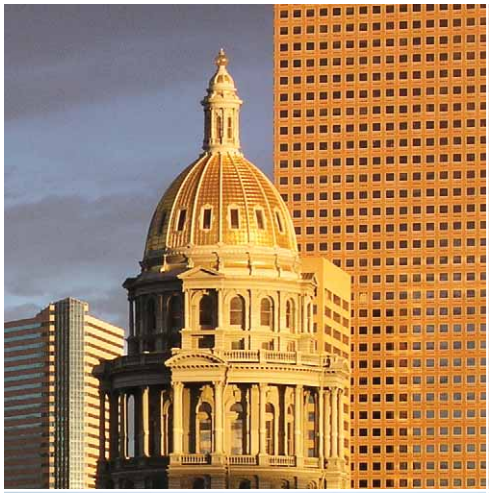
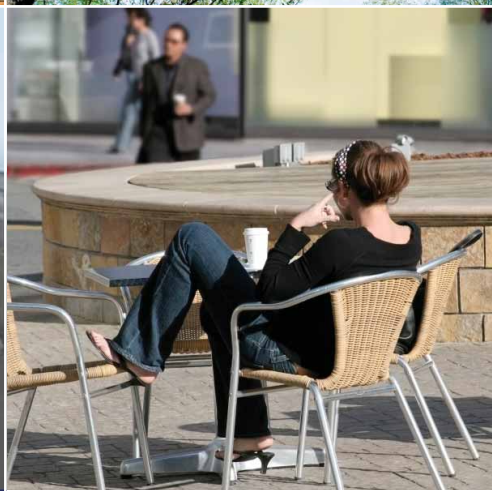
U.S. MAYORS'

CLIMATE PROTECTION AGREEMENT





CLIMATE ACTION HANDBOOK

ICLEI Local Governments for Sustainability

City of Seattle

The United States Conference of Mayors

The Climate Action Handbook is a resource guide on climate protection created by ICLEI - Local Governments for Sustainability with support from the City of Seattle and the U.S. Conference of Mayors.

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purpose

Climate Action Handbook

The Climate Action Handbook offers examples of actions that local governments can take to reduce global warming emissions and implement the commitments for climate protection called out in the U.S. Mayors' Climate Protection Agreement (MCPA). The Handbook demonstrates that climate protection does not necessitate entirely new government operations. It is a matter of streamlining and making modifications and improvements to many of the systems and operations a city already has in place.

This Handbook offers initial steps a city can take to effectively engage in meeting the 7 percent target set forth in the MCPA and achieve deeper reductions for reducing the greenhouse gas emissions that are global warming pollutants.

This guide is separated into three sections that offer simple next steps to advance climate protection in your city:

Section 1: Policies

Section 2: Actions & Tools

Section 3: Best Practices & Resources

This handbook contains an abundance of resources and tools, which are marked as follows:

R For informational Web **RESOURCES**

T For **TOOLS** that are available to assist you

What Can Local Governments do?

Local governments have the power to affect the main sources of pollution directly linked to climate change: energy use, transportation, and waste. Cities control the day-to-day activities that determine the amount of energy used and waste generated by their community - from land use and zoning decisions to control over building codes and licenses, infrastructure investments, municipal service delivery and management of schools, parks and recreation areas.

A range of actions can be incorporated into these operations to reduce associated global warming emissions. Local governments are uniquely positioned to influence citizen behaviors that directly affect climate change such as transportation options, energy consumption patterns, and general consumer decisions.

The following sections offer the policies, tools and best practices needed to help a city meet the commitments of the MCPA and positively support the path to effectively reducing global warming pollutants and advancing climate protection.

climate protection benefits

Save Taxpayer Dollars

Actions that reduce global warming pollution also reduce electricity and fuel use, minimizing energy costs for citizens, businesses and local governments. In 2005, through ICLEI's Cities for Climate Protection® (CCP) Campaign more than 160 U.S. local governments reported collective savings of over 23 million tons of global warming pollution and $600 million in related energy and fuel costs.

Build the Local Economy and Create Jobs

Decreased energy costs and the provision of new energy services and technologies (e.g. energy efficiency and renewable energy) give local government and private firms a competitive edge. Demand for energy efficient products and services and for new or alternative energy technologies expands local business and creates local jobs.

Improve Air Quality and Public Health

Reducing global warming pollutants also helps cities comply with federal air quality regulations and preserves federal funding for local projects. These strategies ultimately create less air pollution, which results in fewer air quality-related public health impacts, such as asthma and other respiratory ailments.

Improve Community Livability

Cutting global warming pollution includes measures that also reduce auto dependency and traffic congestion, clean the air, and contribute to more efficient land use patterns and walkable neighborhoods. In combination, these types of measures can help build a more livable community.

Connect Cities with National Leaders and Resources

The expanding network of cities committed to advancing climate protection represent U.S. MCPA signatories, CCP cities and member cities of the U.S. Conference of Mayors.

Create a Legacy of Leadership

Taking action on climate change provides tangible benefits for citizens today – and ensures that future generations will have access to the resources that support healthy, prosperous, and livable communities.

policies

Planning for longterm municipal commitments is the crucial first step for a city engaging in climate protection actions. Policies and resolutions help build political will and ensure that a city's capital investments and operational changes can realize the intended benefits over time. Cities can also enact local, state, and national policies and legislation that build political support for climate protection.

Lead Climate Cities: U.S. Mayors' Climate Protection Agreement

As a signatory to the U.S. Mayors' Climate Protection Agreement (MCPA), your city joins a leading group of cities nationwide that have committed to action to advance climate protection at the local level. Led by Seattle Mayor Greg Nickels, the MCPA aims to promote climate protection and the goals of the Kyoto Protocol – an international agreement addressing global warming pollution and ratified by 164 countries – through leadership and action by American cities.

On February 16, 2005, Seattle Mayor Greg Nickels launched the MCPA. Today it includes nearly 300 signatures from mayors representing over 49 million Americans in 44 states and Washington, D.C.

R To see the cities that have signed the Agreement, visit:
http://www.seattle.gov/mayor/climate/default.htm#who

To view full text of the MCPA, visit;
http://www.usmayors.org/uscm/resolutions/73rd_conference/en_01.asp

R For a sample resolution outlining a city's commitment, view the City of Seattle's Resolution

View a sample resolution from a city participating in ICLEI's Cities for Climate Protection Campaign

The sample above can be modified to include language specific to your community. See how the City of Carbondale, CO has personalized its resolution

Ensure Your City's Commitment: Pass a Climate Protection Resolution

One of the first steps a city can take towards reducing global warming pollution is to pass a local resolution that affirms the city's commitment. Passing a resolution highlights the importance elected officials place on climate change and serves as another opportunity to educate the public and the local government staff while securing a path towards action and implementation far into the future.

action & tools

Implementing Climate Protection Actions

Cities can implement a range of actions to reduce global warming pollution. These measures can be instituted ad-hoc or as part of a comprehensive framework like that offered by ICLEI – Local Governments for Sustainability's Cities for Climate Protection Campaign (CCP). Since 1993, ICLEI has helped nearly 200 local governments across the U.S. reduce global warming pollution through its CCP Campaign. The information and tools provided both here and in the "Take Action" section can serve as a useful resource for implementing strategies for reducing global warming pollution.

After a local government has made a commitment to addressing climate change, the CCP provides a five-step methodology to reduce global warming pollution. The 5 Milestones articulated by the CCP can be implemented independently or comprehensively – though greater reductions and co-benefits are realized when all of the actions are pursued in coordination. The experience of cities participating in the CCP offers a proven reference point to cities newly engaging in climate protection actions.

The 5 Milestones of the CCP Campaign

1. Conduct a **baseline inventory** of global warming pollutants
2. Establish a **target to lower emissions**
3. **Develop a local Climate Action Plan (CAP)** to implement actions that reduce global warming pollution
4. **Implement the local Climate Action Plan**
5. **Measure, verify and report performance**

ICLEI's Cities for Climate Protection Campaign

The CCP's 5 Milestones provides a simple, standardized means to enable your community to effectively reduce the emissions from both government operations and the community as a whole.

Engaging in the five-step process means that a city is making a commitment to reduce global warming emissions as financial and staff resources allow. The process of completing the five milestones is not necessarily linear. The milestones can be undertaken concurrently, and the specific target and contents of the local Climate Action Plan are up to each city to determine. The amount of time needed to complete the milestones also depends on the size and complexity of a city, and the availability of data, staff, and resources.

action & tools

1 Conduct a baseline inventory

An inventory identifies and quantifies the global warming pollution produced by both government operations and the community at large in a particular year. The inventory and forecast provide a benchmark against which the city can measure the progress in terms of its own operations and that of its citizens. This emissions analysis identifies the activities that contribute to global warming pollution and the quantity of pollution generated by each of these activities. An inventory is established by collecting data about energy management, recycling and waste reduction, transportation, and land use.
A local government can calculate global warming pollution for a base year (e.g. 1990) and for a forecast year (e.g. 2012). Expertise in climate science is not necessary. A wide range of government staff members, from public works to environment and facilities departments, can conduct an inventory. ICLEI also supplies technical training and support – and in some cases can provide specialized, fee-for-service project work as well.

