Planning for a Sustainable Future

A Guide for Local Governments

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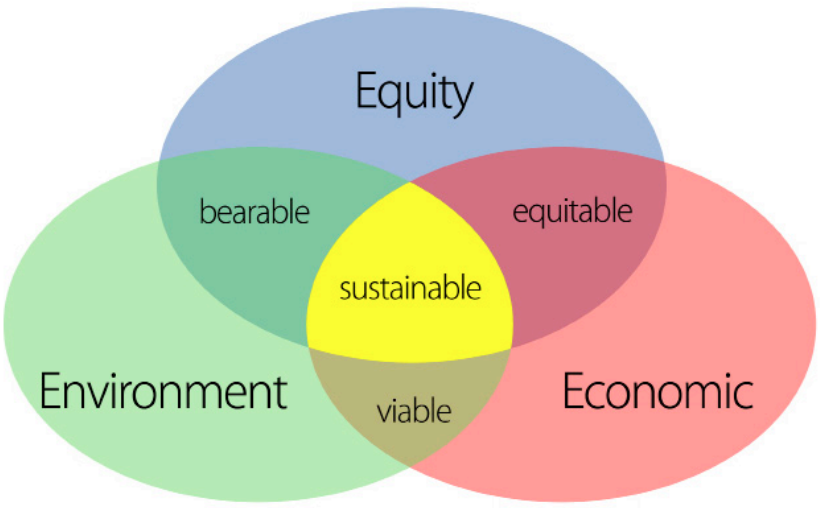
1 Introduction to Sustainability Planning

What is Sustainability?

The U.S. Environmental Protection Agency (EPA) defines sustainability as "meeting the needs of the present without compromising the ability of future generations to meet their own needs." In other words, sustainability attempts to balance the needs of people today with the future needs of our children and the natural systems that sustain all life.

In an era of population growth, increasing economic competition, and environmental challenges ranging from climate change to air pollution and decreasing water levels to rising energy costs, planning is essential to our future and the well-being of our communities. Planning in the face of these challenges must transcend traditional zoning or general land use considerations. It can also promote sustainability by incorporating the three "E's" – economy, environment and equity in plans for development.



Increasingly, many local governments, ranging from towns and cities to counties and regional partnerships, are taking more long-term, comprehensive approaches to economic development, with the goal of improving overall sustainability. They have recognized that planning for a sustainable future can bring real-world benefits to our towns and cities.

What are the best sustainability practices currently in use? How can a community move from an idea to a plan to successful action? This handbook, which includes information gathered from more than two dozen cities, towns and counties across the United States, will provide the answers to these questions and provide a roadmap for developing effective plans for a sustainable future.

Reasons to Plan

Sustainability planning is becoming main stream. Once the domain of only the "greenest" cities, sustainability planning is being undertaken by more cities and towns across the nation. While efforts like New York City's PlaNYC are better known, smaller cities like Cleveland, Ohio, towns like Sedona, Arizona, and counties like Westchester County, New York are benefitting from an integrated approach to resource and community planning.

Municipal sustainability planning is helping communities across the country lower energy costs, secure sustainable supplies of water, reduce air pollution, and encourage new economic development. Although every area of the country faces its own challenges, sustainable concepts and ideas can be adapted to the needs of any size community.

2 Getting Started

Assess the Challenge

The critical first step in developing a successful sustainability plan is an assessment of community strengths and weaknesses as well as current and future needs. Every community is characterized by a set of unique features – from its climate and topography to local development patterns. The issues on which you focus will determine the structure of your local sustainability plan, but most of the municipal plans discussed in this handbook cover the following topics:

- transportation
- land use planning
- open space protection
- energy, air quality and climate
- water supply, storm water and wastewater
- solid waste and recycling

Your final plan may include some or all of these issues or other areas of concern, but the overall goal is to be comprehensive because many of these areas are interconnected.

A look at the best practices used by similar communities can provide a comprehensive list of the opportunities and options useful in reaching sustainability goals. The following are some helpful questions to ask in developing community-specific benchmarks:

- What communities in your region or state are facing similar challenges in terms of the environment, population growth and the local economy?
- What are the similarities between your community and others, and what plans have been devised and/or implemented to meet the challenges?
- Are there examples of "best practices," as is or modified, to help your community reach its objectives?

Environmental threats, economic pressures and changing regulations often spur or drive planning efforts, so it's worth thinking through these related issues as well:

- What environmental, economic or regulatory impacts are the highest priorities? How were the priorities determined?
- What studies or projections (environmental, land-use patterns, economic development) exist for your community, region, or state for the next five, 10, 20, or 50 years?
- What are the regulatory requirements that currently apply or that may be developed down the line?
- What is the potential for mitigating or preventing various threats and how difficult or easy will it be to implement change?
- What are the potential synergies that might result from tackling a range of issues at the same time? For example, can improved open space protection preserve biological resources and reduce flood risks? Can improvements to a government's vehicle fleet lower its energy costs and reduce local air pollution?

TIP: As your list grows longer, you may wish to employ a spreadsheet or database of some kind.

Recommended Resources:

Start with a basic self-assessment. The National Environmental Services Center, funded by EPA, provides a comprehensive checklist to jump start the process.
www.nesc.wvu.edu/netcsc/Self_Assmnt/SelfAssessment.pdf
www.nesc.wvu.edu/training.cfm

Identify Vulnerabilities and Prepare for Natural Disasters

Protecting against natural disasters should be a key planning priority. Natural disasters will always pose potential threats, but careful planning can keep them from becoming management disasters. By assessing your community's vulnerabilities and implementing mitigation strategies, the potential impacts can be reduced.

Risk is determined by evaluating the potential hazard and assessing the vulnerability to the impact. Although evaluating risk is often more qualitative than quantitative, it can be useful to think about risk as a product of the hazard multiplied by the vulnerability. Risk assessment usually follows a three-step approach:

- understanding the nature, location, intensity and probability of the key threats in your area
- determining the degree of vulnerability to those threats
- identifying the resources available to manage or respond

In evaluating vulnerabilities to particular threats, it is common to consider:

- land use patterns, engineering of key infrastructure such as roads and bridges, and the architecture of the built environment
- social factors related to the well-being of individuals, communities and society
- economic conditions, with an understanding that distressed and low-income neighborhoods may have a more limited capacity to evacuate or recover
- environmental concerns, including how the degradation of natural areas such as wetlands can increase the damaging impacts of events

Particular care should be taken in evaluating how risks associated with natural disasters can be potentially compounded by the existence or condition of human-made infrastructure such as a flood causing an overflow of a wastewater treatment plant. Your emergency preparedness strategy should also consider possible threats such as the potential for an accidental or intentional chemical release, explosion, outbreak of disease, or even, depending on the area, radiological release. Government agencies in your area, such as police, fire and emergency management, routinely track and evaluate these types of threats, so a multi-stakeholder approach that involves relevant local and regional agencies is critical. In addition, it is worth considering global threats such as climate change and population growth.

Recommended Resources:

General information on preparing for disasters, determining risks and planning for emergencies can be found on the Federal Emergency Management Agency (FEMA) Web site.
www.fema.gov/plan/index.shtm

In collaboration with FEMA, the National Oceanic and Atmospheric Administration (NOAA) has developed a Community Vulnerability Assessment Tool to help determine and prioritize vulnerability hazards.
www.csc.noaa.gov/products/nchaz/startup.htm

FEMA developed HAZUS (Hazards US) software for estimating potential losses from natural hazards.
www.fema.gov/plan/prevent/hazus/index.shtm

The Climate Change Science Program is a portal to federal research on climate change impacts across all agencies.
www.climatescience.gov/

NOAA, among other organizations, has been looking at the potential regional impacts of climate change via the Regional Climate Modeling Tool.
www.ncar.ucar.edu/research/climate/regional.php

Planning Locally for Climate Change is a climate change guidebook produced by the Climate Impacts Group at the University of Washington and members of King County, Washington, in collaboration with ICLEI.
www.iclei.org/index.php?id=7066

EPA Regional Vulnerability Assessment
www.epa.gov/reva/

EPA Events of National Significance Web page studies major disasters and incidents.
www.epa.gov/emergencies/content/learning/national_response.htm

Center for Disease Control Natural Disasters and Extreme Weather
www.bt.cdc.gov/disasters/

ICLEI Global Platform for Disaster Risk Reduction
www.iclei.org/index.php?id=6880&tx_ttnews[backPid]=6877&tx_ttnews[tt_news]=2008&cHash=a05f248d7d

UN World Conference on Disaster Reduction
www.unisdr.org/wcdr/

Additional resources may be found on the Web sites of municipal governments such as the Portland Office of Emergency Management.
www.portlandonline.com/oem

The Sarasota County and City of Santa Barbara Offices of Emergency Services
www.scgov.net/EmergencyServices/EmergencyManagement/emergencymanagement.asp
www.santabarbaraca.gov/Resident/OES/

Work through Existing Resources and Networks

As you begin to create your sustainability plan, it's a good idea to take a look at related work being done by other organizations in your area. Are there agencies conducting relevant studies? Is there a local group involved in protecting open space, a business association analyzing the impacts of growth, or a school program focusing on stream cleanups or water quality?

Chances are that at least some plans, studies and committees have been created over the years. Organize a meeting with the coordinators of existing projects to better coordinate your planning.

Annual reports tracking water and energy consumption as well as wastewater and solid waste generation should be readily available from local and regional utilities. Land use planning and environmental documents such as open space preservation plans and natural resource protection plans, and environmental impact statements and reports will also be useful in identifying what has been done and what needs to be done. Anything older than five to 10 years may need to be updated, but even older efforts can provide worthwhile guidance and data, which will come in handy when targets are set and progress is measured.

Once you've taken a survey of ongoing efforts and historical data, the next step is to look at the local capacity needed to manage the planning.

Build Coalitions

Successful planning efforts are typically broad-based and encourage participation by the whole community. By partnering with residents and existing groups, the effects of your sustainability plan can be amplified and staff workload can be minimized.

Local volunteers are a key group to consider as part of your partnerships, since they directly benefit and can help make the public case for your plan to their neighbors and friends. Organizing volunteer days and getting community members involved in the planning process is not only helpful, but required in some areas such as land use planning.

Forming ad hoc committees or commissions, overseen by government officials, is another effective way to address specific environmental planning issues while allowing interested community members to contribute their expertise. Inviting community members to participate in meetings is a good way to recruit them to serve on a committee. The Westchester County Global Warming Task Force in New York, for example, allows interested community members to work on specific issues without being permanent members.

Local environmental groups are another potential set of organizations with which communities can partner during the planning process. Environmental groups often bring specialized expertise in areas such as watershed protection or smart growth planning. Ensuring that all local environmental concerns are considered can help create broad-based support for the planning process. Some examples are Denver, Colorado, where the city has involved the FrontRange Earth Force in its planning process, and Westchester County, New York, which is working with the Natural Resources Defense Council (NRDC) and Riverkeeper, among other groups.

Because environmental sustainability and the long-term economic viability of communities are linked, businesses, business associations and chambers of commerce

are also important partners. Resource and planning issues, such as the availability of water, the price of energy and accessibility to transportation, are often of critical importance to the local business community. In addition, local businesses can provide both technical resources and funding for your sustainability planning process.

Along with community members, nonprofits and business groups, other government agencies are another key constituency to consider. For instance, a city or town may want to, or in some cases, be required to involve regional or state agencies in their planning process. Outside agencies may be able to provide a wealth of resources and assistance, including grants, loans or other financing.

Academic organizations are also possible partners. As members of the community, universities, colleges and technical schools may have a direct interest in the local government sustainability planning process. In addition, these organizations can provide technical resources, research support and venues for public discussions. The Montgomery County Greenhouse Gas Task Force, for example, was developed as the result of a project conducted by Pennsylvania State University graduate students.

Faith and service organizations, transportation advocacy groups and labor unions are also potential partners depending on the interests of local groups and the needs of the community.

In creating workable coalitions, try to balance the desire for broad support from many sectors of the community and the need to keep the groups from becoming unwieldy.

Educate Colleagues and the Public

Once you take your baseline, look at applicable planning approaches, and assess potential partners, the next essential step is to articulate the need for a plan to your city, town or county government. As part of your internal outreach, you may want to create a project brief that outlines possible benefits, looks at costs and creates a timeline for major milestones.

Based on an analysis of various sustainability plans, the best ones are concise, discuss top-level goals and are not too technical. They emphasize the challenges unique to individual communities and the benefits of planning for the community. They also make a combined appeal to civic culture, area values and economic benefits.

