers, copiers and non-emergency lights when leaving offices and buildings. For two hundred computers this would reduce energy use from 227,760 kW to 61,007 kW (based upon 24/7 usage).
3. Use electronic mail or other methods (e.g. flash drive or CD) besides paper to transfer information whenever possible.
4. Consider installing fax modems on computers to reduce paper usage and avoid printing junk faxes.
5. Re-use back of paper instead of recycling it after one side is used.
6. Recycle treated waste water. Use for irrigation of golf courses, landscaping, ethanol plants, etc.
7. Explore uses for methane gas produced at the old landfill site.
8. Summertime temperatures in and around facilities and within the community are lowered by enhancing the community tree canopy. Heating costs are lowered with an enhanced community tree canopy that blocks harsh winter winds.
9. Explore all options for energy savings when remodeling facilities.
10. Strive to meet or beat the Kyoto Protocol targets through actions ranging from anti-sprawl land-use policies to urban forest restoration projects to public information campaigns.
11. Urge our state and federal government to enact policies and programs to meet or beat the greenhouse gas emission reduction target suggested for the United States in the Kyoto Protocol—7% reduction from 1990 levels by 2012.
12. Urge the United States Congress to pass the bi-partisan greenhouse gas reduction legislation, which would establish a national emission trading system.
13. Encourage businesses to turn off sign and parking lot lighting at night.
14. Encourage the use of awnings to reduce energy costs during the summer months.
15. Invest in "green tags", advocate for the development of renewable energy resources, support the use of waste to energy technology (Climate Protection Action).

Challenges:

1. Provide adequate lighting to promote safety within the community through updated lighting regulations.

Waste and Recycling

Zero Waste

Opportunities:

1. Adopt a resolution establishing a Zero Waste goal by 2020.
2. Convene a Zero Waste working group to review data and develop a Zero Waste Strategic Plan and recommendations to achieve the Zero Waste goal.
3. Significant recycling potential remains and can contribute to energy savings, reduce carbon dioxide emissions, air quality improvements, resource conservation and financial savings, as well as job growth and economic development.
4. Reduce the quantity and toxicity of materials being landfilled. Investigate the possibility of establishing a permanent household hazardous waste facility.
5. Employee training of the importance of recycling and government agency programs can lead by example.
6. Consider sponsoring a City-wide reduce/reuse/recycle event every year to provide a place for residents to purchase and dispose of usable goods.
7. Encourage schools to enhance recycling programs.

Challenges:

1. Overcome the public perception that discarded materials are “wastes”. Instead cultivate the viewpoint that discarded materials are commodities that can be reduced and/or recovered.
2. Developing local public/private sector partnerships to realize benefits of Zero Waste.
3. Conducting a strong and repetitive public education campaign.
4. Lack of accurate generation and recovery data to guide the focus future recovery efforts and to determine reliable diversion rates and successes.
5. Implementation of programs targeted at specific sectors of the commodity/waste stream due to regulatory constraints, economies of scale, and/or funding.
6. Additional staff and a coordinating administrative structure may be needed to plan and implement Zero Waste goals and programs.
7. Secure compost sales to commercial garden centers.
8. Secure a position on State contracts within the Champaign County for use of the Landscape Recycling Center’s products.

Construction and Demolition Debris

Opportunities:

1. Develop specific information and strategies as a part of Zero Waste planning process.
2. Develop partnerships with builders and haulers to educate and implement recovery programs.
3. Encourage the expansion or new development of markets and Construction and Demolition processors or restoration/recovery groups.
4. At a minimum, require the recovery of cardboard at all new construction sites. This could be implemented with little to no adverse impact to contractors.

Challenges:

1. Construction and Demolition recycling facilities in Illinois, except those located in Cook, Lake, and DuPage counties, must obtain solid waste permits from Illinois EPA. This would require any business, outside of these counties, to obtain local siting approval which is a lengthy and costly process before securing an Illinois EPA development and operating permit.
2. Economies of scale and lack of markets for certain materials (e.g. drywall or gypsum) may hinder recovery of significant portions of recoverable materials.

Commercial Business Recycling

Opportunities:

1. Require haulers to offer collection of the same materials as offered by U-CYCLE.
2. Consider establishing a recycling diversion goal for the commercial sector in concert with development a Zero Waste strategies.
3. Provide comprehensive education and technical assistance programs, through joint partnerships with the private sector.
4. Acquire more reliable generation and recovery data.

Challenges:

1. Composting of food scraps is currently hindered by state permitting requirements.
2. Encouraging participation by private sector businesses and hauling firms.

Water

Opportunities:

1. Work with Illinois American Water Company on a program to encourage residents to conserve water. Program could include incentives to install low water usage fixtures and modifying consumption patterns, such as lawn watering.
2. Enhance street tree longevity and vigor, as healthier more mature trees absorb more water, through a stepped up forestry maintenance program. Shorten tree trimming cycles from 12 years to 6.
3. Reduce rainwater runoff and heat reflection of parking lot pavement through the use of permeable pavement.
4. Launch a public education campaign to reduce excessive fertilizer (salt)/herbicide applications (5+ applications per season) by lawn care companies to reduce excessive salt and chemical runoff into our stormwater/watershed.

Challenges:

1. Maintaining an adequate tree planting/replacement program in new subdivision developments with present staffing levels.

Boneyard Creek

Opportunities:

1. Adopt and implement Beautification Plan for section of the Boneyard Creek from Springfield Avenue to University Avenue.
2. Partner with Prairie Rivers Network and National Guard to create a walking/recreational path along the Boneyard Creek from University Avenue to the Saline Creek.

Challenges:

1. The City currently possesses only a drainage easement for the Boneyard Creek and does not own the property adjacent to the Creek. The narrow drainage easement will make it difficult to widen the existing narrow channel width.
2. It will be difficult to expand public access and recreational opportunities for the sheet-piled sections of the Boneyard Creek from Lincoln Avenue to Race Street.

Landscape and Open Space

Opportunities:

1. Adopt and enforce land-use policies that reduce sprawl, preserve open space, and create compact, walkable urban communities (Climate Protection Action)
2. Encourage developers to plant rows of trees in parking lots instead of individual tree islands.
3. Encourage the use of rain gardens, wetlands or infiltration areas instead of detention ponds as a way to deal with run-off within developments.
4. Promote community gardening projects, such as the Master Gardeners' Idea Garden; and the Urbana Park District Community Vegetable Gardens.
5. Enhance tree maintenance and planting to gain a larger return on tax dollar investment in the community's green infrastructure through future benefits in energy savings, storm water management, clean air and quality of life.
6. Encourage the use of cisterns for irrigation supply.
7. Partner with Prairie Rivers Network to develop a brochure on rain garden construction for residents.
8. Encourage more square foot soil space for parking lot trees to enhance tree longevity and canopy cover. One solution for this suggestion is to promote development of linear green islands (minimum 8-foot width) between parking aisles that run the length of parking aisles as compared to only having green islands at the ends of parking aisles.

Challenges:

1. Design parking lot greenspace for consideration of snow and debris removal. Linear green aisles between parking aisles not only provide additional soil space for roots but also facilitate snow removal and sweeping by providing a long straight curb line as compared to extended end islands of irregular shapes and acute curb angles.
2. Maintain community tree vigor to provide healthy trees and improved shade through shortened tree maintenance cycles and additional tree planting. Tree decay spreads throughout a tree if left unchecked so regular pruning of deadwood is an important component to maintaining healthy trees.

Regional Food System

Opportunities:

1. Encourage community and individual gardens.
2. Expand the season for the Market at the Square or the Market in the Square.
3. Promote healthy food such as fruit, granola bars in city vending machines.
4. Support organic food for meetings and conferences;
5. Create a site on the City's webpage to feature restaurants that buy locally, stores that sell locally produced food and/or farms that sell products that they raise.

Challenges:

1. Educate residents on the environment concerns of excessive use of pesticides and herbicides use on garden, landscape and turf areas.

Land Development

Opportunities:

1. Achieve Leadership in Energy and Environmental Design New Development (LEED-ND) certification for the Kerr Avenue project.
2. Look for opportunities for new commercial buildings to achieve LEED or equivalent standards.
3. Work with utilities and other agencies to make it easier to move buildings otherwise scheduled for demolition.
4. Reduce topsoil loss due to mass grading operations during development.

Challenges:

1. Balancing the restrictions of historic preservation with the necessary architectural changes for energy conservation.
2. Remove obstacles to infill development as a means of reducing sprawl and greenfield development.

Infrastructure and Transportation

Opportunities:

1. Build narrower “complete streets” with wider parkways for trees and multipurpose paths in residential neighborhoods to encourage more bicycle and pedestrian traffic.
2. Install storm water screening devices at Weaver Park and Busey Woods to improve water quality to these two natural areas.
3. Implement a “Green Alley” demonstration project. Replace pavement on an existing alley with new permeable pavement and monitor to determine performance of the permeable pavement. If demonstration project is successful, convert additional streets and alleys with permeable pavement where applicable.
4. Consider “rubber sidewalks” to reuse recycled rubber tires and promote healthy street tree growth.
5. Develop incentives for motorists who drive alternative fuel vehicles or to carpool.
6. Establish commute trip reduction programs, develop incentives for public transit, and promote bicycling (Climate Protection Action).

Challenges:

1. Local contractors have limited experience with permeable pavements and there has been little permeable pavement installed in the area to date.
2. Prevalent area soil types make use of permeable pavements problematic.
3. Narrower street designs will reduce on-street parking availability.
4. Narrower street designs may negatively impact emergency operations during a crisis.

Housing and Development

Opportunities:

1. Forgive building permit fees for structures applying advanced energy efficiency features, such as geothermal, passive solar and straw bales construction or LEED certification.
2. Include extra points for energy efficiency for TIF RIP loans.
3. Encourage the inclusion of green building features of LEED certification as a part of City development and redevelopment agreements.
4. Amend zoning ordinance to provide incentives or variances to promote adaptive reuse of existing buildings.
5. Offer an exchange program to give hand push mowers to anyone who turns in a gas powered lawn mower.
6. Create incentives for residents to plant trees.
7. Establish a small grant program to promote energy efficiency in households.

Challenges:

1. Additional funding sources may be necessary to provide incentives for green buildings.
2. The City would need to find a source for disposing of the gas powered lawn mowers collected as part of any exchange program.
3. Increase tree survival in new subdivision areas where parkways are limited to compacted clay soils.

Building and Regulation

Opportunities:

1. Adjust zoning/development code to accommodate sustainable features:
 - a. Allow/encourage the use of permeable surfaces for drainage.
 - b. Encourage the use of bioswales.
 - c. Encourage the use of cisterns for irrigation.
 - d. Allow solar cells and wind turbines in setbacks.
 - e. Encourage construction of “complete streets” in developments.
 - f. Allow narrower streets in developments.
2. Amend City’s Consolidated Plan to promote energy efficiency as a prominent policy for affordable housing.
3. Encourage training and accreditation in LEED for City staff members with the goal that at least one staff member receives accreditation in LEED.
4. Adopt new erosion and sediment control ordinance to reduce impact of construction on area streams, rivers and lakes.
5. Encourage developers to adopt post-construction best management practices for storm water management to enhance water quality.
6. Encourage or regulate topsoil removal/replacement in development areas to be replaced/refurbished to preconstruction soil conditions.
7. In new subdivision developments establish utility corridors that are separated from parkway tree areas to minimize utility/tree conflicts and ongoing tree damage resulting from utility repair.
8. Promote sustainable building practices using the U.S. Green Building Council's LEED program or a similar system (Climate Protection Action).

Challenges:

1. Administration and enforcement of new erosion and sediment control ordinance.
2. Convincing developers and builders to adopt sustainable building and construction practices.
3. Create an ordinance that promotes soil revitalization without inhibiting new development. Trees and landscapes will never grow to their full potential in newly developed areas where topsoil has been removed and soil structure destroyed.
4. Finding a cost effective solution to creating utility corridors separate from tree root areas.

Municipal Buildings

Opportunities:

1. Installation of tankless water heaters in all facilities to reduce heating water that is not used.
2. Evaluate solar collectors that serve as shelters for cars in parking lots as an option to provide energy while providing protection from the elements for parked cars.
3. Explore the placement of solar collectors on the Civic Center and other City facilities.
4. Initiate an employee education campaign to reduce energy costs, i.e. turn off lights when rooms are unoccupied, keep room temperatures higher in summer; lower in winter to reduce energy usage.
6. The next City construction project should aim for LEED certification.
7. In new construction, combine the landscape design process along with architectural design process to allow the maximum benefit of surrounding/adjoining greenspace.
8. Purchase only Energy Star equipment and appliances for City use (Climate Protection Action).

Challenges:

1. Replacing windows at the Civic Center, while an option, is cost-prohibitive at this time.

Procurement

Opportunities:

1. Order office supplies monthly instead of last-minute to avoid shipping costs and reduce the supply company's energy consumption.
2. Save office paper by utilizing more page space (tighten up margins and spacing) and double sided copies.

Challenges:

1. As more people are demanding green products, some companies are labeling their products with vague terms that lead consumers to believe the products cause no harm to the environment or even help the environment. Consumers need to be savvy in determining which products to purchase.

Fleets

Opportunities:

1. Promote non-traditional modes of business transportation, such as mass transit system, walking, bicycling, segways, etc.
2. Conduct successful discussion with MTD regarding employee bus passes.
3. Make bus schedules easily available to promote transit use.
4. Use technology to avoid travel. Use conference calls or webcasting to meet with others in different locations.
5. Encourage each department to establish a 10% fuel reduction policy and assist them in developing their policy.
6. Use a City newsletter and/or webpage (internal) to educate employees about fuel and other energy conservation tips.
7. Promote car pooling for both personal and City use. Explore the possibility of a shared car program.
8. Implement driver training programs that demonstrate fuel conservation practices.
9. Consider new vehicles technologies when making vehicle purchases, such as LED lighting, lighter composite materials, more fuel efficient engine options, etc.
10. Consider 10 hour working days to shorten work week to four days resulting in potential vehicle fuel and office energy savings.
11. Consider converting diesel vehicles to bio-diesel (Climate Protection Action).

Challenges:

1. Exploring the possibility of car-sharing company coming to Urbana-Champaign. Work with the University and City of Champaign to encourage the use of the shared car program.
2. Explore the possibility of a bio-diesel production facility. This would require the City to return to in-house fueling services (infrastructure cost \$150,000). This could be incorporated into a consolidated fleet study. A pilot study could be performed with Landscape Recycling Center equipment and current fueling operations.
3. Reduce the number of vehicles in the City fleet while maintaining current service levels.
4. Provide employee incentives for walking or riding bicycles to work.

Outreach and Education

Opportunities:

1. Encourage developers and contractors to recycle construction and demolition materials.
2. Distribute a newsletter, brochure, and/or include information on the City's website to inform citizens about ways they can reduce their environmental footprint. Some suggestions have been included in this document.
3. Increase awareness of the reduction in ecological footprint provided by the Farmer's Market.
4. Develop classroom curriculum on stormwater for 5th or 6th-graders.
5. Provide educational opportunities on reducing global warming pollution for other jurisdictions, professional associations, business and industry (Climate Protection Action).

Challenges:

1. It is difficult to change routine behavior regarding environmental issues. For example, people have a set routine of fertilizing lawns, spraying weed killers and

washing their cars in their driveways, which all have negative impacts on water quality.

2. Dedicating staff time to the design, development and publication of educational material.



Chapter 6. Additional Recommendations

While Urbana has made significant accomplishments under the umbrella of sustainability, these have resulted largely from individual uncoordinated initiatives. The challenge that lies before the City is to institutionalize sustainable practices into our municipal organizational structure and programming. Applying sustainability evaluations and overseeing successful implementation – both internally and externally throughout the city – is a significant operational and philosophical shift. The breadth of such a change impacts operations spanning from the purchase of office supplies to capital projects and maintenance activities to policy decisions. Creating a Sustainable Urbana Strategic Plan will assist in determining priorities and procedures. A Strategic Plan will provide guidance as the City takes responsibility for the impacts of its operations and works to create a livable sustainable community with a high quality of life.

The following describe possible actions which can lead the City into a strategic process for developing a sustainability plan.

- Establish a green ribbon “Sustainable Urbana Commission” with members representing residents, business, University, utilities providers, and environmental stakeholders. This commission could act as a steering committee for the process of creating a Sustainable Urbana Strategic Plan.
- Expand the internal City “Green Team” to include all city departments and assist in furthering the implementation of the Sustainability strategic plan and in developing new ideas.
- Complete the Sustainable Urbana Strategic Plan. A community-wide input process is needed to generate ideas for collaborative programs and other citizen-initiated projects. Receiving consultations from professionals in the field of municipality sustainability efforts may assist in facilitating an integrated sustainability plan for the community as a whole. Professions working with The Natural Step, eco-municipalities, or the American Planning Association may offer assistance.
- Establish baseline energy consumption for internal City operations. Set realistic short-term and long-term goals to reduce the City’s energy consumption and emissions.
- Model carbon emissions for the entire populace of Urbana. The Mayor’s Climate Protection Agreement calls for a seven percent improvement from 1990 emissions levels. Since that data may not be available, the City should establish a baseline from the earliest

accurate data available. From this modeling the Strategic Plan will set numerical goals to cap Vehicle Miles Travelled and cap Single Occupant Vehicle trips.

- Implement programs and projects identified in the Strategic Plan to meet objectives such as reducing use of disposable shopping bags.

There are a few manuals available to help the City establish its sustainability plan. The Sustainable Urbana Commission, working with the expanded internal Green Team should evaluate these guides and adopt a process to establish the Strategic Plan. Below is an outline of one such process, taken from the Handbook on Urban Sustainability:

1. Statement of intent-developed by Council
2. Select timeframe for the implementation of Plan
3. Create a Sustainability Commission
4. Commission develops and proposes Sustainability Plan
5. Identify overall goals
6. Select sustainability alternatives
7. Identify sustainability assets and liabilities
8. Identify regulatory support
9. Develop sustainability education plan
10. Select indicators to evaluate goal attainment
11. Select metric for Life Cycle cost analysis
12. Select implementation projects
13. Develop and recommend budget for plan
14. Council approves plan
15. Monitor and validate plan

The Climate Protection Agreement sets a goal for the community as a whole. The City of Urbana is taking the first step towards reducing greenhouse gas emissions to 7% below its levels in 1990, and additional partnerships and initiatives are needed to expand this effort to the community as a whole. Partnerships and collaborations will assist in meeting the goals of sustainability. Partnerships to build upon include: the Center for Neighborhood Technology, the Sierra Club, the Green Building Council, the University of Illinois, local utility providers, and the cities of Champaign and Savoy.

It is important to bear in mind that incorporating sustainability practices will be an on-going and long term process – not a single individual project. As time progresses the City will have implemented many actions identified in this Strategic Plan, and an updated plan, with new objectives and focus areas should be created.

Appendix A:
Urbana City Council Goals 2005-06

**Appendix B:
2005 Comprehensive Plan Goals**

Appendix C:
Waste and Recycling Background Information and Survey

**Appendix D:
Councilmember Bowersox
Sustainable Urbana Initiative Proposal**

**Appendix E:
Mayors Climate Protection Agreement**

Urbana City Council Goals

As approved September 19, 2005 with the addition of the Intergovernmental Section, as accepted August, 14, 2006.

Common Goals

1.) Promote Public Safety

- a. Provide police and fire service at the level needed for all neighborhoods.
- b. Support the Mayor in putting together a task force to pursue a Police Review/Oversight Board appropriate for our size of city that is effective, professional, and cost-effective.
- c. Establish appropriate ordinances to strengthen the city's ability to maintain safe environments within our neighborhoods.

2.) Strengthen Urbana's Economic Development Program

- a. Philo Road – implement action plan, extend Florida, work with neighborhood and business leaders, stabilize nearby neighborhoods, consider additional safety enhancements, and examine further economic incentives.
- b. Recruitment visits including Mayor/Council Members to targeted businesses.
- c. General business development along Cunningham Ave including beautification.
- d. Monitor developments on 130/150 and develop consensus vision.
- e. Look at Olympian Drive completion over the next several years.
- f. Hire Economic Development Manager ASAP. Consider higher level position that answers directly to the Mayor and CAO.

3.) Create an energetic, vibrant downtown that provides needed services to the city.

- a. Establish Downtown Commission that will propose Annual Action Plans before each budget season to Council.
- b. Create and implement redevelopment plan for key segments of downtown.
- c. Create and implement redevelopment plan for the Boneyard – especially Race to Vine.
- d. Implement downtown, public wireless.
- e. Develop trailway from Carle to downtown.
- f. Increase outdoor activity – create single ROW usage license, market Farmers Market to tours, encourage outdoor dining and beer gardens and music events.

g. Pursue increased outdoor green space/establishment of a public square.

4.) Preserve Neighborhoods and Promote Rental Safety

- a. Develop Conservation districts for historic and sensitive areas of the city. Conservation Districts should include review of demolitions, approval of new construction, and design guidelines applied by a MOR style Design Review Board or as fixed requirements required by zoning ordinance.
- b. Increase code enforcement, particularly for rentals. Hire additional housing inspector, and pursue consequences for repeat code offenders.
- c. “Rebuild Urbana” - encourage home maintenance including painting in target areas, examine incentives for conversion of rentals and boarding houses to single family and condos, and replace decayed stock to low density or condos.

5.) Implement the 2005 Comprehensive Plan

- a. Rewrite our Zoning Ordinance. We propose hiring an outside consultant in order to accomplish this over the next year and to focus on billboards and sign issues now with current staff.
- b. Include use of design guidelines, form-based code concepts, modern sign and lighting standards, Traditional Neighborhood Development standards, commercial big box store standards, neighborhood business zones, preserving historic neighborhoods, farmland, natural areas and minimizing sprawl as guiding principles (see Comprehensive Plan implementation section for complete action items and goals).
- c. Update the sign ordinance for the city, setting new guidelines for commercial signs along main arteries and traffic corridors designated for redevelopment or beautification. Establish a time table for the replacement or phasing out of billboards and tall pole signs along designated traffic corridors.

6.) Reduce Urbana’s Environmental Footprint and Waste Stream/Expand Recycling

- a. Study and implement green building guidelines, incentives, energy conservation improvements, and environmentally friendly public works.
- b. Implement recycling of bottles, paper, etc in downtown - particularly in light of local beer distributors’ termination of bottle recycling.
- c. Target construction debris for waste reduction/recycling, since it is the greatest source of waste.
- d. Support hazardous waste collection.

7.) Promote Diversity and Non-Discrimination

In:

- a. Hiring
- b. Contracts
- c. Public services
- d. Code enforcement

8.) Increase Affordable Housing

- a. Develop nationally recognized, model neighborhood that is affordable and uses 10% of standard energy consumption.
- b. Develop replacement rental housing for Lakeside Terrace – 80 units or more – that are affordable to the poorest of the poor as per prior council agreement.
- c. Continue support for accessible, energy-efficient, affordable housing including an effective mix of rent subsidized housing with home ownership programs.

9.) Get Urbana Bicycling

- a. Create a Bicycle and Pedestrian Advisory committee and seek Bicycle Friendly Community designation.
- b. Staff and Council will implement Bike committee recommendations on new and improved routes and regional connections, bike maps, designated routes, signage, improved off-street and on-street bike routes and facilities, increased bicycle parking, as well as creation of bike safety and public education programs.
- c. Take a leadership role on developing the regional trail to Danville that would include historic Lincoln sites in Urbana.
- d. Develop a local trail from Carle to Downtown and other in town greenways and trails.

10.) Create a Public Arts Program

- a. Establish a dedicated revenue stream for public art – consider percent for arts approach.
- b. Encourage the preservation and commemoration of local and multicultural traditions and histories.
- c. Integrate art into every feasible public works project – promote functional and streetscape art.
- d. Create a public art program that represents our community in all its diversity – in terms of race, geography, gender, class, sexual orientation, belief-system, etc.

- e. Provide opportunities for local and national, established and emerging artists in Champaign County.
- f. Develop a strong public collection of artworks representing diverse communities, artistic styles, and disciplines.
- g. Establish a public arts commission.

11.) Recruit and retain top quality staff

- a. Become more competitive and develop methods for better retaining staff.
- b. Identify immediate changes and long-term goals to attract and retain top-notch employees; include examination of pay scale and advancement through positions.
- c. Implement appointment contracts.
- d. Gather input from employees on how to improve the city's employment climate.

12.) Review City Code

- a. Compare policy to practice.
- b. Review code for inequities.
- c. Pursue relevant changes as required.

13.) Handle Council Business Efficiently

- a. Improve council chambers audio.
- b. Provide three chairs at public comment table and replace with better microphone.
- c. Provide public with a "how to" brochure for public input and advice on how to make comments additions to the conversation instead of repetition.
- d. Improve meeting efficiency.
- e. Wherever possible, staff time at meetings should be consolidated and ordered with agenda items planned so that a particular staff member is not at every meeting.
- f. Several vacation periods have been set including no meetings the weeks of July 4, August 1, Dec. 26, and Jan 1. In the event that a council meeting is needed, it should be scheduled to precede the regularly scheduled committee of the whole meeting of the subsequent week. Attempts will be made to line up vacation periods in upcoming years.

14.) Encourage Intergovernmental Cooperation

The City of Urbana has a number of intergovernmental agreements and will continue to look for partnerships that encourage cost savings and efficiencies.

- a. Continue to build cooperative relationships with the University of Illinois
- b. Intergovernmental Planning and Development Efforts with Local Governments
- c. Joint Utilities and Franchise Matters with the University and Champaign

Comprehensive Plan Goals Related to Sustainability

Goal 4.0 **Promote a balanced and compatible mix of land uses that will help create long-term, viable neighborhoods.**

Objectives

- 4.1 Encourage a variety of land uses to meet the needs of a diverse community.
- 4.2 Promote the design of new neighborhoods that are convenient to transit and reduce the need to travel long distances to fulfill basic needs.
- 4.3 Encourage development patterns that offer the efficiencies of density and a mix of uses.

Goal 5.0 **Ensure that land use patterns conserve energy.**

Objectives

- 5.1 Encourage development patterns that help reduce dependence on automobiles and promote different modes of transportation.
- 5.2 Promote building construction and site design that incorporates innovative and effective techniques in energy conservation.

Goal 6.0 **Preserve natural resources (including air, water, and land) and environmentally sensitive areas in the community.**

Objectives

- 6.1 Protect groundwater and surface water sources from flood and storm-related pollution.
- 6.2 Protect sensitive areas, such as wooded areas, major drainageways, and areas of topographic relief.
- 6.3 Encourage the county and forest preserve to acquire and develop publicly accessible natural areas along north High Cross Road to conserve this area and allow the general public to appreciate it.
- 6.4 Preserve natural amenities in new development through innovative development regulations and design.
- 6.5 Encourage development that protects and enhances an area's natural features, such as wooded areas, creeks, and hilly terrain.

Goal 7.0 **Protect and beautify existing waterways.**

Objectives

- 7.1 Protect the floodway of the Boneyard Creek.
- 7.2 Ensure that development regulations protect floodways and major drainageways.
- 7.3 Redevelop parts of Boneyard Creek to provide natural and public amenities.

Goal 9.0 Strengthen Urbana’s parks and recreational facilities.

Objectives

- 9.1 Support the Urbana Park District’s efforts to provide a park space per capita ratio that exceeds the national average.
- 9.2 Encourage an appropriate mix of large and small parks to serve the active and passive needs of the community.
- 9.3 Encourage the development of parks within walking distance of neighborhoods.

Goal 10.0 Create trails connecting the community’s parks and open areas.

Objectives

- 10.1 Continue to plan for a coordinated, regional system of trails and greenways as described in the *Champaign County Greenways and Trails Plan*.
- 10.2 Promote linkages of trails through the design of new development.

Goal 11.0 Create new neighborhood and community parks in developing residential areas.

Objectives

- 11.1 Encourage the inclusion of open spaces and recreational facilities in new residential and mixed-use developments.
- 11.2 Encourage adequate pathways to connect residential areas to nearby commercial and office areas.
- 11.3 Ensure that parks provide links to existing natural features and open spaces.

Goal 13.0 Capitalize on Urbana’s unique heritage as a community with a mix of urban and small-town features.

Objectives

- 13.1 Promote the incorporation of public art in significant new public and private developments.
- 13.2 Promote community events and activities (such as the Market at the Square, Sweetcorn Festival, and local art festivals) that bring the community together and promote Urbana’s special character.
- 13.3 Expand the City’s creative community by promoting arts-related uses and events.
- 13.4 Promote the beautification of Urbana through both public and private developments.

Goal I4.0 Increase Urbana’s inventory of trees.

Objectives

- I4.1 Maintain the City’s status as a “Tree City” through the arbor program and arbor commission.
- I4.2 Promote appropriate tree plantings in new development to contribute to the urban forest.

Goal I5.0 Encourage compact, contiguous and sustainable growth patterns.

Objectives

- I5.1 Plan for new growth and development to be contiguous to existing development where possible in order to avoid “leapfrog” development.
- I5.2 Extend utilities and services in an orderly fashion to encourage compact, contiguous growth.
- I5.3 Pursue annexation strategies that promote orderly development.
- I5.4 Annex unincorporated areas that have been previously developed at urban densities.
- I5.5 Promote intergovernmental cooperation on development and growth issues.

Goal I6.0 Ensure that new land uses are compatible with and enhance the existing community.

Objectives

- I6.1 Encourage a mix of land use types to achieve a balanced growing community.
- I6.2 Preserve agricultural lands and environmentally sensitive areas outside the growth area of the city.
- I6.3 Encourage development in locations that can be served with existing or easily extended infrastructure and city services.
- I6.4 Coordinate with utility and service providers on future planning for roadway improvements, sanitary sewer extensions, water lines, treatment facilities and other utilities.
- I6.5 Consider the impact of new development on public services and the ability to provide those services cost effectively.

Goal I8.0 Promote infill development.