T **ICLEI's Clean Air/Climate Protection Software:** Allows cities to calculate emissions and emissions reductions. The software enables local governments to track and quantify emissions outputs and develop emissions scenarios to inform the planning process. ICLEI's Technical Program Officers provide training and technical expertise to cities using the CACP software and implementing the CCP five milestones.
http://www.cacpsoftware.org - http://www.iclei.org/usa

R **Sample Inventories:**

Sonoma County Greenhouse Gas Inventor

City of Somerville, MA Greenhouse Gas Inventory

2 Establish a target to lower emissions

Setting a reduction target for global warming pollutants creates a tangible goal and metric to guide the planning and implementation of your community's action. The target in the U.S. Mayors' Climate Protection Agreement is to reduce emissions by a minimum of 7 percent below 1990 levels by 2012. Almost all of the local governments participating in ICLEI's CCP Campaign establish reduction targets of global warming pollution at 15 percent or higher to be met within a 10 year period.

T **The ICLEI network** provides access to data and information from both U.S. and international cities participating in the CCP Campaign. The CCP network offers direct access to best practices, technology transfer and cost/benefit analysis of measures. ICLEI's Clean Air/Climate Protection Software also estimates the scale of action needed to achieve a city's target once the inventory is complete.

3 Develop a local Climate Action Plan

A local Climate Action Plan (CAP) is a customized roadmap to reduce global warming pollution by the target that your city has identified. The CAP includes an implementation timeline for reduction measures, costs and financing mechanisms, assignments to city departments, and actions the city must implement to achieve its target. The inventory and quantification of existing climate protection measures helps guide a city to understand where they can get the largest emissions reductions. The majority of measures in CAPs fall into the following categories:

- **Energy management**
- **Transportation**
- **Waste reduction**
- **Land use**

As the next section illustrates, common measures include energy efficiency improvements to municipal buildings and water treatment facilities, streetlight retrofits, public transit improvements, installation of renewable power applications, and methane recovery from waste management.

T **The ICLEI Clean Air/Climate Protection Software** assists cities to model potential emissions reduction scenarios. Fact sheets and case studies capture capital investment and probability for return, average global warming pollution reductions, and implementation processes. Toolkits on transportation planning, urban forestry, public outreach and education are also available at http://www.iclei.org/usa

R **Sample Action Plans:**

City of Seattle Green Ribbon Commission Report

City of Burlington, VT Climate Action Plan

City of Boulder, CO Climate Action Plan

4 Implement the local Climate Action Plan

Successful implementation of actions identified in the local Climate Action Plan depends on a number of factors including management and staffing, financing, a realistic timeline and stakeholder involvement in appropriate aspects of the Plan to build community support.

T **ICLEI best practices and case studies** offer snapshots that include information about costs, staffing and benefits as well as lessons learned. The ICLEI network of cities offers immediate access to peers and practitioners that offer informed advice. ICLEI staff also provides ongoing technical expertise to cities participating in the CCP.

5 Measure, verify and report performance

Verification of progress ensures integrity and accuracy in the city's efforts to achieve its global warming pollution reduction target. The reductions that a city achieves through implementation of actions to reduce global warming pollution must be monitored to measure progress. Tracking progress builds political support, informs the process and often drives further city investment to advance climate protection.

T When the data is maintained, **ICLEI Clean Air/Climate Protection Software** monitors, verifies and reports results to enable a city to capture quantifiable reductions and the cost savings realized as a result. The ICLEI network of cities offers resources and support to cities working towards setting and achieving their reduction targets.

Sample Actions and Measures

This section provides a carefully selected overview of the types of measures that can make a significant impact on a city or county's emissions profile. The measures are divided into two main categories – government and community. Government measures refer to the actions the local government can take to reduce the emissions associated with their operations and activities while the community measures target the reductions associated with the operations and activities of a city's residents and commercial and industrial operations.

Land Use Management and Urban Forestry

Increasingly, many communities are designed in such a way that residents are living farther from places of work, school, and services. This growth pattern fosters an increasing dependence on motor vehicles. This community design, commonly know as sprawl, translates into higher air and global warming pollution associated with higher rates of car travel. Development also exerts pressure on a city's open space and urban forest resources. Many scientific studies confirm that trees and vegetation are valuable resources for cooling our communities.

Local government, residents and businesses can profit from the development of dense, mixed-use neighborhoods. These measures save green spaces and money by cutting fuel, utility and infrastructure, and service delivery costs.

Government Measures

Short Term

- Plant shade trees in and around local government parking lots and facilities

Long Term

- Co-locate facilities to reduce travel time and maximize building use
- Utilize brownfield sites where possible

Community Measures

Short Term

- Maintain healthy urban forests and street trees
- Promote tree planting to increase shading and to absorb CO_2

Long term

- Preserve open space
- Promote high-density and in-fill development through zoning policies
- Institute growth boundaries, ordinances or programs to limit suburban sprawl
- Give incentives and bonuses for development in existing downtown areas and areas near public transit
- Encourage brownfield development
- Discourage sprawl through impact, facility, mitigation, and permit fees

Transportation Planning

Automobiles are a leading cause of global warming. Nationally, the transportation sector is one of the largest sources of U.S. emissions, representing nearly one-third of total emissions. It's hard to visualize, but every gallon of gasoline burned emits 20 pounds of CO_2 the principal global warming pollutant. Many local governments are increasing their jurisdictions' fuel efficiency by making alternative forms of transportation more accessible to residents and employees.

Government Measures

Short Term

- Encourage car-pooling, van-pooling, and mass transit use by municipal employees
- Encourage telecommuting for municipal employees
- Restrict idling of municipal vehicles
- Station police officers on bicycles

Long Term

- Retire old and under-used vehicles
- Use car sharing programs in lieu of a city fleet
- Purchase fuel efficient (e.g. hybrid) and/or smaller fleet vehicles
- Utilize fuel-efficient vehicles (e.g. scooters) for parking enforcement
- Utilize alternative fuel vehicles (biodeisel, ethanol, electric, compressed natural gas) for city fleet

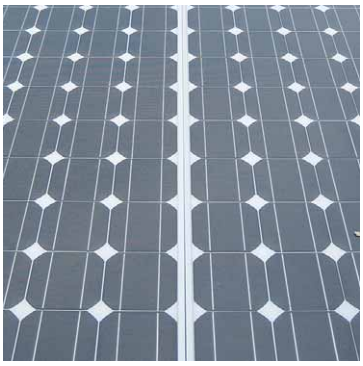
Community Measures

Short Term

- Promote commute trip reduction programs, incentives for car and van pooling, and public transit
- Restrict idling at public facilities
- Improve traffic signal synchronization
- Open local government alternative fueling stations to the public

Long Term

- Promote community purchases of compact and hybrid vehicles
- Help bring car sharing programs to the community
- Implement bicycle and pedestrian infrastructure programs
- Provide electric plug-in stations for freight vehicles at truck stops or boats marinas and ports



Green Power

Electricity that is generated from renewable energy sources is often referred to as "green power." Unlike fossil fuel-based power, these sources of energy emit no or low global warming pollutants. Green power can include electricity generated exclusively from renewable resources including wind, hydro-electric or solar power - or electricity produced from a combination of fossil and renewable resources. Cities can source renewable energy through utilities offering green power programs, through the purchase of renewable energy certificates called Green Tags or by installing on-site renewable technologies, such as solar panels.

Government Measures

Short Term

- Purchase green electricity from solar, geothermal, wind or hydroelectric sources
- Purchase green tags/renewable energy certificates

Long Term

- Install solar panels on municipal facilities
- Generate electricity from landfill or wastewater methane or refuse

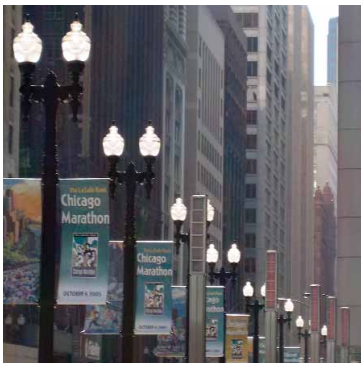
Community Measures

Short Term

- Promote community clean energy use through green power purchasing or on-site renewable technologies

Long term

- Offer incentives to foster solar photovoltaic installations in the community
- Implement a form of community choice aggregation



Energy Efficiency

Energy efficiency programs offer one of the best ways to reduce global warming pollutants. A large share of fossil fuel use is dedicated to providing the electricity that powers almost all aspects of our daily lives. Globally, 75 percent of all energy is consumed in cities. In addition, U.S. State and local governments spend upwards of $40 billion a year on energy consuming products and equipment.