Strong leadership is essential to the success of your sustainability plan. This role can be taken on effectively by an elected official, a planning or community development department in the local govern-

ment, a community-based commission, a prominent local business or a hybrid approach that combines all of these stakeholders. The importance of leadership cannot be over estimated.

In developing your plan, confirm that leaders in local government and senior managers in implementing departments are aware of:

- the implementation strategy and schedule for the programs
- the estimated labor commitment needed for program success
- when, how and what to communicate to employees on a regular basis
- how your programs align with current management plans and programs

One of the most significant challenges in discussing sustainability is creating greater public awareness of the interdependence between the environment, the economy and community life, and the reasons they don't have to conflict with each other. Cooperation between public agencies, non-profit organizations and the private sector can create compelling messages and materials to improve public understanding of the issues and the planning process. Effective outreach materials should be specific to your area and based on the actual experiences of local people, organizations and the government.

Recommended Resources:

Place Matters: This is an educational Web site for citizen engagement and community education.
www.placematters.org

Sustainable Communities Network is a Web site that offers several resources and links to organizations working on sustainability education.
www.sustainable.org/living/education.html

The Education for Sustainability Web site was created by the Center for a Sustainable Future.
www.ffof.org/pcsd/toc.html

Secure Funding, Reduce Costs

As initial planning is conducted and environmental objectives are being defined, you will also need to consider how you will fund the planning process and future projects. Just as each municipality's sustainability plan will vary, so will their approach towards funding.

Some municipalities find support through government grants programs. Various grants are available from EPA, the U.S. Department of Energy and state departments of environmental protection. For example, the Burlington Legacy Project in Vermont was funded in part by an EPA Sustainable Development Challenge Grant.

TIP: Prepare your organization to apply for grant opportunities by registering your search parameters and automatically receive an e-mail notification of new grant opportunities.
www.grants.gov/search/subscribeAdvanced.do

Public-private partnerships are also potentially valuable financing tools. The United States Conference of Mayors provides numerous examples of municipalities teaming up with non-governmental organizations, utilities, water boards, businesses and other partners. Not only do such efforts frequently result in funding to help in reaching sustainability goals, they also help foster support for planning efforts.

Among the most frequently cited and successful sources of sustainability funding are programs that result in cost savings. In some cases, upfront investment in long-lasting infrastructure — projects that are amortized over decades — can be offset by long-term savings.

According to the United States Conference of Mayors, typical cost savings come from:

- energy reduction strategies (e.g., on-site renewable energy or replacement of lighting with high-efficiency alternatives)
- purchase of low-energy appliances
- green building projects
- vehicle emissions reduction programs such as the replacement of leaking gas caps
- arbor projects that add shade and/or create natural stormwater buffers
- recycling programs
- education and training
- traffic-signal optimization

Weighing the benefits and costs of a given approach is a frequent first-step in the budgetary process, but it is rarely straightforward, especially when assessing environmental benefits. How does one quantify the value of clean air, open space, a pristine shoreline, quality of life, or, for that matter, human lives, especially those of future generations? One broad rule of thumb is that it is usually best to start with the most pressing problems and those that lend themselves to the most direct and cost-effective solutions. Then use a systematic planning approach such as an environmental management system (EMS), described in the next section of this handbook, to continue to improve performance over time.

It is also important to consider the full cost and full benefits of each approach to determine an accurate payback period. For example, preventing sewer overflows into rivers and seas can improve drinking water, aquatic-based commerce and tourism. Electricity and fuel-saving programs can reduce operating costs, and recycling materials, like aluminum and copper, can be lucrative. The payback periods may be shorter than you think. In just one instance, the San Diego Refuse Disposal Division saved $868,000 in heavy equipment and diesel charges by shutting off equipment during breaks and lunch periods.

TIP: Use ENERGY STAR®'s Cash Flow opportunity calculator to estimate the payback period for investments. ENERGY STAR is a joint EPA, U.S. Department of Energy program that helps businesses and individuals protect the environment through superior energy efficiency.
www.energystar.gov/index.cfm?c=government.bus_government_local

Recommended Resources:

EPA and other federal grant opportunities
www.grants.gov

The U.S. Department of Energy database of incentives for renewable energy and efficiency has detailed information on state and local incentives and funding programs.
www.dsireusa.org/

U.S. Department of Energy Funding for Energy Efficiency
www1.eere.energy.gov/financing/

The U.S. Department of Housing and Urban Development offers incentives for redevelopment via its Home Ownership Zones.
www.hud.gov/offices/cpd/affordablehousing/programs/hoz/

EPA's Guidebook of Financial Tools: Paying for Sustainable Environmental Systems
www.epa.gov/efinpage/efinfin.htm

Center for American Progress Green Recovery: A Program to Create Good Jobs and Start Building a Low-Carbon Economy
www.americanprogress.org/issues/2008/09/pdf/green_recovery.pdf

Use a Planning Framework

Even the most successful sustainability planning effort needs a systematic approach for managing and reducing environmental impacts. Environmental Management Systems (EMS) provide a vetted framework that allows communities to address both specific and broad environmental issues in order to realize desired outcomes. By addressing root causes and integrating environmental approaches into everyday operations, environmental stewardship can become a priority across your entire organization.

Every EMS follows a basic four-step model:

- The Plan phase is used to analyze current environmental impacts and legal requirements, and then to set appropriate environmental goals and objectives.
- The Do phase moves to implementing specific programs and processes to meet objectives and targets. Tasks might include training employees and establishing operational controls. Being precise about assigning responsibilities to ensure

accountability is a must.

- The Check phase includes internal auditing, monitoring progress, assessing successes and failures, identifying areas for improvement and benchmarking. Evaluating employee understanding of the system and retraining employees when necessary is key to keeping the system current and useful.
- The Act phase is for reviewing progress, performing management reviews and implementing improvements to the plan, which can start the planning process anew.

General information the EMS process can also be found on EPA's Web site:
www.epa.gov/ems/index.html

EPA has found that an EMS can help municipalities:

- improve environmental performance and enhance regulatory compliance
- prevent pollution and conserve resources
- reduce environmental hazards
- attract new businesses and create new markets
- increase energy efficiency and reduce costs
- enhance employee morale and awareness as well as recruiting
- enhance a community's image with the public, regulators, lenders and investors
- qualify a community for recognition and incentive programs such as the EPA Performance Track Program
www.epa.gov/perftrac

Communicating the successful results of your EMS is a great way to demonstrate cost savings, environmental improvements and leadership.

Recommended Resources:

The Public Entity EMS Resource Center is a collaborative effort between EPA and the Global Environment and Technology Foundation.
www.peercenter.net/

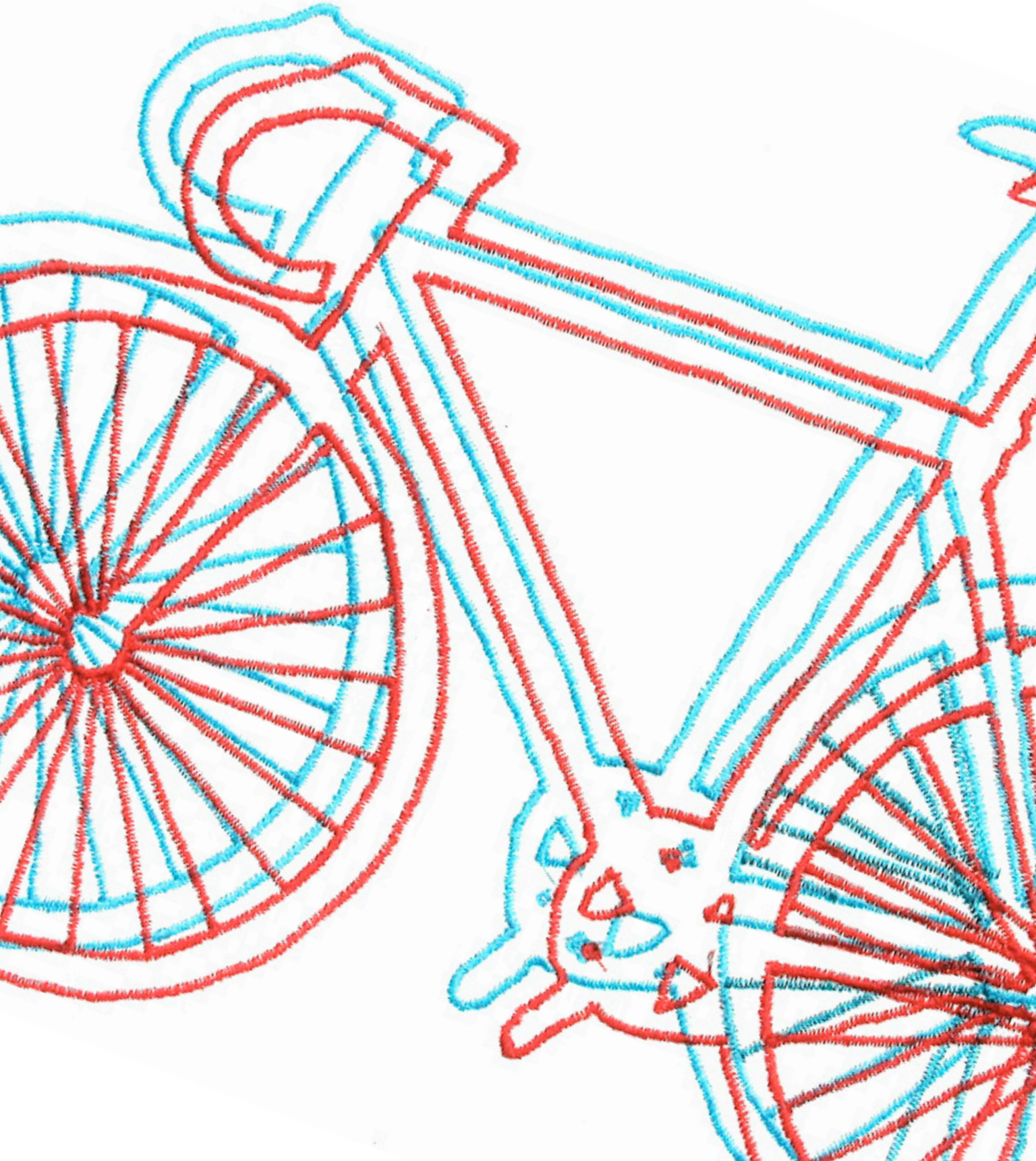
EPA funded the creation of Clean Air Climate Protection (CACP) software by Local Governments for Sustainability (ICLEI). CACP is designed to help local governments formulate climate action plans and is used by the U.S. Conference of Mayors to compute emissions numbers and calculate cost savings.
www.iclei-usa.org/action-center/tools/cacp-software

Climate and Air Pollution Planning Assistant (CAPPA). EPA funded this ICLEI tool, as a more comprehensive planning support tool.
www.iclei-usa.org/action-center/tools/decision-support-tool

The International Organization for Standardization (ISO) developed management system standards including quality and environmental management.
www.iso.org/iso/iso_catalogue/management_standards/iso_9000_iso_14000/iso_14000_essentials.htm

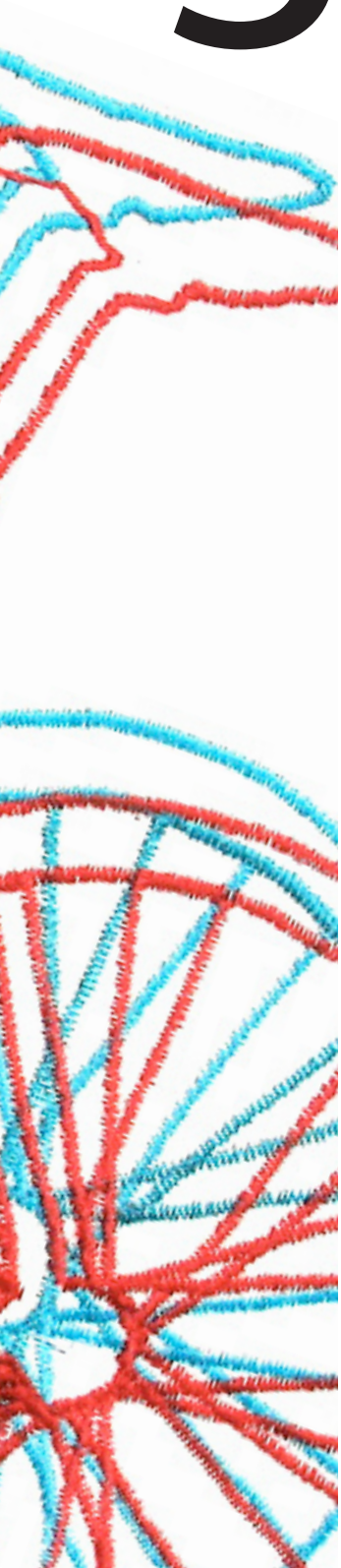
Sustainability Reporting Framework and Guidelines. Although primarily for businesses, this product of the Global Reporting Initiative can help communities and organizations track and report indicators.
www.globalreporting.org/AboutGRI/

The U.S. Green Building Council, known for its energy-efficient and environmentally-conscious construction and operation standards, is pilot testing a new LEED® (Leadership in Energy and Environmental Design) system for neighborhood design.
www.usgbc.org/DisplayPage.aspx?CMSPageID=148



3 Areas of Opportunity

Transportation



In 2005, according to the U.S. Department of Transportation, traffic congestion resulted in 4.2 billion hours of travel delay, 2.9 billion gallons of wasted fuel, and a net urban congestion cost of nearly $80 billion. The social and environmental impacts of congestion, such as the value of lost time and extra air pollution created by idling, are no less important. Proposing more and wider roads only temporarily mitigates congestion and results in lasting consequences – more air pollution from increased vehicle traffic, more stormwater run-off due to increases in impervious surfaces, and threats to open spaces and wildlife corridors.