Objectives

- I8.1 Promote the redevelopment of underutilized property using techniques such as tax increment financing, redevelopment loans/grants, enterprise zone benefits, marketing strategies, zoning incentives, etc.

18.2 Promote rehabilitation and improvement of housing opportunities through the use of Block Grant and redevelopment programs.

18.3 Work with the University and the private sector to develop community-enhancing reuse plans for the Orchard Downs and Pomology sites.

Goal 20.0 Encourage the development of new “planned neighborhoods.”

Objectives

20.1 Promote a “traditional neighborhood development” style as an alternative to the conventional suburban development pattern.

20.2 Encourage new neighborhoods to include a mix of residential types, with convenient access to schools, parks, shopping, work places, services, and transit.

20.3 Promote compact and contiguous development of new neighborhoods along the High Cross Road, Windsor Road, and East Airport Road corridors.

Goal 30.0 Develop a comprehensive approach to economic development.

Objectives

30.1 Prepare an economic development plan for the City, highlighting sectors to promote and capitalize upon and identifying specific marketing strategies.

30.2 Support private, non-profit organizations and local business groups by providing technical assistance and targeted financial investment.

30.3 Market Urbana to potential investors, brokers, consultants, and residents.

30.4 Establish economic development programs to promote economic and business growth.

30.5 Coordinate with regional efforts to help market Urbana for commercial and industrial development that will benefit both the city and the region.

30.6 Support regional efforts to promote Willard Airport.

30.7 Work with the Urbana Business Association (UBA) and the Champaign County Economic Development Corporation to promote Urbana as a place to live, work and do business.

30.8 Support regional, state, and federal efforts to promote high-speed and standard-speed intercity passenger rail connections serving Champaign-Urbana.

Goal 33.0 Provide maximum service and dependable utilities.

Objectives

33.1 Work with utility providers to ensure dependable, affordable, high quality services to the Urbana community.

- 33.2 Correct areas of stormwater infiltration-inflow into the sanitary sewer system.
- 33.3 Continue regular capital improvement programs to correct utility deficiencies.
- 33.4 Plan for future needs of the community to ensure residents have safe and reliable utilities.
- 33.5 Promote the use of alternative energy sources, such as wind and solar.

Goal 36.0 Protect both developed and undeveloped areas from increases in runoff and localized flooding.

Objectives

- 36.1 Protect life and property from storm and floodwater damage.
- 36.2 Reduce the impacts of development on stormwater conditions through regulations, including appropriate provisions for detention and conveyance.

Goal 39.0 Seek to improve the quality of life for all residents through community development programs that emphasize social services, affordable housing and economic opportunity.

Objectives

- 39.1 Make social services available to residents in need.
- 39.2 Implement strategies to address social issues related to housing, disabilities, poverty and community development infrastructure.
- 39.3 Implement strategies to address chronic homelessness and to provide permanent shelter.
- 39.4 Implement strategies and remove barriers to fair housing choice.
- 39.5 Work to improve public housing in Urbana through cooperative efforts with the Housing Authority of Champaign County.

Goal 42.0 Promote accessibility in residential, commercial and public locations for disabled residents.

Objectives

- 42.1 Ensure that new developments are sensitive to the mobility and access needs of the disabled.
- 42.2 Ensure that there are accessible ramps for all new sidewalks at intersections with roadways.
- 42.3 Ensure that new developments include adequate access for the disabled through compliance with ADA requirements and other measures.
- 42.4 Encourage residential developers to consider the market for disabled residents and visitors and to promote the provision of accessible and adaptable units.

- 42.5 Ensure that all City-funded single-family and two-family dwelling units are fully visitable by the disabled.
- 42.6 Encourage enhanced accessibility features in heavily used public facilities.
- 42.7 Ensure that people with disabilities have access to the city's sidewalks by installing accessible ramps where requested by people with disabilities, their advocates, or in heavily pedestrian-trafficked areas.

Goal 44.0 Provide for the safe, efficient, and cost-effective movement of people and goods within, through, and around the City.

Objectives

- 44.1 Maximize cost effectiveness in all existing transportation modes as well as for future project planning, design, and construction.
- 44.2 Reduce the number and severity of pedestrian, bicycle, and vehicular crashes.
- 44.3 Improve intersection markings and signage, especially in the University District and downtown areas.
- 44.4 Implement the strategies identified in the Campus Area Transportation Study (CATS).
- 44.5 Ensure that street lighting is established in tandem with new development in order to enhance safety.
- 44.6 Promote new technologies and designs in construction and improvement of crosswalks, including accessible ramps and signaling for the visually impaired.
- 44.7 Adopt access management guidelines for existing and planned arterial roadways.
- 44.8 Improve intersection markings and signage near and around High Cross Road.

Goal 46.0 Improve access to transportation modes for Urbana residents.

Objectives

- 46.1 Work to improve pedestrian, bicycle, and transit access throughout Urbana.
- 46.2 Work with representatives of the disabled community to improve accessibility throughout the community.

Goal 47.0 Create a multi-modal transportation system.

Objectives

- 47.1 Improve transit service to important activity centers (e.g. retail areas, employment centers, transportation hubs, etc).
- 47.2 Extend transit service to the entire contiguous developed area.

- 47.3 Investigate the need for alternative transit facilities to support commuter traffic and increased traffic demand.
 - 47.4 Require developers (especially of large-scale developments) to provide easy access for public transportation users and pedestrians.
 - 47.5 Make it easier for people to switch from one transportation mode to another.
 - 47.6 Improve traffic flows in peak traffic periods through traffic control and roadway improvements.
 - 47.7 Promote bicycle/pedestrian access to major activity centers.
- Goal 48.0 Increase use of existing transportation infrastructure.**
- Objectives*
- 48.1 Complete planned connections for existing roadways, pathways and other facilities that can help create infill development opportunities.
- Goal 49.0 Avoid development patterns that can potentially create an over-dependency on the automobile.**
- Objectives*
- 49.1 Promote alternatives to automobile travel, through provision of sidewalks, pedestrian access, bicycle pathways, and high quality transit service.
 - 49.2 Increase land use densities to promote availability of transit service and walkability.
 - 49.3 Improve access to alternative transportation modes within neighborhoods.
 - 49.4 Institute parking rate-based financial incentives with major employers to increase usage of alternative transportation modes.
- Goal 50.0 Ensure adequate transportation facilities for new growth.**
- Objectives*
- 50.1 Ensure that new developments provide easy access to pedestrians and bicyclists, as well as automobiles and mass transit vehicles.
 - 50.2 Ensure that land use and transportation are considered in tandem for all transportation and new land use projects.
 - 50.3 Foster intergovernmental cooperation to help create the necessary links in a regional transportation system.
 - 50.4 Promote efforts to preserve abandoned rail corridors through rail banking.

Waste and Recycling Survey and Case Study

Compiled by Rod Fletcher, City of Urbana Environmental Manager

The topic of waste and recycling can be broken down into three components; Zero Waste, Construction and Demolition Debris, and Commercial Recycling. While the Sustainable Urbana addresses the Objectives and Opportunities related to waste and recycling, this appendix will describe in detail and provide background information for the three components.

ZERO WASTE

"Zero waste is a philosophy and a design principle for the 21st Century; it is not simply about putting an end to landfilling. Aiming for zero waste is not an end-of-pipe solution. That is why it heralds fundamental change. Aiming for zero waste means designing products and packaging with reuse and recycling in mind. It means ending subsidies for wasting. It means closing the gap between landfill prices and their true costs. It means making manufacturers take responsibility for the entire lifecycle of their products and packaging. Zero waste efforts, just like recycling efforts before, will change the face of solid waste management in the future. Instead of managing wastes, we will manage resources and strive to eliminate waste."

- Institute for Local Self Reliance (Washington, DC) -

There is clearly a trend being acknowledged by government agencies, as well as private sector entities, to recognize the importance of a fundamental change – **that discards traditionally perceived as garbage in need of disposal should be seen as commodities or resources to be recovered.** This results in the need to adopt and enact policies, goals, strategies, and programs to effectively **manage resources rather than to manage wastes.** This is a significant shift in thinking about the entire production and consumption cycle – and consideration of the impacts of raw material extraction, product design, production processes, product sales and delivery, consumer product choice, and how we manage discards after use and consumption. While Zero Waste may never be literally fully attained, it is nonetheless, a true goal to aspire to meet.

CONSTRUCTION AND DEMOLITION (C&D) DEBRIS

The quantity of C&D debris generated is subject to wide debate and data is as varied as the type of building structure, roads, or bridges built and materials used in construction or renovation. Industry experts estimate that nationally, including road and bridge debris, the quantity generated - some 386 million tons, is greater than the municipal waste generated - 245 million tons. The quantity of C&D generated is usually a direct function of the economic vitality of a given community.

C&D debris should be understood as a “family” of different generation streams – in the broadest definition there are residential/commercial building related debris,

infrastructural debris – i.e. roads and bridges, land clearing debris, etc. Even within the family of building related debris there are variations to be noted. New construction, renovation, and demolition activities each produce a different generation streams, and within these categories, residential and non-residential buildings add additional complexities or opportunities.

Local data

In the 2005 Urbana Recycling Report, C&D was estimated to be about one third or about 13,000 tons per year (TPY) of the commodity/waste generated in Urbana. However, this estimate was derived from the waste characterization data found in the initial Champaign County Solid Waste Management Plan (CCSWMP) and that data was gathered from local landfills 20 years ago. Upon further investigation, as acknowledged in that report, the quantity of C&D was an unusually high percentage, 2½ times as great, as compared to national data and was likely due to the capital improvement programs being undertaken by the University at the time.

In order to attempt to supply a more current estimate of C&D quantities specific to the Urbana, a review of building and demolition permits issued by Urbana over the last four years was undertaken for this report, and estimated generation data taken from several sources was applied to refine estimates. Reclaimed asphalt/concrete from road projects was not included, since it is reused on site and is not intended to be discarded.

Based on this methodology, C&D resulting from new construction ranged from 1124 to 2265 tons - an average of 1588 tons per year. Demolition activities would see a range of 2145 to 5889 tons – an average of 4860 tons per year (see Table 1). But as shown, quantities can vary widely from year to year. With these data estimates, it would appear that the C&D portion of the commodity/waste stream is not as great as previously reported and would be reduced from 13,000 to about 6500 TPY, using an average over the last 4 years. C&D would then represent about 20% of Urbana’s waste/commodity stream. (There are several generation studies now being conducted by USEPA and others, and will be updated.)

Table 1. Estimated Urbana Data

Year	New Construction		Demolitions		Total tons
	Sq. ft.	Tons/% of Total	Sq. ft.	Tons/% of Total	
2003	680,343	1360/39%	37,311	2145/61%	3505
2004	802,309	1604/29%	66,999	3852/71%	5456
2005	1,132,590	2265/23%	131,390	7554/77%	9819
2006	562,365	1124/16%	102,420	5889/84%	7013
Total	3,177,607	6355/25%	338,120	19,442/75%	25,797
4 yr. Average	794,402	1588/25%	84,530	4860/75%	6448

Demolition vs. new construction

Nationally, it is reported that demolition activities are estimated to constitute 48% of all building related C&D debris, followed by renovations at over 44% and new construction is the smallest sliver at about 8%. Data generated specific to Urbana sees demolition comprising 75% and new construction 25% of total estimated tons generated averaged over the last 4 years.

The types of materials that could potentially be recovered from “general building” demolition is shown in Table 2. Table 3 is even more specific and represents the potential recovery of materials generated from new construction of a “typical” 2000 square foot home.

Table 2. General Building demolition

Material	Percentage
Concrete/rubble	40-50
Wood	20-30
Drywall	5-15
Asphalt roofing	1-10
Metals	1-5
Bricks	1-5
Plastics	1-5

Table 3. “Typical” home new construction

Material	Weight (in lbs.)	Percentage
Solid sawn wood	1600	20
Engineered wood	1400	17.5
Drywall	2000	25
Cardboard (OCC)	600	7.5
Metals	150	1.8
Vinyl (PVC)	150	1.8
Masonry	1000	12.5
“Toxic” materials	50	.06
Other	1050	13
Total	8000	100

In general building demolition the top three commodities generated are concrete, wood and drywall. And for new residential construction - wood, drywall, and masonry or other materials are about even. Although cardboard is not nearly as significant in terms of weight, it is in volume. Quantities of cardboard are increasing in new construction since more building components are delivered as finished products ready for installation. Cardboard can represent as much as 30% of the total volume of discards, and if unconsolidated or boxes are not flattened, boxes just take up volume. Often contractors unnecessarily just pay for air, when in fact cardboard is a valuable commodity in demand.

General management strategies

A hierarchy of strategies to manage C&D would be: Reduction, Reuse, Recycling and non-recoverable items being landfilled.

C&D reduction would be accomplished by careful estimation of quantities of materials needed for construction – contractors shouldn't pay for materials not used and then again for disposal of unused items.

Reuse during construction would involve such practices as using inert materials like bricks and concrete for fill under driveways, placing "leftover" insulation in attics, saving excess flooring sheet goods for future use, etc. In demolition, reuse would involve recovering functional lumber, plumbing fixtures, appliances, etc., or grinding concrete or asphalt.

Recycling of wood, aluminum, shingles, cardboard, etc. usually involves 3 options:

Mixed material collection in either new construction or demolition, where materials are transported from the job site, processed and sorted at a facility and transported to manufacturers;

Source separation where materials are kept in separate containers depending on market specifications from other materials, i.e. cardboard segregated from metals;

On-site processing is usually reserved for large sites where machinery is brought in and materials are processed on-site for on-site use – such as grinding old pavement.

In general, recycling activities are usually easier to implement in new construction projects as opposed to demolition projects, but space availability can often limit the size and number of on-site containers in source separation.

Mixed material recycling activities performed off-site by processors involves a system of shredders and mechanical separation devices for maximum recovery attempts and requires an IEPA operating permit. Also mixed material processing raises concerns regarding certain materials that would have been used in construction of the building such as lead and asbestos and therefore certain handling and air pollution issues – such as dust, must be dealt with accordingly.

Most demolition contractors, especially when demolishing steel framed buildings, will segregate metals from sites and take to processors for sale. The high value of metals over the past several years, make this an especially profitable motivator. And it usually is common practice for concrete generated from demolitions to be recovered.

However, as with any recovery program, but especially those targeted from the C&D sector due to size and weight of materials, there must be viable markets available and they must be local to avoid increasing transportation costs and related negative environmental impacts to make recovery actually cost effective and beneficial.

Finally, there are also "deconstruction" options that literally take a building carefully apart, rather than to demolish it. This method sees high rates of recovery and reuse of all types building materials. However, according to several articles, this practice is usually limited to houses and typically takes a crew 5 times longer and costs at least 25% more to undertake as opposed to traditional demolition.

COMMERCIAL BUSINESS RECYCLING

Discard Profiles

Like the residential sector, there are 3 material categories that comprise the bulk of discarded materials: paper- including cardboard (OCC), plastics, and organics. Together these materials can typically comprise two-thirds to three-quarters of total discards with metals, glass and other discards the remainder. But unlike the residential sector, where discards are “relatively homogeneous” from household to household, the type and quantity of discards can vary widely depending on the type of business. As an example, the state of Vermont conducted a characterization profile of selected business types within the commercial sector. The chart below depicts the range of variations found in that study:

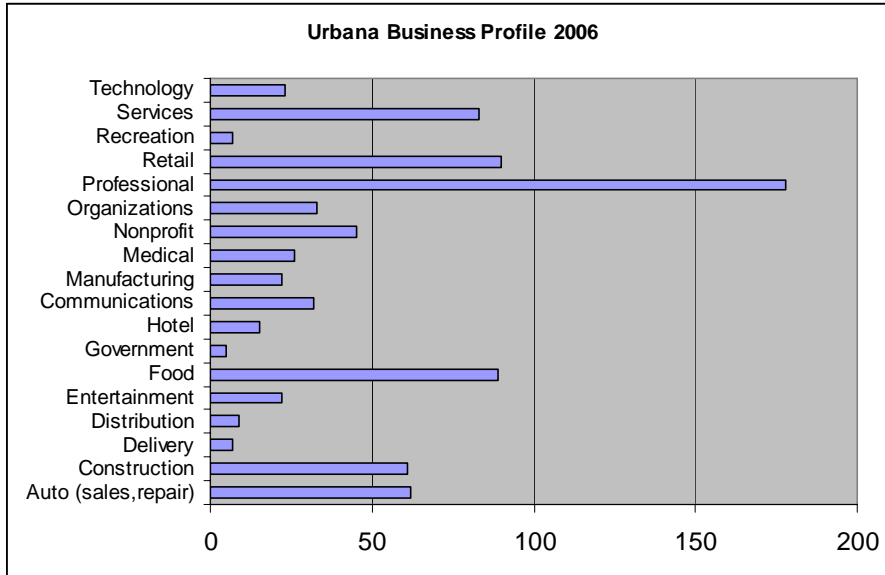
Vermont Study of Types of Businesses and their Discards as a Percentage of the Total

Category	Office	Retail	Restaurant	Grocery	Motels	Mixed	Average
Paper	54.1	37.6	17.5	36.9	41.9	20.7	34.8
Plastic	9.3	19.7	14.5	8.5	9.7	9.8	11.9
Metal	3.5	6.7	2	1.5	1.4	5.3	3.4
Glass	3.5	3.2	2.2	2.1	9	1.6	3.6
Organics	18.9	14.5	51.2	46.9	20.4	36.6	31.4
Other	10.5	19.4	12.7	4.1	17.6	26.1	15.1

As mentioned in prior sections, it is difficult to correlate this data relative to Urbana, as every community is different and has differing numbers of types of businesses that impact the type and quantity of discards. For example, the percentage of organics listed under office settings in the chart above, is unusually high. For large office complexes that also have on-site dining halls this may be reflective. Other studies, report a very small percentage of organics, under 5%, and very high paper percentages – as much as 90% for typical office settings. The latter would be expected to be the case for Urbana.

Local data

The chart below profiles the type and number of businesses within the City. There are approximately 800 businesses within Urbana city limits, and there is twice the number of professional businesses - banks, law offices, insurance firms, engineer/architects, etc. than any other group. While all businesses have some type of office, clearly this sector in aggregate, offers good potential for high grade paper for recovery.



However, providing recycling to businesses on an individual basis can often add to business expenses. Recycling is not free. Obviously, recyclers must make a profit, and many factors play a role in establishing the cost to recycle, or for that matter to collect garbage, including disperse locations of business locations – collection route efficiencies, frequency of collection, quantities collected, labor, overhead, profit, and rising operational costs. Thus the isolated cost to make a stop at any individual business location can be high. The more customers, the broader the income base and the more quantities of commodities that can be captured to add to expenses recovery and profit, while attempting to stay competitive.

Most of the businesses in Urbana, professional and other types, are relatively small to medium sized firms that tend to generate smaller quantities of potentially recyclable materials. Depending on the types and quantity of materials that are recycled at an individual location, the resulting commodity resale revenue may also be small and not sufficient to cover the additional recycling stop costs. Therefore the cost any given individual business may incur to recycle may actually add to their expenses, even if the quantity of garbage is reduced because the quantities of garbage collected is usually not a significant operating cost component.

However to retain customers, haulers as opposed to commercial recyclers, have an advantage and can subsidize the cost to recycle through the garbage service price structure. The optimum scenario is to substitute a garbage collection stop for a recycling stop. If a business is of such a size and requires at least 2 collection stops a week for garbage collection, often one stop could be substituted for a recycling stop, and businesses could see little financial impact. However, very few small to medium sized businesses, except for restaurants or others that dispose of food scraps or other putrescible materials, have the need for more frequent collection than once a week, and if they do, the most common solution is to increase the size of the container. More price structure data needs to be reviewed from the private sector to determine the net costs. But “cooperative sharing” discussed later may also provide viable recycling options.

There are a number of high generation locations such as food stores, medical facilities, manufacturing, and other businesses. Most all high generation locations have some sort of asset management program and realize the value of recovery of items that would otherwise be discarded as garbage and subsequent reduction in garbage costs and as such, many commercial recyclers are currently serving these locations. These recyclers are local and also there are regional brokers that collect “chain” stores through regional contracts.

In Downtown mostly OCC and paper is recycled. There is some collection of glass from bars which has been accomplished by a few locations cooperatively sharing both garbage and recycling collection costs through the same hauler. This cooperative sharing likely could be expanded, even for glass, but the hauler also requires that garbage service contract and does not just pickup recyclables, and businesses must be located close to each other. Cooperation between businesses and the hauler in sharing services and a location to place containers is essential for success of such a program. The market for glass has traditionally been of low value and is a difficult material to process, and at best is a break-even or a slight financial loss to collect and process. Consequently, haulers must be collecting other recyclable materials of value and/or adjust their service fees. Many cities have stopped collection of glass for these reasons and even locally, while the University of Illinois has very good recycling programs, glass collection was halted a number of years ago.

Portland, OR.

The City of Portland, has since 1996, required businesses to recycle at least 50% of their discards. Portland and Urbana share similar collection systems– private sector haulers (58 haulers in Portland) are permitted to provide garbage and recycling services in a competitive system, and there are no franchises (geographical territories assigned to a hauler). Customers are free to choose their hauler and negotiate price, services, collection location and frequency. Independent commercial recyclers are required to be registered with the city, and offer services for a variety of materials, including compostables, provide quarterly reports of quantities collected, but operate under a different set of requirements than permitted haulers and pay no waste related fees.

Some of the salient requirements for permitted haulers are:

1. To offer, and make known the availability of service to customers, the recycling for 14 principal recyclables (the same materials U-CYCLE collects, except yard debris),
2. Report each quarter the collected amounts of garbage and recyclables,
3. Allowed to subcontract for recyclables collection,
4. Must provide and complete a Recycling Plan Form for every customer,
5. Prohibited from disposal of any recyclables intentionally segregated from waste, and

6. Pay the city a \$3.80/ton fee for garbage collected, plus an annual fee of \$60.

There are stiff fines for infractions for these and other rules. It should be noted that the fee paid by haulers for each ton of garbage collected serves 2 functions, first it is an incentive to encourage recycling and second, it generates revenue for the Office of Sustainable Development to use for their programs. Of course this fee is ultimately paid by businesses through hauler rate structures.

Portland relies on targeted outreach, technical support and education to gain voluntary compliance with the 50% recycling requirement. While Portland states that businesses have generally met the 50% recycling goal, they are currently reviewing plans to increase recycling efforts.

In the proposed new plan – Portland Recycles! there is a brief discussion of the need to change the current system: *“The competitive nature of hauling services has limited the promotion and growth of waste prevention and recycling in the commercial system. To retain customers, haulers tend to offer the least complicated service at the lowest cost. This makes it difficult for them to promote expanded recycling services and remain competitive. In general, most businesses are very sensitive to price and will not demand expanded recycling service unless it represents a cost savings.”*

In the recommendations, they are proposing to adopt new standards for the commercial sector and acknowledge that 1) businesses can expect recycling costs to increase, 2) an intensive outreach and education plan is critical, and 3) additional staff and resources will be needed for monitoring, verification and enforcement.

Portland’s proposed recommendations are:

1. Establish a new 75% recycling requirement for mandatory business recycling.
2. Establish new mandatory food scrap diversion.
3. Establish new mandatory paper recycling for all businesses.
4. Increase mandatory C&D recycling ordinance to 75%.
5. Provide additional education and technical assistance for items listed above.
6. Promote salvage, reuse and recycled products in construction, remodel and demolition projects.
7. Adopt enhanced recovery of residuals from Material Recovery Facilities (MRF’s).
8. Develop new hauler requirements to:
 - a. Allow customers to reach a 75% goal by offering “customized” service packages.
 - b. Require all trucks to use B20 biodiesel fuel & meet new emission standards.
9. Consider alternative regulatory scenarios:
 - a. Enhance existing competitive system.

- b. A competitive system where city sets rates for service.
- c. A franchise system with city rate setting and assigned service areas.

Survey of Urbana Businesses

In 2002, the City conducted a survey to gather information on the extent of commercial sector recycling and receive input from businesses regarding recycling. Just recently in May, another similar survey was conducted to update information. The links between economic and environmental benefits and recycling are strong. The 2007 survey asked the question “why do you recycle?”. Overwhelmingly, the number one reason was because it is “good for the environment” with 60 choices, the second reason was “to reduce garbage costs” with 26 choices and 18 choices because it is “management policy”. While only 9 haulers or commercial recyclers were named as providing services in 2002, the 2007 survey named 18 service providers. This is an indication of the growing demand, and private sector response, for commodities. Both surveys received responses from a fairly representative cross-section – both large and small firms, and by business type. The surveys were designed to not be too detailed so as to foster a good response rate, but it does provide a snapshot from this sector. A summary of other responses received from both surveys follows:

Results of Business Survey

	2002	2007
Number of surveys sent	660	571
Number of responses/response rate	122/18%	87/15%
Number of responses that currently recycle/percent of responses	57/47%	54/62%
Does the private sector provide adequate service options to recycle ? (All responses)	n/a	Adequate 40% Inadequate 29% No response 31%
Which option would be preferred for commercial recycling ?		
Businesses voluntarily determine to recycle or not	48%	31%
Businesses required to recycle by their choice of hauler	12%	7%
Haulers required to offer service to businesses	12%	13%
City contract funded by businesses	8%	7%
No response	17%	40%
Other	3%	2%

Both the 2002 and 2007 surveys indicate that the leading preference for recycling to occur in the commercial sector is to let businesses voluntarily determine whether to recycle or not. The next highest preference is to require haulers to offer recycling services. However, bear in mind that the 2002 response rate was about 1 in 5 and in 2007 about 1 in 7 businesses.

From the 2007 survey, 54 businesses indicate they have been recycling for more than one year and 33 do not recycle. The chart below provides a summary of whether the private sector provides adequate or inadequate service options for those that do recycle and those that do not:

Do you feel that the private sector provides adequate service options for you to recycle ?

	Businesses that do recycle	Businesses that do not recycle
Adequate service options	55%	18%
Inadequate service options	27%	30%
No response	18%	36%

It is interesting to note that regardless of whether a business is recycling or not, there are a relatively significant percentage of responses that indicate the private sector is not providing adequate service options for businesses to recycle. No detail was asked regarding this so this could mean that fees are too high, number of materials collected is limited, or simply that businesses are not aware of availability. Also there is a significant percentage that did not respond to the question.



FROM THE DESK OF COUNCIL MEMBER BOWERSOX

Sustainable Urbana

4/5/2007

Background

In the 2 years since the creation of the City Council Goal to "Reduce Urbana's Environmental Footprint" the Mayor, Council, and City staff have learned about many innovations and visited cutting-edge places:

- Prairie Crossing, the model conservation community
- The Chicago Center for Green Technology
- The Lt. Governor's Sustainable Cities Symposium in December 2007

In order to move from learning to action steps for the coming 2 years, the Mayor and Council Member Bowersox have planned the "Sustainable Urbana" discussion as a brainstorming opportunity to hear and collect Council Members' suggestions and ideas.

Of course the public and private sectors have already accomplished important steps:

- Completion of a second energy-efficient affordable home with Eco-lab
- Kerr Avenue Model Green Neighborhood planning with Farr & Associates
- Addition of LEED green building as recommended for PUD approval
- Growth of the Farmer's Market and U-Cycle
- Revitalization of Downtown and Philo Road and focus on compact, infill development

This "Sustainable Urbana" discussion is being held to collect ideas and suggestions from Council, with the intent to ask City staff in coming months to hold a similar brainstorming conversation and to identify which ideas can become feasible action steps for the coming 2 years.

Invitation

Council Members are invited to bring 1-3 suggestions or proposals for reducing Urbana's environmental footprint. Each Council Member will have a chance to speak during the course of the discussion. Council Members are encouraged to keep each individual proposal or suggestion brief; in future meetings the details and the feasibility will be discussed further. Members of the public are also invited to give input via the public input process and some speakers are planned.

Speakers

The following speakers are scheduled to provide their suggestions and share their knowledge:

- Katrin Klingenberg, Executive Director, E-co Lab, a builder of Urbana's super-energy-efficient affordable housing
- Lesley McCain, Midwest Director of Business Development, Community Energy, Inc.,

the 2006 U.S. EPA / Department of Energy Green Power Supplier of the Year (scheduled on April 16 because of a conflict on April 9)

Suggested Motion and Schedule

The following motion is suggested: "To direct City staff to hold a similar brainstorming session and add their suggestions to the list compiled by the City Council members, then to briefly perform a rough, initial assessment of the feasibility of each suggestion and report the complete list back to Council in July, 2007."

Therefore the suggested schedule is as follows:

April 9, 2007: Committee of the Whole: Sustainable Urbana Discussion and Motion; Katrin Klingenberg, guest speaker

April 16, 2007: Council: Motion acted on by Council; Lesley McCain, guest speaker

May - June, 2007: City staff hold a similar brainstorming session, then a rough initial assessment of feasibility of each suggestion

July, 2007: City staff report the complete list of suggestions and feasibility back to Council



The U.S. Mayors Climate Protection Agreement

(As endorsed by the 73rd Annual U.S. Conference of Mayors meeting, Chicago, 2005)

- A. We urge the federal government and state governments to enact policies and programs to meet or beat the target of reducing global warming pollution levels to 7 percent below 1990 levels by 2012, including efforts to: reduce the United States' dependence on fossil fuels and accelerate the development of clean, economical energy resources and fuel-efficient technologies such as conservation, methane recovery for energy generation, waste to energy, wind and solar energy, fuel cells, efficient motor vehicles, and biofuels;
- B. We urge the U.S. Congress to pass bipartisan greenhouse gas reduction legislation that 1) includes clear timetables and emissions limits and 2) a flexible, market-based system of tradable allowances among emitting industries; and
- C. We will strive to meet or exceed Kyoto Protocol targets for reducing global warming pollution by taking actions in our own operations and communities such as:
 - 1. Inventory global warming emissions in City operations and in the community, set reduction targets and create an action plan.
 - 2. Adopt and enforce land-use policies that reduce sprawl, preserve open space, and create compact, walkable urban communities;
 - 3. Promote transportation options such as bicycle trails, commute trip reduction programs, incentives for car pooling and public transit;
 - 4. Increase the use of clean, alternative energy by, for example, investing in "green tags", advocating for the development of renewable energy resources, recovering landfill methane for energy production, and supporting the use of waste to energy technology;
 - 5. Make energy efficiency a priority through building code improvements, retrofitting city facilities with energy efficient lighting and urging employees to conserve energy and save money;
 - 6. Purchase only Energy Star equipment and appliances for City use;
 - 7. Practice and promote sustainable building practices using the U.S. Green Building Council's LEED program or a similar system;
 - 8. Increase the average fuel efficiency of municipal fleet vehicles; reduce the number of vehicles; launch an employee education program including anti-idling messages; convert diesel vehicles to bio-diesel;
 - 9. Evaluate opportunities to increase pump efficiency in water and wastewater systems; recover wastewater treatment methane for energy production;
 - 10. Increase recycling rates in City operations and in the community;
 - 11. Maintain healthy urban forests; promote tree planting to increase shading and to absorb CO₂; and
 - 12. Help educate the public, schools, other jurisdictions, professional associations, business and industry about reducing global warming pollution.