Government Measures

Short Term

- Install energy-efficient exit sign lighting
- Perform energy-efficient building lighting retrofits
- Institute a "lights out at night" policy
- Institute a "lights out when not in use" policy
- Install building/office occupancy sensors
- Purchase only ENERGY STAR equipment and appliances for City use. Negotiate prices by purchasing in bulk where feasible.

Long Term

- Conduct an energy audit of municipal facilities
- Implement an energy tracking and management system
- Perform heating, cooling and ventilation system retrofits (e.g. chillers, boilers, fans, pumps, belts, fuel-switching from electric to gas heating)
- Install ENERGY STAR appliances - and require this and the following in specs/purchasing RFPs
- Install green or reflective roofing
- Improve water pumping energy efficiency
- Install energy-efficient vending machines
- Install energy-efficient traffic lights
- Install energy-efficient street lights (e.g. high pressure sodium)
- Decrease average daily time for street light operation

Community Measures

Short Term

- Adopt stringent residential or commercial energy code requirements
- Promote energy conservation through campaigns targeted at residents and businesses

Long Term

- Implement a low-income weatherization program
- Implement district heating and cooling
- Implement time-of-use or peak demand energy pricing
- Install energy-efficient co-generation power production facilities
- Launch an "energy efficiency challenge" campaign for community residents
- Promote participation in a local green business program
- Promote the purchase of ENERGY STAR appliances
- Promote water conservation through technological and behavioral modification

Green Building

Cities across the country are passing ordinances to mandate that municipal buildings meet green building standards. One of the most frequently cited standards are those set by the Leadership in Energy and Environmental Design (LEED) program of the U.S. Green Building Council and the U.S. EPA and Department of Energy's ENERGY STAR program. This series of programs for new and existing buildings, as well as community design, provides a framework for cities to begin implementing energy efficiency and green building techniques that save thousands of dollars and avert greenhouse gas emissions.

Government Measures

Short Term

- Encourage/Sponsor city staff to become LEED Accredited Professionals

Long Term

- Require all new construction projects to be LEED certified
- Require all retrofit projects to become LEED certified

Community Measures

Short Term

- Provide green building information to the public
- Share the efforts and knowledge of the city's green building resources

Long Term

- Encourage incentives or mandate developers to construct LEED certified or ENERGY STAR homes

Water and Wastewater Management

Nationwide, drinking water and wastewater systems cost more than $4 billion a year in energy costs to pump, treat, deliver, collect, and clean water – and the majority of this cost is paid for by municipalities. The energy costs to run drinking water and wastewater systems can represent as much as one-third of a municipality's energy bill and this is often the single largest utility expenditure for a city.

Government Measures

Short Term

- Install variable frequency drives for water pumps
- Install energy efficient motors into equipment
- Make heating, cooling, and ventilation improvements in these facilities

Long Term

- Establish methane recovery systems in local wastewater treatment plants
- Install an anaerobic digester at the wastewater treatment facility and optimize the co-generation potential of this technology

Recycling and Waste Reduction

Waste prevention and recycling eliminates global warming pollution by reducing landfill methane emissions, transportation-related emissions and overall energy savings by reusing items that would otherwise have to be manufactured.

Government Measures

Short Term

- Establish/expand recycling programs
- Implement organics and yard debris collection and composting

Long Term

- Establish system for reuse or recycling of construction and demolition materials for government construction projects
- Implement solid waste reduction programs for facilities
- Implement environmentally preferable purchasing program
- Establish a methane collection system for your landfill or consider a waste-to-energy facility for your community

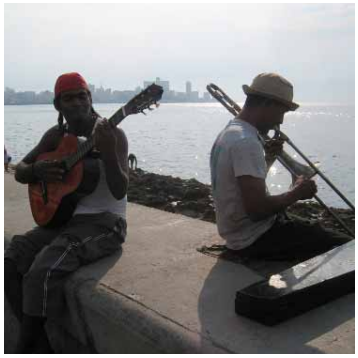
Community Measures

Short Term

- Establish/expand recycling programs and set aggressive recycling targets/goals
- Educate the public about existing programs to boost compliance
- Implement penalties for non-compliance with recycling programs

Long Term

- Implement organics and yard debris collection and composting
- Establish system for reuse or recycling of construction and demolition materials
- Implement solid waste reduction programs



Education and Outreach

From how you heat your home to how you drive your car, the daily choices that every citizen makes can impact both local and global warming pollution. Educating government staff and the public is the crucial first step to changing the behaviors that contribute to climate change.

Government Measures

Short Term

- Educate city staff about reducing global warming pollution and its importance to their work and the city's mission

Community Measures

Short Term & Long Term

- Help educate the public, schools, other jurisdictions, professional associations, business, and industry about reducing global warming pollution

action & tools

Cost effective actions to reduce global warming pollution

Education

Effectively communicating to a city's staff the importance and impact of taking actions to reduce global warming pollution is key to the success of the following measures. Motivating staff to partner and pioneer simple energy and water conservation actions and implement complex measures is integral to ensuring the success of programs. See the Education and Outreach page for more information.

Clean Fleets and Fuel

From restricting the idling of all city staff vehicles or assigning police officers to patrol on bicycles in dense urban areas to purchasing the most fuel efficient vehicles possible or using alternative fuels – cities can reduce emissions and costs from what is often one of the largest sources of global warming pollution – transportation. See the Transportation page for more information.

Recycling

Waste prevention and recycling reduces global warming pollution by reducing methane emissions and saving energy. Reducing the waste stream produced by city staff operations cuts the volume of waste disposed, reduces solid waste collection fees and can even generate revenue. In 2001 ICLEI found that more than 70 percent of reported global warming pollution reductions from CCP participants were due to waste-related activities. See the Recycling and Waste Reduction page for more information.

Switch to LED's or CFL's

Save energy and maintenance costs by switching to LEDs (Light Emitting Diodes) in traffic signals and exit lights. Use CFLS (Compact Fluorescent Lights) to light municipal buildings. LEDs are 90 percent more energy efficient and last 6–10 times longer than conventional lights and CFLs use up to 66 percent less energy than a standard incandescent bulb and last up to 10 times longer. Both LEDS and CFLs significantly lower both energy and maintenance costs. See the Energy Efficiency page for more information.

Turn out the lights at night

Instituting a "lights out at night" or "while not in use" policy is an easy and effective way to save electricity, reduce global warming pollution, and save municipal dollars. This can be accomplished through educational campaigns and through technology, such as timers and occupancy sensors. See the Energy Efficiency page for more information.

Purchase energy efficient equipment

Look for ENERGY STAR labeled equipment. ENERGY STAR computers use 70 percent less electricity than non-ENERGY STAR equipment. Some ENERGY STAR copy machines reduce paper costs by $60 a month and reduce energy costs at the same time, and fax machines that have earned the ENERGY STAR label can cut associated energy costs by 40 percent. See the Energy Efficiency page for more information.

Lighten Rooftops

In warm climates, cool roofs can absorb less solar energy and quickly release any heat that they store. Simply adding a highly reflective/emissive coating to a black or metal roof on a city building can reduce the need for air conditioning and produce huge annual cost and energy savings while decreasing global warming pollution at the same time. See the Green Building page for more information.

Encourage Commuters to take Public Transit

In cities with public transit systems, providing incentives for employees and commuters in the community to commute via public transit is one way for cities to decrease traffic, free up downtown parking spaces, and reduce emissions. These can include subsidized or free transit passes, parking cash-out programs, coordinated car or van pools, and programs such as a commuter challenge. See the Transportation page for more information.

Plant Trees

Studies have shown that well-landscaped commercial buildings and residential neighborhoods have lower heating and cooling costs. Strategically planted street trees and shrubs can significantly reduce cooling costs around low-rise facilities by providing shade in the summer months. Planting deciduous trees can offers shade in the summer and allows the sun to warm buildings naturally in the winter. See the Land Use page for more information.

