

How Chicago is facing the environmental challenges of the 21st Century

It's no secret that under the leadership of Mayor Richard M. Daley, Chicago has become one of the greenest cities in the nation. Whether it's green roofs, green streets or community gardens, Chicago incorporates sustainability into most aspects of urban living. Since 1989, the Chicago Park District has planted more than 600,000 trees and landscaped more than 90 miles of medians on major streets. The Park District has worked to add hundreds of acres of green space and many new parks throughout the city, that includes more than 100 campus parks adjacent to our public schools. Parks and public open spaces are essential building blocks of strong neighborhoods. The City of Chicago has established the Chicago Trees Initiative (CTI), which brings together the resources of 20 agencies and organizations to plant, care for and advocate for trees. CTI aims to help increase the overall tree canopy throughout the city. Along with CTI, the Park District hopes to inspire a civic and social movement that will involve the city, the green industry, the business community, and private homeowners in improving our urban forest.

Chicago has more than 1900 miles of alleyways – the most of any city in the world. Through the Green Alley program, we have tested a range of techniques such as permeable pavers and permeable concrete and we are now making these techniques the standard operating procedure for rebuilding alleys and in many other construction projects. Green buildings are an important part of our environmental efforts in Chicago. As we rehabilitate existing city buildings and construct new ones, we follow green building policies. Our Center for Green Technology – a rehabilitation of a former industrial building -- was the first municipal building in the world to be awarded a platinum rating by the U.S. Green Building Council. The Chicago Park District has six LEED certified facilities that include beach comfort stations and park field houses.

Chicago has established a Green Business Strategy program in which the city works with Chicago companies to help them save money by becoming more sensitive to the environment. As part of a major expansion of our McCormick place convention center, we have built a 3,000-foot tunnel to carry clean rain water from the roof to Lake Michigan. This will keep approximately 55 million gallons of rain water out of the sewer system. And our rain barrel program provides subsidized rain barrels to residents, encouraging them to both conserve water and disconnect their downspouts to keep storm water out of the sewers. The Chicago Park District has disconnected downspouts when appropriate and uses rain barrels and rain cisterns for irrigation.

Chicago is a leader among cities in the use of green roofs. We now have 600 green roofs completed or underway, totaling more than seven million square feet. The first rooftop garden was planted at City Hall in 2000. The garden is 21,000 square feet featuring nearly 150 different species of plants and two bee hives which produce honey

that is sold to benefit after school programs for teens. The City has worked to promote the construction green roofs through a combination of requirements and incentives included in a number of policies administered by City's departments.

These projects will reduce harmful emissions, reduce greenhouse gas emissions and create and retain jobs. World Business Chicago, the City's economic development organization, has implemented a green industry target study to retain, attract, and expand green industries and firms in Chicago. The headquarters of Veolia Environment, one of the world's largest environmental companies, was brought to Chicago. Additionally, the WorkNet Chicago program helps direct job seekers to training and education that will prepare them for green employment opportunities.

Climate Change

One of the biggest challenges facing cities is climate change. That's why, in 2007, the City of Chicago convened a task force to review the impacts and implications of climate change on the city. The results of the research are both serious and encouraging. They clearly demonstrate that Chicago's current trajectory poses risks to our economy and health. What developed from the research and the task force is the Chicago Climate Action Plan. Every Chicago resident and business has a role to play in implementing the Chicago Climate Action Plan, which will not only ensure a more livable climate for the world, but also for the city. The economy and quality of life could improve. Jobs could be created. New technologies will emerge.

The Chicago Climate Action Plan details steps for organizations of all kinds and suggests actions for every individual. As new technologies and options emerge, actions may change. The goal, however, remains the same: to reduce our emissions and prepare for change. The Plan lays out five strategies: energy efficient buildings, clean and renewable energy sources, improved transit options, reduced waste and industrial pollution, and adaptation.

Energy Efficient Buildings

Buildings account for approximately 70 percent of all the city's emissions and are the primary target for reductions. Key opportunities here are improving the energy efficiency of residential, commercial, and industrial buildings.

Many small changes in how motivated individuals use energy can add up to big emissions reductions. It can be as easy as turning off the lights and appliances when not needed, dialing down the thermostat at night or turning off the tap when brushing teeth. If half of all city residents took easy, low-cost steps like these -- and half of all managers of commercial businesses take similar steps -- they would each reduce their emissions by one metric ton of CO₂e.

The Chicago Park District has engaged in an aggressive program to retrofit many of our oldest buildings. Upgrading heating systems, switching out lights, and automating controls will not only reduce our emissions footprint but it will make our buildings more comfortable to occupants and reduce our expenditure on utilities. Additionally, the Park District is in the process of implementing an energy savings performance contract program District-wide by replacing the existing heating system and installing a new temperature control system at some of the Park District's oldest and largest facilities. This will allow the Park District to save in heating and operating costs, decrease green house gases, and increase energy efficiency.

Clean and Renewable Energy

To address climate change, the world must require higher efficiency from existing energy sources and move to cleaner power sources. Chicago homes and businesses receive power purchased from the larger regional grid of Midwest plants, which includes nuclear, coal-fired, natural-gas fired and renewable-generation plants. Some of these are a significant source of CO₂ emissions, especially those that use coal. Upgrading or repowering the 21 coal plants in the State of Illinois, including two in Chicago, could yield a significant reductions, Chicago's share of which would be 2.5 million metric tons of CO₂e. Implementation of a cap and trade system will also help achieve this goal.