Policy Guide on Planning for Sustainability

(<http://www.planning.org/policyguides/sustainability.htm>)

Adopted by Chapter Delegate Assembly, April 16, 2000

Ratified by Board of Directors, April 17, 2000, New York, NY

I. FINDINGS

There is growing concern for the issue of sustainability – whether the Earth's resources will be able to meet the demands of a growing human population that has rising aspirations for consumption and quality of life, while maintaining the rich diversity of the natural environment or biosphere.

Patterns of human development - physical, social, and economic - affect sustainability at the local and the global level. City and regional planning is integrally related to defining how, where, and when human development occurs, which affects resource use. Planners can therefore play a crucial role in improving the sustainability of communities and the resources that support them.

There are several dimensions to the "sustainability" issue:

1 - We want to sustain communities as good places to live, and that offer economic and other opportunities to their inhabitants.

2 – We want to sustain the values of our society – things like individual liberty and democracy.

3 – We want to sustain the biodiversity of the natural environment, both for the contribution that it makes to the quality of human life and for its own inherent value.

4 – We want to sustain the ability of natural systems to provide the life-supporting "services" that are rarely counted by economists, but which have recently been estimated to be worth nearly as much as total gross human economic product.

A sustainable community is one that is consistent with all of these dimensions of sustainability.

A range of indicators suggest that there is a growing gap between human consumption of resources and Earth's capacity to supply those resources and reabsorb resulting wastes. Several of these are described below:

Global Indications of Unsustainability

Global Warming. Human activity, particularly the combustion of fossil fuels, adds gases like carbon dioxide and methane to the atmosphere. The world's scientific community continues to document that this buildup of gases is altering global climatic patterns. Over the past century, the land surface temperature worldwide

has risen an average of 0.8 -1.0 Fahrenheit degrees. Over the same period, average precipitation has increased about 1% while the worldwide sea level has risen about 6-8 inches.

Soil Degradation. For the past 50 years, agricultural mismanagement has resulted in severe degradation of the Earth's soils, erosion being the most common type of degradation. Soil lost to wind and water erosion ranges from 5-10 tons per hectare annually in Africa, Europe, and Australia, 10-20 tons per hectare in North, Central, and South America, and 30 tons per hectare in Asia. Given that soil is created at roughly one ton per hectare per year, current rates of erosion are depleting the nutrient base of agriculture.

Deforestation. The world has lost 1.5 billion acres of forest in the last 200 years. Tropical rainforests, which support more than 60% of all known plant species are currently disappearing at a rate of 2.4 acres (two football fields) per second, 214,000 acres (larger than New York City) per day, and 78,000,000 acres (the size of New Mexico) per year.

Species Extinction. Human activity is creating a "biodiversity deficit" by destroying ecosystems faster than nature can create new ones. Rates of species extinction are currently estimated at one hundred to one thousand times higher than pre-human levels. In North America, an estimated 36% of fish, 35% of amphibians, 17% of mammals, and 11% of birds are either in jeopardy or are already extinct.

Declining Fisheries. After many years of continually increasing worldwide seafood catches, the tonnage of seafood harvested peaked in 1989 and has plateaued since. Harvests for many species have declined. For example, the annual salmon catch in British Columbia fell by nearly 50% from 1985 to 1995.

Economic Inequity. The fifth of the world's people living in the highest-income countries controls 86 per cent of world gross domestic product (GDP), 82 per cent of world export markets, 68 per cent of foreign direct investments, and 74 per cent of world telephone lines.

In addition to these global indicators, a variety of local and regional indicators also show unsustainable trends. The reasons that our lifestyles are unsustainable are varied and complex. Here are a few of the key factors contributing to unsustainability.

What is Contributing to Unsustainability?

Overconsumption. Over the last 40 years, the increase in per capita energy and material consumption has increased even faster than the world's human population. Scientists estimate that our present consumption level is exceeding the Earth's carrying capacity by 30%. We are making up that difference by depleting "natural capital". The United States leads the world in material consumption and waste generation. The 'ecological footprint' (estimated amount of land to support consumption and waste generation patterns) of the typical U.S. resident per year is

25.5 acres, compared to 6.9 acres for the average world resident and 2 acres for the average resident in India.

Population Growth. The world's human population is growing at a rate of 385,000 per day. Almost all of this growth (98%) is occurring in developing nations. Many developing nations remain impoverished because economic development cannot keep pace. Even in the United States, where the growth rate is a relatively modest 1.1%, the nation's population will double in roughly 60 years.

Dependence upon Non-Renewable Resources. Modern economies rely on a host of substances that are not part of nature's cycle of growth and decay. Because these substances are not renewable, their supplies are constantly diminishing. This causes competition for limited resources, with societal repercussions and resulting damage to the environment.

Pollution. The use of substances that accumulate in the ecosphere and are not part of nature's cycle causes environmental pollution in various forms. Carbon dioxide has increased 30% over its natural occurrence in our atmosphere. Poisonous elements mined from below the Earth's crust, such as cadmium and lead, are found at five and eight times, respectively, their natural rates in the ecosphere. Over 70,000 chemical compounds are now present and accumulating in the ecosphere. Many of these may be toxic to humans or other species.

Environmentally and Socially Destructive Development Patterns. Historically, human development has not considered the natural processes upon which we depend, thereby damaging or destroying the systems that support us. The typical suburb paves over land that was once the habitat of other species. It also reduces opportunities for social interaction, once as easy as walking down the street to go to the corner store. Today, fewer than 10% of daily commute trips in the U.S. are by walking or bicycling.

Inequities in Resource Distribution. Between 1960 and 1994, the disparity in per capita income between the richest and poorest fifth of the world's nations rose from 30:1 to 78:1. The historic solution to poverty – economic growth -- has generally served to exacerbate inequities, while degrading the resources upon which all life depends.

Limited Public Participation. Problems arise when sectors of society are disenfranchised from political and economic decision-making, contributing to social and economic inequalities. Limited public participation and lack of equity undermine the ability to sustain the natural and community systems upon which all people depend.

One of the root causes of the problems described above is the failure to recognize the fundamental limits to Earth's ability to withstand alterations to its natural systems. As a result, most Americans consume wastefully, using our limited resources inefficiently and inequitably. People need to acknowledge that we are an interconnected part of nature. Policies and actions must reflect the important

linkages among a healthy environment, a strong economy, and social well being. Indeed, it may be necessary to change some of the operational definitions of "strong economy" and "social well being."

These global problems are reflected in -- and are affected by -- localized unsustainable activity in communities and regions throughout the United States and in other regions of the Earth. Many of these environmentally, economically and socially unsustainable practices are directly connected to local - including remotely influenced local - decision-making. Some examples are summarized as follows:

U.S. Indications of Community Unsustainability

Suburban Sprawl. Current growth in urban and suburban land use far exceeds the population growth in many major metropolitan centers in the U.S. Between 1970 and 1990, for example, metropolitan Chicago's population grew by 4% while the amount of land dedicated to housing grew by 46%. During that same period, metropolitan Cleveland's population fell by 11% but developed land still increased by 33%. This trend has resulted in increased costs for public services, the decline of central cities, increased vehicle miles traveled and emissions of carbon dioxide, the destruction of farmland and open space, and arguably a loss of community.

Segregation/Unequal Opportunity. Communities all over the United States continue to be largely divided along economic and racial lines, both physically and socially. Poverty is increasing among whites as well as minorities. Minority groups continue to have less access to economic opportunities, adequate food and shelter, and needed services. Nationwide, nearly 28% of people of color live below the poverty level, as compared to about 11% of whites.

Loss of Agricultural Land and Open Space. From 1970 to 1990, more than 19 million acres (30,000 square miles) of rural lands were developed. Every year, construction transforms 400,000 acres of high quality farmland. This amounts to 45.6 acres every hour of every day. Such development weakens the agricultural basis upon which people depend, as well as the natural resources upon which all life depends.

Depletion and Degradation of Water Resources. Groundwater over-pumping is occurring in many of the nation's regions. In California, groundwater overdraft averages 1.6 billion cubic meters per year, which amounts to 15% of the state's annual groundwater use. Depletion of the High Plains Aquifer System, which underlies nearly 20% of all irrigated land in the U.S., totals 325 billion cubic meters while current annual depletion is estimated at 12 billion cubic meters. Despite progress made under the Clean Water Act, carcinogens have been found in wells in fourteen different states throughout the Corn Belt and many of the nation's waterways remain badly polluted. In addition, the continuing increase in impermeable surfaces such as parking lots and buildings acts to prevent groundwater recharge, create destructive runoff patterns, and destroy the treatment capacity of natural systems.

Loss of Wetlands. Among the most productive ecosystems in the world, wetlands on non-federal lands in the U.S. are disappearing at a rate of 70,000 to 90,000 acres annually. In the 1600s, over 220 million acres of wetlands are thought to have existed in the lower 48 states. By the 1980s, only an estimated 103 million acres remained.

Traffic Congestion and Air Pollution. Vehicle-clogged roadways and deteriorating air quality diminish quality of life and health for millions of Americans in cities, suburbs, and outlying areas. Since 1970, vehicle miles traveled have increased by 121%, more than four times the population growth over that same period. Traffic congestion is estimated to cost the nation \$168 billion in lost productivity. Although air quality has improved in several metropolitan areas due to more stringent emission standards, 46 million Americans continue to live in counties that do not meet federal air quality standards.

Disproportionate Exposure to Environmental Hazards. Low-income people and people of color continue to be disproportionately exposed to environmental hazards in urban and rural areas. In Los Angeles County, California, minorities are three times as likely as whites to live within half a mile of a large, hazardous waste treatment, storage, or disposal facility. Nationwide, Black children from poor families are five times as likely to have dangerous blood lead levels than wealthier White children. White children from households with annual incomes of under \$6,000 are three times as likely as White children from families with incomes over \$15,000 to have dangerous blood levels of lead.

II. FRAMING THE ISSUE

Sustainability is the capability to equitably meet the vital human needs of the present without compromising the ability of future generations to meet their own needs by preserving and protecting the area's ecosystems and natural resources. The concept of sustainability describes a condition in which human use of natural resources, required for the continuation of life, is in balance with Nature's ability to replenish them. However, humans are depleting and degrading many resources faster than Earth's natural systems can replenish them, and human consumption continues to grow every year. This is a far-reaching issue that extends well beyond the realm of today's urban and regional planner. Nevertheless, planners are in a position to protect the natural environment and its ability to support human life by working with communities to implement concepts of sustainability in their current and long range planning daily practices.

Planning for sustainability promotes responsible development - not anti-development. It requires a democratic process of planning to achieve the greatest common good for all segments of our population, protect the health of the environment and assure future generations of the resources they will need to survive and progress. Specifically, planning for sustainability includes the following *processes, practices* and *outcomes*.

Planning processes include:

- Making planning decisions in a holistic and fully-informed manner that involves all segments of the community and the public and private sectors.
- Educating all age groups to raise public understanding of and regard for the future consequences of current planning decisions and ultimately change human behavior.

Planning practices include:

- Developing a future-oriented vision, which look beyond current needs and recognizes environmental limits to human development.
- Fostering projects/activities that promote economic development by: efficiently and equitably distributing resources and goods; minimizing, reusing and recycling waste; and protecting natural ecosystems.
- Upholding a widely held ethic of stewardship that strongly encourages individuals and organizations to take full responsibility for the economic, environmental, and social consequences of their actions, balancing individual needs and wants with nature and the public good.
- Taking leadership in the drafting and implementation of local, regional and state policies that support sustainability, such as APA's Growing Smart statutes.

Planning outcomes include:

- Local and regional development patterns that expand choice and opportunity for all persons, recognizing a special responsibility to address the needs of those that are disadvantaged..
- Resilient, diverse, and self-sufficient local economies that meet the needs of residents and build on the unique characteristics of the community to the greatest extent possible.
- Communities with a healthy economy, environment and social climate that function in harmony with natural ecosystems and other species and allow people to lead healthy, productive and enjoyable lives.

III. POLICY POSITIONS

A. GENERAL POLICY OBJECTIVES

The American Planning Association and its Chapters have identified four basic objectives for planning toward greater sustainability that can be used as a framework for policy development at each level of decision-making – local, state, regional, and federal - in the broad range of matters with which planners are concerned – land use, housing, transportation, economic development – among others. The four objectives are based upon a framework developed by a group of scientists in Sweden and the U.S combining knowledge of physics, biology, and other fundamental sciences with understanding of societal decision-making.

Using these basic objectives as a guiding framework, planners and decision-makers can develop policies, legislation, and action plans toward sustainability that are

appropriate to their particular circumstances and communities. For example, efforts to reduce the use of fossil fuels (*Objective 1*) may take very different form in an urban settlement compared to efforts in rural communities. Similarly, initiatives to improve the quality of life for disadvantaged residents may be very different in a bedroom suburb than in an inner-city neighborhood (*Objective 4*). The Specific Policies in the section that follows are guided by these objectives. The attached Appendix illustrates how these objectives can be used systematically to generate a comprehensive strategy of planning actions in the direction of sustainability. While any one of these objectives pursued separately is a worthy endeavor, it is the integrated, comprehensive application of all four objectives that is needed to move toward sustainability in planning and development; hence, no one objective is more important or of greater value than the others.

OBJECTIVES OF APA'S STRATEGY FOR PLANNING FOR SUSTAINABILITY

Planning for sustainability requires a systematic, integrated approach that brings together environmental, economic and social goals and actions directed toward the following four objectives:

1. Reduce dependence upon fossil fuels, extracted underground metals and minerals.

Reason: Unchecked, increases of such substances in natural systems will eventually cause concentrations to reach limits – as yet unknown – at which irreversible changes for human health and the environment will occur and life as we know it may not be possible.

2. Reduce dependence on chemicals and other manufactured substances that can accumulate in Nature.

Reason: Same as before.

3. Reduce dependence on activities that harm life-sustaining ecosystems.

Reason: The health and prosperity of humans, communities, and the Earth depend upon the capacity of Nature and its ecosystems to reconcentrate and restructure wastes into new resources.

4. Meet the hierarchy of present and future human needs fairly and efficiently.

Reason: Fair and efficient use of resources in meeting human needs is necessary to achieve social stability and achieve cooperation for achieving the goals of the first three guiding policies.

B. SPECIFIC POLICY POSITIONS

Planners have a leadership role in forming and implementing the strategies by which communities seek to use resources efficiently, to protect and enhance quality

of life, and to create new businesses to strengthen their economies, and supporting infrastructures. The best practices of comprehensive community planning – the way we plan the physical layout, or land use, of our communities, is key to sustainable land use.

Two main features of our land use practices over the past several decades have converged to generate haphazard, inefficient, and unsustainable development sprawl – zoning regulations that separate housing, jobs, and shopping, and low density development that requires the use of the car. Our economic development and infrastructure planning practices present opportunities for us to encourage businesses and community facilities that offer creative, economically beneficial solutions to wasteful resource use and environmental degradation. Only through the best planning practices can we hope to create healthy communities that can sustain our generation and secure a promising and sustainable future for all children.

The listed order of specific policies follows the logic of the four objectives and does not reflect an implied priority of action or importance. As is the case with the four policy objectives, while each of the specific policies are of merit if followed separately, they need to be pursued as a whole in an integrated, comprehensive, *systems* approach in order to move toward sustainability in community planning and development. While certain policies may be of greater immediate relevance to particular regions, levels of government, and planning expertise, planners can contribute substantially to communities and to society through maintaining this perspective of the whole in our thinking and in our planning approaches.

1. The American Planning Association and its Chapters support planning policies and legislation that encourage alternatives to use of gas-powered vehicles. Such alternatives include public transit, alternatively-fueled vehicles, bicycle and pedestrian routes, and bicycle and pedestrian-friendly development design.

Reason: Use of privately-owned gas-powered vehicles significantly contributes to increasing carbon dioxide concentration and greenhouse gases in the atmosphere at the global level, and to air pollution, as well as nuisance and societal costs of traffic congestion at the local and regional levels. Planning and development actions that reduce the need to drive can in turn help to reduce carbon dioxide and other emissions, as well as help reduce traffic congestion and add system capacity.

2. The American Planning Association and its Chapters support planning policies and legislation that encourage all types of development to use alternative renewable energy sources and meaningful energy conservation measures.

Reason: Use of alternative renewable energy sources will contribute to reduced dependence upon fossil fuels for heat and power, also helping to reduce concentrations of carbon dioxide and other gases in the atmosphere. Increased use of alternative energy sources will also contribute to healthier, more stable local economies through reduced dependence on one or two energy sources whose own economic future is uncertain.

3. The American Planning Association and its Chapters support planning policies and legislation that encourage development, agriculture, and other land uses that minimize or eliminate the use of extracted underground substances such as mercury, cadmium, phosphorus.

Reason: The increasing concentrations in natural systems of extracted underground metals and minerals – for example, mercury, cadmium, phosphorus - which do not readily disappear or get re-absorbed by the Earth - are increasing toxicity in natural systems. This in turn jeopardizes ecosystems, wildlife, water supplies, soil, food, and human health. Development and agriculture that reduces or eliminates the use of these substances can contribute to the increased long-term safety of human, animal and plant health, and ecosystems both for the near future and for generations to come.

4. The American Planning Association and its Chapters support planning policies and legislation that encourage development and businesses to reduce the use of chemicals and synthetic compounds in their construction and building materials, operations, products, and services.

Reason: Chemicals and synthetic substances that do not easily break down also are increasing in society, producing increased toxicity in ecosystems, water supplies, soil, food, the built environment, the working environment, and human health. Planning, economic development strategies, and policies that affect the built environment can help safeguard the natural and man-made environments through encouraging development that reduces or eliminates the use of these substances.

5. The American Planning Association and its Chapters support planning policies and legislation that encourage methods of landscape design, landscape and park maintenance, and agriculture that reduce or eliminate the use of pesticides, herbicides, and synthetic fertilizers as well as encouraging the use of compost and conserving water.

Reason: Pesticides, herbicides, and synthetic fertilizers accumulate in natural systems, water supplies, soil, food, animals, and humans. Landscape design, maintenance of parks and open space, and agricultural practices that use alternative approaches to pest control can help reduce toxicity in ecosystems, water, food, and human health.

6. The American Planning Association and its Chapters support planning policies and legislation that result in compact and mixed-use development that minimizes the need to drive, re-uses existing, infill, and brownfields sites that have been thoroughly reclaimed and remediated before using open land, and that avoids the extension of sprawl. ("Sprawl" refers to low-density, land-consumptive, center-less, auto-oriented development typically located on the outer suburban fringes). APA's "Growing Smart" Initiative is consistent with this Policy Position.

Reason: Scattered, land-consumptive development is bringing about the deterioration and loss of open lands, forests, ecosystems and species. These are

essential elements of Nature's capacity to re-create the materials upon which all life – including ours – depends. Threatened also is the traditional and historic character of our communities and countrysides – a major source of community "quality of life", heritage and economic viability. Encouraging compact development and redevelopment of existing sites can avoid further encroachment upon diminishing land and other natural resources, helping to safeguard these for our well-being and those of future generations.

7. The American Planning Association and its Chapters support planning, development, and preservation policies and legislation that conserve undeveloped land, open space, agricultural land, protect water and soil quality, consciously restore ecosystems, and that minimize or eliminate the disruption of existing natural ecosystems and floodplains. Such policies and legislation include Growing Smart and other innovative planning approaches.

Reason: Safeguarding important lands, water, wetlands, soil, forests, coastal areas as natural ecosystems also helps to preserve the productivity and diversity of life upon which human life and well-being depends.. Efforts are needed to protect the critical land mass required to maintain the level of agricultural production needed to maintain viable agricultural operations and provide sufficient food supply for our population. These critical natural and open space resources contribute as well to "quality of life" as an essential part of local and regional community character.

8. The American Planning Association and its Chapters support planning policies and legislation that encourage forms of development, business, and agriculture that reduce the use of water, re-using wastewater on-site, and that employ innovative wastewater treatment that minimizes or eliminates the use of chemicals (example: using plants for sewage treatment).

Reason: Groundwater over-pumping is occurring in many of the nation's regions. Reducing use of and re-using water using alternatives to chemical treatment, can use this resource more efficiently, allowing for its renewal through groundwater recharge, and minimizing or eliminating increased concentrations of chemicals in natural systems.

9. The American Planning Association and its Chapters support planning policies and legislation at all levels of government that support and implement sustainable development policies that seek to equitably protect public health, safety and welfare, and which incorporate the needs of those currently disenfranchised in the process.

Reason: Certain planning decisions may improve the quality of life for some individuals at the expense of others for example, constructing a roadway, siting a bus depot or sewage treatment plant, or building housing near an industrial zone. This problem is acute in disadvantaged communities where equal consideration, fair siting decisions, and open planning processes are not always offered. Sustainable planning and development goals aim to provide equal protection and access to

opportunities in all communities regardless of income status, race, gender, or ethnicity.

10. The American Planning Association and its Chapters support planning policies and legislation encouraging businesses, communities, institutions and development that pursue reduction and re-use of by-products and waste, especially approaches that also employ waste as a resource, such as eco-industrial development.

Reason: Reducing the amount of wastes and by-products reduces the likelihood of pollution while also reducing disposal problems and related costs for communities and businesses alike. Communities and businesses that make use of their own or each other's excess energy, water, and materials by-products can reduce or eliminate disposal and pollution problems and save, if not generate, significant revenues.

11. The American Planning Association and its Chapters support planning policies and legislation encouraging participatory and partnership approaches to planning, including planning for sustainability, integrally involving local community residents in setting the vision for and developing plans and actions for their communities and regions. Planning decisions that follow should be consistent with those community visions.

Reason: Plans that are citizen-based, reflecting citizen intents and visions for their communities' futures, have the highest probability of successful adoption and implementation. Citizen participation in planning helps ensure fair and efficient targeting of resources to community needs.

12. The American Planning Association and its Chapters support initiatives and partnerships with other organizations that: a) support research and development of technology promoting the four general policy objectives for sustainability; and b) provide best available economic, social, and environmental data and indicators on impacts, alternatives, costs, and benefits for integrated decision-making at all levels of government.

Reasons: Well-informed policy choices that take into consideration the fundamental links among the economy, the environment, and society will be more likely to result in actions that serve all three rather than one at the expense of the others. Most of the innovation or technology to achieve greater sustainability either does not exist, is in the early stages of development, or is not readily available. For example, the use of alternative fuels is growing. However, some private users or transit authorities are reluctant to purchase alternative fuel vehicles because the fueling stations are scarce and the technology is still new.

13. The American Planning Association and its Chapters support planning policies, programs, and state and federal legislation that support incentives and other economic tools to improve the sustainability of our natural environment, enhance natural resources, and improve community subdivision and building design standards.

Reason: Economic tools such as incentives hold promise for bringing about the implementation of sustainable development. Local, state, and federal legislation can support and strengthen the use of these approaches.

Appendix A

Planning Actions Toward Sustainability

[The following section is not APA policy, but rather a guide to the user showing examples of actions planners can take in support of sustainability.]

This Appendix contains examples of how the four guiding objectives can be employed as a framework to systematically generate a comprehensive strategy of *specific planning actions* toward sustainability. The four principles are applied to a range of areas for which planners are concerned – land use, transportation, housing & building, economic development, open space and recreation, infrastructure, growth management, floodplain management, watershed planning, and planning processes and education. The appropriateness of a specific action to, say - reduce fossil fuels - will vary from community to community and region to region, as well as from level to level of governmental responsibility. Hence, the most fruitful planning approach may be for communities and agencies themselves to generate a planning and policy agenda toward sustainability, using the four guiding objectives as a framework in a participatory planning process.

I. Land Use Actions toward sustainability:

A. Reduced dependence upon fossil fuels, underground metals, and minerals by promoting:

1. Compact development that minimizes the need to drive
2. A mix of integrated community uses -- housing, shops, workplaces, schools, parks, civic facilities -- within walking or bicycling distance
3. Human-scaled development that is pedestrian-friendly
4. Development oriented around public transit
5. Home-based occupations and work that reduce the need to commute
6. Local food production and agriculture that reduces need for long-range transport of food.

B. Reduction of activities that encroach upon nature through:

1. Guiding development to existing developed areas and minimizing development in outlying, undeveloped areas
2. Maintaining a well-defined "edge" around each community that is permanently protected from development
3. Remediation and redevelopment of brownfield sites and other developed lands that suffer from environmental or other constraints
4. Promote regional and local designs that respect the regional ecosystems and natural functions which support human communities.

5. Creation of financial and regulatory incentives for infill development; elimination of disincentives

C. Meeting human needs fairly and efficiently by:

1. Eliminating disproportionate environmental burdens and pollution experienced by historically disadvantaged communities.

II. Transportation Actions toward sustainability:

A. Reduced dependence upon fossil fuels through:

1. Reduction in vehicle trips and vehicle miles traveled through compact, infill, and mixed use development
2. Use of alternatives to the drive-alone automobile, including walking, bicycling, and public transit
3. Development and use of vehicles powered by renewable fuel sources
4. Local street designs that encourage pedestrian and bicycle use and discourage high speed traffic
5. Street designs that support/enhance access between neighborhoods and to neighborhood-based commercial developments.

B. Meeting human needs fairly and efficiently, by:

1. Providing affordable, efficient transportation alternatives for everyone, especially low-income households, elders, and others comprising 30% of the national population that cannot or do not own cars

III. Housing and Building Actions toward sustainability:

A. Reduced dependence upon fossil fuels, extracted underground metals, and minerals through:

1. Solar-oriented design of development
2. Use of regenerative energy heating and cooling source alternatives to fossil fuels
3. Provision of housing near places of employment
4. Selection of building materials with low "embodied energy," which require less energy-intensive production methods and long-distance transport

B. Reduced dependence upon chemicals and unnatural substances through:

1. Use of chemical-free and toxic-free building materials
2. Reduction of waste and recycling of building waste materials and promoting recycling by residents
3. Landscape design standards that minimize the use of pesticides and herbicides

C. Reduction of activities that encroach upon nature, through:

1. Reuse of existing buildings and sites for development
2. Compact and clustered residential development, including reduced minimum lot sizes
3. Removal of code obstacles to using recycled materials for building
4. Water conservation measures, to minimize environmentally destructive side effects of developing new water sources
5. Responsible stormwater management that reuses and restores the quality of on-site run-off – (example,- constructed marsh or wetlands systems).
6. Reduction or elimination of impervious paving materials
7. Use of recycled building materials, helping to minimize the mining of virgin materials
8. Use of "cradle-to grave" (life cycle) analysis in decision-making for materials and construction techniques.
9. Recycling of building construction waste materials and appropriate deconstruction techniques.

D. Meeting human needs fairly and efficiently, by providing for:

1. Communities and housing developments that are socially cohesive, reduce isolation, foster community spirit, and sharing of resources (example: cohousing)
2. Housing that is affordable to a variety of income groups within the same community
3. A diversity of occupants in terms of age, social, and cultural groups
4. Housing located near employment centers.

IV. Economic Development Actions toward sustainability

A. Encourage businesses that reduce dependence upon fossil fuels, extracted underground metals, and minerals; for example, businesses that:

1. Reduce employee and product transport vehicle trips
2. Use regenerative energy alternatives to fossil fuel, or that are working to reduce dependence on fossil fuel
3. Do not use or are reducing use of cadmium, lead, and other potentially toxic metals and minerals that can accumulate in the biosphere.
4. Are locally-based or home-based, reducing or eliminating the need to commute.

B. Encourage businesses that reduce dependence upon chemicals and unnatural substances; for example, enterprises that:

1. Actively seek ways to minimize the use of toxic manufactured substances
2. Meet or exceed clean air standards

3. Minimize or reduce use of chemicals and employ proper disposal and recycling mechanisms for these
4. Use agricultural methods that reduce or minimize use of pesticides, herbicides, and manufactured fertilizers
5. Use byproducts of other processes or whose wastes can be used as the raw materials for other industrial processes

C. Encourage businesses that reduce activities that encroach upon nature; for example, enterprises that:

1. Use recycled or by-products of other businesses, minimizing the use of virgin raw materials
2. Prevent activities that emit waste or pollutants into the environment
3. Use agricultural approaches that build up rather than deplete topsoil, and conserve or minimize water use
4. Maintain natural terrain, drainage, and vegetation, minimizing disruption of natural systems
5. Re-use processed water.