Land Use

Best Practices

Sacramento's Transit Village Redevelopment

The City of Sacramento's 65th Street/Transit Village redevelopment project provides a 20-25 year plan for mixed use, transit-oriented development in East Sacramento. The goal of this project is to improve pedestrian and bicycle circulation, increase residents', shoppers', and workers' access to the city's light rail system and strengthen this neighborhood's connection to the nearby California State University, Sacramento. The project was examined using six different scenarios of varying densities and mixed uses. In 2003, the residentially focused, transit-oriented model predicted that households would drive 2,000 miles less per year compared to the existing zoning and existing use scenarios. This reduces each household's emissions by one ton of CO_2 yearly.

Newark's Tree Planting Initiative

In 2004, Newark undertook a new project to create a more attractive, healthier, energy-efficient city with one simple tool: trees. Utilizing funding from a statewide urban forest energy efficiency initiative called "Cool Cities," Newark planted 500 trees in strategic areas to employ the trees' energy efficiency and air pollution reduction benefits. The City anticipates each tree will reduce heating and cooling costs by up to 12 percent for buildings that are shaded by the trees, which will in-turn, reduce energy use and global warming pollution.

Ⓡ Resources

Victoria Transport Policy Institute http://www.vtpi.org/documents/smart.php

Smart Growth Online http://www.smartgrowth.org

CCAP Guidebook http://www.ccap.org

ICLEI Land Use and Transportation Planning Toolkit http://www.iclei.org

Smartgrowth America http://www.smartgrowthamerica.com

EPA Getting to Smart Growth: 100 policies for Implementation:
http://www.smartgrowth.org/pdf/gettosg.pdf

EPA Getting to Smart Growth: II http://www.smartgrowth.org/pdf/gettosg2.pdf

Smart Growth Toolkit Geared towards MA Municipalities, but generally applicable
http://www.mass.gov/envir/smart_growth_toolkit

National Governor's Association – Growth and Quality of Life Toolkit
http://www.nga.org/portal/site/nga/menuitem.9123e83a1f6786440ddcbeeb501010a0/?vgnextoid=adeb5aa265b32010VgnVCM1000001a01010aRCRD

Transportation Research Board – State by State Smart Growth Resources by State
http://www.trb.org/conferences/2002SmartGrowth.pdf

American Forests http://www.americanforests.org

USDA Urban Forest Research Center http://www.fs.fed.us/ne/syracuse/index.html

Land Use "Resources" continued...

Northeast Urban Tree Center – Tools for assessing Urban Tree Health and Establishing Design Guidelines http://www.umass.edu/urbantree/projects.shtml

Air Pollution Removal Calculator: This program is designed to estimate pollution removal and value for urban trees based on basic user inputs about the study area (e.g. a park). This program uses local data analyzed for various cities by the Urban Forest Effects (UFORE) model. http://www.fs.fed.us/ne/syracuse/Tools/tools.htm

Ordinances/Resolutions:

Visit the Congress for New Urbanisms Web site for a listing of Model TOD Ordinances, http://www.cnu.org/pdf/code_catalog_8-1-01.pdf

Model Ordinances for Traditional Neighborhood Design and Neighborhood Preservation http://www.smartgrowth.org/library/byldrtype.asp?typ=1&res=1400

American Planning Association's Growing Smart Legislative Guidebook: Model Statutes for Planning and the Management of Change http://www.planning.org/growingsmart

Guidelines for Developing and Evaluating Tree Ordinances. A website from the USDA Forest Service and the International Society of Arboriculture, which includes information on planning for an ordinance, drafting an ordinance and evaluating an ordinance. http://www.isa-arbor.com/publications/ordinance.aspx

Transportation

Best Practices

Honolulu's Bus Rapid Transit Program

A steady growth in passengers choosing the bus for their commute has accompanied the expansion of Honolulu's Bus Rapid Transit (BRT) program. Monthly ridership has increased from about 100,000 riders since 1999, when the program began, to over 630,000 in 2005. Assuming that half of BRT ridership represents a shift from trips made in passenger vehicles to trips taken on BRT, this equated to an annual CO_2 reduction of approximately 7,000 tons.

Portland's Light Rail System

The TriMet Metropolitan Area Express (MAX) light rail system, serving 64 stations over 44 miles of track in the Portland metropolitan area, sees 97,000 trips each weekday. More than $3 billion in development has occurred along MAX lines since the decision to build was made in 1978. MAX ridership now eliminates 22.2 million car trips per year, offsetting an estimated 26,400 tons of CO_2 annually, while reducing traffic, improving air quality, and preserving neighborhood livability - and public transit use has grown 75 percent since 1990.

Philadelphia's Carsharing for the City Fleet

The City of Philadelphia and PhillyCarShare instituted a novel car sharing system that includes both local residents and government employees. The program replaced 330 municipal vehicles and saved the city $2 million each year. In the community, 1,200 citizen vehicles were replaced saving residents $5.5 million in costs and reducing vehicle travel by 8.2 million fewer miles per year.

Transportation "Best Practices" continued...

Seattle's Bicycle and Pedestrian Planning

A substantial proportion of Seattleites use their bicycles for recreation or transportation. It is estimated that about 36 percent of Seattle's 520,000 citizens engage in recreational bicycling and 11 percent of commute trips are walking and bicycling trips (7 percent walking and 4 percent bicycling, respectively). In some parts of the city, bicycling and walking make up 20 percent of the commute trips. By cycling, residents avert emissions that would have otherwise been made by car trips. Cyclists and pedestrians are able to take advantage the extensive urban trails network. Seattle has about 28 miles of shared use paths, 22 miles of on-street, striped bike lanes, and about 90 miles of signed bike routes. The City's Department of Transportation has a Bicycle Program that is developing the City's first Bicycle Master Plan to improve and expand the network of shared use paths, bike lanes, signed bike routes, arterials with wide shoulders and pedestrian pathways.

Marin County's Safe Routes to Schools

Today only 13 percent of children walk or bicycle to school, as opposed to 66 percent in 1970. According to a study by Marin County Safe Routes to School, 21-27 percent of the county's morning traffic can be attributed to parents driving their children to school. More parents drive their children as a result of increased congestion near schools, further aggravating the problem. These trends have serious implications for both childhood obesity and respiratory problems, which are both rising trends. The Safe Routes to Schools program promotes walking and biking to school in order to reduce pollution and promote children's health and community livability. Since the program was instituted, single student car trips have dropped by 13 percent, saving over 4,250 one-way trips each day.

Keene's Conversion to Biodiesel

From fire engines to snowplows, all 77 of the vehicles in the City of Keene, New Hampshire's Public Works Department are running smoothly on B20 biodiesel. The fleet is fueled onsite at the department's pump. The biodiesel performs well in cold temperatures and has improved the air quality inside the fleet maintenance facility. The City has burned more than 4,400 gallons of biodiesel since 2002, which prevents an estimated 12 tons of CO_2 from entering the atmosphere annually.

Resources

General Transportation Planning Information:

American Public Transportation Association http://www.apta.com

Transportation Research Board http://www.trb.org

Win-Win Transport Emissions Strategies – A paper from the Victoria Transport Policy Institute http://www.vtpi.org/wwclimate.pdf

Clean Air and Transportation Resources from the U.S. Department of Transportation http://www.italladdsup.gov/resources/index.asp

National Congestion and Travel Time Data from the Texas Transportation Institute's Urban Mobility Report http://mobility.tamu.edu/ums

Walking and Bicycle Planning Resources
http://www.vtpi.org/documents/walking.php ; http://www.bikewalk.org

Transportation "Resources" continued...

Transportation Planning Tools:

Travel Matters' Transit Planning Emissions Calculator: Quantify the impact of transit decisions on global warming pollution. An online tool for measuring the emissions impact of making transit buses more fuel efficient.
http://www.travelmatters.org

Center for Transportation Excellence's Transit Benefits Calculator: Estimate the co-benefits of transit investments. An online tool that focuses on the local economic benefits of transit investments. http://www.cfte.org/calculator.asp

EPA's COMMUTER Model: Examining the Benefits of Transportation and Air Quality Programs Focused on Commuting. A model for quantifying the emissions benefits of strategies to reduce solo commuting.
http://www.epa.gov/otaq/stateresources/policy/pag_transp.htm#cp

ICLEI Land Use and Transportation Toolkit http://www.iclei.org

Commute Trip Reduction:

Case studies from Best Workplaces for Commuters on creating commute reduction programs from carpooling to parking cash out programs
http://www.bwc.gov/employ/benefits.htm

The U.S. EPA has developed a Web-based Calculator to enable an employer considering Best Workplaces for Commuters to estimate the financial, environmental, traffic-related, and other benefits of joining the program. http://www.bwc.gov/resource/calc.htm
Car sharing strategies from the Victoria Transport Policy Institute:
http://www.vtpi.org/tdm/tdm7.htm

The Car Sharing Library – A listing of resources http://www.carsharing.net/library/index.html

Commute Trip Reduction - Ordinances/Resolutions:

Commute Trip Reduction Model Ordinance from the Washington State Department of Transportation
http://www.wsdot.wa.gov/tdm/tripreduction/download/ModelOrdinanceFINAL.doc

Transportation Demand Management Model Ordinance from the State of Minnesota
http://server.admin.state.mn.us/pdf/2000/eqb/ModelOrdWhole.pdf

Green Fleets:

The Clean Fleet Guide features tools to help fleets make "green" vehicle and fuel decisions including specifications on available alternative fuel and advanced technology vehicles, tools to perform cost analyses based on specific locations, and information on other technologies that can help improve fuel economy. http://www.eere.energy.gov/fleetguide

Clean Cities is committed to providing coalitions, fleet managers, and the public with accurate, accessible information. Data on purchasing alternative fuel and advanced technology vehicles to emissions and fuel information.
http://www.eere.energy.gov/cleancities/tools_info.html

EPA Green Fleet FAQ
http://www.epa.gov/emissweb/faq.htm

Green Driving Tips – Driving and maintenance tips for emissions reductions.
http://www.tripnet.org/GreenDrivingTips.PDF

Transportation "Resources" continued...