What are called for are innovative approaches that add more options for public transportation and reduce the need for driving. The good news is that communities that have successfully added public transportation and revitalized downtown areas have often reaped big rewards, including reduced commute times, improved air quality and a reduction in greenhouse gas emissions. Other less quantifiable benefits include reduced asthma rates, improved integration of disparate neighborhoods, especially for communities with environmental justice concerns, and increased safety for pedestrians, cyclists and drivers alike. Commuters who have public transportation options are often able to save money, especially as fuel prices continue to increase. Promoting walking and bicycling can promote physical fitness and reduce health care expenses.

Best Practices and Solutions

Planning approaches range from simple changes of existing infrastructure to comprehensive efforts to rethink how a region travels. Although the creation of major new projects, such as the introduction of light rail, can take time and require major capital spending, these efforts can be linked with other large-scale projects to revitalize downtowns and reshape development patterns.

There are a range of feasible and cost-effective transportation approaches that are worth considering, including:

- car-pooling programs
- creation or upgrade of bike lanes and paths, sidewalks and walking paths to encourage non-motorized transportation
- installation of clean diesel technologies on municipal vehicles, equipment and buses
- upgrade and expansion of public transportation services such as bus rapid transit, trolleys, ferries, trains and light rail
- optimization of transportation routes and timing
- agreements with local businesses to stagger delivery and commute times, and encourage telecommuting
- incentives to use public transportation by providing park and ride spaces
- promotion of car sharing services such as providing on-street parking for car sharing businesses in your community
- support of walking and biking by providing bike route maps, bike parking and street beautification programs
- development of "transportation corridors" between communities by linking existing

public transportation services with neighboring communities
- creation of public transportation along or parallel to existing highway/arterial corridors

To develop a strategic action plan for sustainable transportation, communities may need to establish a dedicated planning group to work jointly with local, state and federal agencies. Reducing congestion and improving access to public transport requires the integration of land use planning for new residential development and major employment and entertainment attractions with the creation of accessible transit hubs.

Measuring Success

Communities may evaluate their progress by measuring operational effectiveness and efficiency, environmental impacts, behavioral changes in public transportation choices and infrastructure security. Some specific indicators could include:

- fossil fuel consumption, by mean annual gallons of fuel savings
- greenhouse gas emissions, in annual tons of carbon equivalents
- traffic congestion, in total hours saved each year
- commute times, by average length
- miles of bike lanes
- public transit ridership and system revenue
- miles of public transit routes
- distance traveled to public transportation circuits
- results of rider or driver satisfaction surveys
- plans to modify public transportation systems such as retrofitting buses or investing in electric-powered systems
- the number of people traveling by carpool

Recommended Resources:

EPA regulates air pollution from all kinds of motor vehicles and engines and encourages travel choices that minimize emissions. The Agency has a lot of useful information for state and local governments on its Web site, including easy-to-use calculators and modeling tools.
www.epa.gov/otaq/stateresources/index.htm

EPA also provides information on transportation "conformity," required by the Clean Air Act to ensure that federal funding and approvals are given to highway and transit projects that are consistent with the goals established by each state's air quality implementation plan.
www.epa.gov/otaq/stateresources/transconf/index.htm

The U.S. Department of Transportation offers several programs to assist rural areas and small communities, such as the Transportation Toolbox for Rural Areas and Small Communities and Urban Partnership Agreements.
http://ntl.bts.gov/ruraltransport/toolbox/
www.upa.dot.gov/

The U.S. Department of Transportation has developed "Transportation Vision for 2030," a document that provides specific strategies for passenger transportation, freight transportation, financing and partnerships, and technology and innovation.
www.webs1.uidaho.edu/ce501-400/resources/Addressing%20sustainbility%20in%20transportation%20systems.pdf

The U.S. Department of Transportation has information on how to get funding for bicycle and pedestrian projects.
www.fhwa.dot.gov/environment/bikeped/bp-broch.htm#funding

Transportation Case Study: Westchester County, New York Action Plan is on a Roll

In its sustainability plan, Westchester County, a community just north of New York City, included an assessment of local transportation infrastructure and approaches to reducing greenhouse gases from the transportation sector. The benefit: more efficient fleets, lower municipal costs and less traffic cut down on air pollution. To achieve these goals, the plan set out a series of transportation strategies:

The first strategy is the creation of partnerships with neighboring communities and local businesses to reduce transportation demands. Specific approaches include:

- use of carpools and van-pools
- participation in ride sharing programs such as Nu ride
- encouragement of car sharing via services provided by private rental companies that will rent cars for short (hour long) or long (week long) periods of time
- establishment of a private transportation network where people who have common local or far destinations can carpool to save on costs, air pollution and so they can enjoy each other's company
- promotion of flexible work weeks and telecommuting
- consolidation of transportation across school districts by establishing a county-wide network of school district coordinators for clean transportation

A second strategy is support for the use of public transit. Westchester is fortunate to have an extensive network of public transit and school bus services available in many communities.

The third strategy is the promotion and development of alternate modes of transportation such as biking or walking.

The fourth strategy is the replacement of vehicles and better management of municipal fleets. The plan encourages the purchase of hybrid, flex-fueled and alternative fueled vehicles. Some effective fleet management practices include:

- a comprehensive survey to determine fleet needs
- a green vehicle replacement and retrofitting strategy
- matching of vehicle size to the required tasks
- retrofitting buses with devices that prevent idling and unnecessary burning of fossil fuels, and older buses with tailpipe and crankcase filters to reduce air pollution

The plan includes other strategies to reduce greenhouse gas emission such as encouraging businesses and households to purchase carbon offsets and substituting virtual technology, such as video conferencing, for travel.

Further information is available at:
www.westchestergov.com/pdfs/ENVFACIL_globalWarmingAction2008FINAL.pdf

Land Use Planning

Land use planning is a critical element in developing vibrant and livable communities, increasing property values, ensuring economic vitality, addressing potential human health issues, promoting transportation efficiency, ensuring affordable housing, and improving environmental sustainability. Compact, efficient urban development improves the health and quality-of-life of area residents, revitalizes the local economy and increases environmental sustainability. Development of compact areas, even in small downtown areas, can reduce travel times, help preserve open space and reduce the commercial pressure to sprawl. Neighborhoods with walkable areas stimulate a strong sense of place and enhance an area's overall livability, while encouraging the development of strong, vibrant communities.

Zoning is the main tool in land use planning and can be used to direct development and redevelopment in urban areas to ensure that municipalities grow in a sustainable manner. Innovative land use planning policies and smart growth techniques are central in creating comprehensive municipal sustainability plans.

Larger municipalities may find it beneficial to create a new office for sustainability to work in cooperation with existing planning. Smaller municipalities may not have this option. In such cases, it may be effective to recruit local residents, community leaders, business owners and environmental groups to advise local government on land use decisions and development goals.

Best Practices and Solutions

Smart growth principles can be applied to a range of critical planning issues including community quality of life, urban design, economic development, environmental issues, human health, affordable and accessible housing, and transportation. Smart growth principles usually encompass the following:

- a range of housing choices and price-points based around compact, walkable neighborhoods
- mixed land use in the form of combined retail and residential development
- community and stakeholder collaboration in development decisions
- support for distinctive, attractive communities with a strong sense of place
- predictable development decisions that are fair and cost effective
- preservation of open space, farmland, natural beauty and critical environmental areas
- a variety of transportation choices
- development directed towards existing communities and transportation corridors
- compact building design
- appropriate remediation and redevelopment of brownfields
- formal parks and plazas in proximity to residential areas

Large cities such as Denver, Seattle and Portland offer excellent insight into sustainable land use planning practices. While smart growth principles offer an excellent theoretical framework for taking steps towards sustainable growth, these city planning departments have demonstrated how such principles can be used on the ground.

Measuring Success

Some specific indicators of successful land use planning are:

- population density and distribution
- percent of green space per neighborhood
- vehicle miles traveled per capita and average commute times
- frequency of walking or bike trips per capita
- results of surveys of neighborhood safety

and livability
- energy use per capita
- number of energy efficient buildings in the municipality

Recommended Resources:

EPA's Smart Growth Web page contains more information on applicable techniques.
www.epa.gov/smartgrowth/

Smart Growth Principles
www.smartgrowth.org/

The City of Portland's Sustainable Development Commission has created a comprehensive guide for identifying indicators and measuring progress to determine the success of sustainable planning and development strategies. The indicator matrix can be found on the City of Portland's Web site.
www.portlandonline.com/shared/cfm/image.cfm?id=133058

Seattle Department of Planning and Development
www.seattle.gov/dpd/

Green Print Denver
www.greenprintdenver.org/

City of Portland Bureau of Planning
www.portlandonline.com/planning/

Land Use Planning Case Study: Portland, Oregon
Land Use Planning Evolves

Recognized among American cities as one of the most dedicated to planning, Portland is frequently cited for its progressive transportation and land use policies, downtown redevelopment and success in containing urban sprawl. Building on this success, Portland's Bureau of Planning initiated a comprehensive plan to guide growth and development within the city over the next 30 years. The "Portland Plan" identifies a number of goals and outlines regional development policies that encourage walking, access to public transit and the preservation of open space, while allowing for population growth and economic development.

The goals of the plan include:

- creating a rich and enjoyable environment for pedestrians throughout the central city
- striving for excellence in the design of new buildings
- encouraging construction to enhance the human scale of buildings, streets and open spaces
- promoting districts with distinct characters and a diverse and rich mixture of uses
- identifying and protecting significant public views
- locating the highest density populations downtown and along potential and existing transit corridors

Through careful planning and a holistic approach to land use decisions, Portland's Bureau of Planning has allowed for substantial increases in new jobs, housing units and commercial spaces, without increasing the number of acres occupied by the central city.

Further information is available online:
www.portlandonline.com/planning

"Land-use planning should protect ecosystems and open space as these areas often provide critical natural services."

Biological Conservation and Open Space Preservation

As our nation's population continues to grow and as development of open space continues, preserving special natural places and prime agricultural land becomes ever more important. Open space can be a soggy wetland, a verdant forest or a breezy grassland. These ecosystems provide habitat for an abundance of wildlife, critical protections such as flood control, and add to aesthetic appeal and a general sense of well-being.

Preserving open space is a frequently used strategy in comprehensive municipal sustainability planning and garners high levels of public support because of the attractiveness of open spaces and their value to local residents both socially and economically. Open space preservation can provide aesthetic appeal and recreation opportunities, while enhancing local real estate values and making communities more livable. Burlington, Vermont; Westchester County; Sarasota County, Florida; Brownsville, Texas; and Davis, California all provide excellent examples. Lake Champlain Bikeways, for example, a public-private partnership in Burlington, Vermont connects various practical as well as historic sites around the city, appealing to both residents and visitors alike.