D. Encourage businesses that meet human needs fairly and efficiently; for example, enterprises that:

1. Fulfill local employment and consumer needs without degrading the environment
2. Promote financial and social equity in the workplace
3. Create vibrant community-based economies with employment opportunities that allow people economic self-determination and environmental health
4. Encourage locally-based agriculture, such as community supported agriculture, providing a nearby source of fresh, healthy food for urban and rural populations

V. Open Space/Recreation Actions toward sustainability

A. Reduced dependence upon fossil fuels, extracted underground metals, minerals, by:

1. Providing recreational facilities within walking and bicycling distance
2. Using local materials and native plants in facility design to reduce transport distances and reduce maintenance
3. Landscape and park maintenance minimizing use of equipment powered by fossil fuels

B. Reduced dependence upon chemicals and synthetic substances; for example by

1. Use alternatives to chemical pesticides and herbicides in park and facility maintenance (example: integrated pest management)

C. Activities that reduce encroachment upon nature, such as:

1. Funding for open space acquisition
2. Preservation of wilderness areas
3. Urban gardens, community gardens
4. Preservation of wildlife habitats and biological diversity of area ecosystems
5. On-site composting of organic waste
6. Restoration of damaged natural systems through regenerative design approaches
7. Creation of systems of green spaces within and among communities
8. Development of responsible alternatives to landfilling of solid waste
9. Using regionally native plants for landscaping
10. Encouraging landscape and park maintenance that reduce the use of mowers, edgers, and leaf blowers

VI. Infrastructure Actions toward sustainability:

A. Reduced dependence upon fossil fuels, extracted underground metals, minerals, by promoting:

1. Facilities that employ renewable energy sources, or reduce use of fossil fuel for their operations and transport needs

B. Reduced dependence upon chemicals and synthetic substances, by promoting:

1. Treatment facilities that remove or destroy pathogens without creating chemically-contaminated byproducts
2. Design approaches and regulatory systems that focus on pollution prevention, re-use and recycling.

C. Reduction of activities that encroach upon nature, through:

1. Promotion of innovative sewage and septic treatment that discharges effluent meeting or exceeding federal drinking water standards while minimizing or eliminating the use of chemicals (example: greenhouse sewage treatment facilities)
2. Recognition of the "cradle to grave" costs of waste generation and disposal
3. Promotion of and removal of regulatory barriers to composting and graywater reuse systems

D. Meeting human needs fairly and efficiently, by:

1. Cleaning, conserving, and reusing wastewater at the site, neighborhood or community level, reducing the need for large, expensive collection systems and regional processing facilities

VII. Growth Management Actions toward sustainability:

A. Reduced dependence upon fossil fuels, extracted underground metals, minerals, by promoting:

1. Development near existing transport systems; minimizing need for new road and highway construction

B. Reduction of activities that encroach upon nature, by promoting:

1. Appropriate development and population growth policies linked to carrying capacity of natural systems and community facilities
2. Development patterns that respect natural systems such as watersheds and wildlife corridors.

C. Meeting human needs fairly and efficiently, by promoting:

1. Fair and equitable growth management policies maintaining diversity in local populations and economies

VIII. Floodplain Management Actions toward sustainability

A. Reduction of activities that encroach upon nature, by:

1. Guiding development away from floodplains
2. Guiding development away from barrier beaches
3. Preserving or restoring wetland areas along rivers for natural flood control

VIX. Watershed Planning/Management Actions toward sustainability

A. Reduction of activities that encroach upon nature, such as:

1. Preservation and enhancement of water quality
2. Reduction in water use
3. Recharge of groundwater basins
4. Use of flood control and stormwater techniques that enhance and restore natural habitats
5. Prevention of wetlands destruction; restoration of degraded wetlands

X. Resource Conservation Actions toward sustainability:

A. Reduced dependence upon fossil fuels, extracted underground metals, and minerals, by:

1. Minimizing energy use
2. Encouraging the development of renewable energy sources
3. Discouraging the use of products that utilize packaging derived from non-renewable, non-degradable resources
4. Promoting the recycling of waste materials derived from non-renewable, non-degradable resources.

5. Developing community gardens that reduce the need for long-range transport of food and associated consumption of fossil fuels.

B. Reduction of activities that encroach upon nature; for example, by:

1. Promoting the preservation and planting of trees and other vegetation that absorb carbon dioxide and air pollutants

XI. Planning Processes/Education Actions toward sustainability:

A. Support activities that reduce dependence upon fossil fuels, extracted underground metals, and minerals; for example, by:

1. Encouraging and enabling people to use transport other than gasoline-powered vehicles

B. Support activities that reduce dependence upon chemicals and unnatural substances; for example, by:

1. Educating citizens and public servants about both short- and long-term risks associated with the use and disposal of hazardous materials

C. Support activities that reduce encroachment upon nature; for example, through:

1. Educational efforts to reduce levels of consumption and waste generation at the household and community levels

D. Support meeting human needs fairly and efficiently by:

1. Integrally involving local community residents in setting the vision for and developing plans for their communities and regions
2. Establishing avenues for meaningful participation in decision-making for all citizens and in particular for historically disadvantaged people
3. Providing for equitable educational opportunities for all members of society
4. Promoting retraining of those displaced in the short-term by a shift to a more sustainable economy

References

The topics and material covered in this Policy Guide on Sustainability are germane to a range of additional policy guides developed by the American Planning Association, most notably Policy Summaries addressing:

Role of Government and Growing Smart
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Community Development
Environmental Quality

Housing

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Toward a *Sustainable* Community:

A Toolkit for
Local Government



“The future is literally in our hands to mold as we like. But we cannot wait until tomorrow. Tomorrow is now.” –Eleanor Roosevelt



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This is a crucial time for people to rethink how we meet our needs today to help to ensure a desirable future for following generations. Local government officials must play their part in reinventing our institutions to help communities and residents stay healthy and whole. This is because we have entered an era where human generated pressures on the natural world are unprecedented and threaten our current way of life. A few examples include depletion of nonrenewable resources – 65% of U.S. oil is gone and the world is at or past peak oil; insufficient drinking water for two thirds of the world’s population; consumption of land and loss of topsoil at unsustainable rates; projected loss of 90% of the world’s fisheries by 2048; extinction of a distinct species of plant or animal, on average, every 20 minutes (qualifying the present period as one of the six great periods of mass extinction in the history of Earth¹); and the presence of 250 persistent toxic chemicals not known before 1945, many of which are now found in human tissues.

Global climate change is considered the most serious threat facing the world today. Due to human activities, our atmosphere contains 32 percent more carbon dioxide, one of the main greenhouse gases that keeps heat from escaping the earth’s surface, than at the start of the industrial era.^{2,3} Carbon dioxide is one of the main greenhouse gases that keeps heat from escaping the earth’s surface. We put 70 million tons of it into the atmosphere every 24 hours.⁴ Global warming, one measure of climate change, reveals a rise in the average global temperatures substantially higher than at any time in the last 1,000 years. **“Climate change threatens the basic elements of life for people around the world – access to water, food production, health, and use of land and the environment.”⁵**

Sir Nicholas Stern, the former chief economist of the World Bank, released a report warning that not fighting global warming now could bring on a worldwide depression, shrinking the global economy by 20%. The report states that if we continue with the status quo rather than taking action to address global climate change, up to 200 million people could become refugees as their homes are hit by drought or flood. **Stern found that the cost of action to cut emissions is manageable and that the economics show it is urgent to cut emissions now. “Mitigation – taking strong action to reduce emissions – must be viewed as an investment,” the report states.**

Yet, a time of great challenge is also a time of great opportunity. And local governments can be instrumental in moving communities toward solutions.

Local governments have a key role to play in reducing greenhouse gas emissions by increasing energy efficiency and reducing fossil fuel use.⁶ Some approaches include phasing out coal plants, expanding renewable energy sources and public transit, and implementing new efficiency standards for vehicles and buildings. Local governments can also pass policies that protect natural resources, which are climate-sensitive public goods.

¹ Levin, Donald, A., The Real BioDiversity Crisis, American Scientist, January-February 2002

² Oreskes, Naomi, Beyond the Ivory Tower: The Scientific Consensus on Climate Change, Science 3 December 2004: Vol. 306. no. 5702, p. 1686

³ Intergovernmental Panel on Climate Change Fourth Assessment Report, Climate Change 2007: The Physical Science Basis, Summary for Policy Makers, February 2007. With input from 2,500 of the world’s leading scientists, economists and risk experts, is the most comprehensive evaluation of climate change. <http://www.ipcc.ch/SPM2feb07.pdf>

Also see Union of Concerned Scientists, Global Warming FAQs www.ucsusa.org/global_warming/science/global-warming-faq.html

⁴ Gore, Al, Transcript: Finding Solutions to the Climate Crisis, New York University School of Law, September 18, 2006

⁵ Stern Review: The Economics of Climate Change, Executive Summary, p. vi, October 30, 2006.

⁶ David Suzuki Foundation, Climate Change: Impacts and Solutions http://www.davidsuzuki.org/Climate_Change/Science/

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Why this Toolkit?

Individuals and groups across Wisconsin are calling upon local governments to enact policies and take actions that are aligned with the principles and concepts of sustainability. Several communities and a county in Wisconsin have recently shown leadership by adopting resolutions stating their intent to follow well-accepted principles and concepts of sustainability. They are becoming “eco-municipalities” or “green communities” or “sustainable communities.”

“Just suppose, for a minute, that all the departments, boards and agencies of a city or town, and all the sectors of the larger community have a common vision about a sustainable community future and a shared understanding of a new set of playing rules for how to get there.”

– “The Natural Step for Communities: How Cities and Towns Can Change to Sustainable Practices,” by Sarah James and Torbjörn Lahti

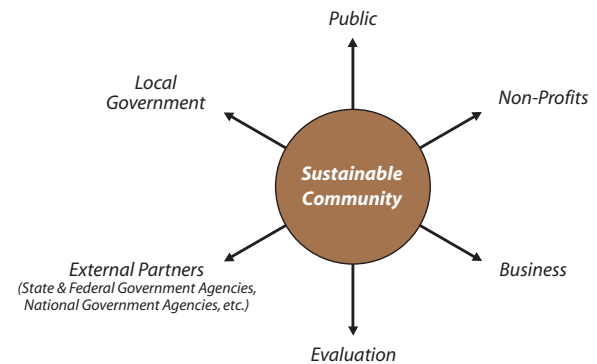
The purpose of this toolkit is to provide ideas and descriptions of specific actions that a local government can take to transform itself into a model of sustainable practices. These practices can result in cost savings and increased employment, and enhance environmental quality and community well-being. The message of this toolkit is simple: local governments can lead by example.

The focus of this toolkit is narrow, by design, and intended to address only the internal workings of local government. Specifically, it addresses sustainable approaches to energy, building, transportation, purchasing, investment, and hiring. It provides practical tools for making these functions of local government more supportive of long-term human and environmental health and well-being. It provides strategies that can be implemented through traditional means of policy development, fiscal administration, local government programs, and education. Other important areas where government can lead by example and that should be included in local sustainability programs but that are not included in this toolkit include storm water and drinking water, integrated

waste management, and natural resource management. In addition, this guide does not address comprehensive planning, food systems, parks and open space, and many of the other areas that local governments address in their daily work. Future guides are planned to address those issues.

The various local government functions and strategies listed in this guide are intended to be viewed and implemented as part of a whole system approach to sustainability. If they are approached and implemented in a piecemeal manner, the objective of sustainability will be more difficult to achieve.

Finally, a significant dimension to building sustainable communities is the process of engaging the entire community. While it is not specifically addressed by this toolkit, it should be incorporated into any sustainable community program design.



What is Sustainable Development?

The “Brundtland Report” definition of sustainable development – shown below – has been the most commonly used or cited definition since 1987 when the world community gathered to address this critical issue. Sustainability acknowledges the biophysical or environmental limits that the natural world imposes on economic activity and social and political institutions.

Recently, emphasis has shifted to the *science of sustainability* and a focus on the core principles of ecological limits. Regardless of the definition or approach, there is a shared sense that sustainable development explicitly recognizes the interconnections and relationships between the economy,

“Sustainable development is...development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

– World Commission on Environment and Development, Our Common Future, 1987



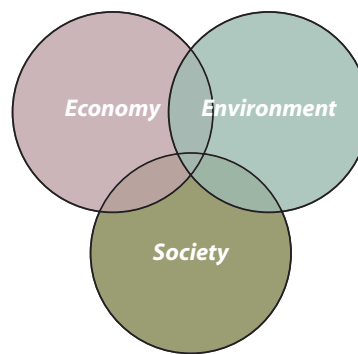
society, and the environment. These are often seen as three types of capital – economic, social, and natural.

When sustainable development has been represented as three interconnected types of capital, the emphasis is on the linkages between the economy, society, and the environment.

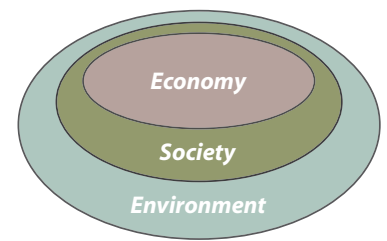
But when a systems view is used, the emphasis shifts specifically to the ecological limits imposed on the economy and society. In this case, a concentric circles diagram is used to model sustainability and sustainable development. Here, the economy and society function within a larger environmental system, or biosphere, and are limited by the carrying capacity of the natural environment.

This concept of sustainability speaks to the need for consideration of all forms of capital in community decision making but places prime importance on the services of natural capital that are essential to all life on this planet.

The Linkages View of Sustainable Development



The Systems View of Sustainable Development



The Natural Step Approach

This toolkit presents the principles of “The Natural Step” as a sustainability framework, both because it works and because it has been adopted by a growing number of Wisconsin local governments. It provides a shared framework around which they and other communities are developing and implementing sustainable practices. But which framework a local government adopts – and there are others available – is less important than the act of adopting one. Such a step is a key part of the process of moving toward sustainability.

The Natural Step (TNS) sustainability framework and process originated in Sweden in 1983.⁷ The first Swedish eco-municipality, Övertorneå, was a pilot project that used this framework in a northern rural town of 5,000. Success in Övertorneå sparked what today is a network of 70 eco-municipalities across Sweden. These eco-municipalities represent over a quarter of the country’s municipalities, ranging from villages of 300-400 residents to the capital city of Stockholm with a population of over 700,000. Many communities around the world are now exploring and implementing this model and a number of Wisconsin’s communities are among the first in the United States to do so.

Five local governments in northern Wisconsin – the Cities of Washburn and Ashland in 2005 and the City of Bayfield, Town of Bayfield and Douglas County in 2006 – adopted resolutions stating their intention to become eco-municipalities based on this model. The City of Madison launched a sustainable city program in 2004 and passed a resolution adopting The Natural Step as its guiding sustainability principle in 2005. Madison city staff from all twenty- five departments were then formally trained in The Natural Step framework in 2006. Also in 2006, the Village of Johnson Creek in



Karl-Henrik Robert, founder of The Natural Step.

S. Gruder photo

The Natural Step's Four System Conditions for a Sustainable Society

In the sustainable society, nature is not subject to systematically increasing...

- concentrations of substances extracted from the Earth's crust;
- concentrations of substances produced by society;
- degradation by physical means;

and, in that society,

- people are not subject to conditions that systematically undermine their capacity to meet their needs.

Source: The Natural Step

Jefferson County passed a resolution adopting the The Natural Step sustainability principles.

What is an eco-municipality? It is a city, town, or region that aspires to develop an ecologically, economically, and socially healthy community for the long term, using The Natural Step or other framework for sustainability⁸ as a guide, and a democratic, highly participative development and decision-making process as the method.

The Natural Step takes a "systems approach" to creating sustainability. It is based, in large part, on laws of nature. Embedding the non-negotiable laws of nature in business, government, institutions, and the way we operate as a society is an identified route toward sustainability. In order to be sustainable over the long term, laws and policies developed by humans must cooperate with, mimic, or be consistent with the laws of nature. The Natural Step is a key international example of a science-based sustainability initiative.

According to the authors of *The Natural Step for Communities: How Cities and Towns Can Change to Sustainable Practices*, Sarah James and Torbjörn Lahti, "Many communities in the United States and around the world have initiated and are carrying out sustainable development projects. Green building programs, affordable housing, open space preservation, recycling, climate change initiatives, smart growth initiatives, are just a few of these. While these initiatives have made progress toward sustainable goals, they largely are occurring on a project-by-project or issue-oriented basis. Frequently these efforts, as laudable as they are, are unconnected and unintegrated throughout municipal governments and the larger communities."

They go on to say, "In contrast to this 'silo approach' to sustainable development, the eco-municipality model uses a *systems approach*. Key ingredients of this systems approach are widespread community awareness-raising and integrated municipal involvement, using a common "sustainability language" based upon the Natural Step framework. Using this common language brings about a shared understanding of what sustainability means and how to achieve it throughout all sectors of municipal government and the wider community. The likelihood of conflict and competition among resulting actions is therefore minimized, since all sectors are using the same 'sustainability playing rules.'"⁹

How to Move Toward Sustainability

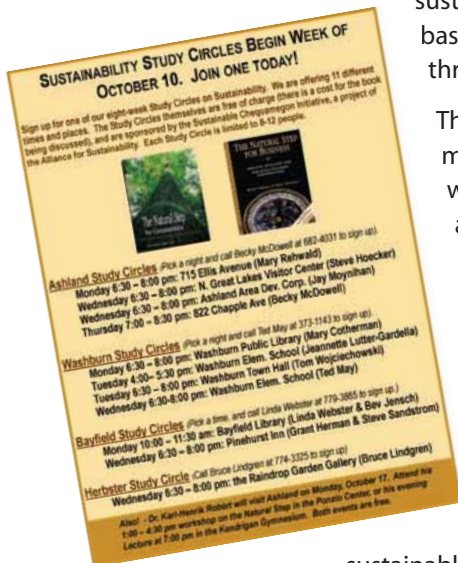
There are a number of fundamental steps a municipality can take to initiate a sustainable community program although there is no single route. Local governments can provide leadership to organize the process through municipal channels; or, this can occur through community involvement and grassroots efforts (see Appendix 2, Sustainable Chequamegon Initiative) ; or, it can evolve through both top-down and bottom-up approaches (see Appendix 3, Fano Guidelines). Ten basic steps to consider are outlined below.

1. **Convene a task force/committee/study group/green team** (see Appendix 4, Marshfield Mayor's letter to prospective eco-municipality committee members).
 - Purpose: develop recommendations with regard to sustainable community development for consideration by elected officials.
 - Group make-up: include wide representation of various businesses, utilities, architecture, engineering, energy experts, watershed experts, farmers, local environmental non-profits, city departments, local officials, local residents,



Sarah James and Torbjörn Lahti conducting a seminar on the eco-municipality model for Wisconsin communities.

M. Rehwald photo



community social agencies, schools, faith-based groups, university, two-year campus or technical colleges.

- Process: Assess the current situation – identify existing green initiatives; identify key areas and opportunities; identify gaps and barriers; develop a vision statement and key goals; recommend actions based on goals.

2. **Commit to becoming a sustainable community through a formal resolution**

(see Appendix 5, A through F, for local community resolutions)

3. **Adopt a guiding principle or framework for sustainability.** This guide presents the principles of The Natural Step as a sustainability framework because it works as both a process and as a measure of what constitutes sustainability based on the fundamental laws of science. It has been adopted by a number of Wisconsin local governments, the American Planning Association, and communities around the world, including many Canadian cities.¹⁰ But there are other examples, as well, and communities across the country have developed their own frameworks and have excellent web sites where it is possible to review their work.

The applicability of The Natural Step to local planning and sustainable development efforts has been recognized by the American Planning Association (APA). In its *Planning for Sustainability Policy Guide*, the guiding objectives for policies and practices are based on The Natural Step's "four system conditions for a sustainable society" (see Appendix 1, Benefits of Using the Natural Step Sustainability Framework to Guide Implementation of Madison's Sustainable City Goals).



Washburn City Council discussing eco-municipalities and The Natural Step framework.

M. Reinwald photo

4. **Establish a standing committee**

or advisory board to oversee implementation of the sustainable community program and to further develop a strategic sustainable community plan. Consider a committee of 12-15 members with varying length terms and strengths that complement the implementation plan.

5. **Establish a department, reconfigure existing departments, or appoint or hire a director of sustainable development.** The purpose of this "office of sustainable development" is to implement the strategic sustainability plan, leverage investments wisely, and coordinate the program across departments. Include a staff representative from each department to be the green liaison or point person. Note: Sustainability is necessarily a holistic approach and therefore negates the traditional silo approach of government.

Objectives of APA's Strategy for Planning for Sustainability

Planning for sustainability requires a systematic, integrated approach that brings together environmental, economic and social goals and actions directed toward the following four objectives:

- Reduce dependence upon fossil fuels, extracted underground metals and minerals.
- Reduce dependence on chemicals and other manufactured substances that can accumulate in Nature.
- Reduce dependence on activities that harm life-sustaining ecosystems.
- Meet the hierarchy of present and future human needs fairly and efficiently.

Source: American Planning Association's *Planning for Sustainability Policy Guide*, 2000. <http://www.planning.org/policyguides/sustainability.htm>



6. **Educate and train staff and officials across departments about sustainability.** This is important for creating organizational capacity to lead by example and move toward sustainability. Education is also key to integrating sustainability effectively into the government culture.
 - The City of Madison has undertaken this step. Madison trained personnel across 25 departments in The Natural Step to develop a common language and integrated approach to sustainability citywide. As a result of the training and continuing application of lessons learned by interdepartmental teams, staff will be able to make decisions based on sustainability impacts, evaluate existing programs, policies and practices as to whether they meet the systems conditions for sustainability, develop short- and long-term action plans to achieve sustainability, and prioritize and initiate new projects and policies based on the city's sustainability goals (see Appendix 6, Madison Mayor's Memo.).
7. **Establish demonstrations.** Either move various existing initiatives into examples of sustainability or initiate new projects that showcase sustainability principles. This provides staff with experience using sustainable planning, decision making and green practices, allows leadership to show progress and success, and provides the private and public sector local models and successes to learn from and emulate.
8. **Adopt Full Cost Accounting.** Full Cost Accounting, or "FCA," is the analysis of all the costs, as well as the advantages, of all proposed alternatives, and the presentation of those findings to decision makers. In FCA, "cost" is not just the monetary cost to the organization making decisions. It also includes the social and environmental costs to anyone else affected by the decision. This process can be especially useful for government agencies that represent a variety of interests when deciding how to allocate public funds and/or other resources. Organizations that use FCA have experienced budget savings.

Performing an FCA helps avoid "externalizing" a cost. In economics an externality is a cost "side-effect". In the context of local government decision making, a decision that may not create a direct cost for the decision maker or her department or program can often create negative costs for somebody else's department or program, and that will ultimately cost the community as a whole.

FCA can be applied across the broad range of decisions made every day by local governments. For example, in purchasing fleet vehicles a local government can use FCA to help choose between different options. One of the vehicle options might have the lowest "purchase price" but, from a lifecycle perspective, the local government will need to determine whether it's *really* the "less expensive vehicle" if it uses more fuel and releases more toxins and carbon dioxide. The public health and quality-of-life costs affected by



Our future generation.

S. Grauer photo

that decision are not truly external to local government. FCA will help you determine the costs of those “cheaper” vehicles’ “side effects” to your the community, residents and others affected by the decision.

Another example would be using FCA on a community’s solid waste operations. In this case, the community would need to go beyond a simple analysis of the capital and operating costs of a facility. FCA would include:

- Front-end costs of engineering and site planning
- Direct and indirect daily operating costs:
 - *Direct cost* – costs of specific services, salaries, parts, interest on debt
 - *Indirect cost* – costs of support from general government services such as purchasing, administration, legal, fleet maintenance
- Back- end costs such as closing a facility at the end of its useful life, post-closure care and monitoring

9. **Measure, track, record, and report progress and results.** What gets measured gets accomplished. Local governments can demonstrate leadership by assessing and continuously improving their contribution to a sustainable community. Sustainability indicators typically are tied to the sustainable community goals and measure progress toward meeting each of the goals. There are many examples of community sustainability indicators.¹¹ Minneapolis, Minnesota, for example, created a sustainable city plan in 2003 with 24 indicators ranging from water quality to public health.¹² The process of developing indicators can bring different sectors of the community together. “Indicators reveal the common goals and shared values that foster alliances across traditional boundaries, provide citizens with a better compass for understanding community problems and maximizing regional assets, and compel change toward progress” according to Redefining Progress in the *Community Indicators Handbook*, 2nd Edition, a best practices resource.¹³
10. **Publicize.** Communicate the efforts and results to staff, local officials, and to the private, public, and non-profit sectors.

The goal of this toolkit is to provide towns, cities, villages, counties and regions with specific actions to take to preserve options for future generations and for enhancing quality of life and securing the health of people, the economy, and the environment now and for the future. As local governments move forward with a process, whether using the ten steps outlined above or some others, consider working with county University of Wisconsin-Extension community development and natural resource educators to help move toward a sustainable community.

The next sections of this guide discuss the purpose, strategy and actions of specific areas within local government. Within each section are one or two case studies as well as a list of specific resources.

Santa Monica, California (<http://santa-monica.org/epd/>) developed a Goal/Indicator Matrix that not only measures progress for each goal but demonstrates linkages between the areas. As a result, on the ten-year anniversary of their sustainable city program, Santa Monica was able to report their successes to the public.

This included reducing dry weather pollution to the Bay by 95%; first U.S. city to buy 100% renewable electricity and cut greenhouse gas emissions by 6%; toxic-free parks and public buildings; water savings of over 328,500,000 gallons per year; established a Blue Line (voted best bus line in the country) and is now a leader in clean air technology; a growing group of sustainable business leaders helping the local economy, environment, and quality of life.

⁷ James, Sarah and Torbjörn Lahti, 2004, *The Natural Step for Communities: How cities, Towns and Villages Can Change to Sustainable Practices*, New Society Publishers, British Columbia, Canada.

⁸ For more about the Natural Step, go to www.naturalstep.org.

⁹ James, Sarah and Torbjörn Lahti, “The Eco-Municipality Model for Sustainable Community Change: A Systems Approach to Creating Sustainable Communities,” 277 pages, May 2005.

¹⁰ The Natural Step Canada, www.naturalstep.ca

¹¹ Sustainable Measures: Communities That Are Working on Indicators. www.sustainablemeasures.com/Resources/Communities.html

¹² www.ci.minneapolis.mn.us/environment/Sustainability-Initiatives.asp

¹³ *Community Indicators Handbook*, 2nd Edition, 2006; www.redefiningprogress.org/cihb/index.shtml

Purpose

Currently, the energy sources upon which we largely depend – coal, natural gas and oil – have many negative impacts on all three forms of capital: social, economic, and natural. Air pollution and greenhouse gas emissions, primarily from power plants, cars, and buildings, cause respiratory diseases and drive climate change, which in turn adversely affects economic productivity and environmental health (Hurricane Katrina’s destruction of New Orleans is but one example).¹⁴ Further, the instability of oil and gas markets and declining availability of oil have high costs for local governments and their constituents.

“The Stone Age did not end for lack of stone, and the Oil Age will end long before the world runs out of oil.”

– Sheikh Zaki Yamani, ex-Minister of Energy, Saudi Arabia, 1999

The most cost-effective way to reduce these negative impacts is to increase energy efficiency – that is, squeezing more productivity out of the energy we use, which enables us to use less of it. By consuming less energy, we reduce the need for energy production in the first place and realize immediate savings. Coupling that with using clean energy from locally available renewable sources including solar, wind, biogas, and biomass will bring Wisconsin closer to energy independence and economic sustainability.

Local governments’ facilities and operations use significant amounts of energy. Due to their relatively large power and fuel purchases, as well as involvement in smart growth and economic development plans, there are many opportunities for promoting clean energy initiatives. Using green approaches to planning, designing and operating buildings, developments and transportation can accommodate growing populations and economies while reducing dependence on external energy sources. This promotes resource efficiency and provides meaningful savings to taxpayers and improvements in the health of local communities.

Energy sustainability is about finding alternative ways of structuring the energy sector, and alternatives to our fossil-fuel based economy. Its goal is to provide plentiful, reasonably priced energy to all sectors of society safely and to support the health of our economy, people and environment without limiting the ability of future generations to meet their energy needs. Energy savings and the adoption of renewable forms of energy are key approaches to achieving this.

Strategy

Leading by example, local governments can green their own facilities and operations, influence the private sector, and work with local groups to educate, empower and challenge their local residents. They can help inspire change and drive innovation.

Public officials can:

- Adopt policies that set targets for renewable energy purchase and installation and energy efficiency goals for government facilities, operations and transportation;
- Influence local building codes, specifications and standards to promote renewables purchase and installation, energy efficiency and green design;
- Initiate a multi-departmental sustainable energy effort in the context of broader sustainable development goals (e.g., smart growth, clean energy initiatives, transportation policies, community health and infrastructure development);
- Reduce fossil fuel use in public transit, purchase electric vehicles and hybrids, use biodiesel and ethanol, establish minimum fuel efficiency standards;
- Develop the urban core for residential living in addition to office and retail;
- Provide incentives and guidelines for the private sector to power and drive green;
- Assess, monitor and report the effectiveness of clean energy strategies and projects including benefits, achievements and savings to share with local businesses and taxpayers;
- Educate city staff, developers and the community about energy efficiency and renewable energy.

Benefits of Renewable Energy:

- Stabilizes energy costs for a community, its businesses and residents
- Grows employment opportunities
- Keeps dollars in the local economy
- Preserves a community’s quality of life, air, water and land
- Reduces reliance on foreign and polluting sources of energy

U.S. buildings alone are responsible for more CO₂ emissions than those of any entire country in the world except China.

– Kinzey et al., The Federal Buildings Research and Development Program: A Sharp Tool for Climate Policy, 2002 ACEEE proceedings, Section 9.21.

All photos by S. Gruder



Solar hot water heat on low-income housing.



Solar electric awning on Memorial High School, Madison, Wisconsin.



Microturbines at the Sauk County, Wisconsin, landfill.



Solar parking canopy, City of Madison, Wisconsin, and Madison Gas and Electric.