Green Fleet - Ordinances/Resolutions:

Model Low Emissions Vehicles Ordinance
http://www.airquality.org/modelord/EpisodicModelLEFleetV10.pdf

Model Greenfleet Policy Ordinance from ICLEI's Greenfleets Web site
http://www.greenfleets.org/MakeItOfficial.html#Write%20Your%20Own
http://www.cleanaircounts.org/content/Green Fleet Policy Ordinance.pdf

The City of Seattle Green Fleet Policy
http://www.cityofseattle.net/environment/Documents/CleanGreenFleetAP.pdf

The City of Seattle Green Fleet Resolution http://www.greenfleets.org/Seattle.html
The City of Denver Green Fleet Resolution http://www.greenfleets.org/DenverRevised.html

Alternative & Clean Fuels:

National Clean Diesel Campaign http://www.cleanfleetsusa.net

Alternative Fuels Data Center http://www.eere.energy.gov/afdc

Biodiesel Board – A national non-profit trade association http://www.biodiesel.org

School Bus Toolkit http://www.eere.energy.gov/afdc/apps/toolkit/school_bus_toolkit.html

Transit Vehicle Toolkit http://www.eere.energy.gov/afdc/apps/toolkit/transit_bus_toolkit.html

National Clean Diesel Campaign http://www.cleanfleetsusa.net

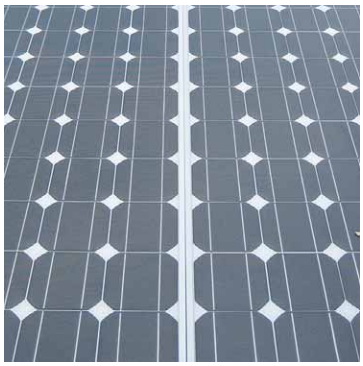
Pedestrian/Bicycle Resources:

Pedestrian Planning from the U.S. Department of Transportation
http://www.walkinginfo.org/pedsafe

Walking and Bicycle Planning Resources
http://www.vtpi.org/documents/walking.php http://www.bikewalk.org
Safe Routes to Schools http://www.saferoutestoschools.org

Pedestrian/Bicycle Resources - Ordinances/Resolutions:

Exemplary Bicycle and Pedestrian Master Plans
http://www.bicyclinginfo.org/pp/exemplary.htm



Green Power

Best Practices

Montgomery County, Maryland's Green Power Purchasing

In 2004, Montgomery County led a group of local governments and local government agencies in a wind energy purchase that represents 5 percent of the buying group's total electricity needs. Under the two-year deal, the buying group will collectively purchase 38 million kWh of wind energy annually, translating into a yearly reduction of 21,000 tons of CO_2, 95,000 pounds of nitrous oxides, and 1.4 pounds of mercury. The County demonstrated the benefits of renewable energy in meeting the requirements of the federal Clean Air Act by including the wind energy purchase as a control measure for ozone pollution in a State Implementation Plan for air quality improvement. The County plans to offset the added

Green Power "Best Practices" continued...

expense of the wind power purchase by instituting employee energy efficiency programs such as turning off lights, computers, and office equipment when not is use.

District Energy Saint Paul Wood-fired Cogeneration

District Energy Saint Paul Inc.'s new $52 million combined heat and power plant uses 275,000 tons of clean wood waste fuel each year. Under a 20-year agreement with Xcel Energy, the plant generates 25 megawatts of electricity, enough to power 20,000 homes. The plant significantly reduces air pollution by displacing 110,000 tons of coal, reducing SO_2 emissions by 600 tons per year and fossil fuel derived CO_2 emissions by 283,000 tons per year, plus an additional 50,000 tons from efficiencies compared to on-site systems. District Energy heats/cools twice the building area vs. on-site systems with the same fuel input; serves 80 percent of downtown building space, including the State Capitol complex and 300 residences; is the largest hot water district heating and chilled water cooling system in North America.

Portland's 100 % Renewable Goal

Portland Oregon' Local Action Plan on Global Warming sets aggressive goals for renewable resources, instructing the City to acquire 100 percent of its energy needs from renewable sources by 2010 with an interim target of 10 percent by 2003. Actual renewable energy purchased currently stands at around 11 percent. To meet the long term goal, the City has invested in hydroelectric turbines in its drinking water reservoir system and a fuel cell powered by waste methane. Most significantly, in June 2003, the City purchased green energy certificates representing nearly 44 million kilo watt hours of wind power – enough to supply nearly 4,000 homes for a year.

Seattle City Light's Net Zero Emissions Policy

In 2000, the Mayor and City Council mandated Seattle City Light to meet all new electrical demand with cost-effective conservation and renewable energy resources and achieve zero net emissions of global warming pollutants. As of 2005, Seattle City Light is reaching both these goals. Seattle has a low baseline of global warming pollution because clean hydropower produces most of the city's electricity. But even with this green power, the utility still produces some emissions from its fleet and building operations, among other examples. To reach zero net global warming pollutant emissions, the utility mitigates for all emissions by purchasing offsets; in 2004 and 2005, City Light paid less than $2 per year per City Light rate payer for offsets through a variety of projects, such as supporting biodiesel in Seattle area fleets and contracting with DuPont Fluorochemicals to install a technology that substantially cut global warming pollution. Maintaining these policies avoids 200,000 metric tons of global warming pollutants being added to the atmosphere.

Resources

EPA's Guide to Green Power Purchasing – The Guide includes information about different types of green power products, the benefits of green power purchasing, and how to capture the benefits of green power purchasing.
http://www.epa.gov/greenpower/buygreenpower/guide.htm

Green Power Partnership – A program that promotes the purchase of green power in the private and public sector. http://www.epa.gov/greenpower

Green Power "Best Practices" continued...

Green Tags vs. Delivered Products – A primer comparing these two types of programs. http://www.epa.gov/greeningepa/content/energy/pdf/greentags.pdf

Green Tags http://www.eere.energy.gov/femp/technologies/renewable_purchasepower.cfm

Green Pricing utility programs by state
http://www.eere.energy.gov/greenpower/markets/pricing.shtml?page=1

The Database of State Incentives for Renewable Energy (DSIRE) is a comprehensive source of information on state, local, utility, and selected federal incentives that promote renewable energy. http://www.dsireusa.org

Bonneville Environmental Foundation - Markets green power products to help fund renewable projects. http://www.b-e-f.org

Green Power - Ordinances/Resolutions:

City of Albuquerque Renewable Energy Resolution
http://www.cabq.gov/energy/documents/resolution329.doc

City of Seattle City Light Resolution for Net Zero Emissions City Light Net Zero Resolution

Energy Efficiency

Best Practices

Chicago's 15 Million Square Feet Retrofit Program

The City began to audit and retrofit 15 million square feet of public buildings with efficient equipment for heating and cooling, lighting and ventilation. The 15 million square feet are made up of police stations, libraries, fire stations, park facilities, transit facilities, health centers, community/cultural centers, colleges and other types of facilities that are owned by the City, the Chicago Park District, the Chicago Transit Authority or the City Colleges of Chicago. As of June 2004, more than 5 million square feet of city-owned facilities had been audited and retrofitted. 15 million square feet is roughly equivalent to the size of three Sears towers. When the project is complete, energy savings to the City and its sister agencies are estimated to be $6 million annually, with $2 - 3 million in savings for the City alone. The annual savings upon completion estimates 30,000 tons of CO_2, and 84 tons nitrous oxides, and 128 tons of sulfur dioxide.