Best Practices and Solutions

Techniques to safeguard environmentally sensitive areas vary across communities and types of surrounding ecosystems. EPA identifies three of the most common approaches:

- protecting wetlands
- establishing buffers along rivers and streams
- creating greenbelts and conservation easements

Plan Smart New Jersey identifies three key open space protection tactics. First, it promotes conservation easements, restrictions requiring a property to be maintained forever in an underdeveloped or natural state. Second, it encourages developer set-asides, which are voluntary protections created when projects are planned. The Plan Smart guide suggests that for maximum effect, "the jurisdiction should encourage developers to set aside land in stream corridors, mature forests, and other key environmental areas identified during the planning process, or it should use the in-lieu contributions to purchase this land." And third, it includes outright purchase, which, "provided the jurisdiction is committed to maintaining the land in a natural state, is the best way to ensure that land remains preserved."

Measuring Success

Some specific indicators for biological conservation and open space preservation are:

- acres of land in easement
- acres of protected wetland areas
- number of bike paths in proximity to popular sites

Recommended Resources:

To measure and assess the status of ecosystem health, it is important to have good indicators. EPA discusses this topic in its report, Community Based Environmental Protection.
www.epa.gov/care/library/howto.pdf

New Jersey's Plan Smart Full Guide
www.plansmartnj.org/projects/gig/index.html

The Defenders of Wildlife Incentives for Conservation has extensive information on available approaches.
www.defenders.org/programs_and_policy/habitat_conservation/private_lands/landowner_incentives

Open Space Preservation Case Study: Burlington, Vermont
Engaging Community to Protect Wildlife

As the area around Burlington grows, wildlife and people have been coming into greater contact. As part of the city's open space preservation efforts, volunteers are gathering data on where animals live and the routes they travel to help them make informed decisions about ecosystem protection, land use planning and development.

The volunteers are trained by a local non-profit organization, Keeping Track, which encourages community participation in the long-term stewardship of wildlife habitat. This mission is achieved through monitoring, cooperation, data management, conservation planning and education.

Volunteers must complete six full-day training workshops in the field plus two classroom sessions. Participants are taught scientifically-based data collection methods and then help with field work, monitoring and other facets of the program. Keeping Track has trained nearly 1,300 volunteers, representing almost 100 communities, and has gathered valuable data to help shape local land use preservation efforts.

Further information is available online:
www.keepingtrack.org/

Solid Waste Generation and Recycling

According to EPA statistics for 2006, the average person in the U.S. generated 4.6 pounds of waste per day and recycled 1.5 pounds. The energy saved by recycling is the equivalent of more than 10 billion gallons of gasoline per year. Yet, the two most common management strategies for municipal garbage are to construct local landfills to dispose of solid waste or to transport the waste to other communities.

As populations increase, landfills reach capacity and newer facilities remain difficult to site. If municipalities choose to remotely dispose of their waste, they incur the added cost of transporting it. These costs include depreciation of vehicles, personnel hours to transport trash, fuel for the vehicles, as well as administrative costs and uncertainty associated with contract negotiations.

Wherever your trash goes, a comprehensive sustainability plan should have the goal of reducing the amount of trash that enters the waste stream. Solutions include programs to encourage recycling and reusing materials, increasing composting of organic waste and turning waste into usable energy. More and more communities are looking at their waste stream as a potential source of energy. The term waste-to-energy is used for many different types of projects, including capturing landfill methane for electricity generation or fuel use, diverting organics for processing in anaerobic digestors, or converting waste vegetable oil into biodiesel.

As we reduce our waste stream, more land can be used for other services, and less money needs to be spent to manage waste. A community sustainability plan should address the 3 R's of the waste stream — reduce, reuse and recycle.

In addition, many items placed in household trash are hazardous materials that should be disposed of properly. These include paints and chemicals, batteries, electronics (E-waste) and light bulbs. Construction debris and materials (C&D) come from waste that results from the construction, renovation and demolition of buildings, roads and bridges. While C&D is not accounted for in municipal solid waste, the municipal waste stream includes building demolition and renovation materials from construction.

Best Practices and Solutions

A waste audit is a crucial first step in reducing the flow of garbage. It can identify opportunities for waste diversion, prevention and reduction, and increasing recycling. Review historic data to determine how much is being thrown out, how much is being recycled (if a program exists), and any other programs that your community may have in place. It's also important to document the costs associated with disposal and reduction programs.

Once a basic inventory is complete and a baseline is defined, you can identify targets. Your initial target could be as simple as starting a recycling program (if one doesn't exist) or expanding an existing program. Using the baseline inventory, you can monitor and compare future waste generation to see if your program is a success.

Reducing Waste:

- Implement a "Pay as you Throw" system that charges residents for what they actually throw out to encourage them to discard less to save money.
- Use full cost accounting, which identifies and assesses the costs associated with managing a solid waste facility to account for the real costs of solid waste management. It also assists with short and long-term planning by local policy makers to identify opportunities to streamline and improve operations.

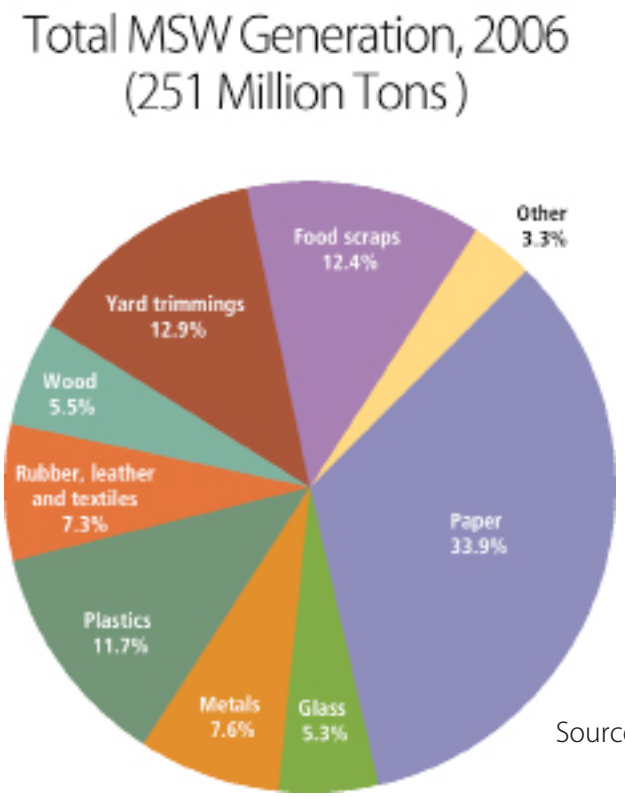
• Implement or expand a compost program. Organize short-term seasonal events specifically for grass clippings, fallen leaves or Christmas trees. Later, transition to a long-term municipal-run food waste program for residents, farmer's markets, local restaurants/businesses or schools and hospitals.
• Make better purchases. Buying products that are longer lasting or recyclable, contain less packaging materials, and are less harmful to the environment is a proactive step to reducing your municipal solid waste. Refer to the green procurement section for more information.

Reuse and Recycling:
• Improve information on how to recycle properly and create incentives for recycling programs in your community.
• Provide opportunities for second life or reuse of soft used items, such as a materials and waste exchange.

Safe Disposal of Hazardous Waste:
Both commercial and residential hazardous wastes are harmful to the environment and to human health if not disposed of in the appropriate manner. Whether it's an annual or year-round program, household and commercial hazardous waste should be a part of your municipal solid waste reduction program to ensure these materials are disposed of appropriately.

E-Waste:
Electronics waste is an increasing component of local waste streams and the new frontier in solid waste management. Many municipalities and facilities have instituted programs to address hazardous materials in the waste stream. E-waste programs are still relatively young, and often experimental. As a result, E-waste is generally handled through special collection events rather than as a continuous collection program.

According to EPA, approximately 1.9 to 2.2 million tons of used or unwanted electronics was disposed of in 2005. The majority, 1.5 to 1.9 million tons, was disposed of in landfills, while only 345,000 to 379,000 tons were recycled. It is clear that there is still considerable room for improvement, and e-waste strategies should be an integral component of any local sustainability planning effort.



Source: EPA, 2007

Construction and Demolition (C&D) disposal:
Keeping this material out of the waste stream can conserve landfill space. C & D waste reduction can also be addressed through green building practices and by setting up recycling centers for building materials.

Measuring Success

Some specific indicators for solid waste generation and recycling are:
• reduction of the waste stream reaching local landfills or being exported
• increased percentage of recycled materials (e.g., metal, plastic, glass, paper, yard trimmings and E-waste)
• reduction in the amount of recycled materials found during a secondary sort

- creation of a waste stream baseline via an audit

TIP: EPA has developed a voluntary, standard methodology for measuring recycling rates. This Web site helps state and local government officials learn more about the standard methodology:
www.epa.gov/recycle.measure/

Recommended Resources:

The waste section of EPA's Web site offers information on all types of waste opportunities, educational resources and programs to dispose of, reduce, reuse and recycle things found in the waste stream.
www.epa.gov/epawaste/index.htm

EPA Waste Assessment Web site offers information on evaluating what is thrown away and what is recycled in your community.
www.epa.gov/epaoswer/osw/conserve/onthego/program/assess.htm

Decision Makers' Guide to Solid Waste Management aims to provide cost-effective solutions to solid waste management that protect quality of life and the environment.
www.epa.gov/osw/nonhaz/municipal/dmg2.htm

The EPA WasteWise partnership program assists organizations in reducing solid waste as well as improving cost savings and benefits to the environment. The Web site offers a variety of information about the program, including resources on reducing waste, planning and implementing your programs, and reporting your results and celebrating success.
www.epa.gov/wastewise/

EPA's Pay As You Throw (PAYT) program offers several resources for local officials looking to implement a PAYT program.
www.epa.gov/payt/intro.htm
www.epa.gov/epawaste/conserve/tools/payt/states/index.htm

EPA Full Cost Accounting Resource.
www.epa.gov/epawaste/conserve/tools/fca/index.htm

The Florida State Department of Environmental Protection has a Web site devoted to full cost accounting with access to software and a report entitled The FUNdamentals of FCA.
www.dep.state.fl.us/waste/categories/fca/default.htm

EPA offers information about composting as well as resources on local legislation, environmental benefits, publications and links.
www.epa.gov/compost/

The state of Maryland has an annual goal of reducing its waste by 40 percent and a credit system that became effective in 2000 to assist participating counties and Baltimore. The Web site offers information on the state's initiative to divert waste through source reduction.
www.mde.state.md.us/Programs/LandPrograms/Recycling/source_reduction/index.asp

EPA's In Your Community Web site.
www.epa.gov/osw/wycd/community.htm

Consider generating less trash overall. EPA provides tools for local communities to encourage the decrease in overall consumption.
www.epa.gov/osw/conserve/tools/localgov/index.htm

Communicate the success of your recycling and reduction programs to constituents.
www.epa.gov/osw/conserve/tools/localgov/benefits/index.htm

This Web site provides the latest information on EPA guidelines for procuring recycled-content products. It contains the latest comprehensive procurement guidelines, upcoming events and information on designated products.
www.epa.gov/epaoswer/non-hw/procure/index.htm

Materials and waste exchange programs exist all over the globe and serve as opportunities to match up buyers and sellers by creating a market for recyclable and reusable commodities. This Web site provides links to international, national and state specific exchanges.
www.epa.gov/jtr/comm/exchange.htm

San Francisco EcofindeRRR is a government Web site that allows residents to look up what can be recycled, reused or disposed of, how to do it, and where to bring it. It's a great resource to help identify opportunities that may exist in your community.
www.sfenvironment.org

EPA's Recycle on the Go initiative encourages recycling in public places.
www.epa.gov/epaoswer/osw/conserve/onthego/index.htm

The mission of Earth 911 is "to deliver actionable local information on recycling and product stewardship that empowers consumers to act locally, live responsibly and contribute to sustainability." The Web site and its 1-800-CLEANUP number offer information and resources on recycling and reuse locations across the nation.
http://earth911.org/

RecycleBank.org is a cost effective and environmental conscious solution that gives communities incentives for encouraging recycling to minimize the rising costs of waste disposal. In addition it manages and provides reports to track the success of the program.
www.recyclebank.com/

San Francisco's Zero Waste Program defines the city's aggressive goal of reaching zero waste by 2020. Its Web site contains information on the programs available in the city and how it plans to reach its goal through reducing, reusing and recycling.
http://sfenvironment.org/our_programs/overview.html?ssi=3

EPA developed the Resource Conservation and Recovery Act (RCRA) on-line program to encourage the reuse and reclamation of hazardous materials.
www.epa.gov/osw/inforesources/online/index.htm

EPA provides Information on the proper disposal of paints, pesticides, cleaners, oils and other types of household hazardous waste to prevent contaminated ground water and other pollution.
www.epa.gov/osw/conserve/materials/hhw.htm

EPA e-cycling resources and tips are available on-line.
www.epa.gov/osw/conserve/materials/ecycling/index.htm

Goodwill Industries and Dell Computers partner with local communities to create recovery programs for electronics in an effort to reuse and recycle this potential waste stream in an environmentally responsible way.
www.reconnectpartnership.com/

Waste-to-energy information is available on EPA's Web site.
www.epa.gov/cleanenergy/energy-and-you/affect/municipal-sw.html

EPA's Landfill Methane Outreach Program
www.epa.gov/lmop/

Solid Waste Case Study: San Francisco, California Moves Towards Zero Waste

In 2003, San Francisco adopted aggressive waste reduction goals. By 2010, the city aims to divert 75 percent of waste headed to the landfill; by 2020 the goal is to divert 100 percent of the waste stream. According to the Department of Environment's Strategic Plan, they are currently two thirds (69 percent) of the way to reaching their zero waste goal. The city has made rapid progress by implementing a 3-cart system for waste collection, providing grants, forging partnerships and promoting a host of other recycling and waste reduction initiatives.