Actions

Local government can lead by example by establishing renewable energy and energy efficiency policies and goals, and an implementation plan to achieve them. The steps should include the following:

1. Pass a resolution that the local government will save, power, transport and build green. Consider adopting the Kyoto Protocol by signing on to the Mayors' Climate Protection Agreement;¹⁵
2. Form an integrated clean energy team as partners to implement the clean energy program, including the local government, local utility and fuel providers, businesses, non-profits and farmers. This team can help to develop, stimulate, promote and attract local green energy initiatives and businesses as an economic development opportunity;
3. Create and adopt sustainable energy principles, plans, and incentives including a measurable goal such as 10% energy reduction in city operations by 2010 with a certain percentage of the savings staying with the departments that achieved them;
4. Adopt the U.S. Green Building Council's LEED Green Building Rating System – Leadership in Energy and Environmental Design – for Existing Buildings (EB) as a performance standard to upgrade and operate city buildings to higher efficiency;
5. Require that new homes meet ENERGY STAR¹⁶ homes standards, and encourage use of Wisconsin Green Built Home or the LEED for Homes programs;
6. Allocate staff time for training and an adequate budget for energy analysis and upgrades;
7. Make renewable energy use and efficiency part of standard procedures. Modify requests for proposals, specification and contract language to ensure sustainable energy policies and procedures are an integral part of each project. Modify building and vehicle codes and standards;
8. Adopt purchasing policies for ENERGY STAR¹⁷ equipment and computers;
9. Build bike trails and lanes and provide bike racks;
10. Develop a few demonstration renewable energy projects as models, e.g., a renewable energy commercial center, housing project, school or vehicle fleet;
11. Document energy use and respective savings and monitor performance over time.

Green Building Saves Energy and Money. The energy savings from green building result primarily from reduced electricity purchases and from reduced peak demand.

“On average, green buildings are 28% more efficient than conventional buildings and generate 2% of their power on-site from photovoltaics (PV). The financial benefits of 30% reduced consumption at an electricity price of \$0.08/kWh are about \$0.30/ft²/yr, with a 20-year NPV of over \$5/ft², equal to or more than the average additional cost associated with building green.”

Source: Kats, Gregory H., Green Building Costs and Financial Benefits, 2003, developed for the Massachusetts Technology Collaborative. <http://www.cap-e.com/ewebeditpro/items/059F3481.pdf>

Case Study

Madison, Wisconsin Green Framework

Madison adopted a comprehensive green framework, much of which has energy impacts: Build Green/Power Green/Save Green/Buy Green/Drive Green/Manage Green. Within this framework, green building has been a central focus because of its potential for enhancing energy conservation and efficiency (see Green Building chapter). Madison set a goal of purchasing 10% of its annual electricity from renewable sources by 2007 and 20% by 2010 in keeping with the state targets. The city is also planning a Solar Mile along a main thoroughfare to highlight its commitment to renewable energy.

Madison hired an energy engineer to measure city building energy use and to assess city properties for their solar energy suitability. In order for the engineer to establish city baseline energy use and to track energy savings, the city purchased energy software. The energy engineer attended the solar site assessor training provided by The Midwest Renewable Energy Association. Additionally, the city received technical assistance, funding, and incentives from Focus on Energy, Madison Gas & Electric (MGE) (its main utility), Wisconsin Energy Conservation Corporation (WECC), MSB Energy Associates, UW-Extension and U.S. Department of Energy's Million Solar Roofs Program. The city also trained its facilities operations and engineering staff in commissioning

and retro-commissioning, building in-house expertise to evaluate space use, identify sub-optimal lighting and HVAC performance, and to upgrade systems.

Energy efficiency projects: installing meters and measuring energy use in all city buildings, increasing roof insulation and retrofitting lighting with high efficiency lamps in two buildings being repaired; commissioning a new engineering building to optimize mechanical system operations; continued retro-commissioning of existing facilities; and developing lighting, heating and ventilation standards for city facilities and targeted upgrade projects. Energy trainings will be conducted with 35 staff across city departments. Five new hybrid buses will be purchased by Madison Metro, fuel-efficient fleet cars are being purchased, and a fuel-efficiency standard for city vehicles developed. Purchasing specifications for ENERGY STAR computer equipment are being developed and a power management software evaluation is underway monitoring the power usage of 100 city PC users to reduce power consumption of non-critical computers.

Renewable energy initiatives include: analyzing all city fire stations, libraries and field operations for suitability for solar energy; installing solar hot water heat or solar thermal panels on two fire stations and the Monona Terrace Convention Center; incorporating solar thermal into the design of a parks maintenance facility; teaming with MGE to identify and install visible renewables installations; and including renewables in the Mayor's capital budget. A solar canopy at the city pool, a wind turbine on a public golf course and photovoltaic panels and educational energy monitoring computers at a library are being considered for joint MGE projects. Capital budget funding was secured for outfitting eight other fire stations with solar thermal heating in 2007.

Resources

Focus on Energy:

- Energy efficiency for government facilities: For program information and assistance, call 1-800-762-7077 or e-mail at Govinfo@focusenergy.com
- Renewable energy information and incentives: a detailed web site including fact sheets, case studies, resources and contractors. Also includes technical assistance, site assessments and cash incentives for installations and feasibility studies. www.focusenergy.com/page.jsp?pagelid=130



City of Madison fire station solar thermal panel installation.



Solar panel installation.



The Center for Renewable Energy and Sustainable Technology (CREST) publishes an extensive listing of reports on renewable energy, including state-by-state economic impacts, as well as development and policy manuals.

www.crest.org

CREST has a report that supports the argument for renewable energy in Wisconsin called Component Manufacturing: Wisconsin's Future in the Renewable Energy Industry, which is available at:

www.crest.org/articles/static/1/binaries/Wisconsin%20Report_Short_2.pdf

Community Energy Opportunity Finder is an interactive tool that will help determine a community's best bets for energy solutions that benefit the local economy, the community, and the environment. The Finder helps a community collect information on its energy use, and then demonstrates the potential energy savings; dollar savings; reductions in carbon dioxide, nitrogen oxides, and sulfur dioxide emissions; and job creation from energy efficiency programs. Developed by Rocky Mountain Institute.

www.energyfinder.org/

Database of State Incentives for Renewable Energy (DSIRE) provides an exhaustive listing of active incentives for renewable energy at every governmental level.

www.dsireusa.org

Energy Center of Wisconsin is a non-profit that serves Wisconsin by providing information and education on energy efficiency.

www.ecw.org

Green-E Renewable Electricity Program is a certified green power provider.

www.green-e.org

ICLEI Local Governments for Sustainability is an association of local governments that have made a commitment to sustainable development. ICLEI provides technical consulting, training, and information services to build capacity, share knowledge, and support local government in the implementation of sustainable development at the local level.

www.iclei.org

Midwest Renewable Energy Association is an extensive resource for renewable energy and energy efficiency in central Wisconsin. They have a Renew the Earth Institute that showcases renewable energy and holds classes, as well as the largest sustainable living and renewable energy fair in the country held annually each June.

www.the-mrea.org

Midwest Rural Energy Council has information and educational tools about renewable energy and efficiency in rural areas.

www.mrec.org/index.htm

RENEW Wisconsin provides detailed information on renewable energy legislative initiatives, utility initiatives, installation case studies, and related information via web site newsletter and issue briefs, and provides project facilitation and educational presentations. This network promotes clean energy strategies – conservation and energy efficiency, renewable energy, and low-emission distributed generation – for powering the state's economy in an environmentally sound manner.

www.renewwisconsin.org

Wisconsin Energy Conservation Corporation (WECC) is a not-for-profit organization that administers energy programs and provides policy analysis to a broad range of customers. For more than 25 years, WECC has worked to provide high-quality, affordable opportunities to increase energy efficiency, lower utility bills, aid in reducing the environmental impacts of energy use and promote economic development in communities.

www.wecc.usa.org

¹⁴ Spreading the Word on Global Warming, ABC News Video on Demand <http://abcnews.go.com/Video/playerIndex?id=1774402>

¹⁵ "U.S. Mayors' Climate Protection Agreement", Cities Working Together to Protect Our Air Quality, Health and Environment: A Call to Action. Wisconsin Mayors Friedrich P. Schnook, Ashland; Michael J. Neitzke, Greenfield; John D. Medinger, La Crosse; Dave Cieslewicz, Madison; Irene Blakely, Washburn; Theresa M. Estnes, Wauwatosa; Tom Barrett, Milwaukee; Jack F. Chiovatero, New Berlin; Gary Becker, Racine; Don Richards, River Falls; Gary Wescott, Stevens Point; and Jeannette Bell, West Allis, signed the agreement along with mayors in 50 other U.S. states.

¹⁶ Home Performance with ENERGY STAR, a program through Wisconsin Focus on Energy, includes site assessments and cash back rewards for eligible customers. See www.focusonenergy.com or call 1.800.762.7077

¹⁷ EPA's ENERGY STAR products and programs, <http://www.energystar.gov/>

Purpose

Green Building, or sustainable design, is an approach to building design, construction and operation that considers the building, its property, and place in the community as a whole system to create economical, environmentally sound and healthy spaces in which to live and work. Green buildings are designed to reduce environmental impacts on the site, and on water, energy and resource use while creating healthy indoor environments.

Local governments build, own and operate a wide variety of buildings and facilities including offices, jails, park shelters, libraries, police and fire stations, maintenance buildings, airports and water treatment plants. Local governments also develop land use plans. There are green approaches to planning, designing and operating buildings and developments to accommodate growing populations that will help promote resource efficiency, provide meaningful savings to taxpayers and improve the health of local communities.

The government sector is a significant driver of green building. The U.S. Green Building Council (USGBC), a national non-profit organization that created the LEED (Leadership in Energy and Environmental Design) Green Building Rating System, a third party certification program, has created a market transformation to green building. Although the government sector is a relatively small part of the USGBC membership compared with the design and construction industry, government buildings comprise 45% of the 774 million square feet of LEED green building projects. Ninety local governments across the U.S. have green building policies, three quarters of which adopted the LEED Green Building Rating System. Additionally, 16 states have green building policies as does the federal government.

The benefits of green building to a local government are:

- Decreased costs for building operation and maintenance;
- Decreased costs for community infrastructure (roads, sewer, waste water treatment, energy generation, and landfills);
- Increased productivity;
- Reduced electrical peak demand costs and fossil fuel use;
- Reduced water use;
- Reduced water and air pollution; and
- Enhanced competitiveness by spurring private sector work and living environments with superior health and comfort.



An increasing number of local builders and organizations in Wisconsin are providing green building and energy services.

M. Rehwald photo

Strategy

Local government can lead by example by greening its own facilities and operations, influencing the private sector, and working with local groups to educate, empower and challenge the local citizens.

Public officials can:

- Adopt sustainability principles and green building policies for their own facilities;
- Influence local building codes, specifications and standards to promote green design and construction;
- Provide incentives and guidelines for the private sector to build green;
- Assess and monitor the effectiveness of green strategies and projects; and
- Educate city staff, developers and the community about green building.

Why Build Green?

There are over 76 million residential buildings and nearly 5 million commercial buildings in the U.S., which cost over \$240 billion a year to operate. They account for:

- 36% of total energy use (65% of electricity consumption)
- 30% of greenhouse gas emissions
- 30% of raw materials use
- 30% of waste output (136 million tons annually)
- 12% of potable water consumption

By 2010, another 38 million buildings will have been constructed.

“The U.S. Green Building Council has over 60 chapters in 30 countries, including the Wisconsin Green Building Alliance (www.wgba.org) and a membership of more than 7,000 organizations that are creating a market transformation to green building. LEED green building projects cover over half a billion square feet of space or 5% of the commercial marketplace and are located in every state of the U.S.” (as of October 2006), US GBC

All photos by S. Gruder



Green building team for the Dane County, Wisconsin, Justice Center.



Sustainable development workshop city/private sector training.



Solar site assessment by Focus on Energy for Monona Terrace LEED-EB project, Madison, Wisconsin.

Actions

Local government can lead by example by establishing green building policies and goals and creating a framework to implement them. The steps to take include:

1. Support commitments from local government to build smart. Adopt a green building resolution in the context of broader sustainable development goals (smart growth, community health, infrastructure development, energy initiatives, transportation policies, etc.).
2. Form a multi-departmental green building team – a working group of personnel: parks, public works, water utility, public health, comptroller’s office, and purchasing to assist with aspects of green building. Also, consider initiating an advisory group of staff and outside experts such as: private developers, builders, architects, engineers, utilities, non-profits, haulers, renewable energy providers, and motivated residents.
3. Develop an action plan with long- and short short-term actions to green municipal building stock.
4. Create and adopt sustainable building design principles. These can be voluntary and/or mandatory, varying by sector. For example, mandatory LEED certification for city buildings, phased in for private projects receiving TIF funds and for affordable housing. More than forty municipalities have adopted the LEED Green Building Rating System for municipal buildings, additions, renovations and existing buildings.¹⁸
5. Allocate staff time for green building training and budget for it. Staff include department managers (decision makers), architects, engineers, code officials, facility managers, and landscape/grounds personnel.
6. Make green building part of standard procedures. Modify requests for proposals, specification and contract language to ensure sustainable building policies and procedures are an integral part of each project. Modify building codes and standards.
7. Pilot green building projects as models, e.g., certify a few new buildings and an existing building using the LEED Green Building Rating System
8. Create incentives for building owners and developers to design and build green such as green building commercial and residential tax credits, faster project approval times, density bonuses, reduced storm water fees, etc.
9. Document government building energy, water use, and landfilling and respective savings and monitor performance over time. Use quantification to document benefits, achievements and savings to relate to local businesses and taxpayers.



Three primary challenges to building green are perceptions about budget (first or initial cost), experience of the design/build team, and time. Studies have shown that the cost of designing and building LEED silver and gold buildings is the same or within 2% of traditional buildings. The State of California commissioned the first rigorous assessment of the costs and benefits of green buildings.¹⁹ The report analyzes not only up-front costs but attempts to quantify the environmental and human health benefits of green buildings in financial terms. According to this study, minimal increases in up-front costs in the range of 0-2% will result in life cycle savings of 20% of total construction costs or more than 10 times the initial investment. The operational savings alone over the life of the building return its initial cost many times over. If the cost of personnel is factored in, a mere 1% increase in productivity can cover the energy costs of the building in just one year according to the Rocky Mountain Institute. Yet, governments typically don't consider life cycle costs and they separate capital from operating budgets.

As for the other two challenges, experience of the design team and project timeline, these can be addressed from the outset by indicating in requests for qualifications and proposals the local government's intent to design and construct a LEED certified building. Require teams to submit qualifications to accomplish that. The Wisconsin Green Building Alliance lists professional members involved with green building to target for solicitation. As there is a learning curve with using an integrated design approach and green building, and added time needed for deconstruction rather than demolition of existing buildings, project timelines should be designed to accommodate this.

Case Studies

Madison Green Building Program and Demonstration Projects

In Madison, LEED was adopted for all new and existing city buildings with plans to require it in the future for private sector projects receiving TIF funding. This was adopted as part of the city's *Building a Green Capital City: A Blueprint for Madison's Sustainable Design and Energy Future*:

http://webapp.cityofmadison.com/sustainable_design/index.html

A Sustainable Design and Energy Committee was appointed by Madison's mayor and the city council with diverse representation and partnership to advise municipal officials, administration and staff on implementing green building, energy conservation and renewable energy initiatives as part of a sustainable city program. Members are key stakeholders including: municipal officials, developers,

the design and construction industry, utilities, energy conservation and renewable energy providers, Focus on Energy, financial institutions, local community groups and state agencies.

Three pilot building projects are being certified to LEED: Monona Terrace Convention Center as a LEED for Existing Buildings project, the parks maintenance building as a LEED for New Construction, and a library as a LEED for Commercial Interiors project. Green operations policies developed for the Monona Terrace Convention Center are being used as templates for city-wide application, including those for green cleaning and green purchasing, and as templates for other buildings that will be certified under the LEED-EB program. Existing building stock is being evaluated and ranked as to which will go for LEED-EB certification. Madison's mayor also supports private sector LEED projects by appearing at press events for green building openings.

City staff, including engineers, architects, facilities and operations managers, purchasing agents and building inspectors, were trained in commissioning (Cx) and retro-commissioning (Rx). Cx and Rx are baseline requirements of LEED. Commissioning (for new buildings) and retro-commissioning (for existing buildings) are systematic methods of identifying operational and maintenance improvements for buildings, and for ensuring their continued optimized performance over time.



Green roof on City of Madison, Wisconsin, engineering building.

Reasons to commission and retro-commission buildings include: bringing equipment to its optimal operational state; reducing energy and demand costs; increasing equipment life; improving indoor air quality; reducing staff time spent on complaints and emergency calls; increasing occupant satisfaction; and improving facility operation and maintenance.

Requests for qualifications and proposals and contract language for architectural and engineering firms were modified to reflect the LEED green building requirement. The city will hire a Facilities and Sustainability Manager in 2007 to provide in-house oversight and expertise to implement the green building and sustainable city program.

State of Wisconsin Green Building Executive Order and Pilot

On April 11, 2006, Governor Jim Doyle signed Executive Order 145 Relating to Conserve Wisconsin and the Creation of High Performance Green Building Standards and Energy Conservation for State Facilities and Operations.

The first state high performance green building project is the LEED Gold DNR Northeast Regional Headquarters near Green Bay. An investment of \$70,000 to help make that building more environmentally sound is expected to have a payoff in energy savings of \$500,000 over 20 years. Included in the design improvements were efforts to take advantage of daylight, maximize the use of recycled materials and recycle waste, and minimize the building's footprint on its surrounding environment.



Wisconsin Governor Jim Doyle signs the green building executive order in 2006.

Resources

University of Wisconsin-Extension has many resources to help Wisconsin communities build green. These are available from local Extension agents or on the web site of the Solid & Hazardous Waste Education Center at: www.shwec.uwm.edu

Some SHWEC resources include:

- Building Alternatives for Public Projects: A Smart Growth Approach, a fact sheet for municipal officials on the what, why and how of green building
- Government Green Building Programs Inventory, listing U.S. municipalities with green building policies and programs and details about each
- Building Green Guide: sustainable product choices – a searchable database of green building products and services and where to get them in Wisconsin and the Midwest

Other Useful Resources:

AIA, "Writing the Green RFP: Sustainable Design Language for Consultant Requests."
www.aia.org/cote_rfps

U.S. Green Building Council State and Local Government Tool Kit
www.usgbc.org

U.S. Green Building Council
www.usgbc.org

Wisconsin Green Building Alliance
www.wgba.org

"Whole Building Design Guide" is a gateway site for up-to-date information on integrated 'whole building' design techniques and technologies. Maintained by the federal government, this site is filled with useful technical resources and links from design tools to specifications to operation and maintenance management systems.
www.wbdg.org

¹⁸ Gruder, Sherrie, Government Green Building Programs Inventory, UW-Extension Solid & Hazardous Waste Education Center, Pub No 615.SG.0701

¹⁹ The Costs and Financial Benefits of Green Buildings, Principal Author: Greg Kats, October 2003. Prepared in partnership with the US Green Building Council and California's Sustainable Building Task Force for 40+ California state agencies, www.cap-e.com/spotlight/index.cfm?Page=1&NewsID=25770

Purpose

Our transportation choices affect everything – public health, the environment, and our economy. Pollution produced by fossil-fuel burning vehicles is responsible for public health problems that decrease our quality of life and impose significant financial costs on individuals and the community as a whole. It also results in serious reductions in the health, productivity and enjoyment of our air, agricultural crops, forests, lakes, rivers and other waterways. Finally, as the resources that feed our fossil-fuel dependent transportation policies become scarcer and more expensive, communities are beginning to recognize that those policies simply are economically unsustainable. The many negative effects of pollution and global climate change resulting from vehicle emissions is now recognized as one of our largest challenges from the local to the global level.

A local government's transportation and mobility policies play a major role in a community's sustainability. Those policies and decisions should address how to move residents, employees, visitors, as well as materials and goods to, from, and within the community in a more sustainable manner. The results of such policies have the potential to generate environmental, public health, and social benefits, as well as significant cost savings for communities.

Sustainable transportation policies must address several areas, including the municipal fleet, parking, commuter options and transportation alternatives. Such policies call for:

- Including transportation practices that reduce emissions of carbon dioxide (CO₂) and other greenhouse gasses;
- Practices that reduce the use and waste of fossil fuels by providing alternative modes of transportation; and
- Practices that minimize the environmental impacts, health hazards and costs of transportation.

Strategy

One strategy for putting such policies in place includes:

- Identifying current transportation policies;
- Evaluating current transportation policies throughout the local government – across departments rather than just within the streets, parking, transit and other departments traditionally associated with transportation;
- Determining how transportation policies relate to and affect other governmental/organizational policies. Work to ensure that land use, business development policies, public transit, and municipal transportation policies all operate as a system whose parts work together toward reduction of fossil fuel use;
- Outlining the rational basis for adopting a sustainable transportation policy;
- Identifying immediate and longer term policies;
- Setting short- and long-term goals; and
- Identifying measurements to track achievement toward goals.



1000 Friends of Wisconsin photo
Sustainable transportation options give community residents choices for work and play.

Transportation Benefits

The benefits of sustainable transportation policies and practices include:

- conserve natural resources
- safeguard and improve public health by eliminating or reducing air pollution and ozone action days
- minimize or eliminate the environmental impacts from pollution and toxics that result from fossil fuel use
- transport workers, residents and visitors to the community efficiently and effectively
- reduce local government operating costs
- encourage local economic development through sustainability-related products and services
- encourage other organizations, businesses, and individuals in the community to adopt similar goals.



G. David photo
All generations benefit from sustainable community transportation policies.



Local governments can encourage their employees and residents to bicycle by providing adequate and convenient facilities.



A sustainable transportation system usually requires a mix of several available options – pedestrian, bicycle and public transit options.



An increasing number of local government transit authorities are exploring renewable fuels for their busses.

Actions

Municipal Fleet Vehicles

- Purchase or lease fleet vehicles that are the most fuel efficient in their class and/or powered by renewable fuel sources (this includes not only passenger vehicles, but garbage trucks and other community service vehicles). This can include a vehicle fleet fueled by compressed natural gas, methane captured from landfills, ethanol (E85), electric and ultra-low sulfur diesel;
- Convert existing diesel vehicles to biodiesel (e.g., school buses and trucks);
- Keep vehicles well maintained to ensure efficient performance (e.g., proper tire pressure, regular tuning, etc.);
- Provide incentives for employees to operate vehicles efficiently;
- Switch to refined motor oil for fleet vehicles, and look for products that meet eco-label standards;
- Train employees and community members in eco-friendly driving techniques that conserve fuels, release fewer emissions into the atmosphere and prolong vehicle life. [Examples: In Luleå, Sweden, driving students drive a specified route and energy consumption is measured, then it's done again after eco-driving instruction on topics such as tire inflation, fuel conserving acceleration and braking, and optimum fuel conservation speeds. In Övertorneå, Sweden, eco-driving is part of the high school driving class curriculum. The town also has courses for trucking industry and business employees in order to reduce emissions. They estimate that they have trained 70% of the drivers in Övertorneå to be more aware of how their driving practices affect fuel use and equipment costs];
- Consider creating a "bicycle fleet" for employees to use for local work-related trips in order to improve employee health, air quality and reduce fleet vehicle costs.

Parking

- Change parking policies at the work site to make it easier for employees to switch to transportation alternatives;
- Provide parking priority and reduced-price or free parking to people who ride share or drive super-low emitting hybrids or electric vehicles;
- Support those who walk, cycle or bus to work through incentives and alternatives to parking benefits.

Commuter Options and Transportation Alternatives

- Evaluate which transportation options are currently subsidized by the community and whether those subsidies promote sustainable transportation choices;
- Improve transit service and equipment;

- Work with neighboring local governments to coordinate regional public transit opportunities including mass transit, shuttle buses, carpooling and vanpooling, bicycle and pedestrian infrastructure;
- Promote Transit Oriented Development (TOD) that minimizes the need to drive to work, school, errands, recreation and other typical destinations;
- Provide and encourage ride sharing programs;
- Provide hybrid car-share cars or become a “member” of an existing car share program so employees can take advantage of community car sharing;
- Make it more convenient for people who choose to cycle, walk or run to work by providing showers, lockers, and secure bicycle parking at work sites, and by designing safe, connected streets and dedicated bicycle trails and lanes with adequate lighting and bike racks that encourage pedestrian and bicycle use and discourage high speed traffic;
- Allow for variable work hours to help connect potential ride sharers and eliminate car trips;
- Allow telecommuting.

Miscellaneous

- Work with private businesses to reduce truck trips by increasing truck load capacity, coordinating trips with other distributors, creating flexible pick-up/drop-off times, utilizing empty trucks for “green returns” (return of recyclable materials);
- Maintain existing local stores and markets in residential neighborhoods and develop new ones so that customers can shift from driving to biking or walking for short trips.

Case Studies

Portland , Oregon Transportation Actions Reduce Greenhouse Gases

In 1993 Portland became the first U.S. city to adopt a strategy to reduce emissions of carbon dioxide (CO₂). In 2001 Multnomah County joined the effort to create the *Local Action Plan on Global Warming* with a goal of reducing carbon dioxide emissions to 10% below 1990 levels by 2010.

On a per capita basis, Portland and Multnomah County CO₂ emissions have fallen 13% since 1993. This is contrary to the national trend, where per capita CO₂ emissions in the U.S. have increased slightly over the same period, with total greenhouse gas emissions up 13%. The reduction is due to multiple factors, including the following transportation actions:

- The addition of two major light rail lines and the Portland Streetcar and 75% growth in public transit use since 1990.
- All diesel vehicles and equipment that use the city’s fueling stations currently are fueled by a 20% biodiesel blend (20% biodiesel/80% diesel, also known as B20). Each year the city uses about 600,000 gallons of B20.
- In early 2002, the city took delivery of 30 Toyota Priuses, hybrid gasoline-electric vehicles that get 50 mpg.
- In 2001 the city finished replacing incandescent traffic signals with LED bulbs, saving 3% of total city CO₂ emissions and cutting the city’s electricity bill by \$265,000 per year.

Portland points out that “while the actions of one city will have only a small impact on global CO₂ emissions, many cities together can achieve meaningful reductions. Since the adoption of the 1993 plan, more than 400 municipal governments worldwide have followed Portland’s lead and adopted “climate change mitigation plans” that include transportation actions.



“Creating and Implementing a Trip Reduction Program at the Work Place,” Whistler, British Columbia, Canada: “Go Green” Program

The GO GREEN Choices Program recommends an 11-step plan for reducing trips to work. The detailed plan begins by discussing the reasons for trip reduction, and ends by providing tools to implement and maintain a program to reduce the number of cars arriving at the workplace every day.

The eleven steps of the program are: 1) Making the move – Securing management approval. 2) Who do you work for? – Creating an employer profile. 3) Where do you work? – Analyzing your work site. 4) Who works here? – Conducting an employee transportation survey. 5) Room to move – Setting your trip reduction targets. 6) What’s in it for me? – Proposing incentives. 7) The price of a program – Creating a budget. 8) The go ahead – Presenting your plan. 9) On the road – Promoting your plan. 10) Green means go – Implementation of the plan. 11) Staying on the right track – On-going evaluation. More details can be found at: www.gogreen.com/choices/getstarted/1.html

Resources

1000 Friends of Wisconsin

www.1kfriends.org

City of Portland, Oregon’s Transportation Sustainability Program

www.portlandonline.com/transportation/index.cfm?c=35707

Whistler Canada’s Comprehensive Sustainability Plan – Transportation

www.whistler.ca/files/PDF/Admin/Whistler_2020/August_Final_Drafts/Transportation_Draft_Strategy_Final.pdf

Community Car Sharing

Car Sharing Network

www.carsharing.net/

Madison’s Community Car program:

www.communitycar.com/

Using bikes to replace other vehicles in the workplace

“Bicycles in the Workplace for a Healthy Business”

www.breezerbikes.com/docs/BreezerFleetBrochure.PDF

For examples of communities around the world using bikes for employees, see “Post, Parks and Petite Bourgeoisie On Your Bikes” on the International Bicycle Fund website “Workbikes” section

www.ibike.org/economics/workbike.htm

“From the Margins to the Mainstream: A Guide to Transportation Opportunities in your Community”

Surface Transportation Policy Project, a guide to federal law and funding for local government transportation programs

www.transact.org/PDFs/margins2006/STPP_guidebook_margins.pdf

Toward Sustainable Transportation Indicators for California, MTI REPORT 02-05, August 2003

http://transweb.sjsu.edu/mtiportal/research/publications/documents/02-05/Lee_4Mar04.htm

Seattle, Washington: “Way to Go” Program

Way to Go, Seattle is the City of Seattle’s umbrella program for a variety of initiatives intended to improve livability by reducing automobile usage for non-work trips and increasing the use of busing, biking, walking, trip consolidation and carpooling instead. For more information see:

www.cityofseattle.net/waytogo/

Way To Go Seattle – Seattle Transportation Program

www.cityofseattle.net/waytogo/

Way to Go Seattle – Car Cost Worksheet

www.cityofseattle.net/waytogo/carcostworksheet.htm

Way To Go Seattle – Commute Trip Reduction program

www.seattle.gov/transportation/commute.htm

Way To Go Seattle – One Less Car Challenge

www.cityofseattle.net/waytogo/onelesscar.htm

Procurement Benefits

Community and environmental benefits of green purchasing:

- Conserve natural resources
- Minimize environmental impacts such as pollution and use of water and energy
- Eliminate or reduce toxics that create hazards to workers and the community
- Support strong recycling markets
- Reduce materials that are landfilled
- Increase the use and availability of products that protect the environment
- Identify environmentally preferable products, services and distribution systems
- Create a model for successfully purchasing environmentally preferable products that encourages other purchasers in your the community to adopt similar goals
- Create incentives for existing and new sustainable local business

Purpose

Environmentally preferable purchasing (EPP) or green purchasing is the purchase of “products and services [that] have a lesser or reduced effect on human health and the environment when compared to other products and services that serve the same purpose.” EPP, however, not only protects the environment; it also protects human health, saves money, and improves the overall quality of government purchases. EPP was formally adopted by the Federal Government in 1993 and expanded in 1998 Executive Orders though part of the Resource Conservation and Recovery Act (RCRA).