Ann Arbor's Municipal Energy Fund

Since 1998 Ann Arbor's Municipal Energy Fund has provided city facilities with a source of capital for energy efficiency retrofits. The Energy Fund provides initial capital for new projects and receives 80 percent of projected annual energy savings from each installed project for five years. The five-year payment plan allows projects that have a shorter payback to help support projects with a longer payback, and all savings accrued beyond the first five years remain with the departments implementing the improvements. The Fund was seeded by the city with five annual investments of $100,000, and quickly became self-sustaining. Most installed measures have had payback periods of three to six years, and projects supported by the Fund have yielded a total of 685 tons of annual eCO_2 reductions.

Energy Efficiency "Best Practices" continued...

Seattle's Energy Conservation Measures

In 1998, the City of Seattle dedicated approximately $1 million to pay for cost effective energy and water conservation measures in City buildings and facilities. An Energy Services Company (ESCO) was hired to identify, analyze and install conservation measures. The program was managed by the City's Office of Sustainability and Environment and created incentives for departments to participate by offering them the opportunity to save money on their utility bills - which could then be applied to their programs. Energy efficient lighting and HVAC projects were completed in police and fire stations, community centers, fleet maintenance centers and office building, and red traffic signals and pedestrian walk signs were changed to LEDs. After three years, an independent evaluation of the program concluded that the City's investment was sound: the present value of net benefits to the City for all of the projects was $2.5 million. The internal rate of return to the City for all of these the projects was 14 percent, and the pay-back period is under six years.

Resources

Background:

American Council for an Energy Efficient Economy – General Information.
http://www.aceee.org

DOE's Building Energy Codes Program is an information resource on national model energy codes.
http://www.energycodes.gov

Energy Star for Government Agencies - ENERGY STAR brings your government agency a proven energy management strategy to save energy and money while demonstrating your environmental leadership.
http://www.energystar.gov/index.cfm?c=government.bus_government

ACEEE Buildings Guide promotes the development and widespread adoption of energy efficiency improvements in buildings, appliances, and other equipment used in buildings.
http://www.aceee.org/buildings/index.htm

Energy Savers take you directly to resources available across Federal agencies for homeowners, contractors and builders, building managers, realtors, state agencies, drivers and fleet managers, and industry managers. http://www.energysavers.gov

ENERGY STAR – Delta Score Estimator identifies the relationship between the percent energy saved in a building and the energy performance rating score of a building using ENERGY STAR.
http://www.energystar.gov/index.cfm?c=delta.index

ENERGY STAR – Assess Financial Value by using the Financial Value Calculator to estimate increased earnings from energy reductions.
http://www.energystar.gov/ia/business/financial_value_calculator.xls

ENERGY STAR - Use the Cash Flow Opportunity Calculator to help answer critical questions about energy efficiency investments.
http://www.energystar.gov/ia/business/cfo_calculator.xls

Energy Cost Calculators - The calculators below allow users to enter their own input values (e.g. utility rates, hours of use, etc.) to estimate the energy cost savings from buying energy efficient lighting and commercial, residential and office equipment.
http://www.eere.energy.gov/femp/procurement/eep_eccalculators.cfm

Energy Efficiency "Resources" continued...

Energy Efficiency - Ordinances/Resolutions:

Comprehensive City of Albuquerque: Energy Resources http://www.cabq.gov/energy

Chicago Energy Conservation Code
http://egov.cityofchicago.org/city/webportal/portalEntityHomeAction.do?entityName=Construction+and+Permits&entityNameEnumValue=124

California Energy Commission - 2005 Building Energy Efficiency Standards for Residential and Nonresidential Buildings
http://www.energy.ca.gov/title24/2005standards/2005-11-03_400-03-001F.PDF

Energy Star Purchasing

Best Practices

City of Chicago Housing Authority Buys ENERGY STAR

The ENERGY STAR program enables public agencies to purchase large quantities of appliances to help lower both manufacturers and buyers costs. Through a national initiative of the U.S. Department of Energy and the Consortium for Energy Efficiency, public housing agencies and utility companies in 38 cities purchased over 70,000 Maytag brand refrigerators that use energy efficient technology. By purchasing 10,000 of these refrigerators, the Chicago Housing Authority reduced annual electric bills by more than $500,000.

Massachusetts Buys ENERGY STAR

In 1997, the State of Massachusetts began including ENERGY STAR standards in its procurement specifications for computers, fax machines, copiers, printers, and other office equipment. Energy Star is a voluntary labeling partnership between the U.S. EPA and industry certifying and promoting energy efficient products. The Energy Star label makes it easy to identify products that save money and prevent pollution, and Energy Star products are available from almost all manufacturers at the same cost as more energy-intensive models. Thus the State of Massachusetts' procurement policy protects the environment without compromising quality or price.

Resources

Green Purchasing: A guide for local communities:
http://www.state.nj.us/dep/dsr/bscit/sustainable-comm/epp.pdf

Center for a New American Dream's Procurement Strategies Program
Helps U.S. state and local governments and other large purchasers incorporate environmental considerations into their purchasing. Publishes success stories of pioneering efforts and conducts training sessions and conference calls to teach purchasers how to identify and buy greener products. http://www.newdream.org/procure

Environmentally Preferable Purchasing Program and Database,
U.S. Environmental Protection Agency - Comprehensive source of information on green purchasing. Database includes green contract language and specifications, voluntary standards and guidelines, and other practical information. http://www.epa.gov/oppt/epp

Energy Star Purchasing "Resources" continued...

Massachusetts Environmentally Preferable Products Procurement Program
Information about state efforts to buy green products, including useful guides and reports as well as contracts for purchasing recycled products and other goods.
http://www.state.ma.us/osd/enviro/enviro.htm

Energy Star Purchasing - Ordinances/Resolutions:

City of Honolulu, Energy Star Purchasing Resolution
http://www.honolulu.gov/refs/cclpol/99-225.htm

City of Berkeley, Environmentally Preferred Purchasing Resolution – including energy and water conservation specifications:
http://www.besafenet.com/ppc/docs/purchasing/PU_BPP.pdf#search=%22energy%20star%20purchasing%20ordinance%20%22

Green Building

Best Practices

Austin Builds Green

Whether remodeling a home or building an office tower, the City of Austin's Green Building program helps community members, governments and businesses build more energy efficient, environmentally sound structures. Since 2000, the City Council has mandated that all new municipal buildings achieve a LEED silver rating. LEED accreditation ensures sustainable site development, water savings, energy efficiency and green materials selection. In 2003, 22 percent of new homes and four commercial projects totaling 145,000 sq ft. in the Austin Energy utility district were built in accordance with the program's guidelines. Overall, the program has peak load energy use and the total 21,600 megawatt-hour savings equals a $1.8 million savings for utility customers. In terms of pollution reduction, this means 8,343 tons yearly reduction of CO_2.

Seattle's Developer Incentives

Seattle was the first city in the nation to formally adopt LEED as the design and performance standard for all city projects and today Seattle has also developed strong incentives for the private sector. Developers who pursue and achieve certification at the silver, gold and platinum levels for new projects receive financial incentives and technical assistance. In order to get significant bonuses to increase building height and density, developers building New Construction (LEED-NC) or Core & Shell (LEED-CS) projects in the central city core and adjoining areas must contribute to affordable housing and other public amenities and achieve at least LEED silver certification. The City also offers financial incentives and provides technical assistance on a case-by-case basis.

Green Building "Best Practices" continued...

Chicago's Greening of City Hall

Surfacing the roofs of municipal buildings with greenery can not only reduce storm water runoff, but also create large energy savings. The degree of savings depends on the type of roof and the climate. Warmer climates offer greater energy savings because green roofs reduce air conditioning costs more efficiently than they lower heating bills.
The City of Chicago found that installing a green roof on city hall lowered the temperature by 3 to 7 degrees Fahrenheit, which translated into a 10 percent reduction in air conditioning requirements. While the city's green roof was 90 degrees on the summer's hottest days, neighboring roofs measured over 160 degrees Fahrenheit.