The 3-cart system is a convenient, user-friendly system that encourages recycling of waste by making the process as easy as possible. Containers are color coded to help sort waste into the appropriate cart: bottles, cans and paper in the blue cart, compostable items (food scraps and yard waste) in the green cart and all non-recyclable, non-compostable garbage in the black cart.

The ecofindeRRR Web site-based program has a quick and advanced search function to find out how to dispose of almost anything. The extensive database of options can be sorted by material, location, services (e.g., pick up, drop off, etc.), end use (e.g., recycle, repair, reuse, etc.), and by associated costs (e.g., buy back, free, payment, etc.).

Collaboration between SF Environment, the Commission on the Environment, the Board of Supervisors and the Mayor has been extremely successful at creating policy by passing resolutions and ordinances that help reach the zero waste goal. The intent is to have the government lead by example while encouraging the general public and private sector to follow along. Recent resolutions are encouraging innovative approaches such as "precautionary" purchasing to minimize waste, a demolition debris recovery plan and a new program to recycle computers and electronics.

SF Environment also offers a variety of grant programs that disperse approximately $600,000 a year to initiatives that increase the diversion of waste in a cost-effective way. Funds are available to nonprofit organizations for projects ranging from reuse and recycling to market development and education.

The work of SF Environment's Zero Waste team involves a broad spectrum of partners to carry out, promote and develop effective programs. Partners range from local haulers to city agencies as well as hundreds of other for-profit and nonprofit organizations.

For more information see: www.sfenvironment.org/


E-ZPass
E-ZPass
CASH
E-ZPass
X19 VIA CHURCH
X7 VIA WEST
VIA 6 AVE

Energy, Air Quality and Climate

Communities need reliable sources of affordable energy. With rising fuel prices and growing concerns about the impacts of fossil-fuel power generation, sustainable energy solutions have never been more important, especially at the municipal level. Energy based on fossil fuels, whether for electricity, heating or transportation, results in air pollution. Fossil fuel consumption causes both chemical and particulate air pollution, better known as smog. Ozone and acid rain can be problems too, depending on local conditions. The burning of fossil fuels contributes more than 80 percent of total annual U.S. greenhouse gases.

Improving energy efficiency and adding renewable energy sources can help communities reduce air pollution while reducing the output of greenhouse gases. In turn, reduced air pollution can improve public health and lower energy costs. By integrating energy efficiency strategies into your community planning process, the cost of improvements can be kept to a minimum. Renewable energy development, biofuel production and retrofits or upgrades of existing infrastructure often create new opportunities for green collar jobs. Combining these approaches with transportation efficiency improvements discussed earlier make an even bigger difference.

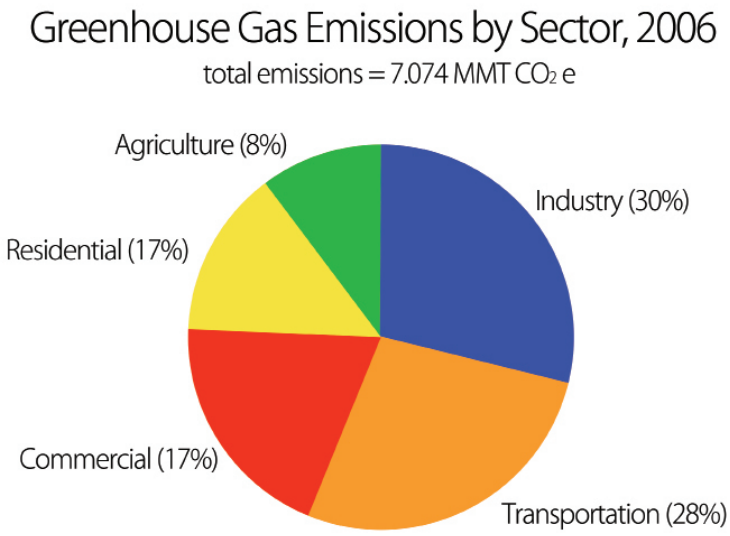
Best Practices and Solutions

Save Energy

Energy efficiency is often the best place for localities to start when trying to make more effective use of resources. Although efficiency upgrades can require initial investment, by increasing the level of efficiency, these upgrades frequently pay for themselves in nine months to three years as shown by the Portland case study.

Strategies to promote energy efficiency include:

- conducting an energy audit of city buildings to identify the most cost-effective projects. Utilities and energy service providers often offer them.
- joining Portfolio Manager and save



Source: US EIA DOE 2006

money and energy by tracking building energy use
- bringing the ENERGY STAR challenge to your community
- encouraging and supporting private audits in both businesses and residences through the provision of information, technical support or even economic incentives or awards
- starting a weatherization program in local neighborhoods with old housing stock
- promoting the ENERGY STAR "Change-A-Light" program to local businesses. By replacing older lighting systems with higher efficiency lighting, communities can reap significant gains in both energy use and, in many cases, operation and maintenance spending as well
- supporting energy efficiency upgrades by local industry to Improve the efficiency of appliances; heating, ventilation and air conditioning systems; and industrial process equipment
- purchasing energy efficient equipment, appliances. See the Green Procurement section

Use Renewable Energy

Local governments can buy renewable energy, and promote consumer option programs. Building and maintaining renewable energy installations can be a source of new "green collar" jobs for communities. Three great examples are described online at:

- www.oaklandnet.com/MayorsPress/RenewableEnergy.pdf
- www.njcleanenergy.com/renewable-energy/programs/cleanpower-choice-program/new-jersey-cleanpower-choice-program
- www.portlandonline.com/auditor/index.cfm?a=146102&c=28608

Communities can also promote distributed generation or, the use of small-scale power generation technologies located close to where energy is used. Examples of distributed generation power can be sourced by fuel cells, microturbines, photovoltaic panels and small scale wind. This strategy avoids the loss of energy during

transmission and can boost local economies through new development and locally earned profits. More importantly, it can give facilities energy reliability during extreme storms. Renewable energy can potentially offer more stable costs in a market of rising energy costs. Local strategies to promote clean energy include:

- micro-generation
- on-site solar
- combined heat and power
- geothermal
- wind
- landfill methane capture

TIP: To find out how energy is produced in your community, type in your zip code at:
www.epa.gov/cleanenergy/energy-and-you/how-clean.html

Measuring Success

Measurements of success for energy can include:

- dollars saved on energy costs
- units of energy consumption reduced (e.g., Btu's)
- amount of local energy supply from renewable sources
- amount of pollutant emissions reduced (e.g., CO2, SOx, NOx)
- jobs created to meet energy efficiency and renewable energy demands

Recommended Resources:

Look to ENERGY STAR, the EPA/U.S. Department of Energy program that goes beyond labeling energy efficient appliances to assist building and utility owners and operators and local governments in conserving energy.
www.energystar.gov/
www.energystar.gov/index.cfm?c=government.bus_government_local

ENERGY STAR Challenge for Communities
www.energystar.gov/index.cfm?fuseaction=challenge_community.showIntroduction

EPA also has a Green Power Partnership program.
www.epa.gov/greenpower/index.htm

The U.S. Department of Energy's Technical Assistance Program offers expert consultation to local governments on renewable energy and energy efficiency.
www.eere.energy.gov/wip/tap.cfm

The U.S. Department of Energy also runs a Solar America Cities program that provides implementation guides for cities.
www.solaramericacities.org/Resources.aspx

The California Distributed Energy Resources Guide is produced by the California Energy Commission.
www.energy.ca.gov/distgen/

Alliance to Save Energy (ASE) is a nonprofit coalition of business, government, environmental and consumer leaders. The ASE supports energy efficiency as a cost-effective energy resource under existing market conditions and advocates energy-efficiency policies that minimize costs to society and individual consumers, and lessen greenhouse gas emissions and their impact on the global climate.
www.ase.org/

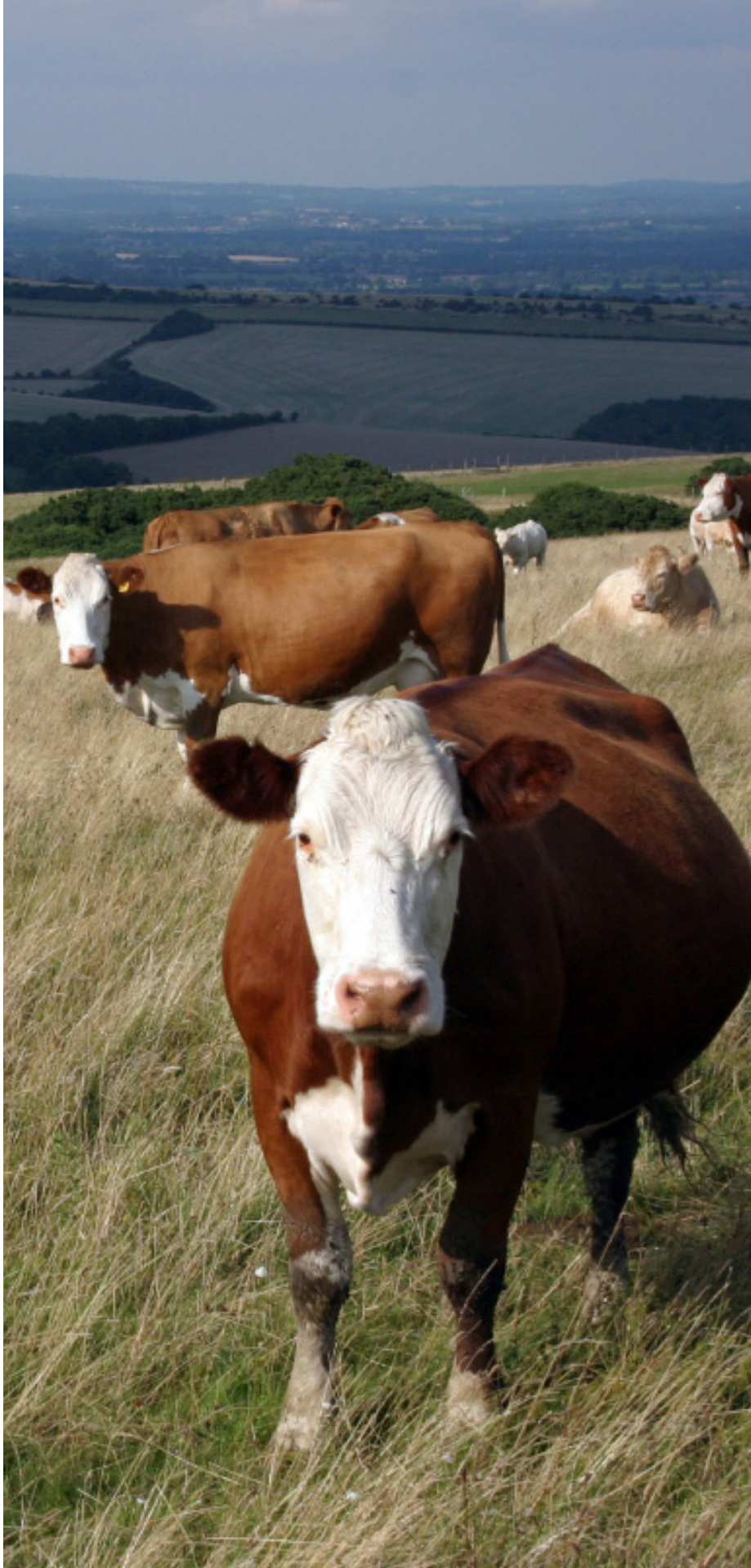
American Council for an Energy Efficient Economy (ACE3) is a nonprofit organization dedicated to advancing energy efficiency as a means of promoting both economic prosperity and environmental protection.
http://aceee.org/

Consortium for Energy Efficiency (CEE), a nonprofit public benefits corporation, develops national initiatives to promote the manufacture and purchase of energy-efficient products and services.
www.cee1.org/

This online calculator can help analyze potential energy and economic savings for homeowners by switching to more efficient appliances, lighting and other forms of efficiency.
www.pge.com/myhome/saveenergymoney/resources/appliancecalculator/

Information about energy cost-saving ideas:
www.nyc.gov/html/nycwasteless/html/at_agencies/govt_case_studies_energy.shtml

New York State's Energy Smart Communities Program:
www.getenergysmart.org/CommunityOutreach/EnergySmartCommunities.aspx

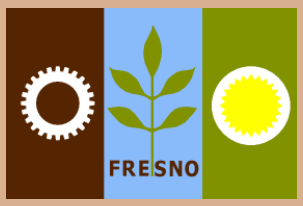


Energy Case Study No. 1: Portland, Oregon Energy Challenge Saves City Millions

In 1991, Portland, Oregon established the "City Energy Efficiency Challenge." This bold initiative started with energy audits at eight city bureaus that each contributed one percent of their energy bills to help fund the efforts. The city then obtained a small low interest loan of $777,000 to help fund energy efficiency measures.