Green purchasing considerations and environmental approaches reduce impacts on: air, water and land, greenhouse gas emissions, resource availability, biodiversity, energy, toxics generation, disposal and health impacts, waste generation, packaging and transport energy.

Rather than addressing environmental problems on a single-medium basis, such as energy efficiency or recycled content, environmentally preferable purchasing is targeted at minimizing environmental impacts across all environmental media by using a lifecycle assessment approach. The benefits of environmentally preferable purchasing to local government include improved ability to meet existing environmental goals, improved community and worker safety and health, reduced liabilities, and reduced disposal costs.

Governmental procurement policies can reflect the principles and concepts of sustainability. Indeed, governments can model the way for businesses and households. Such policies call for:

- Practices that reduce waste by increasing product efficiency and effectiveness;
- The purchase of products that eliminate or minimize environmental impacts, toxics, pollution, and hazards to workers and the community;
- The purchase of products that are reused or refurbished, include recycled content, are durable and long-lasting, conserve energy (ENERGY STAR appliances and electronics) and water, use agricultural fibers and residues, reduce greenhouse gas emissions, use unbleached or chlorine-free manufacturing processes, are free of lead, mercury, PVC and other known toxics, use wood from sustainably managed forests, are regional or local.

Strategy

A strategy for putting green purchasing in place might include:

- Identifying current procurement policies;
- Discussing and evaluating current policy(ies) with Department Heads;
- Explaining the rational basis for adopting an Environmentally Preferable Purchasing Policy;
- Adopting an Environmentally Preferable Purchasing Policy and Implementation Guidance for the policy. See references below for model policies and implementation guides;
- Using a “best value” approach for most purchases as opposed to a “low bid wins” purchasing approach. With best value purchasing, purchasers can identify and consider a wider variety of factors. A purchasing evaluation score sheet, for example, might base 40% of the total score on price, 30% on performance, and the remaining 30% on environmental or other preferential purchasing considerations (e.g., local supplier, or small or woman- or minority-owned businesses).



5.Cruider photo

Herman Miller green office furniture.

Actions

- Encourage purchasers to examine environmental considerations along with traditional factors such as product safety, price, performance, and availability when making purchasing decisions. Each of these factors, including environmental performance, provides important

information about a product's or service's overall value and quality. As a result, environmental considerations should be a regular part of the normal purchasing process.

- Compare environmental attributes such as recycled content, energy efficiency, or reduced toxicity of competing products. A product's environmental attributes can serve as a measure of its overall environmental impacts.

Case Studies

Environmentally Preferable or Green Purchasing Policy success stories include:²⁰

Seattle, Washington's Copernicus Project produced direct cost savings of \$2.3 million in 2001 and indirect savings of \$600,000. In 2002, the direct and indirect cost savings were \$3.14 million and \$400,000, respectively.

Starbucks, by switching to thinner trash bags, has saved \$500,000 annually and reduced the company's annual use of plastic by 750,000 pounds – without impacting performance.

Seattle Swedish Medical Center's supply expenses accounted for 23% of annual net revenues. Today, with the Supply Chain Management system in place, that amount has been reduced to 17.2% – a difference of \$16 million.

The Aberdeen Proving Ground, an EPA Green Lights partner, is replacing standard PCB-containing fluorescent light ballasts with energy-efficient, PCB-free, electronic ballasts as part of its energy efficiency efforts. The project will save the military installation \$1.2 million per year .

King County, Washington saved \$550,000 in 2002 by purchasing environmentally preferable products. In 2003, the County saved \$580,000.

Herman Miller, Inc. without its waste reduction efforts, would be sending eighty million pounds of waste to the landfill each year. Instead, it is sending six million pounds, avoiding \$1 million in disposal costs.

Resources

National Association of Counties. Local Government Environmental Purchasing Starter Kit: Introduction, 1999. Provides tips on how to start an environmental purchasing program. 2.4 MB PDF available at:
www.newdream.org/procure/start/overview.pdf

The above introduction is part of a larger environmental purchasing starter kit which includes a sample purchasing resolution, baseline survey, and press release. For more information on the starter kit, visit:
www.newdream.org/procure/start/naco.php

Scot Case. "Establishing Green Purchasing Priorities." Government Procurement, April 2004, 5 pages. Describes the process government purchasers are using to prioritize and integrate environmentally preferable products into their purchasing efforts. Available at:
www.newdream.org/procure/Establishing_Green_Purch_Priorities.pdf

Scot Case. "Finding the Best Green Value: Strategies Balance Cost, Human Health, and Environmental Concerns." Government Procurement, February 2005. Suggests strategies for balancing human health and environmental concerns with cost concerns. Includes a discussion of calculating life cycle costs, applying price preferences, and adopting best value purchasing. Available at:
www.newdream.org/procure/Green_Value.pdf

Liddel, Beth. Pacific NW Pollution Prevention Resource Center, "Environmentally Preferable Purchasing (EPP) Programs and Strategies: Integrating Environmental and Social Factors into Procurement Practices," October 31, 2003 www.p2pays.org/ref/24/23958.pdf

²⁰Liddel, Beth. Pacific NW Pollution Prevention Resource Center, "Environmentally Preferable Purchasing (EPP) Programs and Strategies: Integrating Environmental and Social Factors into Procurement Practices," October 31, 2003 www.p2pays.org/ref/24/23958.pdf

Purpose

Local governments are called upon to exercise competent and responsible stewardship in how they manage their financial resources. In order to function effectively and to carry out their financial responsibilities, they depend on a reasonable return on investments and are required to operate in a fiscally sound, responsible and accountable manner.

“Millions of people and thousands of institutions want their investments to express social values”

– Paul Hawken (see Resources section)

Socially responsible investing is when you take your beliefs and values and apply them to how you invest your money.

Socially responsible investment incorporates social, environmental, and corporate governance concerns into investment decisions to promote corporate responsibility and sustainability worldwide.

When a local government adopts operational principles and/or mandates, such as those related to sustainability, the combination of these considerations with fiscal responsibilities suggests the need for a clear and comprehensive set of policies to guide local government investments and other related activities. A description for such an approach is socially responsible investment. Investing with a focus on sustainability is a component of, but narrower than, socially responsible investment.

The socially responsible investment (SRI) industry in the United States is a relatively recent phenomenon. The first SRI mutual fund—Pax World Fund—was created in 1971. The SRI movement gained a serious foothold in the financial industry in the 1980s. It now represents over \$2 trillion in assets in the United States. Between 1995 and 2005, the number of SRI mutual funds grew from 55 to 200.

Socially responsible investors screen companies and mutual funds for those that coincide or conflict with their beliefs. As of 2005, two-thirds of all SRI funds had five or more screens in place. Across all SRI mutual funds, over 300 screening criteria are employed today versus only five 20 years ago. Since not all investors are in agreement, this points to the importance of having an agreed upon set of principles at the community level. A local government’s adopted sustainability framework can help provide these principles.

In the past, an argument against socially responsible investing was that it would not be profitable. A range of studies have since shown that socially-conscious mutual funds are able to match or beat the overall performance of the stock market, using the S&P 500 (a broad stock market index of 500 companies) as an indicator of overall market performance. Academic and market studies have repeatedly shown that screened SRI funds earn financial returns comparable to those of their unscreened counterparts.

Others look at financial performance in a different light. “We believe that striving to attain the highest rate of financial return is a direct cause of social injustice and environmental degradation, as it consistently leads to externalization of costs on the environment, the future, workers, and other peoples”²¹ (Hawken and the Natural Capital Institute 2004). They advocate changes in screening criteria, a moderation of investor expectations, and more transparency and disclosure of SRI fund portfolios.

If a local government decides to pursue a socially responsible investment strategy, it will need to figure out what its environmental and social priorities are. A key component to the creation of a sustainable community is the adoption of a community-wide policy or mission statement. The process necessary for such a large-scale plan brings stakeholders to the table and encourages open discussion and creative problem solving.

Strategy

Socially responsible investment includes three fundamental strategies – screening, shareholder advocacy (or corporate engagement), and community investing. A local government can pursue all three strategies, just one of them, or any combination that it decides upon.

Screening

The gist of screening local government investments is summed up with the maxim: “Invest your principal with your principles.” That guideline can be applied to both stocks and bonds, and takes the form of positive or negative screens. Intuitively, screening seems like the best way for an investor to express disapproval or support for a public company. The criteria for inclusive, proactive positive screens can range over a spectrum of concerns. Negative or avoidance screening excludes companies that are directly or partially involved in certain industries, practices, or services. Virtually any screen can be used positively or negatively.

Examples of issues underlying screens include: environment, human rights, labor, abortion, contraception, animal rights, tobacco, alcohol, gambling, defense, pornography, biotechnology, community investment/support, corporate governance, business practices, employment equality, employment diversity, non-marital partner benefits, workplace conditions, foreign operations, nuclear power, renewable energy, beneficial products and services, and sustainability. Screens may also extend to the company’s suppliers or customers.

Shareholder Advocacy

Shareholder advocacy efforts include engaging in dialogue with companies and submitting and voting on shareholder resolutions. Action is focused on positively influencing corporate behavior. Socially conscious investors often work cooperatively to steer management on a course that they believe will improve financial performance over time and enhance the well-being of all of the company’s stakeholders – customers, employees, vendors, communities and the natural environment, as well as stockholders.

Community Investing

Community investing provides capital to people in low-income, at-risk communities who have difficulty accessing it through conventional channels. Many social investors earmark a percentage of their investments to community development financial institutions (CDFIs) that work to alleviate poverty, create jobs, and provide affordable housing and small business development financing in disadvantaged communities.

Community investing is the fastest-growing component of SRI, with total assets more than tripling from \$5.4 billion in 1999 to more than \$18 billion in 2005. This growth in assets has been accompanied by an increase in the number of options that are readily available to both individual and institutional investors. There were eleven certified CDFIs in Wisconsin as of April 2006.

Actions

Basic steps may include the following:

- Decide if the local government wants to model sustainability through its own actions and policies;
- Decide if the local government wants to have an investment approach that reflects its sustainability and, perhaps, other environmental and social principles;
- Do research on the basics of investing, the current investment strategies of the local government, and the basics of socially responsible investing;

- Agree upon a set of principles, at the community level, that will be used as the basis of the local government's investment decisions;
- Set the environmental and social priorities that will determine the type of "screened" investment portfolio the local government wants to have;
- Positive screening identifies those types of companies and funds that the local government wants to support and invest in;
- Negative screening identifies those types of companies and funds that the local government does not want to support or invest in;
- Determine how strictly to enforce or follow positive and negative screening choices;
- Consider a take-no-prisoners attitude where it screens no matter how small the transgression;
- Consider how far along the supply chain to hold companies accountable;
- Determine whether to invest in individual companies or in mutual funds (where the fund manager does the research on the financial and social sides, but where the local government may not agree with every company chosen);
- Determine the local government's financial goals
 - Assess the level of risk it is comfortable with
 - Assess how important rates of return are to its portfolio
 - Determine whether the local government is focusing on short-term, longer-term, or a mixed portfolio of investments;
- Decide whether the local government will manage its investment or if it will have others do it (such as a financial manager or a mutual fund manager).

There are many socially responsible mutual funds available. The choice does not have to be overwhelming. Here are three steps to follow:

1. Get a list of funds by doing an Internet search for "socially responsible investing" or "socially responsible mutual funds." There are also web sites listed in the resources section below, some of which have complete listings of socially responsible mutual funds. For example, the SRI Mutual Fund Chart at www.socialinvest.org provides information on more than 100 funds – including account minimums, screens, and performance information.
2. Check out each fund's web site before requesting a "prospectus" from them. A prospectus provides information on the fund manager's philosophy on screening and investing, the fund's financial performance, and an application form. This way a local government can quickly determine whether the fund's environmental and social priorities are compatible with its own. Typically, each web site will also provide financial information about the fund.
3. After locating a preferred mutual fund, the local government can order a prospectus online or call the mutual fund's 1-800 number.

Up to this point, the emphasis in this section has been primarily on the screening strategy. A local government may decide that it wants to expand its "strategy portfolio" and pursue shareholder advocacy and community investing, as well.

Companies are owned by the people and institutions, such as communities and local governments, who invest in them. Shareholders are increasingly using this leverage to persuade companies to adopt practices that are conscientious and socially and environmentally responsible. For example, in 2005, SRI shareholders filed 348 resolutions on social and environmental issues ranging from climate change to global labor standards to political contributions. Shareholders are becoming increasingly

successful with these strategies. Given the relative importance of institutional investors, this provides another means for communities to influence corporate behavior to reflect their agreed-upon social and environmental principles.

Community investing helps to fill the need for financing in low-income communities that is not being met by conventional financial institutions and services. Through community investing, local governments can invest directly in community-based financial institutions that use their money to provide resources and opportunities for lower-income people and social enterprises. Community investment institutions provide financing for affordable housing, small businesses and micro-enterprises, environmental projects, and vital community services like education and child care.

Communities can also invest in “high-impact” community investment funds like community development loan funds, micro-enterprise funds, pooled funds, and community development venture capital. These are generally long-term (one to five years) investments that offer market or below-market returns that are not insured. Another approach is to invest in SRI mutual funds that have a community investing component.

Case Studies

The Green Wave Initiative in California

This initiative was launched in February 2004 with California’s two major public pension funds dedicating \$1.15 billion to investments that clean up the environment and create jobs while bolstering the funds’ financial returns. The pension funds are being invested in the stocks of environmentally responsible companies and in funding that will grow new industries to develop clean energy and environmental technologies. The funds are also pushing companies to improve their environmental practices and curb global warming; and they are implementing landmark energy conservation goals for their massive real estate holdings (Source: California Political Desk, April 21, 2006).

Wisconsin Women’s Business Initiative Corporation (WWBIC)

The Wisconsin Women’s Business Initiative Corporation (www.wwbic.com) is an economic development corporation providing quality business education, technical assistance and access to capital for entrepreneurs. Established in 1989, WWBIC consults, educates and mentors owners of small and micro businesses throughout Wisconsin. It concentrates its efforts with women, people of color, and those with lower incomes. WWBIC was one of the first CDFIs in Wisconsin and the first statewide certified CDFI in the U.S., one of the first Small Business Administration (SBA) Women’s Business Centers, and one of the first SBA Microlenders.

American Indian Chamber of Commerce of Wisconsin

A recent entry into the Native CDFI world is the American Indian Chamber of Commerce of Wisconsin (www.aiccw.org). The chamber started the First American Capital Corporation, a certified CDFI that received funding from the CDFI Fund, leveraged it for additional funding, and loaned it to Indian businesses across Wisconsin. “We’re covering the whole state of Wisconsin and every Indian in the state,” said Executive Director Craig Anderson, so funding is stretched thin. Still, he said, they can do a lot with little.

Resources

The Local Government Investment Pool offered by the State of Wisconsin is:
www.swib.state.wi.us/lgip.asp

The policies of the State Investment Board and contacts are available on the site as well.

Socially responsible investing resources on the web include:

Changemakers:

www.changemakers.org

Ethical Investment Mutual Funds:

www.rawdc.org/invest/funds.html

Good Money:

www.goodmoney.com

Ethical Investment Research Service:

www.eiris.org

Green Century:

www.greencenturyfunds.com

GreenMoney Journal:

www.greenmoney.com

Interfaith Center on Corporate Responsibility:

www.iccr.org

Natural Investing:

www.naturalinvesting.com

Open Directory – Business Investing Socially Responsible:

http://dmoz.org/business/investing/socially_responsible

RSF:

www.rsfsocialfinance.org

Shared Interest:

www.sharedinterest.org

Social Investment Forum:

www.socialinvest.org

Social Investment Organization:

www.socialinvestment.ca

SocialFunds.com:

www.SocialFunds.com

Socially Responsible.org:

www.sociallyresponsible.org/investing.htm

SRI News.com:

www.srinews.com

SustainableBusiness.com:

www.sustainablebusiness.com

Vision Capital Management:

www.visioncapitalinvestment.com

The Natural Capital Institute released a report in October 2004 that addresses financial management companies offering mutual funds that screen their portfolios against non-financial criteria, which is the socially responsible or ethical investing community. "It examines current portfolio practices, reveals how SRI funds are actually allocated, shows how the industry misleads investors, and recommends how the industry can reform itself in order to respond to investors who want to invest with a conscience and purpose (Hawken 2004)." www.naturalcapital.org

The above report can be downloaded in PDF format (pages 31-33 provide a wide range of internet-based resources on mutual funds, screening criteria, and indices) by going to this link (then click on "Download Report" under the Socially Responsible Investing Project): www.naturalcapital.org/Projects.html

The Community Investing Center has detailed social and financial performance information and the largest database of investment opportunities in the area of community investment. www.communityinvest.org

The Community Development Financial Institutions Fund was created for the purpose of promoting economic revitalization and community development through investment in and assistance to CDFIs. The CDFI Fund was established by the Reigle Community Development and Regulatory Improvement Act of 1994, as a bipartisan initiative. It is part of the U.S. Department of the Treasury. www.cdfifund.gov

The Coalition of Community Development Financial Institutions was formed in 1992 as an ad-hoc policy development and advocacy initiative. It is the lead national organization in the United States promoting the work of CDFIs. The Coalition represents CDFIs working in all 50 states and the District of Columbia. This national network of CDFIs includes community development loan funds, community development banks, community development credit unions, micro-enterprise lenders, community development corporations and community development venture capital funds. The CDFI web site includes extensive information and state-by-state profiles. www.cdfi.org

United States Conference of Catholic Bishops. Socially Responsible Investment Guidelines. Principles for USCCB Investments. November 12, 2003. Washington, DC: Office of Finance/Accounting Services, United States Conference of Catholic Bishops.

Socially Responsible Investing: How the SRI industry has failed to respond to people who want to invest with conscience and what can be done to change it. Natural Capital Institute, Sausalito, CA. Hawken, Paul, October 2004.

SRI in the United States. Schueth, Steven J. www.firstaffirmative.com/news/sriArticle.html

Want to Build a More Sustainable World? Start with Socially Responsible Investing. Conway, Justin, and Larsen, Todd. A Co-op America Real Money feature in Utne Magazine, Nov./Dec. 2005.

²¹ The Natural Capital Institute report, October 2004. Click on "Download Report" under the Socially Responsible Investing Project at www.naturalcapital.org/Projects.html

Purpose

Human resources refers to the individuals in an organization, whether public or private, and more specifically to the organization's unit that deals with hiring, firing, training, and other personnel issues, such as benefits. The way in which an organization treats its employees is critical regardless of whether an organization is using a sustainability perspective. The difference in an organization using a sustainability perspective is the degree to which employees participate in decision making, and the use of a sustainability framework in that decision making. In addition, creating healthy work environments can affect a range of local government goals related to sustainability, such as reducing energy use. More specifically, employees need to have a living wage, a healthy work environment, understand how and where they fit into the organization, and appropriate and regular training. By creating more satisfied and loyal employees, local governments also will create stronger, healthier communities and support their local economy.

"In the context of greening operations, the objectives of human resources management are to ensure the health and safety of employees; to equip employees to meet the requirements of all applicable regulations, guidelines and policies; and to encourage employees to incorporate environmental considerations into their daily activities"

- Public Works and Government Services Canada

Strategy

A human resource office must establish a strategy to accomplish its sustainability purpose. Below are some strategies to consider as the local government begins to change the way it interacts with its employees. The strategies below offer a way to begin to think about human resources in a sustainable way.

- Adopt human resource management practices that foster innovative working arrangements that support sustainability objectives. For example, allowing employees to telecommute (work from home) can improve a local government's transportation sustainability. Perhaps the amount of parking can be reduced. By reducing the amount and costs of parking and/or allowing employees to work at home the local government can promote and perhaps even subsidize the use of alternative transportation modes, and/or less driving to work, which means less pollutants in the air, less fuel used, and potentially healthier employees.
- Pursue actions that affect and engage all local government employees. For example, give all employees the opportunity to take a course in sustainability, such as The Natural Step framework.
- Infuse environmental awareness into all training programs, particularly orientation.

Actions

A local government can take many actions to achieve sustainability through its human resources department. Several actions are listed below. A local government should choose actions that fit its strategy and goals.²²

- Hire and promote people with diverse backgrounds, experiences and perspectives;
- Educate employees about The Natural Step approach to sustainability, or another sustainability framework that the local government is using;
- Compensate employees fairly. Ensure fair compensation internally (between staff that hold similar positions) and externally (between your employees and the market value of those positions);
- Pay employees a 'livable' wage for the community. Paying staff a livable wage will increase loyalty, reduce staff turnover, improve customer service, and ultimately strengthen the community by allowing employees to live and participate in the community where they

work and contribute to a healthy local economy;

- Offer medical and dental benefits to employees;
- Consider prorated health care benefits for part-time employees;
- Empower employees to think creatively, generate ideas, and make decisions. Encourage them to do so regardless of whether success is guaranteed. Employees will feel more ownership if they can contribute innovations and ideas;
- Try to avoid layoffs. Develop a list of other cost-cutting options that could be implemented before layoffs. Include staff in identifying options;
- Consider conducting a confidential survey annually to ensure that employee needs are being met;
- Provide time off or flexible work arrangements for employees who volunteer in the community;
- Promote and support career development. This can be done through activities/programs such as goal setting, mapping out a career plan, establishing a mentoring program, and supporting/rewarding skills development;
- Develop an open, trusting environment where issues and ideas can be comfortably raised. Employees, customers, suppliers and other stakeholders will be more likely to share issues and ideas if they feel comfortable doing so. Their ideas may bring new innovations to the local government and increased awareness of surfacing issues may enable the local government to respond to them before they become unmanageable;
- Encourage school visits to the workplace and allow employees to become student mentors;

It is useful to have a target for accomplishing local government actions. Human resources will need to establish a timeline for achieving actions. For example, "By March 2007, establish environmental training plans and train 10% of the workforce."

In addition, the local government will need to measure how it is doing. Local governments and businesses have commonly accepted the use of performance measures for this task. Sample performance measures include:

- Number of environmental training courses developed
- Number of employees receiving environmental training
- Number of environmental regulatory infractions
- Number of diversity candidates hired

Case Studies

Below are two examples of organizations that have "greened" their human resources department or operations.

Interface, Inc.

Interface understands the importance of sustainability education across the globe. The company is working internally to educate all Interface employees, sponsoring non-sales events to educate their customers and suppliers, and reaching out to many of the communities in which they operate. Interface Europe in Northern Ireland established a challenge program for local high schools to submit environmental projects. Interface Flooring Systems in Canada is working with local civic leaders to promote The Natural Step in local government, industries, and institutions through

their 'Quinte Initiative.' Prince Street is using their facility as a teaching tool to educate 8th grade students on career opportunities relating to manufacturing and the environment. Interface Flooring Systems participated in an initiative to raise school children's awareness of pollution in the local Chattahoochee River."²³

The University of Houston's Health Science Center

The Center "is dedicated to educating its community and offering itself as a model to other institutions working toward sustainability. Internally, the school is attracting interest from graduate students and providing sustainability education to the University's Historically Underutilized Businesses Program (HUB). HUB's mission is to identify small, minority, and woman-owned businesses, and to encourage them to partner and contract with the University. The Health Science Center (HSC) is itself supporting local vendors through contracts for food service, construction materials, and wood flooring. Every 60 days the HSC provides free workshops on The Natural Step and sustainability for UTH students as well as local businesses, schools, and organizations. In addition, the University's award winning film, featuring its sustainable building project, has been translated into Spanish in order to reach audiences that might not otherwise have access to the information."²⁴

Resources

The Natural Step for Communities: How Cities and Towns Can Change to Sustainable Practices, James, Sarah and Torbjörn Lahti, 2004, New Society Publishers, British Columbia, Canada (pages 184-191). Includes a training example from the City of Eksjö, Sweden.

For more information on "living wage," the Living Wage Campaign website and available guide can help local governments with defining a living wage in their area and other tips about establishing a living wage within a community.

www.livingwagecampaign.org

Sustainable Development in Government Operations PWSC (Public Works and Government Services Canada). www.pwgsc.gc.ca/realproperty/text/pubs_sd_gov/goals-e.html
January 3, 2006.

A deeper look at System Condition Four, Rosenblum, Jill. Spring 2000. The Natural Step Newsletter, 1(11). www.naturalstep.org/learn/docs/articles/sc_four.pdf
January 31, 2006.

Whistler – It's Our Nature.

www.whistleritsournature.ca/toolkits/smallbusiness/smallbizframe.html
January 3, 2006

²² Adapted from Whistler, It's Our Nature, January 3, 2006 www.whistleritsournature.ca/toolkits/smallbusiness/smallbizframe.html

²³ A deeper look at System Condition Four, Rosenblum, Jill. Spring 2000. The Natural Step Newsletter, 1(11), January 31, 2006 www.naturalstep.org/learn/docs/articles/sc_four.pdf

²⁴ *ibid*

Appendix 1

Benefits of Using the Natural Step Sustainability Framework to Guide Implementation of Madison's Sustainable City Goals*

Communities are where we live and work, and therefore where the impacts of our collective decisions that affect our land, air and water become most obvious. Madison is charged with planning for our development and managing our systems of waste, water, energy, and transportation, among others, all of which are fundamental to long-term sustainability.

In addition, Madison interacts with many local suppliers and stakeholders. By demonstrating leadership and commitment to sustainability in its own operations, the city can act as a role model for individuals and organizations in the community. In order to do this effectively, Madison will require the engagement of staff at all levels of city government and will need to align individuals and departments with a variety of interests, functions, responsibilities, and time and financial pressures.

The Natural Step Framework will help Madison overcome these challenges by:

- Facilitating the development of a shared understanding of and language for sustainability. A common understanding that is based on science and a system-wide approach will help to align the actions of different city departments and agencies, while still allowing them to work independently.
- Structuring a process for working together to identify, organize, and prioritize actions and investments for sustainable city operations.
- Introducing principles of sustainability that can be used to connect the city's long-term sustainability objectives – as described in the City-Council adopted Blueprint for a Green Capital City – with day-to-day actions and decisions.

The Process

Municipalities around the world have used The Natural Step (“TNS”) sustainability framework to guide their decision making. While each community has different needs and approaches, these municipalities have all used some variation of the following steps:

- 1) An initial group of city staff and senior managers is introduced to TNS framework. By the end of this introduction, staff should be able to describe TNS and explain why it is relevant to their municipal organization. A one-day introductory workshop is usually the most effective way to achieve this.
- 2) Next, a core group of city staff members should be trained to be TNS trainers. The goal is to enhance the capacity of this core group so that they can present the TNS framework, facilitate dialogue, identify opportunities, and be internal resource people for as the city implements its sustainability goals.
- 3) The next critical step is to understand the current sustainability performance of the city as a whole or of particular departments. The Natural Step provides a methodology for performing this assessment using a full sustainability perspective. How is Madison performing in terms of sustainability? Where are high leverage areas for improvement? The output of this process is a Sustainability Analysis document.
- 4) Using the Sustainability Analysis as a baseline, the next step is to undertake initiatives to improve the overall sustainability performance of the municipality. This may involve coordinating existing programs and activities and/or developing new ones, with the overall goal of incorporating a sustainability perspective into city management systems, policies and plans.

Note that the Sustainable Design and Energy Task Force has already performed some of the work outlined in items 3 and 4 above through its development of the Blueprint document adopted by the City Council.

Benefits

Some of the benefits Madison might expect from using the TNS Framework to implement its sustainable city goals include:

- Alignment of municipal departments and staff toward a common vision of sustainability
- Clarity in assessing and organizing actions and programs for sustainable municipal operations
- Enhanced policies and programs incorporating a sustainability perspective (e.g. procurement policies, environmental management systems)
- Enhanced reputation as a proactive contributor to a more sustainable community

*Adapted by Lisa MacKinnon and Sherrie Gruder from “The Natural Step Canada Services for Municipal Operations” Briefing Note.

Appendix 2

The Sustainable Chequamegon Initiative: A Grass Roots Movement

A new spirit took root among hundreds of Chequamegon area residents in the spring of 2005 following an international conference in Ashland sponsored by the Alliance for Sustainability, entitled “Sustainable Sweden: the Eco-municipality Movement.” The conference was the outcome of many slideshow presentations to local governments and other organizations by an Ashland city councilor who had visited Sweden the preceding summer. She visited several of Sweden’s seventy “eco-municipalities” that are known throughout the world for having moved toward a sustainable society over the past twenty years. These municipalities all have adopted The Natural Step (TNS) (see Appendix A), a scientific framework based on sustainable principles to bring about systematic changes in business, government, education, energy production, waste disposal, transportation, and agriculture. After hearing these presentations, thirteen local entities, including three city councils, two tribal councils, and four educational institutions, donated at least \$1,000 each to co-sponsor the “Sustainable Sweden” conference that was held in February 2005 at the AmericInn in Ashland.

This conference was a *turning point* for the Chequamegon Bay region. Over 200 participants listened to Torbjörn Lahti, father of the eco-municipality movement in Sweden, and Sarah James, co-author of *The Natural Step for Communities*, present their experiences and stories of many communities in Sweden that have embraced and moved toward sustainability. Attendance included elected officials, mayors, city and tribal employees, educators, business owners, builders, planners, and interested citizens. One feature of the conference was to have participants brainstorm, discuss, and prioritize potential local community action projects that would be based on sustainable development principles. In the end, over four dozen projects were identified. Several organizational meetings following the conference moved many of these initiatives forward.



A delegation of local community representatives from Sweden visits the Chequamegon Bay region in 2005 (from left): Lars Thunberg, Tammy Persson, Lena Bengtén and Torbjörn Lahti.