Resources

U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED)
The LEED Green Building Rating System™ is a voluntary, consensus-based, market-driven building rating system based on existing proven technology.
http://www.usgbc.org

Building Research Establishment Environmental Assessment Method (BREEAM) is a widely used international method of assessing building quality and performance in terms of energy efficiency, environmental impact, health and operation and management.
http://www.breeam.org

Green Building Program - Austin, Texas
The City of Austin has promoted green building through a city resolution adopted in 1994. The program has a residential and a commercial component, which rates the following dwelling features for sustainability: water, energy, materials and solid waste.
http://www.austinenergy.com/Energy%20Efficiency/Programs/Green%20Building/index.htm

Scottsdale's Green Building Program - City of Scottsdale, Arizona
Program monitors and scores construction projects for approximately 150 green measures. This "yes/no" system is an alternative option to a "multi-star" program like Austin.
http://www.ci.scottsdale.az.us/greenbuilding

Green Building Initiative, City of Portland, Oregon
Their "Integrated Building Design" provides actions and opportunities from predesign through operations and maintenance. Their "Green Building Guidelines" provide specific opportunities in building design and construction practices.
http://www.portlandonline.com/osd/index.cfm?c=41481

Building Codes Assistance Project (For State and Local Code Agencies)
The Building Codes Assistance Project provides custom-tailored assistance on building energy code adoption and implementation. It assists state and local regulatory and legislative bodies. http://www.bcap-energy.org

Green Building - Ordinances/Resolutions:

City of Seattle's Facility Standards for Design, Construction & Operations including LEED specifications
http://www.cityofseattle.net/facilitydevelopment/designstandards.htm

Arlington County, VA requires a LEED Scorecard for all new projects:
http://www.arlingtonva.us/Departments/CPHD/planning/zoning/pdfs/zoa_leeds.pdf#search=%22LEED%20ordinance%22

Water and Wastewater Treatment

Best Practices

Portland Pioneers Waste-to-Energy Generation

The City of Portland, Oregon installed the world's first city-sponsored anaerobic digester gas (ADG) fuel cell in its wastewater treatment plant in May 1999. The Fuel Cell Power Plant converts methane into electricity, generating power in a virtually pollution free operation. Added benefits are manifold–methane and criteria air pollutants are reduced, as is the amount of electricity purchased from utilities that operate fossil-fuel burning power plants, and the fuel is free because methane is produced during wastewater treatment. Portland installed a 200 kilowatts hydrogen fuel cell to help utilize its waste methane and reduce power plant air emissions. The result of this pilot installation is a net reduction of 694 tons of CO_2 annually – 14,000 tons over the life of the fuel cell. Efficiency for generating electricity using a fuel cell is higher than most regional power plants at about 38 percent and when the usable heat is recovered, the rated efficiency climbs to 78 percent. The fuel cell displaces the need for emergency generators or un-interruptible power supply valued at $150,000.

San Diego's Waste-to-Energy

The energy savings incurred by the City of San Diego's Metropolitan Wastewater Department help maintain lower sewer rates for citizens while providing renewable electric energy to the region. Eight "digesters" at the Point Loma Wastewater Treatment Plant use heat and bacteria to break down the organic solids removed from the community's wastewater. One of the by-products of this biological process is methane gas, which is collected from the digesters and piped to the on-site Gas Utilization Facility. The methane powers two continuously running generators that can each produce up to 2.25 megawatts of electricity.

Ⓡ Resources

ENERGY STAR – Wastewater Focus
http://www.energystar.gov/index.cfm?c=government.wastewater_focus

The Integrated Waste Services Association (IWSA) was formed in 1991 to promote integrated solutions to municipal solid waste management problems including waste to energy technologies.
http://www.wte.org/waste.html

PA Department of the Environment Drinking Water and Wastewater Operators Information Center http://www.dep.state.pa.us/dep/deputate/waterops/redesign/indexgood.htm

Online Energy Efficiency Calculators - Pennsylvania Department of the Environment Drinking Water and Wastewater Operators
http://www.dep.state.pa.us/dep/deputate/waterops/Redesign/PAGES/EnergyPages/EnergyCalculators.htm

Recycling and Waste Reduction

Best Practices

San Francisco's Organics Collection Program

The City of San Francisco instituted residential curbside collection of organic material as part of its Fantastic Three program. The program provides each household with a green cart for organic waste, a blue cart for commingled recyclables, and a black cart for all remaining trash. Residents and businesses are encouraged to place all food scraps and yard trimmings into the green cart, which is collected for composting at a regional facility. By instituting curbside organics collection, San Francisco became the first large city in the nation to collect food scraps citywide. The Fantastic Three program enabled the City to reach a reported overall 67 percent garbage diversion rate in 2004. The rough outreach and other methods, the City plans to expand the Fantastic Three program and increase both the amount of organics and recyclables collected. The program's expansion is projected to achieve an annual eCO_2 reduction of 70,000 tons.

Seattle's Ban on Recyclables from Garbage

Since January 2005 the City of Seattle has prohibited the disposal of certain recyclables from residential, commercial, and self-haul garbage by law. The new recycling ordinance is aimed at eliminating recyclable or compostable paper, cardboard, aluminum cans, plastic bottles, and yard debris that, until recently, have constituted approximately 25 percent of the city's garbage. The city hopes the new ordinance will save residents and businesses as much as $2 million per year and keep future garbage costs low, as well as help to reverse the recent decline in Seattle's recycling rates. The measure is projected to achieve an annual reduction of 260,000 tons of eCO_2.

Montgomery County, Maryland Retrofits a Landfill into an Energy Source

The County installed a gas collection system for the Gude Southlawn Sanitary Landfill in Rockville, MD. The landfill was open for almost 20 years and collected an estimated 4.8 million tons of waste under 91 acres. Forty-four wells were established to feed an on-site generation facility with two generators to recover the landfill gas and turn it into electricity. The 1,500 kilowatt electrical generators are connected to the local power grid and revenues is generated from selling this electricity to Potomac Electric Power Company under a 20-year agreement. To date ratepayers have saved millions of dollars in capital costs after the costs of installing the methane collection system in the landfill; approximately 600 million cubic feet of landfill gas is prevented from going into the atmosphere each year. At 50 percent methane content, that's the global warming polution equivalent of approximately 120,000 tons of CO_2 emissions prevented. 20,000 megawatt hours per year are generated–enough to serve an estimated 2,700 homes. Additionally the County makes substantial revenues from the sale of landfill gas rights.

Resources

EPA created the Waste Reduction Model to help solid waste planners and organizations track and voluntarily report global warming pollutant reductions from several different waste management practices.
http://yosemite.epa.gov/oar/globalwarming.nsf/content/ActionsWasteWARM.html

EPA's Landfill Methane Outreach Program (LMOP) demonstrates how to put waste to good use. As organic wastes decompose in landfills, they produce methane gas, which contributes to global warming. LMOP shows companies, utilities, and communities how to capture landfill gas and convert it to energy. http://www.epa.gov/lmop

WasteWise is a free, voluntary, EPA program through which organizations eliminate costly municipal solid waste and select industrial wastes, benefiting their bottom line and the environment. WasteWise is a flexible program that allows partners to design their own waste reduction programs tailored to their needs. http://epa.gov/wastewise

Case Study on San Francisco's Food Waste Diversion Program
http://www.ciwmb.ca.gov/FoodWaste/CaseStudies/Contracts/2000/sanfran2.pdf

National Recycling Coalition resources
http://www.nrc-recycle.org/resources/resources.htm

Source Reduction Publications from the EPA
http://www.epa.gov/msw/sourcpub.htm

Recycling and Waste Reduction - Ordinances/Resolutions:

Seattle Ban on Recyclables in Garbage
http://www.seattle.gov/util/About_SPU/Recycling_System/History_&_Overview
Ban_on_Recyclables_in_Garbage/index.asp

Aspen's Progressive Waste Reduction Ordinance, which includes a "Pay as You Throw" ordinance that charges citizens for waste disposal by volume.
http://www.aspenpitkin.com/pdfs/depts/44/recycling_ordinance.pdf

Debris Recycling Ordinance, Glendale, CA
http://www.ci.glendale.ca.us/public_works/Constr_Dem_Debris_Recycling_Ord.

Education and Outreach

Best Practices

Burlinton's Community 10percent Challenge
The 10 percent Challenge in Burlington, VT is a voluntary program to raise public awareness about global climate change and to encourage households and businesses to reduce their global warming pollution by at least 10 percent. Enlisting innovative outreach methods such as a musical road show called "Beat the Heat," the program is achieving an estimated annual reduction of 1,500 tons of CO_2 in the residential sector alone.

Education and Outreach "Best Practices" continued...

Vancouver, British Columbia's One Day Campaign

One Day is the City of Vancouver's community engagement process in support of its Community Climate Change Action Plan. The process is about taking small steps to reduce energy use, at home and on the road, to make Vancouver the cleanest, greenest, healthiest city in the world. The program emphasizes the small first steps that citizens can take in our every day lives. One Day is working with partners - youth, community groups, business leaders - to start this movement from the ground up, seeding the idea in schools, workplaces, businesses, neighborhoods, coffee shops and more.