The $2.6 million spent on energy efficiency improvements during the first three years generated average internal rate returns of 25.7 percent, with a pay-off time of 3.8 years. By the late 1990s, the energy savings reached $1 million per year, with total savings of $9.46 million between 1991 and 2001. Current annual energy savings are $2 million per year, or 15 percent of the city's energy bills.
In addition to dramatic energy efficiency improvements and considerable savings to local taxpayers, Portland has also turned its energy sources "green." In 1995, the city entered into an agreement with Pacific Gas and Electric to receive five percent of its electricity from renewable sources. As of 2007, Portland receives 10 percent of its electricity from renewable sources, and is looking to increase its use of renewable power.

Further information is available online at:
www.portlandonline.com/osd/index.cfm?a=bbbhde&c=ecdjj
www.smartcommunities.ncat.org/success/city_energy.shtml



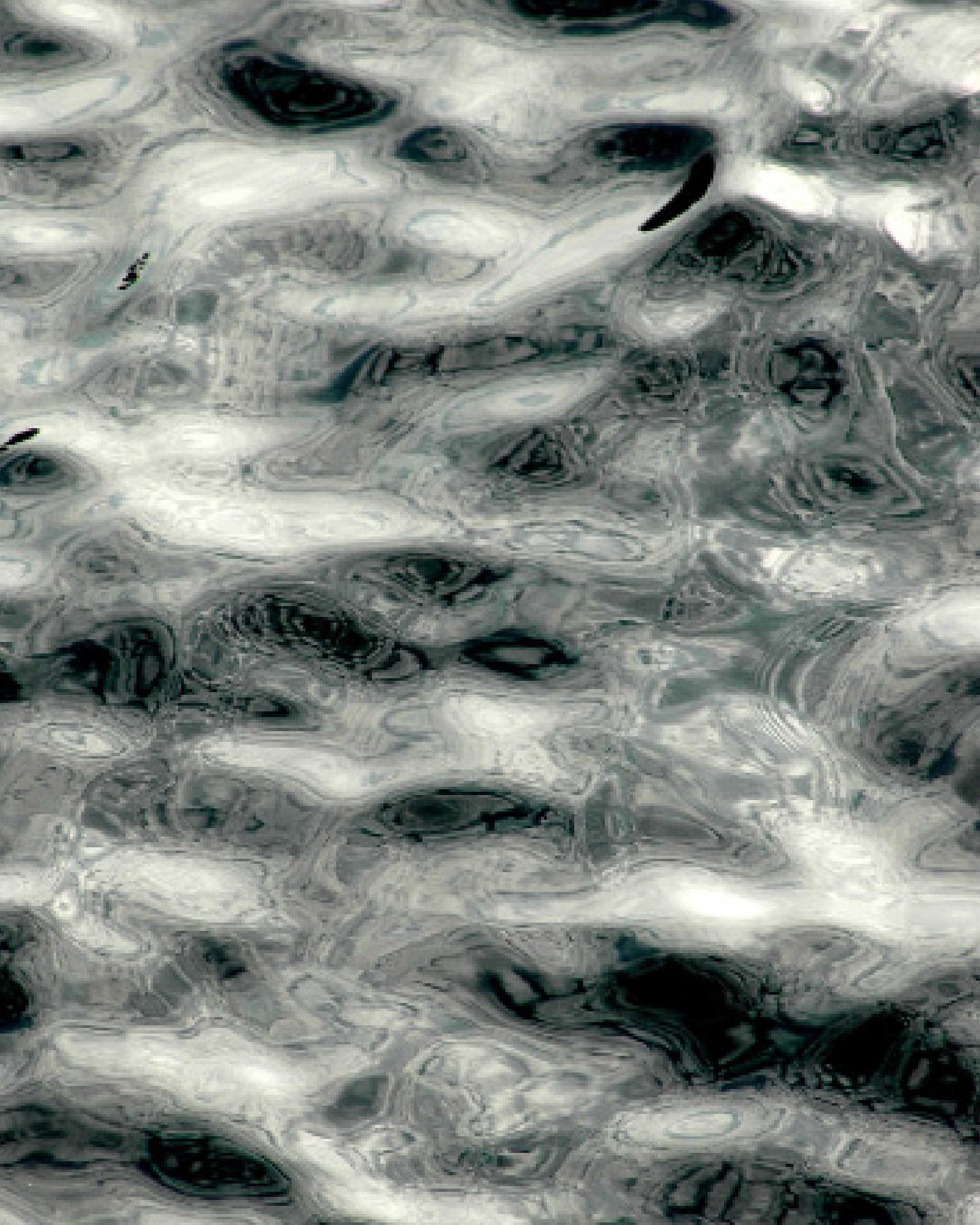
Energy Case Study No. 2: Fresno, California "Cow Power" Powers up the Grid

Pacific Gas and Electric Company (PG&E) has teamed up with BioEnergy Solutions on a biogas-to-pipeline injection project. It produces renewable gas from animal waste, and is the first project in California to deliver pipeline-quality, renewable natural gas to a utility. It delivers up to three billion cubic feet of renewable natural gas a year to PG&E.

This system reduces methane emissions by 70 percent at Vintage Diary, a 5,000-cow dairy in the town of Riverdale. Since methane has a global warming potential 21 times more potent than CO2, this approach could be an effective climate change fighter. Manure from the cows is flushed into an almost 300,000 square-foot covered lagoon, which traps the methane gas released during manure decomposition. The methane is scrubbed to meet PG&E's standards for power plants and then delivered to the utility through the pipeline. The utility uses the methane to create electricity for its central and northern California customers.

BioEnergy Solutions, founded by David Albers, a third-generation dairyman and owner of Vintage Dairy, pays for and installs the infrastructure needed to process the manure and pump the methane into the PG&E pipeline. Proceeds from gas sales and emissions credits are used to help reduce the greenhouse gas emissions of other dairy owners.

Further information is available online through the U.S. Department of Energy:
http://apps1.eere.energy.gov/state_energy_program/project_brief_detail.cfm/pb_id=1167



Protecting Water Quality and Ensuring Future Supply

Community prosperity relies on continuous access to clean water, from reliable drinking water supplies to clean waters that support recreation and viable commercial and sport fishing industries. Water is becoming more scarce around the world, as populations increase, surface waters and our aquifers are drained faster than nature can recharge them. Many local governments, particularly in the arid West and Southwest, including Salt Lake City and Las Vegas, have been aware of the importance of water resources for some time now. Other communities with rapid population growth and variable rainfall are just beginning to come to terms with the harsh reality that water is a precious and scarce resource, which must be used wisely and conserved whenever possible.

The physical scarcity of water is not the only concern. Local fisheries are very sensitive to watershed health too. Protection of local watersheds helps to ensure the long-term health and profitability of recreational and commercial industries for all communities. The "dead zone" in the Gulf of Mexico, expected to grow to the size of New Jersey, threatens to permanently cripple Gulf fisheries.

Often, municipal water management strategies must be shared across regional borders because watersheds overlap multiple jurisdictions and water treatment facilities serve multiple communities. Municipalities are also influenced by a myriad of federal, regional and local standards for water treatment, quality and conservation. The most common approach is to address the need for water resource sustainability through a targeted water strategy. However, many communities also address water resource concerns through land use planning and other smart growth policies with a goal of conserving valuable water resources.

What is common to all localities is the ongoing potential for improvements in local water use efficiency and water resource protection. Water resources can be protected and conserved through a variety of strategies involving: efficient use of municipal supplies; on-site collection, water recycling and treatment; wastewater treatment system improvements; and the reduction of non-point source pollution of local watersheds and aquifers.

Best Practices and Solutions

Promote Water Conservation

Using water efficiently is the key to promoting water conservation and saving money. EPA estimates that the average household spends as much as $500 per year on its water and sewer bill. Conserving water also reduces energy use, which translates into additional savings.

EPA's WaterSense program helps protect the future of our nation's water supply by promoting water efficiency and enhancing the market for water-efficient products, programs and practices: www.epa.gov/watersense/index.htm

Greenscaping encourages conservation of water resources and decreases reliance on polluting fertilizers and pesticides. Landscaping with beautiful, drought-resistant plants in arid climates enhances the local aesthetic and helps to retain much-needed moisture.

TIP: For more information, look to EPA's Greenscapes Web site: www.epa.gov/epaoswer/non-hw/green/lrgscl.htm

Landscaping with native plants is a creative way to conserve water and beautify communities, especially in communities with desert-like climates. The Southern Nevada Water Authority program on landscapes provides recommendations for arid areas.
www.snwa.com/html/land_index.html

The U.S. Department of Energy, within its Department of Energy Efficiency and Renewable Energy, has a program that specifically addresses water efficiency.
www1.eere.energy.gov/femp/water/water_resources.html

Green building practices promote water conservation and wastewater reduction. Some green buildings and facilities use water catchment systems and gray water recycling and treatment to capture rain water and reuse wastewater. Green roofs provide stormwater control in addition to reducing the heat island effect of urbanized areas. Green buildings often incorporate water efficient technology such as aerators, low-volume toilets, low-flow showerheads and water-efficient landscaping and/or irrigation systems.

GreenerBuildings.com estimates that many commercial buildings could reduce water use by 30 percent or more through efficiency measures. More information and practical examples can be found at www.greenerbuildings.com/feature/2008/01/30/using-water-management-strategies-boost-triple-bottom-line or www.greenerbuildings.com/blog/2008/05/08/smart-water-management-a-low-risk-green-initiative-with-a-fast-payback

Protect Local Watersheds from Point Source Pollution

Point source water pollution is pollution that can be traced back to a specific discharge source, like a factory or wastewater treatment plant. Discharges from these sources are usually controlled through government permits that set limits on the amount they are permitted to release into the environment.

Communities that have centralized wastewater collection and treatment systems are already part of the National Pollution Discharge Elimination System (NPDES), the federal regulatory program that sets limits on pollution.
http://cfpub.epa.gov/npdes/

For areas that don't have existing public wastewater treatment systems, switching to centralized ones may or may not be realistic, or even the preferred option. This depends on local characteristics such as population density, climate, topography, geology and how close drinking water sources are to housing. If you are from a smaller community, see:
www.epa.gov/OW-OWM.html/mab/smcomm/index.htm

Municipal storm sewer systems are considered point source pollution under many circumstances and are regulated under the federal NPDES program.
http://cfpub1.epa.gov/npdes/home.cfm?program_id=6

The use of green design principles can naturally filter stormwater run-off, diverting it from wastewater systems and storm drains. Green infrastructure reduces demands on local wastewater treatment plants, lowers costs and energy use, and protects natural water bodies from pollution.
http://cfpub.epa.gov/npdes/home.cfm?program_id=298#case

www.epa.gov/owow/nps/lid/costs07/documents/reducingstormwatercosts.pdf

Protect Local Watersheds from Non-point Source Pollution

Non-point source pollution is water pollution from urban run-off and unregulated

non-industrial or agricultural sources. It affects local watersheds, coastal habitats and degrades water quality posing threat to long-term water security and environmental health.