In June 2005, a delegation of Swedish municipality leaders came to present their success stories to 450 area residents in the Big Top Chautauqua tent. They received a standing ovation for their ideas and for the work local citizens had begun. In July 2005, the Washburn City Council received national recognition for passing an eco-municipality resolution. In early fall, the City Council of Ashland followed suit. **Together, Washburn and Ashland became the first two communities in the United States to pass eco-municipality resolutions.**²⁵

In October 2005, ninety people joined a first round of Study Circles. These nine discussion groups, of eight to twelve citizens each, met one night a week for two months in homes, businesses, and libraries throughout the Chequamegon Bay region to discuss the book *The Natural Step for Communities* by Torbjörn Lahti and Sarah James and how the sustainable development ideas described in the book might be incorporated in these communities.

In January 2006, a public celebration of outcomes from these Study Circles led to **a second round of Study Circles** and the formation of three organizational committees, including the Planning and Organization Committee that spent two months developing a strategic plan for 2011.

Other significant events that took place during the past year included:

1. Ashland Mayor Fred Schnook and Washburn Mayor Irene Blakely signed the U.S. Mayors’ Climate Change proposal along with 218 other mayors in the U.S. who want to reduce their contributions to global warming.
2. Bayfield became one of four communities in Wisconsin to pilot a “Travel Green” certification program. Twenty-four businesses volunteered to participate. Sustainable Bayfield, one of several groups created through the Sustainable Chequamegon Initiative, surveyed Apple Fest booth vendors in 2005 to assess the quantity of waste generated at this annual October event that draws thousands of people to Bayfield. With the assistance of Sustainable Bayfield, vendors will reduce the waste stream at the 2006 Apple Fest. The Bayfield group also sponsored a sustainable business seminar and is developing bio-diesel guidelines for city and Apostle Islands National Lakeshore use.
3. In Ashland, one study circle lobbied successfully to increase the Bay Area Rural Transit (BART) bus funding that will improve the frequency and availability of stops in the region.

4. In Washburn, the Public Works Director replaced inefficient showers in the city's parks with a more sustainable, on-demand shower heating systems.
5. The Daily Press, the daily newspaper for the region, published a 30-page special section – "Northland Innovations" – which told twenty success stories of sustainable enterprises in the Chequamegon Bay region.
6. The Alliance for Sustainability (AFS), a local, non-profit group that has sponsored educational programs for the past fourteen years, created the Sustainable Chequamegon Initiative (SCI) which is seeking to establish a Sustainable Chequamegon Center to be staffed in 2006 (the establishment of a Center/office is part of this Strategic Plan). The AFS board will have oversight of this Center.
7. Washburn Elementary School has developed a school-wide plan to become a Green & Healthy School.
8. The Town of La Pointe organized a study circle that has formed a Sustainable Madeline group, is planning a sustainability education series, and is using biodiesel in its dump trucks (summer 2006). The La Pointe School students planted and shared a Three Sister's Garden with the community and are involved in composting school waste. They also planted a small orchard and garden that will be the basis for food preservation activities.

Appendix 3 Fano Guidelines

An analysis of 40 European cities and towns identified conditions crucial for building capacity for successful sustainability policies. Named the Fano Guidelines after Fano, Italy, where they were presented in 2004 (see www.governingsustainablecities.org), these ten approaches support and expand the steps presented in the section of this toolkit on *How to Move Toward Sustainability*.

Building Capacity for Local Sustainability includes:

1. Learning as an organization
2. Moving away from policy silos within local government
3. Making alliances with people and organizations
4. Facilitating the process and developing credible leadership
5. Encouraging creativity and innovation in policy making
6. Communicating to make a difference
7. Catalyzing action through raising environmental awareness
8. Maintaining commitment to achieving the long-term vision
9. Sharing experience with peers
10. Influencing all levels of government

Appendix 4

Letter from Marshfield Mayor Michael D. Meyers to Committee Members

City of Marshfield
City Hall Plaza
630 S. Central Avenue
P.O. Box 727
Marshfield, Wisconsin 54449-0727



Michael D. Meyers
Mayor
(715) 384-2919
Fax (715) 384-9310
mayor@ci.marshfield.wi.us

June 1, 2006

Dear Eco-municipality Committee Member:

Thank you for agreeing to serve on the city's Eco-municipality Committee. I am honored to have such a group of individuals interested in learning more about this concept and how it might be applied by the City of Marshfield, your place of business, and you personally.

The first meeting is scheduled for June 27, 2006 from 3:00 – 5:00 p.m. at the City Hall Plaza Building in the Common Council Chambers (basement).

I will be joining you as a Committee member because this topic is important to the future of Marshfield for a number of reasons, looking at things from an economic, environmental, and quality of life perspective.

The charge of this Committee are several: to learn more about the concept; to see how this can be applied to the city, our businesses and to each member personally; and to report back to the Common Council with a summary of our findings and any recommendations that the Committee may have that will propel Marshfield into the future.

Respectfully yours,

A handwritten signature in black ink that reads "Michael D. Meyers".

Michael D. Meyers
Mayor

Appendix 5

Sample Resolutions for Becoming an Eco-Municipality

Appendix 5A

Sample Resolutions for Becoming an Eco-municipality

RESOLUTION # _____ City of Ashland, Wisconsin

Eco-Municipality Designation Resolution

Adoption of Sustainable Community Development Policy

WHEREAS, the City of Ashland has adopted a Comprehensive Plan (2004 – 2024) that calls for “The Making of an Exceptional City”, and includes dozens of references to sustainable practices; and

WHEREAS, the adoption of the four systems conditions of the Natural Step can provide a framework that will assist city employees and elected officials in moving in a more sustainable direction; and

WHEREAS, the willingness of the city to move in the direction of becoming an eco-municipality can serve as a model for others and encourage economic development along similar lines in our city and region; and,

WHEREAS, the City of Ashland has a pledge of support through mentorship and consulting from The National Association of Swedish Eco-Municipalities; and

WHEREAS, the following four guidelines were developed by the American Planning Association to help communities implement sustainable practices:

1. Reduce dependence upon fossil fuels, and extracted underground metals and minerals.
2. Reduce dependence on chemicals and other manufactured substances that can accumulate in Nature.
3. Reduce dependence on activities that harm life-sustaining ecosystems.
4. Meet the hierarchy of present and future human needs fairly and efficiently.

NOW THEREFORE BE IT RESOLVED that The City of Ashland hereby endorses the principles of sustainable community development described herein, and agrees to apply these principles whenever possible in its planning, policy making, and municipal practices.

Adopted by the City Council of Ashland, Wisconsin this 13th day of September, 2005

Fred Schnook, Mayor

Date

Attorney

Date

City Clerk

Date

Appendix 5B1

City of Bayfield
Bayfield County – Wisconsin

A Resolution: A Commitment to Sustainability in the City of Bayfield

WHEREAS, The City of Bayfield acknowledges that the people of Bayfield, Wisconsin desire to create a stable, sustainable future and acknowledge that such a future is not certain.

We recognize that it will take the goodwill and determined work of individuals and communities around the world to achieve this goal. We wish be part of this international network and declare sustainability to be a goal of this City.

We wish to integrate our economy, environment, society and governance in ways that foster vibrant social and economic conditions, and a healthy ecosystem. To that end, we commit ourselves to creating the conditions necessary for a sustainable future. By seeking innovative and flexible solutions to the challenges that confront us, by sharing our knowledge, and by coordinating our actions, we strive to:

1. Reduce and eventually eliminate our contribution to the progressive buildup of materials (and their associated wastes) that are extracted from the Earth's crust.
2. Reduce and eventually eliminate our contribution to the progressive buildup of synthetic materials produced by human society.
3. Reduce and eventually eliminate our contribution to the ongoing physical degradation of the Earth.
4. Reduce and eventually eliminate our contribution to conditions that undermine people's ability to meet their basic needs.

THEREFORE, BE IT RESOLVED that the City of Bayfield declares its commitment to sustainability as outlined above.

Adopted this 13th day of December in the year 2006 and signed.

THIS IS TO CERTIFY THAT the foregoing is a true and correct copy of a resolution duly and legally adopted by the CITY OF BAYFIELD at a regular meeting held on the 13th day of December in the year 2006.

Billie Hoopman, Clerk

Appendix 5B2

TOWN OF BAYFIELD
Bayfield County – Wisconsin
RESOLUTION 2006-18
A Resolution
Supporting Sustainability in the Town of Bayfield

WHEREAS, the Town of Bayfield Board of Supervisors does hereby acknowledge societies desire to create a stable, sustainable future. We further acknowledge that such a future is not certain, and that it will take the goodwill and determined work of many individuals, organizations, and communities around the world to achieve our goal.

And WHEREAS, we are proud to be part of a community as rich in natural amenities, economic opportunities, and social responsibilities as the town of Bayfield, and to be working on behalf of a future in which our economy, environment, society and governance are integrated in ways that foster vibrant communities, strong economies, and healthy ecosystems. To that end, we commit ourselves to creating the conditions necessary for a sustainable future. By seeking innovative and flexible solutions to the challenges that confront us, by sharing our knowledge, and by coordinating our actions, we strive to:

1. Reduce and eventually eliminate our contribution to the progressive buildup of materials (and their associated wastes) that are extracted from the Earth's crust.
2. Reduce and eventually eliminate our contribution to the progressive buildup of synthetic materials produced by society.
3. Reduce and eventually eliminate our contribution to the ongoing physical degradation of Nature.
4. Reduce and eventually eliminate our contribution to conditions that undermine people's ability to meet their basic needs.

NOW, THEREFORE, BE IT RESOLVED that the Town of Bayfield Board of Supervisors declares its commitment to sustainability as outlined above.
Adopted this 16th day of October in the year 2006 and signed.

Tom Gordon, Chair Gerald L. Carlson, Supervisor

Richard L. Carver, Supervisor Richard C. Compton, Supervisor

William Ferraro, Supervisor

THIS IS TO CERTIFY THAT the foregoing is a true and correct copy of a resolution duly and legally adopted by the TOWN OF BAYFIELD at a regular meeting held on the 16th day of October 2006.

David L. Good, Clerk

Link:

[www.townofbayfield.com/files/archive/Ordinances%20&%20Resolutions/Resolution%202006-18%20Sustainability\(Clerk%20sig\).pdf](http://www.townofbayfield.com/files/archive/Ordinances%20&%20Resolutions/Resolution%202006-18%20Sustainability(Clerk%20sig).pdf)

Appendix 5C

RESOLUTION #41-06 RESOLUTION BY THE ENVIRONMENT, AGRICULTURE AND EXTENSION COMMITTEE

Subject: Eco-County Designation Supported

WHEREAS, Douglas County acknowledges that a clean and healthy environment determines the quality of life, where the environment can support and sustain the community, and where citizens are committed to local and regional cooperation and a personal philosophy of stewardship, and

WHEREAS, the willingness of Douglas County to move in the direction of eco-county designation can serve as a model for our citizens, encouraging economic development and industrial initiatives while protecting the ecosystem in which they raise their families, and

WHEREAS, Douglas County adopted the Land and Water Resource Management Plan (2002), adopted the Eco-Industrial Development Resolution (2005), is a strong partner in the Lake Superior Binational Forum and St. Louis River Citizen Action Committee, has created policies to control the use of herbicides, disbursement of mercury, remediated the Hog Island site, and implemented a recycling program, and

WHEREAS, Douglas County will include many references to sustainability practices in their comprehensive planning process, and

WHEREAS, Douglas County endorses the following four guidelines which were developed by the Natural Step, and adopted by the American Planning Association, to help communities implement sustainable practices:

1. Reduce dependence upon fossil fuels and extracted underground metals and minerals;
2. Reduce dependence on chemicals and other manufactured substances that can accumulate in Nature;
3. Reduce dependence on activities that harm lifesustaining ecosystems; and
4. Meet the hierarchy of present and future human needs fairly and efficiently.

NOW, THEREFORE, BE IT RESOLVED that the Douglas County Board of Supervisors accept the recommendation of the Environment, Agriculture and Extension Committee and hereby endorses the principles of sustainable community development described herein, and agrees to apply these principles whenever possible in its planning, policy-making and practices.

Dated this 18th day of May, 2006.
(Committee Action: Unanimous) (Fiscal Note: None)

ACTION: Motion by Browne, second Hendrickson, to adopt. Browne advocated strongly for this resolution, and noted Douglas County would be the first county in the nation with this designation.

Brief discussion. Motion carried.

Appendix 5D

STATE OF WISCONSIN

VILLAGE OF JOHNSON CREEK
RESOLUTION 37-06

JEFFERSON COUNTY

Adoption of Sustainable Community Development Policy Village of Johnson Creek, Wisconsin

WHEREAS, in the sustainable society, nature is not subjected to systematically increasing concentrations of substances extracted from the Earth's crust, because human society mines and uses substances from below the Earth's surface that are steadily accumulating at levels far greater than their natural occurrence, are being emitted into the atmosphere, cannot break down further and have outstripped the earth's ability to restore itself, and,

WHEREAS, in the sustainable society, nature is not subject to systematically increasing concentrations of substances produced by society, because human society has been manufacturing synthetic substances faster than these materials can be broken down, and,

WHEREAS, in the sustainable society, nature is not subject to systematically increasing degradation by physical means, because human activity is breaking down natural systems –including land, water, forest, soil and ecosystems - by depletion and destruction faster than these natural systems can renew themselves, and,

WHEREAS, in the sustainable society, human needs are met worldwide, because if people around the world cannot meet their basic human needs for air, water, food, shelter, means of livelihood, mobility, equal treatment, equal access, safety, participation in decisions affecting their lives, the right to peaceful enjoyment of life, a connection with nature, and psychological and spiritual connection and meaning, then such inequality will continually undermine the goals identified above, and,

WHEREAS, by endorsing sustainable community development, the Village of Johnson Creek is joining an international network of eco-municipalities and pledging to educate itself further about sustainable activities and to develop initiatives in support of sustainable practices, and,

WHEREAS, the Village of Johnson Creek has a pledge of support through mentorship and consulting from The National Association of Swedish Eco-Municipalities;

NOW THEREFORE BE IT RESOLVED, the Village Board of the Village of Johnson Creek hereby endorses the principles of sustainable community development, as proposed in The Natural Step Program, and agrees to apply these principles in its planning, policy making and municipal practices.

Adopted by the Village Board of Trustees this 14th day of August 2006.

Fred Albertz, Village President

ATTEST: _____
Joan Dykstra, Clerk-Treasurer

Appendix 5E

City of Madison Resolution Legislative File Number 02486 (version 1)

Adopting The Natural Step Model For Eco-Municipalities As A Guiding Framework For The City Of Madison's Sustainable City Program And Providing Training In Both The Natural Step And Retro-Commissioning For City Staff.

WHEREAS, the recommendations of the "Building a Green Capital City" report, which call for Madison to "adopt a guiding principle on sustainability" to guide the process of Building a Green Capital City, have been approved by the Madison City Council;

WHEREAS, The Natural Step (TNS) model fits this need and has been well shown by the experience of several cities in the United States and over 75 cities worldwide;

WHEREAS, the Sustainable Design and Energy Committee has recommended that the Natural Step model for Eco-municipalities be adopted by the City of Madison as its guiding sustainability framework;

WHEREAS, training recommended by the Sustainable Design and Energy Committee in TNS over a 6 month period is available for City staff and officials at a cost of approximately \$20,000;

WHEREAS, it has been determined that the energy and operational/maintenance savings opportunities in City of Madison facilities and operations need to be measured, analyzed, and discerned in house;

WHEREAS, City staff will be required to carry out the energy savings retrofits;

WHEREAS, the Sustainable Design and Energy Committee has recommended that appropriate staff be identified by the Mayor's Office and become trained in commissioning and retro-commissioning at a cost of approximately \$30,000;

WHEREAS, funds are available in the City's 2005 Operating Budget for both TNS training and a course on retro-commissioning;

WHEREAS, the City could explore and identify partners to share in this training and cost;

NOW THEREFORE BE IT RESOLVED, that the City of Madison adopt The Natural Step Model for Eco-Municipalities as a guiding framework for the City's Sustainable Program; and,

BE IT FURTHER RESOLVED, that training in TNS be provided for targeted City staff and officials over a 6 month period in 2006 at a cost not to exceed \$20,000 with funds appropriated and carried over from the 2005 budget; and,

BE IT FURTHER RESOLVED, that training in commissioning and retro-commissioning be provided for appropriate City staff which have been identified by the Mayors Office in 2006 at a cost not to exceed \$30,000 with funds appropriated and carried over from the 2005 Budget; and

BE IT FURTHER RESOLVED, That the City of Madison will explore and identify other partners to share in this training and its cost.

A total of \$50,000 has been appropriated and is available in the 2005 Operating Budget - Account No. GN01-54301-287000. Funds not contracted or encumbered by the end of this year will lapse to the General Fund balance and may be appropriated again next year by amending the 2006 Operating Budget.

Appendix 5F

RESOLUTION #05-021 City of Washburn, Wisconsin

Adoption of Sustainable Community Development Policy

WHEREAS, in the sustainable society, nature is not subject to systematically increasing concentrations of substances extracted from the Earth's crust, because human society mines and brings into use substances from below the Earth's surface, that along with their emissions are steadily accumulating at levels far greater than their natural occurrence and cannot break down further; and,

WHEREAS, in the sustainable society, nature is not subject to systematically increasing concentrations of substances produced by society, because human society has been manufacturing synthetic substances faster than these materials can be broken down, and,

WHEREAS, in the sustainable society, nature is not subject to systematically increasing degradation by physical means, because human activity is breaking down natural systems—land, water, forests, soil, ecosystems—by depletion and destruction faster than these natural systems can renew themselves; and,

WHEREAS, in the sustainable society, human needs are met worldwide, because if people around the world cannot meet basic human needs—air, water, food, shelter, means of livelihood, mobility, equal treatment, equal access, safety, participation in decisions that affect our lives, the right to peaceful enjoyment of life, a connection with nature, and psychological and spiritual connection and meaning—then this inequality will continually undermine the goals identified above; and,

WHEREAS, by endorsing sustainable community development, The City of Washburn is joining an international network of eco-municipalities, and taking the initiative to become one of the first four eco-municipalities in the United States; and,

WHEREAS, the City of Washburn has a pledge of support through mentorship and consulting from The National Association of Swedish Eco-Municipalities;

NOW THEREFORE BE IT RESOLVED that The City of Washburn hereby endorses the principles of sustainable community development, as proposed in The Natural Step Program, and agrees to apply these principles in its planning, policy making, and municipal practices.

Adopted by the Common Council for the City of Washburn, Wisconsin this 11th Day of July, 2005.

Irene Blakely, Mayor

Appendix 6

Madison Mayor's Memo Outlining the City's Reasons for Using The Natural Step Sustainability Framework

RE: **The Natural Step**

From: Mayor Dave Ceislewicz

To: Department and Division Heads Meeting

Date: September 25, 2006

Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their needs. (UN Brundtland Report, 1987)

The City must move toward sustainability. As a service provider, the City of Madison and its operations have a huge impact on the environment. With over 2,700 employees, it is the eighth biggest employer in Dane County.

It maintains over 750 miles of street, occupies over 3.7 million square feet of office and building space, consumes 54 million kWh of electricity and 1.3 million therms of natural gas, hauls almost 60,000 tons of garbage and recycling, maintains 6,000 acres of parks, and burns over 2.3 million gallons of fuel to run its buses and fleet vehicles.

It's hard to imagine a single entity in the area that has a bigger impact on the environment than City government.

Because the City is both consumer and steward of our environment and its resources, we must incorporate the principles of sustainability to ensure the needs of tomorrow can be met.

Areas for improvement. Based on basic scientific principles, The Natural Step framework lays out many conditions and methods that will help the City make progress toward sustainability. To ensure we are moving toward sustainability, the City will take the following steps.

1. Because resources like fossil fuels, metals and minerals can have adverse effects when they are dispersed and accumulate in our land, air and water, the City will reduce its consumption of materials extracted from the Earth's crust.
2. Because the accumulation of pesticides, fertilizers and other persistent chemicals are harmful to people and the environment, the City will reduce its dependence on these kinds of man-made chemicals.
3. Because ecosystems take a long time to recover from physical destruction (if they can at all), the City will mitigate its impact through wise land use policies, low-impact maintenance practices and environmentally friendly design.
4. Because everyone deserves to be healthy and safe, the City will work to ensure safe working and living environments for its residents, visitors and employees.

A comprehensive approach. We have already made a lot of progress toward these goals. However, we can do even more if we approach decisions about our policies, operations and capital improvements in a more systematic way.

Using The Natural Step framework, the City will:

- a) Work to increase awareness of sustainability among its staff and management. This will provide us with a common language and keep all of us thinking about the impact we have during the course of our daily tasks.
- b) Take an inventory of current efforts that make progress toward sustainability and be frank about areas that need improvement. We will enhance our current efforts and identify additional improvements.
- c) Formulate vision of what sustainability means for the City and identify long-term goals necessary to achieve that vision.
- d) Incorporate the awareness and terminology of sustainability into our budget decisions, program administration and project development.

To achieve this, we will ask questions of relevant projects or policies like:

- Does this help move the City toward sustainability (even if incrementally)?
- Will elements of this project serve as a potential stepping stone toward other changes or initiatives?
- Will increased implementation costs yield savings in the long-run or provide a social or environmental return on investment?

Some likely candidates and examples for treatment using The Natural Step are:

- Land use planning annexation, acquisition, density, zoning, watershed management
- Transportation maintenance and construction of transit systems, streets, parking facilities
- Infrastructure management utility operations, building maintenance, public housing operations
- Economic development rewarding and encouraging businesses to use less fossil fuel, recycle more and use fewer man-made chemicals
- Parks and open space mowing, maintenance, lighting

Toward a *Sustainable* Community: A Toolkit for Local Government



1000 Friends of Wisconsin

Authors:

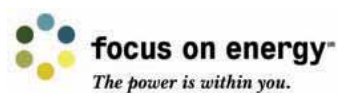
Sherrie Gruder, *UW-Extension, Madison, Solid and Hazardous Waste Education Center*

Anna Haines, *UW-Stevens Point, Center for Land Use Education*

Jerry Hembd, *UW-Superior, Northern Center for Community and Economic Development*

Lisa MacKinnon, *1000 Friends of Wisconsin*

Jane Silberstein, *UW-Extension, Ashland County*



CHAPTER 17 – PROCESS FOR IMPLEMENTING A MUNICIPAL SUSTAINABILITY PLAN

Dana J. Vanier

By

Dana J. Vanier

17.1 Introduction

This chapter outlines steps that municipalities can use to assist them in the development of sustainability plans for their communities (Canada 2005). The chapter also illustrates how to select a specific sustainability alternative using a decision support tool.

The term ‘municipal council’ represents the authority having jurisdiction over the region. The Municipal Council has significant authority and influence over how an urban region is managed and can be *the* leading force in the implementation of a sustainability initiative in a community. The term ‘sustainability plan’ is used in this chapter to describe the complete plan of action for the municipality regarding sustainability. The General Sustainability Plan is the preliminary plan and framework for the municipality’s Sustainability Plan. The Sustainability Council is the municipal organization responsible for the implementation of the Sustainability Plan. The Statement of Intent is the preliminary document developed by the Municipal Council providing instructions to the Sustainability Council.

17.2 Steps towards implementing a Sustainability Plan

This section identifies steps that should be taken in order to implement a Sustainability Plan for a municipality.

The Sustainability Plan is a plan for achieving urban sustainability. As the implementation of a sustainability initiative is a multi-generational activity, it therefore requires a well-defined series of steps in order to guarantee success, or at least, to minimize the chances of failure. The steps described in this chapter are based on the premise that the municipality has agreed in general to the overall sustainability principles outlined in the preceding chapters and has espoused the notion of a sustainable city.

17.2.1 Municipal Council develops Statement of Intent

Before any sustainability project starts, before the Sustainability Council is formed, and before a Sustainability Plan is approved or even suggested, it is wise for the Municipal Council to produce a ‘statement of intent’. This Statement of Intent is used to develop a shared vision of the sustainable city. It should include concepts such as:

“to bring about a sustainable world by promoting an equitable society, a sound economy and a healthy environment” (Ventura County 2005).

“[The] Government will continue to promote a better quality of life for current and future generations, by ensuring our economy, our society and our environment develop in a balanced way (Auditor General Victoria 2004)”.

The Municipal Council should also select general goals for the Sustainability Plan:

“Development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland 1987)

“Sustainable development means improving the quality of life while living within the carrying capacity of supporting ecosystems (UN 1991)”.

In fact, the Statement of Intent can be more specific than a general statement and can include specific Melbourne Principles (Melbourne 2005):

- 1: Provide a long-term vision for cities based on sustainability: intergenerational, social, economic and political equity, and their individuality.*
- 2: Achieve long-term economic and social security.*
- 3: Recognize the intrinsic value of biodiversity and natural ecosystems, and protect and restore them.*
- 4: Enable communities to minimise their ecological footprint.*
- 5: Build on the characteristics of ecosystems in the development and nurturing of healthy and sustainable cities.*
- 6: Recognize and build on the distinctive characteristics of cities, including their human and cultural values, history and natural systems.*
- 7: Empower people and foster participation.*
- 8: Expand and enable cooperative networks to work towards a common sustainable future.*
- 9: Promote sustainable production and consumption, through appropriate use of environmentally sound technologies and effective demand management.*
- 10: Enable continual improvement, based on accountability, transparency and good governance*

The Municipal Council should then select the time frame for the implementation of the Sustainability Plan. It must be remembered that it took hundreds of years for the municipality to grow to its current state; it will take decades of concerted effort for the city to become sustainable. The statement can be as general as: “The city will be sustainable by 2050”.

The Municipal Council should also select a Champion (ChangeCraft 2005) for the initial stages of the implementation of the Sustainability Plan. The Champion should be either a person trained in the area of sustainability, or a competent individual who can receive the appropriate training. The Champion should be able to connect with the organizations concerned, be committed to the initiative, be a vocal and eloquent advocate of the initiative, and have the time resources available to take on the position.

The Municipal Council, along with the Sustainability Champion, should then select a Management Team for directing and monitoring the establishment of the Sustainability Council. The individual members of the Management Team should have a broad overview of the issues related to sustainability, be able to represent their organization, be committed to the initiative, be advocates of the initiative, be objective, and have the time resources necessary to take on the appointment. Typically, these members would represent the social, economic, and environmental facets of the municipality. There should also be representation from the engineering or infrastructure facet.

17.2.2 Management Team proposes a Sustainability Council

A number of steps have been recommended by others (Niagara 2005) in order to guarantee the success for the Sustainability Plan. Of course, these steps can be scaled up or down depending on the size and complexity of the municipality.

In some cases, it might be necessary for the municipality to contract out various

tasks in order to develop the Statement of Intent, the Management Team, and the Sustainability Council.

The proposed steps needed to produce the General Sustainability Plan should provide guidelines to the Management Team for the selection of the Sustainability Council:

1. Finalize statement of intent, general goals and vision of Sustainability Plan. Management Team should solicit input from:

- Stakeholders (citizens, business associations, etc.)
- Council
- Staff

2. Select Sustainability Council programmes:

- Water conservation
- Natural resource protection
- Waste reduction
- Toxin reduction
- Energy efficiency
- Sustainable design
- Environmentally preferable purchasing
- Environmental compliance
- Climate change
- Others

3. Develop the General Sustainability Plan:

- Vision
- General goals
- Time frames
- Topics

4. Propose members for the multidisciplinary Sustainability Council

- Stakeholder groups (unions, churches, NGO's, businesses)
- Citizens (bottom-up approach)
- Staff
- Council
- Staff members
- Technical consultants
- Political Members

The Municipal Council should approve this General Sustainability Plan and the makeup of the Sustainability Council before proceeding further.

17.2.3 Promoting the Sustainability Council

Once the Sustainability Council has been approved, the Municipal Council should promote the existence of, the mandate of and the members of the Sustainability Council to municipal employees, stakeholders groups and the media.

17.2.4 Sustainability Council develops and proposes Sustainability Plan

Techniques such as Value Engineering should be used to determine who are the real stakeholders in a sustainable city and to determine the goals of the Sustainability Plan (Roussot 2003). A reductionist approach is suggested to measure and report on sustainability (Auditor General Victoria 2004):

1. Break sustainability down into three or more pillars (typically, the sustainability pillars are described as: society, environment, and economics)
2. Break each pillar down into a series of topics
3. Break each topic down to a series of performance indicators
 4. Measure each indicator separately
 5. Use 'scientific approaches' to measure each indicator

The Sustainability Council should identify the stakeholders for the Sustainability Plan. These should include all individuals, groups, associations and industries that would be positively or negatively affected by the General Sustainability Plan. These would naturally include: citizens (local, commuting, etc.), citizen groups (Friends of the XXX, church groups, etc.), developers (large, medium, small), companies (multinational regional, local), politicians (local, regional, national), business associations, education sector (universities, colleges, secondary schools), and visitors (tourists associations, workers' unions, etc.).

Developing a long-term Sustainability Plan is not simple: decision-makers must address most of the challenges presented by all complicated systems such as lack of transparency, internal dynamics, inter-related variables, and incomplete understanding of the system. *"Defining goals is the first step in dealing with a complex problem"* (Dörner, 1996).

17.2.5 The Sustainability Council identifies overall goals

An important activity of the Sustainability Council is to identify the social, environmental and economic goals (Brundtland 1987). The Council must identify this 'triple bottom line'. The 'triple bottom line' has been used in business to describe sustainable development. The goals presented in Table 17.1 are not intended to be exhaustive (Auditor General Victoria 2004; Rogers and Ryan 2001), but are presented to give the reader a flavour of the typical goals that should be identified at this stage of the process. The ordering of the goals in Table 17.1 is random.