Seattle's Climate Partnership

The Seattle Climate Partnership is a voluntary pact among Seattle-area employers to take action to reduce their own emissions, and to work together to help meet the community-wide goal. An initial group of Seattle-area employers – the Port of Seattle, Recreational Equipment Inc., the University of Washington, Starbucks Coffee Company, Urban Visions, Lafarge Seattle, Shoreline Community College, Mithun, Garvey Schubert Barer, and the City of Seattle – have come together to develop and grow the Partnership. These employers are committing to take actions that will reduce their global warming pollution emissions while at the same time cutting costs, improving the work environment for their employees, and improving their record of corporate responsibility. In exchange for making and keeping this commitment, Partners will receive a host of benefits, including high-quality technical assistance, access to utility incentive programs, opportunities for cost-saving collaborations such as joint purchasing arrangements, and recognition for a job well-done.

Salt Lake City's E2 (Environmentally and Economically) Sustainable Citizen & Business Community Programs

Salt Lake City's innovative outreach program engages both citizens and businesses to save money, improve the environment, and contribute to the City's livability. The Citizen program challenges residents to commit to at least five things to ensure a sustainable future. The business-oriented program is designed to recognize and support the Salt Lake City business community and economy and provides some of the following benefits; cost savings from reduced resource use; ability to attract new customers and increase customer loyalty; free advertising purchased through grants and other funding sources of the Salt Lake City Green program; earned media; reduced advertising costs in selected publications; free consultation with Salt Lake City staff experts; and finally, the knowledge that their business is contributing in a positive way to the environment and community.

Ⓡ Resources

City Education Campaigns:

One Day Vancouver http://www.onedayvancouver.ca

Salt Lake City E2 Program http://www.slcgreen.com/pages/e2citizen.htm

Seattle Climate Partnership http://www.seattle.gov/climate/partnership.htm

Education and Outreach
"Resources" continued...

City Education Task Forces:

Tucson Metropolitan Energy Commission. Tucson, AZ
Commissioners representing many sectors of the community promote sustainable development in the Tucson metropolitan area through support of resource-efficient building codes and community education.
http://www.tucsonmec.org

Saint Paul Task Force. Saint Paul, MN 10 different city departments are represented in the task force, which coordinates sustainability decision-making throughout the city. The Task Force followed the success of the group formed to guide the Energy Conservation Project.
http://www.ci.stpaul.mn.us/depts/realestate

Educational Programs:

Education Curricula:

ICLEI and the City of Berkeley created this educational brochure about climate change for CCP jurisdictions to download off the web and modify. The City of Burlington, VT also produced a brochure using the template.
http://www.iclei.org/us/brochure.htm

Global Warming Education: School Lesson Plans, Global Warming Kids. Web Site dedicated to: Global Warming Education Climate Change Education Science, Solutions and a Resources Directory.
http://www.climatechangeeducation.org

City Best Practices:

The U.S. Conference of Mayors released a best practices book that covers the topics of air quality, climate change, energy sources, fuels, vehicles and transit, housing, municipal buildings, facilities and operations.
http://usmayors.org/uscm/best_practices/EnergySummitBP06.pdf

Climate Change Educational Information:

EPA Global Warming Site: The EPA Global Warming Site
http://yosemite.epa.gov/oar/resources.nsf/websearch?openform

Frequently Asked Questions about Global Warming From NOAA
http://www.ncdc.noaa.gov/ol/climate/globalwarming.html

Regional Impacts of Global Warming
http://www.epa.gov/globalwarming/impacts/index.html

Environmental Defense Fund's Global Warming, Myth vs. Fact
http://www.edf.org/pubs/FactSheets/e_GWFact2.html

Global Warming Explanation
http://www.newscientist.com/nsplus/insight/global/faq.html

Union of Concerned Scientists - Global Warming Science
http://www.ucsusa.org/global_warming/science

appendix

The U.S. Mayors' Climate Protection Agreement

WHEREAS, the U.S. Conference of Mayors has previously adopted strong policy resolutions calling for cities, communities and the federal government to take actions to reduce global warming pollution; and

WHEREAS, the Inter-Governmental Panel on Climate Change (IPCC), the international community's most respected assemblage of scientists, has found that climate disruption is a reality and that human activities are largely responsible for increasing concentrations of global warming pollution; and

WHEREAS, recent, well-documented impacts of climate disruption include average global sea level increases of four to eight inches during the 20th century; a 40 percent decline in Arctic sea-ice thickness; and nine of the ten hottest years on record occurring in the past decade; and

WHEREAS, climate disruption of the magnitude now predicted by the scientific community will cause extremely costly disruption of human and natural systems throughout the world including: increased risk of floods or droughts; sealevel rises that interact with coastal storms to erode beaches, inundate land, and damage structures; more frequent and extreme heat waves; more frequent and greater concentrations of smog; and

WHEREAS, on February 16, 2005, the Kyoto Protocol, an international agreement to address climate disruption, went into effect in the 141 countries that have ratified it to date; 38 of those countries are now legally required to reduce greenhouse gas emissions on average 5.2 percent below 1990 levels by 2012; and

WHEREAS, the United States of America, with less than five percent of the world's population, is responsible for producing approximately 25 percent of the world's global warming pollutants; and

WHEREAS, the Kyoto Protocol emissions reduction target for the US would have been 7 percent below 1990 levels by 2012; and

WHEREAS, many leading U.S. companies that have adopted greenhouse gas reduction programs to demonstrate corporate social responsibility have also publicly expressed preference for the U.S. to adopt precise and mandatory emissions targets and timetables as a means by which to remain competitive in the international marketplace, to mitigate financial risk and to promote sound investment decisions; and

WHEREAS, state and local governments throughout the United States are adopting emission reduction targets and programs and that this leadership is bipartisan, coming from Republican and Democratic governors and mayors alike; and

WHEREAS, many cities throughout the nation, both large and small, are reducing global warming pollutants through programs that provide economic and quality of life benefits such as reduced energy bills, green space preservation, air quality improvements, reduced traffic congestion, improved transportation choices, and economic development and job creation through energy conservation and new energy technologies; and

appendix

WHEREAS, mayors from around the nation have signed the U.S. Mayors' Climate Protection Agreement which, as amended at the 73rd Annual U.S. Conference of Mayors meeting, reads: The U.S. Mayors' Climate Protection Agreement A. We urge the federal government and state governments to enact policies and programs to meet or beat the target of reducing global warming pollution levels to 7 percent below 1990 levels by 2012, including efforts to: reduce the United States' dependence on fossil fuels and accelerate the development of clean, economical energy resources and fuel-efficient technologies such as conservation, methane recovery for energy generation, waste to energy, wind and solar energy, fuel cells, efficient motor vehicles, and biofuels; B. We urge the U.S. Congress to pass bipartisan greenhouse gas reduction legislation that includes 1) clear timetables and emissions limits and 2) a flexible, market-based system of tradable allowances among emitting industries; and C. We will strive to meet or exceed Kyoto Protocol targets for reducing global warming pollution by taking actions in our own operations and communities such as: 1. Inventory global warming emissions in City operations and in the community, set reduction targets and create an action plan. 2. Adopt and enforce land-use policies that reduce sprawl, preserve open space, and create compact, walkable urban communities; 3. Promote transportation options such as bicycle trails, commute trip reduction programs, incentives for car pooling and public transit; 4. Increase the use of clean, alternative energy by, for example, investing in "green tags", advocating for the development of renewable energy resources, recovering landfill methane for energy production, and supporting the use of waste to energy technology; 5. Make energy efficiency a priority through building code improvements, retrofitting city facilities with energy efficient lighting and urging employees to conserve energy and save money; 6. Purchase only Energy Star equipment and appliances for City use; 7. Practice and promote sustainable building practices using the U.S. Green Building Council's LEED program or a similar system; 8. Increase the average fuel efficiency of municipal fleet vehicles; reduce the number of vehicles; launch an employee education program including anti-idling messages; convert diesel vehicles to bio-diesel; 9. Evaluate opportunities to increase pump efficiency in water and wastewater systems; recover wastewater treatment methane for energy production; 10. Increase recycling rates in City operations and in the community; 11. Maintain healthy urban forests; promote tree planting to increase shading and to absorb CO_2; and 12. Help educate the public, schools, other jurisdictions, professional associations, business and industry about reducing global warming pollution.

NOW, THEREFORE, BE IT RESOLVED that The U.S. Conference of Mayors endorses the U.S. Mayors' Climate Protection Agreement as amended by the 73rd annual U.S. Conference of Mayors meeting and urges mayors from around the nation to join this effort.

BE IT FURTHER RESOLVED, The U.S. Conference of Mayors will work in conjunction with ICLEI Local Governments for Sustainability and other appropriate organizations to track progress and implementation of the U.S. Mayors' Climate Protection Agreement as amended by the 73rd annual U.S. Conference of Mayors meeting.

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