




STRATEGY 2.

CLEAN & RENEWABLE ENERGY SOURCES

GOAL:

TURN TO CLEANER AND RENEWABLE
ENERGY SOURCES

CO-BENEFITS:  jobs

 improved air quality and health

 adaptation

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Electricity use, natural gas use and transportation are the main sources of Chicago's emissions that contribute to climate change.

Actions

1. Upgrade power plants
2. Improve power plant efficiency
3. Build renewable electricity
4. Increase distributed generation
5. Promote household renewable power

For more information, see Chicago 2020 Mitigation and Adaptation Strategies chart on page 50.



To address climate change, the world must require higher efficiency from existing energy sources and move to cleaner power sources. The first section, Energy Efficient Buildings, focused on the need to rethink how we

build and retrofit our homes and businesses. This section focuses on the sources of power—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 substantial reductions, Chicago's share of which would be 2.5 MMTCO₂e. Implementation of a national cap and trade system will also help achieve this goal.

As new power plants replace the old ones, it is essential that they be built to high standards for efficient operations. It also is important to improve the efficiency of existing electricity generation plants in the region that supply Chicago's power. These actions together could drop greenhouse gas emissions by another 1.04 MMTCO₂e.

New ways to power the city

Several technologies for renewable energy show significant promise for Chicago and Illinois. Already in Chicago, people live in buildings retrofitted

with solar domestic hot water as well as solar photovoltaics (PV) installed on tops of roofs or in gardens. Chicago is also home to two megawatts of solar generating capacity. Wind power has high potential for Illinois, which has six wind farms up and running and more under construction. Procuring large-scale renewable sources for Chicagoans in order to reduce electricity emissions by 20 percent could replace four coal-fired power plants. Shifting to renewable power sources will net a 3.0 MMTCO₂e reduction in emissions.

Distributed solutions

With technologies improving, small on-site power plants today can often produce energy more efficiently than central power plants. Distributed generation using gas turbines produces about half the annual emissions of a typical coal plant, and avoids the efficiency loss that occurs when electricity is moved long distances over wires. Combined heat and power is an extension of distributed generation that produces electricity and recovers heat in the process. Increasing efficient power generated on-site using distributed generation and combined heat and power could replace more than 2 gigawatt hours of electricity and 81 million terms of natural gas by 2020, resulting in a drop of 1.12 MMTCO₂e.

Household-scale solutions

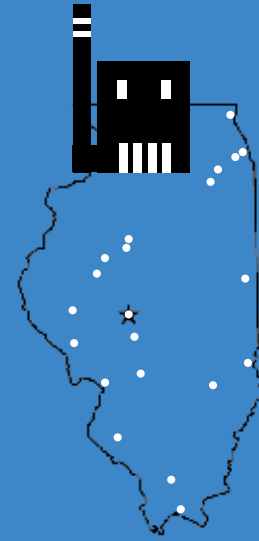
Families, too, can reduce their reliance on the large central power stations of the electrical grid. Instead, they can get part of their energy from small-scale power technologies, such as solar PV panels, solar thermal or wind turbines installed on roofs. If the City and utilities work together to provide incentives such as grants and credits, homeowners can double current household-scale renewable electricity generation. Installing renewable energy technologies in 5 percent of the city's housing stock could reduce greenhouse gas emissions by .28 MMTCO₂e.

Beyond improving our air, switching to renewable energy offers a bonus: job creation. Growth in the manufacture of green energy technology could deliver many more dollars to the Chicago economy.

For more information on Chicago's Climate Action Plan, visit www.chicagoclimatereaction.org.

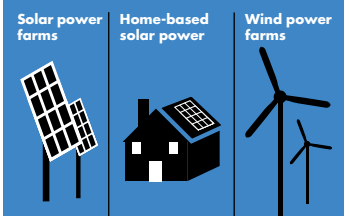
KEY FACTS: REFURBISHING COAL POWER PLANTS WITHIN ILLINOIS.

To address climate change, the world must require higher efficiency from existing energy sources and move to cleaner power sources. Upgrading or repowering the 21 coal plants in the state of Illinois, (see map below) including two in Chicago, could alone yield a reduction of 2.5 MMTCO₂e. Implementation of a cap and trade system will also help achieve this goal.

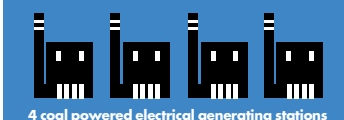


KEY FACTS: CREATING CLEAN & RENEWABLE POWER GENERATION.

Chicago has a growing number of buildings using solar, wind, geothermal and combined heat and power. The goal: large-scale renewable sources reducing electricity emissions by 20 percent, enough to replace four coal-fired power plants.



replaces





Chicago has installed solar PV and solar thermal panels on City buildings and schools and for nonprofit customers; more than 20 percent of the electricity used in City

buildings and 30 percent of that used in Chicago Park District facilities was purchased from green power in 2007. The City also attracted a solar thermal product

manufacturer and used its products to reduce the cost of heating hot water in more than 20 City buildings by 70 percent.

Photography: ComEd/Exelon BSC Audio Visual Services



The City and Commonwealth Edison's Residential Appliance Recycling Program helps retire and recycle inefficient lawn mowers, room air conditioners, refrigerators

and freezers. Together, refrigerators and air conditioners account for approximately 30 percent of electricity usage in the United States.

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LEADING BY EXAMPLE:

NEAR NORTH APARTMENTS



Photography: Mercy Lakefront Housing



Nonprofit developers are demonstrating that green building is not just for the wealthy. A project of Mercy Housing Lakefront, Near North Apartments—designed by renowned architect Helmut Jahn—has wind turbines to generate a portion of its own power. A 1,500-gallon rainwater

cistern is used for landscape irrigation; graywater is collected from showers and sinks and is used to flush toilets. Solar thermal panels, donated by the city, supply 30 percent of the energy to heat the building's hot water. A touch screen educates residents about green living.