Table 17.1 Goals to achieve three pillars of sustainability

Social	Environmental	Economic
Valued education system	Water conservation	Sound financial management
Quality health facilities	Energy efficiency	Growing and linking community
Safe streets, homes and workplaces	Waste reduction	Sufficient jobs and thriving economy
No inequalities	Toxin reduction	High standard of living
Respect of diversity	Biodiversity for flora and fauna	High home ownership

Proactive government	High percentage of green spaces to occupied land	Efficient mass transit
Optimal dwelling density	Optimal ecological footprint	Sustainable commuting
Optimal commercial density	Other ...	Business diversity
Other ...		Other ...

17.2.6 Sustainability Council selects Sustainability Alternatives

In general, the Sustainability Council should adopt a general philosophy about its potential Sustainability Alternatives. Perhaps a 'Green City' is not in the offing; but maybe a city with a comprehensive recycling program is an achievable goal. The list below is not intended to be exhaustive, but to illustrate the different approaches to sustainability that are possible.

- **Do nothing:** Political and business forces dictate urban growth. Growth is entirely uncontrolled and unpredictable.

- **Reactive:** The city approves those projects that comply with a low-level Sustainability Plan; in general, political and business forces dictate urban growth.

- **Efficient:** The city can manage its assets, liabilities and wastes in a comprehensive fashion without undue distress to the citizens and businesses. City grows in a controlled fashion.

- **Pro-active:** The city is developing and using innovative techniques to manage its assets, liabilities and wastes in a comprehensive, systemic and integrated fashion that is financially advantageous to the growth of the city and region.

- **Sustainable:** The city has developed, used and researched innovative techniques that ensure the sustainable management of its assets, liabilities and wastes. Its techniques are best practices, as seen by experts in the field. The indicators for sustainable growth have been achieved and surpassed the four R's (reduce, reuse, recycle, re-engineer). The city's growth is sustainable.

- **Sustainable and exporting:** The city's Sustainability Plan is fully implemented and the city is financially benefiting in its dealings with other cities and regions.

In order to ensure that the goals of future generations have the same importance as current goals, the Sustainability Council must also categorize the above goals into three separate time horizons (by the way, these then become competing goals). In addition, it must be remembered that everything cannot be accomplished in the first year, or even

first decade, of the Sustainability Plan, so it is important to have the goals spread over these three time horizons:

- Operational time horizon (this generation -- 20 years)
- Tactical time horizon (next generation)
- Strategic time horizon (successive generations)

17.2.7 Sustainability Council identifies sustainability assets and liabilities

A ‘Capital Model’ has been proposed by Ekins (1992). The four corners to this capital model shown in Table 17.2 include: natural capital (i.e. environmental), economic capital, social capital, and human capital. The Ekins model has been used in this chapter to sub-classify the social pillar of the ‘triple bottom line’ into two categories: social (dealing with society in general) and human (dealing with individuals). This classification system is used to classify the various types of assets and liabilities in Tables 17.2 and 17.3, respectively:

Table 17.2 Listing of municipal assets classified according to Capital Model

Natural	Economic	Social	Human
Physical space Airspace Subterranean Surface Reclaimed land	Banking / commerce Tax structure Regulatory system Available capital Grants and loans	Political system Democratic Socialistic Communist	Education Unskilled Skilled Professional Specialty
Resources Water Energy Agriculture Raw materials	Infrastructure Roads, bridges Ports, rail stations Highways Mass transit Water distribution Wastewater systems	Attractions Cultural Social Specialty Events	Demographics Gender Race Religion Financial status Age New citizens
Attractions Geographic Leisure Recreational	Buildings Housing Commercial Industrial	Health system Socialistic Private	Immigration Policy Immigration rate
Physical assets Geography Meteorology Orography Hydrography	Education facilities Primary Secondary College University, Postgraduate	Educational system Socialistic Private	Health conditions Mortality rate Birth rate
	Health infrastructure Clinics, hospitals		
	Industry infrastructure Cottage, light, medium, heavy		

	Tourism infrastructure Hotels, restaurants, congress centres		
	Attractions Architecture, museums		
	Natural gas system		
	Electrical system		
	Other energy system		
	Waste collection		
	Telecommunications		
	Recreation / Sports		

Source: Ekins (1992)

Table 17.3 Listing of liabilities classified according to Capital Model

Natural	Economic	Social	Human
Overuse Air Land (soil) Water	Infrastructure Roads Utilities Facilities	Historical practices Waste disposal Dumping Status quo	Historical practices
Pollutants Air Land Water	Pollutants Noise / Light Vibrations Aesthetic / visual	Existing regulations Municipal Regional Federal International	Lack of education
Endangered species Flora Fauna	Waste management practices	Political uncertainty	No communication
Biodiversity Flora Fauna	Unemployment rate	Governance issues	Poor data
Non-renewable assets	Trading partners	Working conditions	
	Company diversity		
	Banking system		
	Marketplace diversity		

Source: Ekins (1992)

17.2.8 Sustainability Council identifies regulatory support (rates, environmental taxes, charges, and levies)

The Sustainability Council, Municipal Council and regional and national governments can use any number of legislative instruments to assist the implementation of the Sustainability Plan. As with other concepts mentioned in this

chapter, the legislative support must be considered along the three time horizons described earlier: operational, tactical and strategic. It is not the intention of this discussion to enumerate the advantages and disadvantages of the available mechanisms, but rather to illustrate how a Municipal Council can control various aspects of sustainability.

For example, service rates such as the water rates (i.e. the cost of a cubic meter of piped water) might be lower than national averages because of historical reasons and cannot be increased drastically for political reasons. However, considerable water distribution infrastructure was installed in the 1950's to 1980's around the world and much of that has reached its technical service life. As a result, considerable replacement costs are anticipated by most water utilities. In order for the water distribution and treatment system to be sustainable in the operational, tactical and strategic time horizons described earlier, the *water rates might be need to be increased three or four fold.*

Another example is the controversial 'Congestion Charge' (see also 'London congestion pricing in section 9.26) in downtown London. The charge is active between 07.00 and 18.30 Monday to Friday, excluding public holidays. This environmental tax is seen as one way to reduce the number of cars in the downtown of major cities. The Mayor hopes the charge will cut down congestion by 15 per cent and have this additional €150 million a year go into London's transport system. Other major cities around the world such as Singapore and Edinburgh have similar charges.

The Sustainability Council should first look at the existing tax structure, locally, regionally, nationally and internationally. It should then look at the legislative changes that could be enacted in order to have the various facets of the municipal operations sustainable (i.e. water distribution, waste management, energy conservation, recycling). These suggested changes should be forwarded to the appropriate authority for consideration and further study. The potential net revenues also should be calculated (rate changes, increased taxes, environmental penalties, reduction in taxes collected).

17.2.9 Sustainability Council develops Sustainability Education Plan

A concerted education plan is required to educate the decision makers, municipal staff, city's professionals and citizens about the long-term benefits of sustainability and the city's Sustainability Plan. The Sustainability Education Plan should have two facets: professional and public education. Professional education (politicians, universities, post-graduate students) is seen as one way to pass proper information to the city managers, decision makers, city professionals and educators. Public education (primary, secondary, and technical schools and universities) is a method of training the city's newest citizens.

As with other concepts described in this chapter, the Sustainability Education Plan should consider the three time horizons described earlier: operational, tactical and strategic. The education of professionals can take place early on, as costs are lower and results can be achieved earlier.

17.2.10 Sustainability Council selects indicators to evaluate goal attainment

Indicators are required to evaluate if sustainability goals have been attained and when they are falling short. The Sustainability Council should first identify which data have been collected to date about sustainability. The Council should also decide whether these *indicators are representative*. The Council should then select which other indicators could be used to measure if a goal has been achieved. Once the

decision about indicators has been finalized, it is necessary to collect data for the baseline conditions (see indicators in Table 17.4). The listing in Table 17.4 is not intended to be exhaustive, but rather to give the readers an overall view of the typical data that can be collected and compared (Rao et al 2001).

Table 17.4 Listing of potential indicators for evaluating goal attainment

Natural	Economic	Social	Human
Number of endangered species	Number of combined sewer overflow events	Average area per residence (dwellings per hectare)	Regular mass transit (within 400 metres from front door)
Area of contaminated land	Growth/decline in gross domestic product	Parks and open space (acreage per population)	Percentage not using motor vehicles
Greenhouse gas reduction	Income disparity (top and bottom quintile)	Access to green space (within 400 metres of front door)	Percentage walking
Heat island temperature	Comparative ratios of kinds of businesses to the total number	Ratio of total farmland (acreage to population)	Percentage using mass transit
Natural landscape increase	Paved roads per person	Ratio of total farmland (acreage to urbanized land)	Percentage car pooling
Smog advisories	Miles of bike paths per person	Ecological footprint (acres/hectares per person)	Distance commuting
Biodiversity of water species	Pedestrian deaths per year	Days over ozone standard per year	Waste per dwelling
	Juvenile felony arrests per year	Heart attack deaths per 100,000	Hours commuting
	High school retention rate	Distance to medical services	
	Permanent jobs created	Diabetes deaths per year	
	Alcohol vehicular deaths per year	Pesticide use per year	
	Solid waste diversion	Birth rate	

	Storm water retention	Beach closures: days	
	Water use reduction	Percentage overweight	
	Energy use reduction	Percentage obese	
	Hate crimes per year	Mix of use	
	Crime rate		
	Employment level		

A scoring system has been developed in 'A sustainability checklist for developments' (Brownhill and Rao 2002). It is also recommended to investigate indexes other than the GDP (see Glossary) to evaluate the economy. For example, numbers obtained from the GPI (Genuine Progress Index) should also be investigated (GPI 2005). The GPI places value on related issues such as:

- Economic value of civic and voluntary work
- Economic value of unpaid housework and child care
- Value of leisure time
- Composite livelihood security index
- Costs of crime
- Human Freedom Index
- Percentage ownership
- Subsidized housing

17.2.11 Sustainability Council selects metrics for Life Cycle Cost Analysis (see Glossary)

In order to compare Alternatives, especially with life cycle costs that go well into the future, it is necessary to standardize an appropriate life cycle cost model. This is necessary in order to harmonize the time value of money when comparing Alternatives (ASTM E-917-02):

- Select equivalent study periods (25 year, 50 year, 100 years, etc.)
- Select the economic discount rate (governmental, industrial and commercial, etc.) to be used
- Select price inflation rate (general, resource specific)
- Select energy price inflation rate (fossil, electrical, etc.)
- Select service life of assets (5, 10, 50, 100 years, indefinite)
- Select social cost factor (Rahman, Vanier and Newton 2005) to calculate full costs of infrastructure projects including the tangible and intangible costs to society
- Select residual value (10%, 5%, etc.) for the various infrastructure asset classes (this determines what percentage of the asset can be recycled or reused)
- Select replacement cost ratio (100%) to determine total value of assets
- Select recurring operation and maintenance costs (2%-4% of replacement cost)

17.2.12 Sustainability Council selects implementation projects

In order to ‘kick off’ the Sustainability Plan, a good first step is to implement pilot projects to demonstrate the need and benefits of the sustainability initiative. Sufficient advertising (i.e. media relations) funds are needed to promote the initiative properly.

Steps that could be followed (Regent Park 2004) for this activity include:

- Solicit project proposals from stakeholders
- Screen the proposed projects according to the following sequence:
 - Eliminate uneconomical projects and provide justification for decision - eliminate all projects that are completely uneconomical (for example, current implementation costs are an order of magnitude more than the envisioned benefits).
 - Eliminate unfeasible projects and provide justification for decision – eliminate all projects that are not feasible (technology is not currently available, has safety or health concerns, has not been validated, has not been tested, etc.)
 - Classify remaining pilot projects and rank priority
 - Provide final recommendations for pilot studies
 - Perform detailed cost/benefit analysis of final recommendations

There can be any number of pilot studies, prototypes or best practices that can be developed at this time. Short-term successful projects encourage the initiative to continue. Long-term project typically have greater benefits, but the results can be questionable for long periods of time. A good mix between the two is recommended at this initial implementation time horizon (i.e. operational time horizon).

17.2.13 Sustainability Council develops and recommends budget for Sustainability Plan

In the current economic situation for municipalities for most of the world, it has to be assumed that any new initiative such as a sustainability one, must be self-sustaining, regardless of the ‘altruistic benefits’ to mankind, the nation, or city. That is, the costs of the Sustainability Plan to the municipality and its stakeholders must be offset by savings in other areas or by some readjustment of revenues (new taxes, environmental penalties, changes to service rate, etc.).

17.2.14 Municipal Council approves the Sustainability Plan

As the Sustainability Council is an instrument of the Municipal Council, it is necessary for the latter to approve the Sustainability Plan. Along with the approval comes the required promotion of the Plan to the city, staff members, stakeholders and media.

17.2.15 Sustainability/Municipal Council monitors and validates sustainability plan

Like any other inter-generational plan, the Sustainability Plan is a living document that should be constantly monitored, validated and updated. Typical steps that should be considered in this on-going validation process include:

- Evaluate and validate existing performance indicators to determine if they remain representative

- Change performance indicators, if required
- Develop new performance indicators
- Adjust General Sustainability Plan, if necessary
- Expand or contract goals, if necessary

17.3 Case studies in the selection of sustainability initiatives

An example of using a decision support system is shown below to demonstrate how the alternative solutions for a Sustainability Plan can be compared. In this example, the general sustainability issues described in this chapter are rated and compared using a technique similar to the AHP described in previous chapters (see section 15.8.4.2). This methodology, called Analytical Network Process (ANP), also allows for the comparison between any Goals, Criteria or Alternatives throughout the hierarchy (ANP 2005); this capability is not available within AHP.

Objective of this case study: To demonstrate the use of a rational methodology, namely ANP, to determine the best alternatives to be adopted for the sustainability initiative.

The process demonstrated in this section consists in defining Goals, Criteria and Alternatives, doing pair-wise comparisons of all the relevant selections, and using ANP to help select the most suitable Alternative.

Goal: To create a sustainable city

Criteria: To compare the Alternatives, the different Criteria established in Table 17.1 are used. Each Alternative is appraised for each Criterion

To do this, each Alternative is pair-wise compared with the others considering each of the selected Criteria. Thus, all Alternatives are compared regarding the Social Criterion, then with respect to the Economic Criterion, and finally with the Environmental Criterion.

Alternatives: The Alternatives selected for this case study are those suggested in section 17.2.6:

- **Do nothing** (Status quo): Political and business forces dictate urban growth. Growth is entirely uncontrolled and unpredictable.
- **Reactive:** The city approves those projects that comply with a low-level Sustainability Plan; in general, political and business forces dictate urban growth.
- **Efficient:** The city can manage its assets, liabilities and wastes in a comprehensive fashion without undue distress to the citizens and businesses. City grows in a controlled fashion.
- **Pro-active:** The city is developing and using innovative techniques to manage its assets, liabilities and wastes in a comprehensive, systemic and integrated fashion that is financially advantageous to the growth of the city and region.

- Sustainable: The city has researched, developed, and used innovative techniques that ensure the sustainable management of its assets, liabilities and wastes. Its techniques are best practices, as seen by experts in the field. The indicators for sustainable growth have been achieved and surpassed (reduce, reuse, recycle, re-engineer). The city's growth is sustainable.
- Sustainable and exporting: The city's Sustainability Plan is fully implemented and the city is financially benefiting in its dealings with other cities and regions.

Results: The results from the ANP comparisons show which is the preferred Alternative according the selection of Goals, Criteria, and Alternatives as well as the pair-wise comparisons.

17.3.1 General Sustainability Plan case study

In this case study, the Goal, Criteria, Sub Criteria, and Alternatives selected are those that have been previously described in this chapter. The overall Goal is a 'Sustainable City', the Criteria are social, environmental and economic, the Sub Criteria are those outlined previously in Table 17.1, and the Alternatives have been described in 17.2.6.

Figure 17.1 sketches the relationships between different components within an ANP analysis, that is: Goals, Criteria and Alternatives. Figure 17.1 looks similar to the AHP comparisons shown in Chapters 7; however, the differences are identified in the following sections.

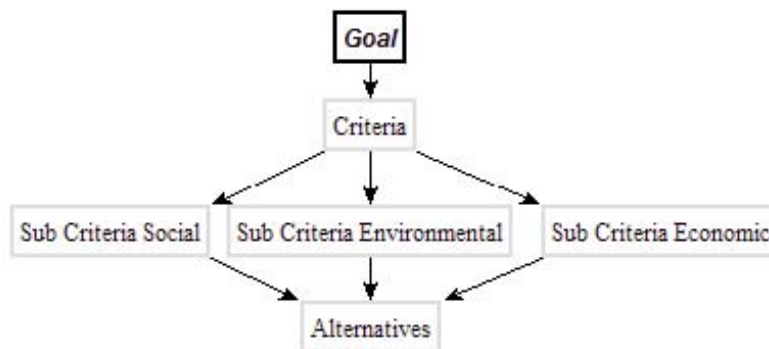


Figure 17.1 Backbone ANP for Sustainability Plan

Figure 17.2 shows the breakdown for different Criteria: social, environmental and economic. These Criteria and Sub Criteria are the elements that are used to compare and prioritize the Alternatives.

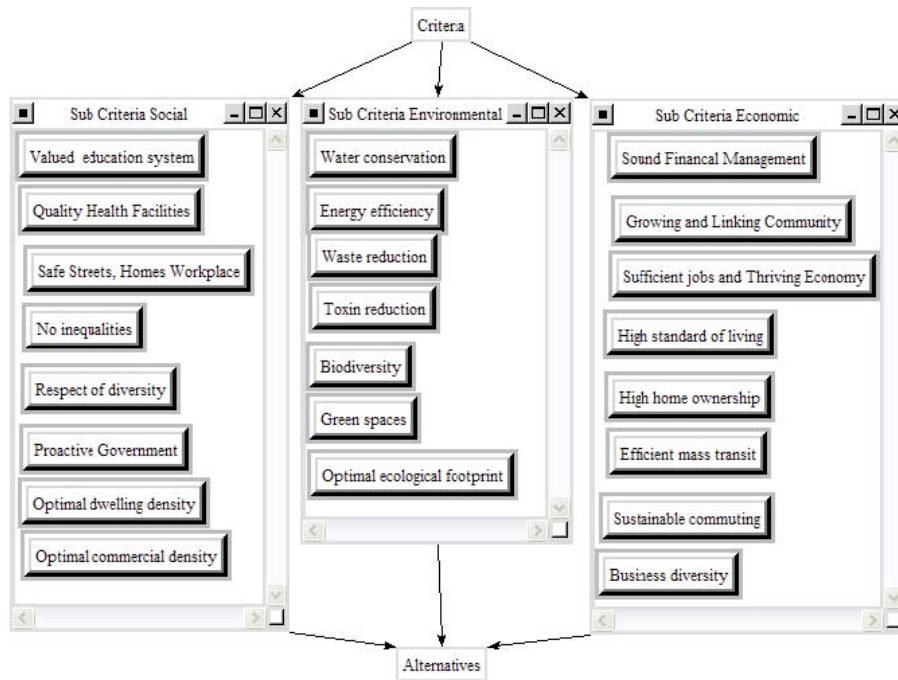


Figure 17.2 Detailed ANP sub-criteria

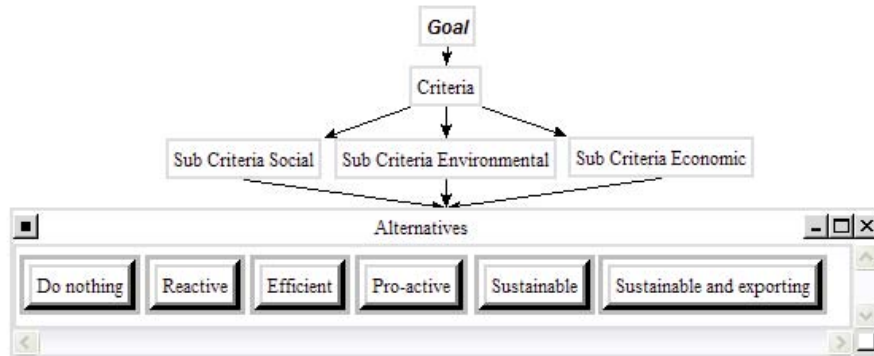


Figure 17.3 Detailed ANP alternatives showing goal and criteria

Figure 17.3 enumerates the Alternatives identified earlier in this section. In Figure 17.4, the pair-wise comparison with respect to the “Sustainable City Node” rates the three Sub Criteria from Figure 17.1 to determine overall Sub Criteria weights. The comparison interface in this application is straightforward; the user selects how the Sub Criterion on the left compares to the Sub Criterion on the right. The selection of ‘9’ means that Criterion is highly preferred over the other; a selection of ‘1’ indicates there is no preference between the two Criteria.

In the first comparison of Figure 17.4, the preference of the Economic Criterion is deemed to be a ‘3’ or ‘moderately more preferable’ than the Environmental Criterion. The second comparison has the Economic Criterion to be a ‘2’ when compared to the Social Criterion. In the bottom comparison, the Environmental Criterion was selected to be equally preferable to the Social Criterion.

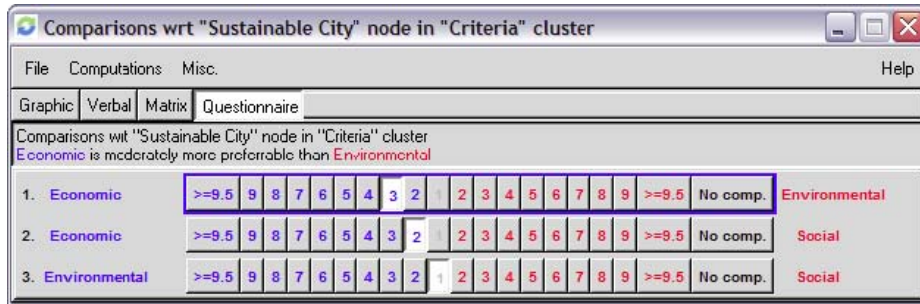


Figure 17.4 Examples of detailed pair-wise comparisons of sustainable city goal

Figure 17.5 applies the same methodology as the previous example but it is applied to the Sub Criterion social cluster and the eight Sub Criteria from Table 17.1. With eight options to be pair-wise compared, there are 28 individual comparisons (7+6+5+4+3+2+1) required (the last nine are shown in Figure 17.5). Regarding the selection of the ratings in this case study, preference was given by the chapter author to health and education over other options, a proactive government was deemed unimportant, and respect of diversity was not preferred.

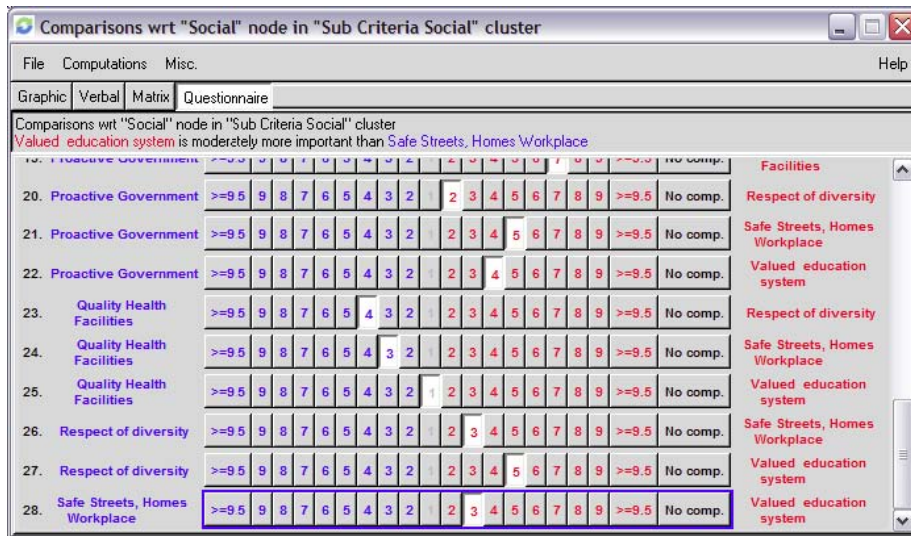


Figure 17.5 Examples of detailed pair-wise comparisons of social sub criteria

Figure 17.6 shows the pair-wise comparison of the Environmental Criterion with its seven different factors. Comparisons 12 through 21 are shown in this figure. Regarding the selection of the ratings in this case study, preference was given to water and waste conservation over other options, the reduction of toxins was deemed important, and green spaces had a low priority. The pair-wise comparison of the Economic Criterion is similar to the other two and is not illustrated.

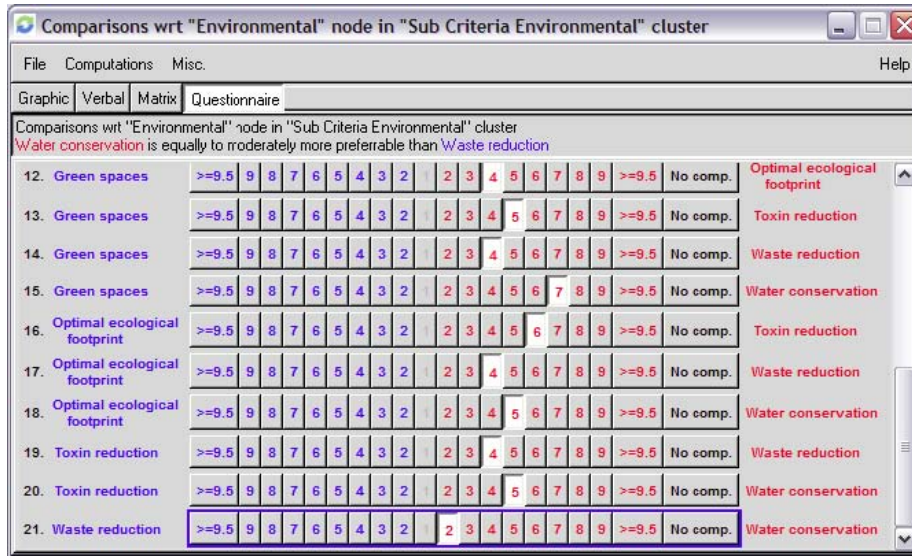


Figure 17.6 Detailed pair-wise comparisons of environmental sub criteria

Figure 17.7 shows the result of comparing Alternatives between themselves when concentrating on a specific Sub Criterion -- a 'Valued education system'. For this example, all the Alternatives identified in Figure 17.3 are pair-wise compared for each of the Sub Criteria illustrated in Figure 17.2. Although the process sounds onerous, the comparison interface in the software application used greatly simplified this task (ANP 2005).

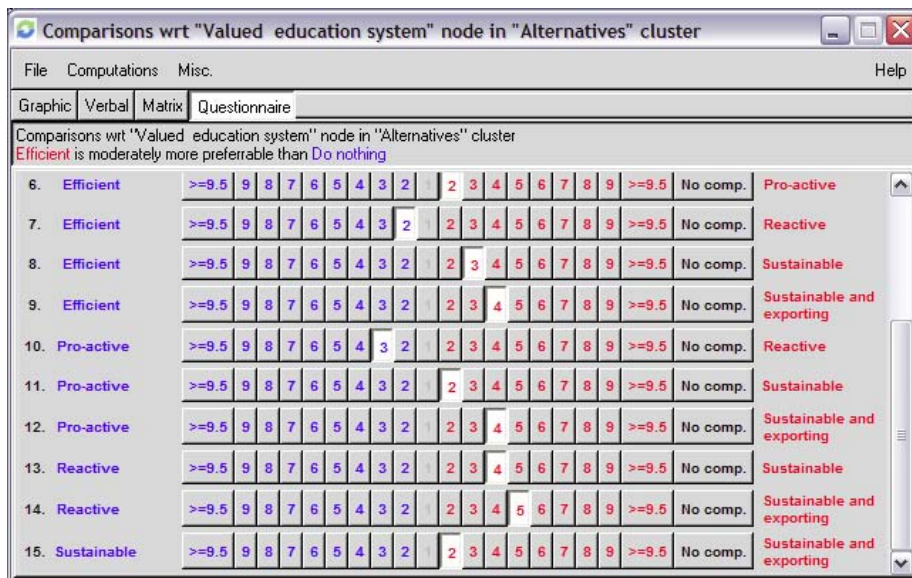


Figure 17.7 Examples of matrix detailed pair-wise comparisons of six alternatives for the 'Valued education system' sub criterion

Finally, Figure 17.8 shows the ANP results. As can be seen the "Sustainable and exporting" Alternative receives the highest rating. The 'Raw' numbers represent the raw values from the matrix manipulations, the 'Normals' are the normalized 'Raw' values, and the 'Ideals' have the highest rating as 1.00 for the first ranking Alternative.







Name	Graphic	Ideals	Normals	Raw
1. Do Nothing		0.328131	0.081374	0.027125
2. Reactive		0.534715	0.132605	0.044202
3. Efficient		0.607446	0.150642	0.050214
4. Pro-active		0.706947	0.175318	0.058439
5. Sustainable		0.855142	0.212069	0.070690
6. Sustainable and exporting		1.000000	0.247992	0.082664

Figure 17.8 Results of ANP and the pair-wise comparisons of alternatives

17.4 Summary

A Sustainability Plan was presented in this chapter. Steps leading up to the attainment of a Sustainability Plan were itemized and discussed. A decision support tool was used to demonstrate how Goals, Criteria and Alternatives could be compared for this complex problem. The final results of the pair-wise comparisons of the Goals, Criteria and Alternatives indicates that the municipality is extremely interested in the concepts of sustainability. The relative positioning of the Alternatives clearly indicates that the municipality ranks these Alternatives progressively from Do Nothing as the lowest ranking to Sustainable and Exporting as the highest.

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www.superdecisions.com

Source: ChangeCraft (2005)
 Title: *Where to look for a Champion*
 Address:
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Source: Melbourne (2005)
 Title: *Melbourne Principles for Sustainable Cities - United Nations Environment Programme, Division of Technology, Industry and Economics, International Environment Technology Centre, Integrative Management Series*
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