Some strategies to address non-point source pollution are:

- collection and treatment of runoff prior to its entry into waterways
  http://sfwater.org/detail.cfm/MC_ID/14/MSC_ID/118/C_ID/3084
- preservation and construction of local wetlands as buffers for aquatic natural systems
  www.cwp.org/Resource_Library/Special_Resource_Management/wetlands.htm
  www.epa.gov/OWOW/wetlands/restore/
- on-site runoff retention and/or treatment of run-off and provisions for surfaces that are not impervious
  http://egov.cityofchicago.org
  http://clerk.ci.seattle.wa.us
- partnerships with local industry for effluent reductions through green industrial practices and water conservation measures
  www.ci.boulder.co.us/www/pace/manufacturing/index.html
- education of the general public about the specific non-point sources in their communities and the options for minimizing impacts
  www.epa.gov/owow/nps/toolbox/
  www.co.thurston.wa.us/health/ehhm/outreach.html
- watershed monitoring with local non-profits, schools and other community groups to identify problem areas
  www.epa.gov/volunteer/
  www.usawaterquality.org/volunteer/links.html
  www.watershedstewardsproject.com/

Measuring Success

Indicators of successful water efficiency strategies might include:

- reductions in community water consumption, set benchmarks related to localities with similar characteristics (e.g., population, climate, topography)
- participation in both private sector partnerships and residential water efficiency programs
- number of new construction (municipal buildings and/or general public) and renovation projects with water efficiency techniques

Watershed health can be monitored through:

- annual rates of local compliance with federal and state water quality regulations
- chemical and physical water quality indicators (e.g., pH, temperature, nutrient levels, water clarity, the presence of toxins and harmful bacteria)
- the level of treatment required to produce safe drinking water and any changes to treatment regimes
- population levels and health of local plants and animals (water and land)
- surface water flows and aquifer recharge rates
- the relative amount of each local stream or river that is "daylit," or not diverted through underground pipes beneath buildings and roads, and has a natural buffer around it
- the ratio of water-permeable surfaces and green spaces to paved surfaces or spaces occupied by buildings with conventional roofs
- the percentage of tree canopy cover for new construction projects

Recommended Resources:

EPA and other federal agencies provide substantial funding for local water infrastructure development, as well as watershed protection and conservation programs. The following links are guides for water project funding sources.
http://cfpub.epa.gov/npdes/greeninfrastructure/fundingopportunities.cfm#fundingtools

www.epa.gov/safewater/dwsrf/pdfs/guide_dwsrf_funding_infrastructure.pdf

www.epa.gov/safewater/dwsrf/pdfs/fs_dwsrf_swp-funding-matrix.pdf

Understanding the regulations is the key to planning for and acquiring funding. Funded partly by EPA, the National Environmental Service Center's National Environmental Training Center for Small Communities developed an invaluable compendium of the regulations, potential changes and pertinent contacts.
www.nesc.wvu.edu/pdf/train/products/regulations_chart.pdf

EPA's Consumer Confidence Reports are important guides for community water providers serving at least 15 connections or 25 people year-round.
www.epa.gov/safewater/ccr/index.html

EPA's Office of Ground Water and Drinking Water has extensive information on water quality and local drink water.
www.epa.gov/safewater/dwinfo/index.html

EPA also regulates total maximum daily loads (TMDLs), which is a "calculation of the maximum amount of a pollutant that a water body can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources." Reports are available for each EPA region and by state as well as an interactive map.
www.epa.gov/owow/tmdl/

Georgia Pollution Prevention Assistance Division has an informative "Successful Water Efficiency Programs for Non-Residential Water Customers" presentation.
www.georgiaplanning.com/watertoolkit/Documents/WaterConservationDroughtManagement/SuccessfulWaterEfficiencyPrograms.ppt

"Benchmarking Performance Indicators for Water and Wastewater Utilities: 2007 Annual Survey Data and Analyses Report," produced by the American Water Works Association and Water Environment Federation
www.awwa.org/bookstore/productDetail.cfm?ItemNumber=34298

Ontario, Canada, Ministry of the Environment's Water Conservation Case Study
www.ene.gov.on.ca/programs/3659e.pdf

EPA Information and Resources on Nonpoint Source Pollution
www.epa.gov/owow/nps/whatis.html

Water Environment Research Foundation report has information and case study links.
www.werf.org/livablecommunities/pdf/benefits.pdf

Some states are pursuing water quality trading schemes to promote watershed protection and support the development of sustainable infrastructure. EPA provides information about eligibility and which states participate.
www.epa.gov/owow/watershed/trading/tradingmap.html

Conservation Technology Information Center Water Quality Training Guide
www.conservationinformation.org/?action=learningcenter_publications_waterqualitytrading

EPA's Water Quality Trading Scenario: Multiple Facility Point Source Trading Publication
www.epa.gov/npdes/pubs/wqtradingtoolkit_multiple-ps.pdf

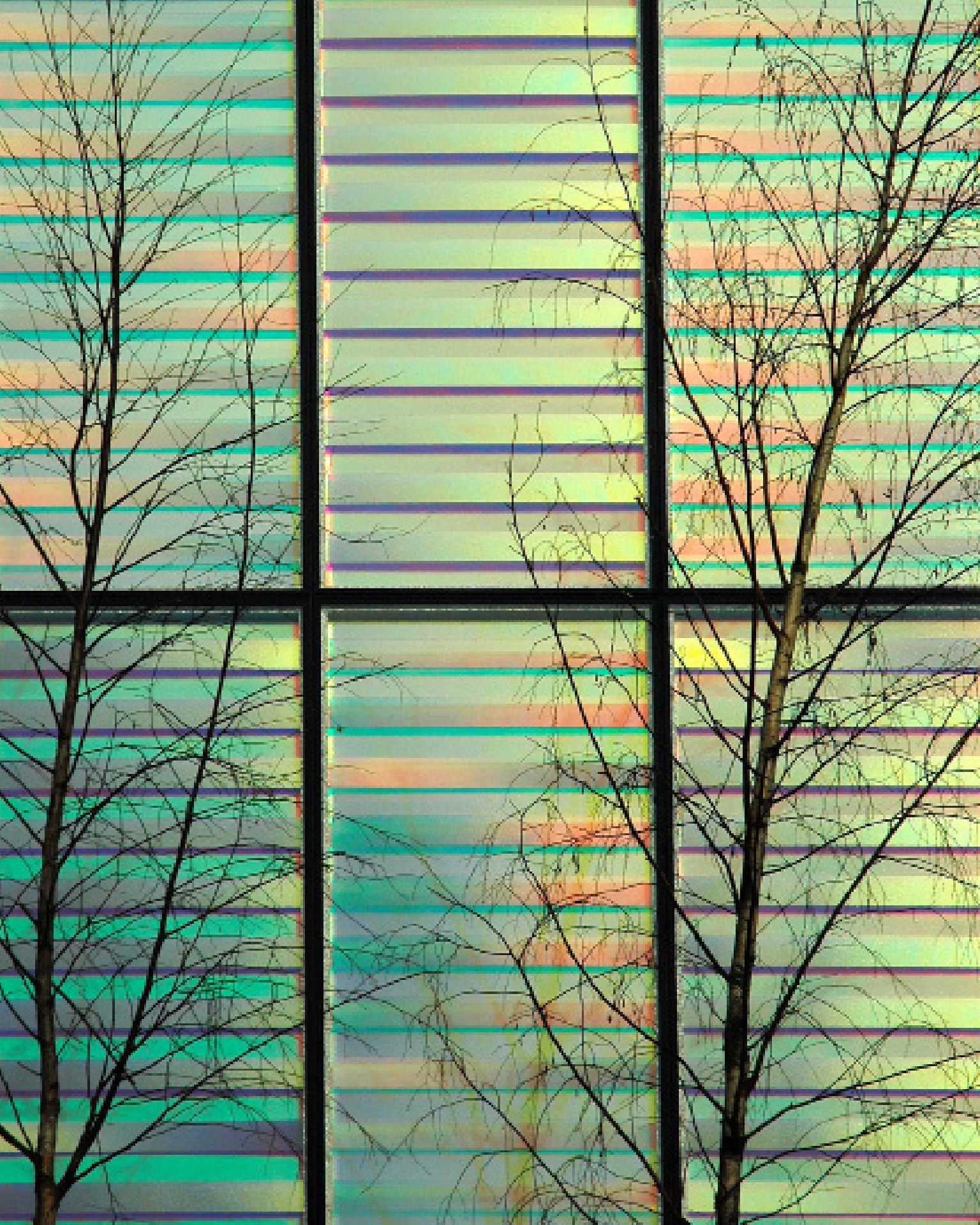
Water Case Study:
Sedona, Arizona is "Water Wise"

The city of Sedona, located in the northern Verde Valley region of Arizona, is a very arid desert community, dependent on a limited supply of ground water. Water conservation is an urgent matter year-round.

The "Sedona is Water Wise" program offers a variety of tools to promote water conservation. Recognizing that over half of the water use was going to landscaping and irrigation, the city began to promote simple techniques such as the use of native plants and containers to catch and store rain water to water plants. Sedona also promotes water conservation strategies for houses, industry, tourists and public education facilities.

Sedona has implemented an award program to recognize individuals, organizations and businesses that demonstrate water wise conservation practices. Its purpose is "to promote the importance of water conservation and to stimulate a greater interest in conserving Sedona's water by recognizing those who contribute to protecting this precious and limited resource."

Further information is available online:
www.sedonaaz.gov/egov/sidePage.aspx?dID=906



Green Building

Environmentally sound building is central to local sustainability. Each building material has its own history of energy and water use, raw material extraction and possibly even environmental pollution. The selection of environmentally sound recycled and raw materials can substantially reduce both on-site and off-site environmental impacts of construction.

The U.S. Green Building Council estimates that the construction of buildings currently accounts for 30 percent of all raw materials used in the U.S. A 1996 study, found that disposal of used building materials comprises 60 percent of non-industrial U.S. waste. It also found that 20 to 30 percent of building debris was already being recovered for recycling yet more opportunities exist to divert C&D waste from landfills.

A recent boom in green building has brought with it a wealth of new resources. Green building products, services and information are more accessible than ever before. The cost of green building has become cheaper too. The cost gap between green and conventional building is closing. Long-term cost savings far outweigh any additional upfront costs; relative cost is actually related to project design and management, and not necessarily because of green building practice.

The U.S. Green Building Council lists government initiatives as the primary factor driving recent green building sector growth, and anticipates a 62 percent growth in public sector green building projects. Larger cities such as Boston , Chicago, Dallas, New York, Portland (OR), San Francisco, San Jose (CA), Seattle, and Washington, DC have already created mandatory green building requirements for all municipal buildings, as have smaller cities such as Chula Vista (CA), Greensburg (KS), Pleasanton (CA), Scottsdale (AZ), and West Hollywood (CA).

Best Practices and Solutions

EPA and partners such as the U.S. Green Building Council developed extensive guidance and resources for green building and locating green building materials that are accessible through Web sites and publications. EPA outlined major elements of green building:

- energy efficiency and renewable energy
- water stewardship
- environmentally preferable building materials and specifications
- waste reduction
- toxics
- indoor environment
- smart growth and sustainable development

While there are multiple rating systems, the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) Green Building Rating System has become the most commonly used standard for green building.

Strategies to increase green building in your community:

- consider mandating all city-owned or financed buildings meet LEED criteria
- offer expedited review for permits and zoning applications for buildings meeting green building criteria, such as LEED
- offer incentives (FAR or other) for green building components such as green roofs, bike racks and electric car recharging areas
- establish a building material reuse facility for wood, windows, doors and paint recycling
- offer green building training to construction industry members and building operators

- develop a local directory of green building businesses and services
- designate a district with tax incentives to encourage the development of local businesses that specialize in green building materials and supplies

TIP: Shop for ideas from other cities for green building ordinances: http://ag.ca.gov/globalwarming/pdf/green_building.pdf

Measuring Success

Success is measured in numerous ways in the field of green building, although the most typical measures focus on efficiency savings for energy and water or renewable energy generated. Indicators of success might include:

- usage of green materials in local new construction and renovations
- local availability of green building materials
- number of local LEED certified buildings and accredited professionals
- number of people employed and overall economic growth of local green construction-related industries
- amount of construction waste being diverted, or measureable decreases in construction-related waste production
- attendance ratings at green buildings like schools or businesses
- employee satisfaction and retention rates compared to industry standards
- amount of renewable energy generated by green buildings
- cost per square foot of public green building projects and savings in annual operations costs

Harder to measure, but equally important, are more subjective indicators of success, such as perceived local quality of life, health and well-being of building occupants, aesthetic contributions of green buildings and community pride.