The Chicago Park District currently gets 25% of its electricity from green sources. We are also looking into technologies such as geothermal for heating and cooling our new field houses.

Improved Transit Options

Every day, Chicagoans travel to a variety of places, from work to the store to the doctor, etc. Currently 21 percent of the city's greenhouse gas emissions are produced by cars, trucks, buses and trains. (This inventory excludes emissions from air travel, an approach that mirrors that of most other cities.) To lower emissions, a high-quality transportation system must include a mix of public transit, bicycling, walking, car sharing, energy-efficient vehicles and the development of transit-oriented neighborhoods. Chicagoans have many places to go, and they need a variety of convenient, energy-efficient ways to get there.

Since 2000, Chicago Transit Authority (CTA) ridership has increased by nearly 10 percent, and its fleet has introduced 228 hybrid buses since 2006. In 2009, CTA's Bus Tracker system was expanded to include all regularly-scheduled CTA routes, and a text messaging service was added to reach a broader share of CTA customers. The CTA Bus Tracker was the second most popular local Google search in 2009.

The Chicago Transit Board recently passed a resolution that recognizes the agency's ongoing sustainability initiatives and pledged their support for the continuation of these initiatives in the future. In addition, on Earth Day, CTA announced its membership with the Climate Protocol.

Reduced Waste and Industrial Pollution

Few Chicagoans ever see where the city's waste goes, yet an estimated 3.4 million tons of our waste (62 percent of Chicago's total waste) winds up in landfills every year. The amount of waste must be reduced that is sent to landfills.

A "Three R" initiative – reduce, reuse and recycle – is one way to achieve this goal. It is essential that both individuals and businesses join in the effort, and there are many opportunities to do so. The payoff will be significant: a 90 percent reduction in waste trucked to landfills by the year 2020 could net about a .84 MMTCO₂e drop in emissions.

The Chicago Park District has over 5,000 blue recycling cans throughout the city parks. Recycling efforts have been implemented inside of park facilities as well. In addition, the Park District partners with the City of Chicago's Department of Streets and Sanitation to host blue dumpsters where residents can recycle household items.

Adaptation

Chicagoans have long prized the city's spacious green parks and tree-shaded streets. In warmer months, when cooling breezes blow off the lake, people crowd the city's ball fields, summer festivals and open-air concerts. Even the bracing change of seasons is a source of civic pride. Yet as many who have already dedicated themselves to climate issues know, Chicago's familiar cycle of weather may soon become a dim memory. The earth responds slowly to changes in atmospheric gases. For that reason, over the next few decades, the city will continue to face the consequences of our heat-trapping gas emissions from decades past.

Aggressive action will reduce greenhouse gas emissions in the future. Everyone must also take action by adapting to changes that are already happening and preparing for the changes ahead. The previous sections have outlined mitigation strategies; key elements of the plan to reduce the likelihood of adverse conditions. Adaptation, the courses of action detailed here, will help reduce the impact of the changes that can be expected even if emissions are greatly reduce.

Urban Heat Island Effect

Chicago, like many built up areas, may experience the urban heat island effect in the summer. Darker colored surfaces and structures heat up during the daytime, releasing

this heat at nighttime. Therefore, the overall temperature does not cool off at night and the overall temperature remains high. This phenomenon is known as the urban heat island effect. Strategically planting trees or using lighter colored materials will counter the urban heat island effect.

The trees, the City and the private sector have planted shade buildings, reducing the urban heat island effect and the strain on air conditioning units. The City has also changed codes to require lighter colored roofing material to be used. The Chicago Park District uses a lighter, higher albedo material anytime re-roofing is done. These lighter colors reflect sunlight during the daytime, thus not contributing to the urban heat island effect and increasing the lifespan of the roof.

Waterways / Lake Michigan

Mayor Daley has been a champion of the Great Lakes, recognizing Lake Michigan as one of the greatest natural resources on our doorstep. His leadership has led to the creation in 2003 of the Great Lakes and St. Lawrence Cities Initiative, a group of both American and Canadian elected officials working together to protect the Great Lakes. He has made it his mission to encourage water conservation. The City of Chicago's Department of Water Management provides information to residents and business on how to conserve water. This includes water efficient fixtures, permeable pavement, and downspout disconnections.

LEED Facilities

The City of Chicago has adopted The Chicago Standard, a new set of construction standards for public buildings, and was developed to guide the design, construction and renovation of municipal facilities in a manner that provides healthier indoor environments, reduces operating costs and conserves energy and resources. It also includes provisions for outfitting, operating and maintaining those facilities. The Chicago Standard takes advantage of new building technologies and practices to enhance the well-being and quality of life of everyone working in and using these buildings, as well as the neighborhoods in which they're located.

The Chicago Standard is derived from the Leadership in Energy and Environmental Design (LEED™) Green Building Rating System developed by the U.S. Green Building Council (USGBC), a nonprofit coalition representing all segments of the building industry. The LEED rating system is the most widely used and accepted standard for green building in the United States. It also is a certification tool. Points are awarded by the USGBC to buildings that incorporate the design and construction practices and technologies listed in LEED. By accumulating points, a building can achieve a rating of LEED Certified, Silver, Gold or Platinum.