The sustainability of building materials, and even whole buildings, can also be quantitatively measured through "life-cycle assessment." Life-cycle assessment is an analytical process through which a product, in this case a building material, is evaluated throughout its entire life for its environmental impact. This includes the natural resources used, pollution generated and any environmental degradation involved in its production, shipment, use and eventual disposal.

Fortunately, simplified models and computer-based systems have been developed to assist in this process, and life-cycle assessments have already been completed for many construction products. Similar tools exist for calculating specific impacts, such as greenhouse gas contributions, and can easily be located through Web sites such as the U.S. Green Building Council's "Resources" page.

Recommended Resources:

EPA information on green building
www.epa.gov/opptintr/greenbuilding

U.S. Green Building Council
www.usgbc.org/resources
www.usgbc.org/DisplayPage.aspx?CMSPageID=1779

A Green Playbook for Local Governments
www.greenplaybook.org/

California Sustainable Building Toolkit
www.ciwmb.ca.gov/Greenbuilding/Toolkit.htm

A Sourcebook for Green and Sustainable Building
www.greenbuilder.com/sourcebook/

Field Guide for Sustainable Construction
www.p2pays.org/ref/41/40904.pdf

Building Design and Construction Network
www.bdcnetwork.com/

Green Building Forum
www.greenbuildingtalk.com/

Greener Buildings
www.greenerbuildings.com/

Materials and Products

EPA Comprehensive Buildings and Construction Resources Page
www.epa.gov/epp/pubs/products/construction.htm

GreenSpec®-listed green building products
www.buildinggreen.com/menus/index.cfm

Building Materials Reuse Association National Directory
www.buildingreuse.org/directory/

EPA Comprehensive Procurement Guidelines material supplier database
http://cpg.epa.tms.icfi.com/user/cpg_search.cfm

Green Building Pages, an online resources and green product locator
www.greenbuildingpages.com/

Forest Stewardship Council sustainable forest products/ green building Web site
www.fscus.org/green_building/

The ENERGY STAR qualified products directory lists energy efficient building technologies (e.g., heating, cooling, electrical, insulation and windows).
www.energystar.gov

Greenguard Environmental Institute's Greenguard Product Guide
www.greenguard.org/Default.aspx?tabid=12

Green Seal's lists of environmentally certified products (windows and doors)
www.greenseal.org/findaproduct/index.cfm

EPA's WaterSense Program Web site has a directory of water efficient products.
www.epa.gov/watersense/

The South Coast Air Quality Management District's green solvent database has information on non-toxic substances (e.g., solvents and adhesives).
www.aqmd.gov/rules/cas/prolist.html

EPA offers life-cycle assessment resources, including the Life-Cycle Assessment 101 tool.
www.epa.gov/ORD/NRMRL/lcaccess/lca101.html
www.epa.gov/ORD/NRMRL/lcaccess/resources.html#EPA%20Documents

Green Building Case Study: Portland, Oregon
Green Building Campaign Reaps Rewards

Portland has established itself as a national leader in green building. With 36 LEED certified buildings, Portland currently ranks with cities such as Chicago and Seattle, which are known for their leadership in green building and distinguished by the large numbers of green buildings they contain.

In 2001, Portland adopted a resolution mandating LEED certification for all city-funded construction and major renovation projects. This policy also formalized the efforts of Portland's newly formed Office of Sustainable Development, prescribing proactive engagement with the public and green building stewardship. Also developed was the "Green Investment Fund," to provide grants for green building projects.

In 2005, Portland adopted another resolution to strengthen the previous policy, increasing the requirement for new city construction projects to LEED Gold certification, and also requiring existing city buildings to be brought up to LEED Silver certification.

Portland has a comprehensive outreach program, and offers free technical assistance to those interested in participating in its booming green building economy. Through its Office of Sustainable Development and its Web site, the city offers an abundance of information and organizes regular outreach efforts.

Green building owners have reported lower energy bills and, in many cases, reduced operation and maintenance costs. Portland is now reaping the fruits of its bustling green construction economy, with the infrastructure firmly in place for continued success in efforts toward sustainable development.

For further information on Portland's green building program, go to:
www.portlandonline.com/OSD/index.cfm?c=ebeib
GreenBuild Expo: www.greenbuildexpo.org/About/archives.html
LEED Projects: www.usgbc.org/LEED/Project/CertifiedProjectList.aspx?CMSPageID=247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Green Procurement

The U.S. has the largest and most technologically powerful economy in the world, with a per capita GDP of $46,000. The ability for local governments to influence the economy through purchasing decisions is enormous.

Green procurement – buying environmentally friendly products whenever possible – is one of the easiest strategies to implement at the local level. It can be done incrementally as equipment or supplies are purchased and contracts are renewed. A key advantage of green procurement is that the principles are applicable at almost every level of commercial activity, from a single-person household to the largest organization in the world. In 1993, EPA introduced the Environmentally Preferable Purchasing (EPP) Program, helping federal agencies to "use sustainable practices when buying products and services." Procurement choices happen at almost every aspect of an organization: transportation, energy supply, water use, packaging, office materials and waste management to name but a few.

Green procurement is a sound strategy and a good initial step toward sustainability. It is:

- easy to initiate and grow over time
- relatively inexpensive and can often lead to net savings
- a market stimulus for environmentally preferable products
- a way to improve employee health and performance
- a method to reduce existing and potential liabilities

Measuring Success

Some specific indicators of successful green procurement are:

- amount of post-consumer recycled products used (e.g., office supplies, bags supplied by vendors, etc.)
- number and volume of cleaning products purchased from an approved green supplier
- use of non-toxic carpets, paints and sealants
- percentage of energy-efficient lighting, equipment and heating/air conditioning systems
- percentage of water-efficient fixtures
- services rendered for green events and purchases from green food suppliers

Recommended Resources:

For full access to all the tools available please visit EPA's EPP Web site
www.epa.gov/epp/tools/index.htm

EPA's Comprehensive Procurement Guidelines Supplier Database is a searchable guide to providers of everything from bicycle racks to signage.
http://cpg.epa.tms.icfi.com/user/cpg_search.cfm

EPA's "EPP Assistant" allows users to quantify and prioritize their green purchasing efforts through a life cycle assessment.
http://pie.earthster.org/

The "General Services Administration's SmartPay® Purchase Card Training" is a tool developed by GSA to help federal purchasers properly design and carry out a purchasing plan.
www.fss.gsa.gov/webtraining/trainingdocs/smartpaytraining/

The "Federal Green Construction Guide for Specifiers" is a comprehensive guide to procuring green building products and construction services.
www.wbdg.org/design/greenspec.php

The "Green Cleaning Pollution Prevention Calculator" figures the projected environmental benefits of purchasing and using green janitorial services and products.
www.ofee.gov/janitor/index.asp

The U.S. Department of Energy has a tool to educate consumers about fuel economy, including gas mileage, greenhouse gas emissions, air pollution ratings and safety information for new and used cars and trucks.
http://fueleconomy.gov

U.S. Department of Energy Alternative Fuels and Advanced Vehicles Data Center
www.afdc.energy.gov/afdc

The Paper Calculator allows an organization to compare the environmental impacts of different paper choices.
www.edf.org/papercalculator/

4 Conclusion: Moving Beyond Planning to Action

Regardless of budget, population or demographics, the development of plans for a sustainable future, or the update of existing plans, is just the first step in a much larger process. Your success will rely on your ability to follow through.

The implementation of the elements in any sustainability plan will rely on the education, commitment and action of not only the government, but residents, businesses and civic organizations alike. Strong cross communication will create feedback loops, best practices and help to ensure increased buy-in, participation and, ultimately, the success of your sustainability plan. This is not a surprising finding, but it emphasizes the importance of outreach and community education throughout the process of plan development and through implementation.

Change can be difficult to sell, so it's important to identify the interests and concerns that will drive support for your local plan. Plans for change may be driven by the community, the government or start one way and end up another, but the most important ingredient for success is engagement. The following are some actual examples of actions or activities that drove support for sustainability plans in various locations:

- Concerns about climate change, air pollution and a host of other environmental issues spurred community members In Westchester County, New York to push for a more comprehensive approach to planning.

- Community interest in greening the town on a small scale led to a conference in Chequamegon, Wisconsin that created much broader local interest. Town Hall meetings proved to be an effective venue for raising and discussing issues in Burlington, Vermont and Greensburg, Kansas.

- In Cleveland, Ohio, key players working together in the government water department started thinking about how they could make improvements.

- Lancaster, Pennsylvania took a top-down approach to priority setting, demonstrating that decisions can be made by the mayor or city council to make sustainability a priority, hire consultants, look at energy efficiency, conduct cost-benefit analyses of programming options or to establish a task force.

- Ann Arbor, Michigan started with a pilot project approach, tackling energy efficiency, which generally pays for itself, and realized other ways to save money.

- Ann Arbor was successful in hiring a new energy policy staff member despite overall cuts, when it demonstrated that the person's activities could save them one percent of its annual energy costs and fully cover the salary for that position. The savings were easily accomplished and exceeded in the first year.

- The interest in sustainability on the part of one member of the local government in Ann Arbor ultimately expanded into a whole new department. The strategic planning department has members from all sectors, and although it might not brand itself as such, it has become the "policy center" for the government.

- Bowling Green, Ohio found an intern from a local university to look at current practices and make recommendations.

- Brownsville, Texas surveyed its primary businesses and performed a needs as-

sessment. When businesses believe their needs will be addressed by a sustainability plan, they may be more likely to participate and support the endeavor.

Goal Setting, Targets and Performance Measurement Strategies

The old adage, "If you can't measure it, you can't manage it" holds true for sustainability planning. Once your plan begins implementation, it is important to gauge whether or not efficient and effective progress is being made towards its goals. This can be achieved through benchmarking.

Each section of this guide provides metrics to emphasize that careful tracking is essential to the success of any program. Metrics and goals should not only be established for each element of your plan, but taking a holistic approach is recommended to link all governmental activities to the goal of sustainability. Once some overarching goals have been set, a series of measurement tools can be employed to establish baselines (e.g., a greenhouse gas inventory) and future assessments can ensure that targets are being met. From the baseline metric, all governmental and community programs and sectors can and should be active participants in the sustainability process.

Targets are more difficult to establish, so in some cases it is important to begin by tracking data. In Ann Arbor, Michigan, its annual "State of Our Environment Report" highlights the direction in which the city's indicators are heading. Burlington, Vermont started its planning process in 2000, setting a 10 percent greenhouse gas reduction by 2005, and established goals based on this over-arching target. It's a good idea to record targets in a matrix for easy reference. Ultimately, goals, targets and indicators are important to creating accountability and public support.

Wrapping Up and Moving Forward

The challenges you face at the local level – from ensuring that daily critical services are provided to anticipating future threats – are substantial. We hope this guide has shown that ideas, approaches and resources that foster sustainability are plentiful. There is no magic bullet or single solution for how to best plan for a sustainable future, but there are a growing array of approaches that have worked for communities of every size and shape.

Although the approaches are diverse, the best plans take comprehensive views that aim to simultaneously improve efficiency, lower costs, protect the environment and provide a healthy future for generations to come.

Every city, town and county faces its own set of challenges and opportunities. Every community has a unique mix of resources, talent and ideas with which to create solutions. By learning from good examples, you can create and implement a plan unique to your community that will lead to a sustainable future.

Preparing the Guide

This planning guide is based on reports prepared for EPA by the Columbia University School of International and Public Affairs. One report compared and analyzed information from fourteen sustainability plans developed by municipalities around the country, and a second assessed information obtained from interviews with planners and officials from sixteen local governments that had no prepared sustainability plans. The researchers selected localities in all 10 EPA regions as well as places ranging in population from small towns to large cities.

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Contributors:
Kelsey Bennett
Nicholas Cain
Radulph Hart-George
Jeremy Newman
Paige Olmsted
Keith Parsons
Plinio Ribeiro
Celine Ruben-Salama
Kyle Smith
Glenn Sonntag
Sofia Treviño Heres
Jill Weyer

Produced by:
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Check this Web site for updates to this publication:
www.epa.gov/region2/sustainability/greencommunities

U.S. Environmental Protection Agency
Region 2
290 Broadway
New York, NY 10007
212-637-3660

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