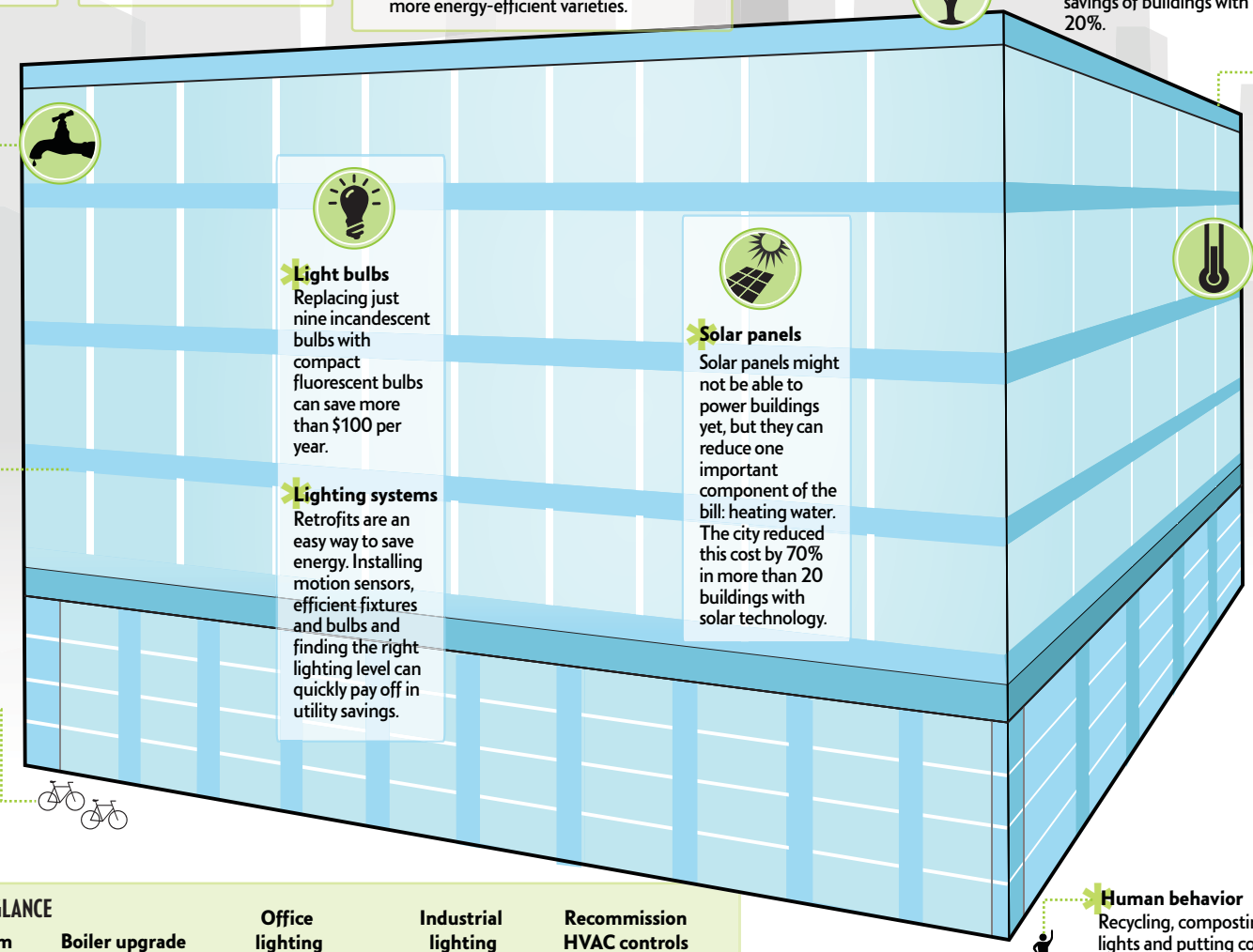
CRAIN'S LIST CHICAGO'S CARBON FOOTPRINT

In Chicago, commercial buildings account for up to 90% of the city's power consumption. "Greening" an existing space can help reduce that load and have a big impact on the area's carbon footprint. Retrofits can include new lighting, insulation, and heating and cooling. Each provides ways to save money as well as the environment. How much money? That depends on a number of variables specific to each project and whether it is for office or industrial space. *Crain's* asked Elk Grove Village-based Lime Energy Co. to provide cost estimates based on more than 150 recent client projects and outside studies. While the initial investment in all can be recouped in just a few years, CEO David Asplund says, "A good first step is to measure the existing energy use and calibrate against other similar buildings, or look at changes in consumption over the years to identify problem areas."

Greenhouse gas
Carbon dioxide, methane and other gases are produced from burning fossil fuels. The gases trap heat in the atmosphere, raising Earth's temperature.

Carbon dioxide
Worldwide CO_2 levels have risen 25% in the last century, from 295 parts per million in 1900 to 385 parts per million in 2007.

Retrofitting
Retrofits reduce building energy consumption and greenhouse gas emissions. Examples include updating the HVAC, water and lighting systems or replacing windows, furnaces and bulbs with more energy-efficient varieties.



Green roofs
On a 90-degree day, the air above a green roof can be 7 to 10 degrees cooler than above a blacktop roof. Studies show the energy savings of buildings with roof gardens is about 20%.

Insulation
Insulating the "building envelope" costs $2 to $5 per square foot, which is paid back through energy savings in three to five years.

Water reclamation
Using water collected in rain barrels and from other sources helps cut down on water consumption. In an apartment building, for instance, this could save tens of thousands of gallons of water a year.

Light bulbs
Replacing just nine incandescent bulbs with compact fluorescent bulbs can save more than $100 per year.

Lighting systems
Retrofits are an easy way to save energy. Installing motion sensors, efficient fixtures and bulbs and finding the right lighting level can quickly pay off in utility savings.

Solar panels
Solar panels might not be able to power buildings yet, but they can reduce one important component of the bill: heating water. The city reduced this cost by 70% in more than 20 buildings with solar technology.

Office temperature
A temperature difference of 3 degrees can save up to 9% on heating and cooling costs. Recalibrating controls that are old or have been overridden by tenants can yield a quick return on investment.

Window films
Placing a film on a building's windows blocks energy from the sun to save on cooling costs in summer and helps retain heat in winter.

HVAC
Retrofitting a building's heating and cooling system involves controlling humidity, reducing duct losses and replacing oversized equipment. Replacing the fans alone can pay for itself in just a few years. A good time to retrofit is when repairs or replacements are needed.

Transportation
Eliminating one 10-mile car trip a week would save 0.22 metric tons of CO_2 a year.

Human behavior
Recycling, composting, turning off the lights and putting computers on sleep mode can help reduce the plug load.

COSTS VS. BENEFITS AT A GLANCE

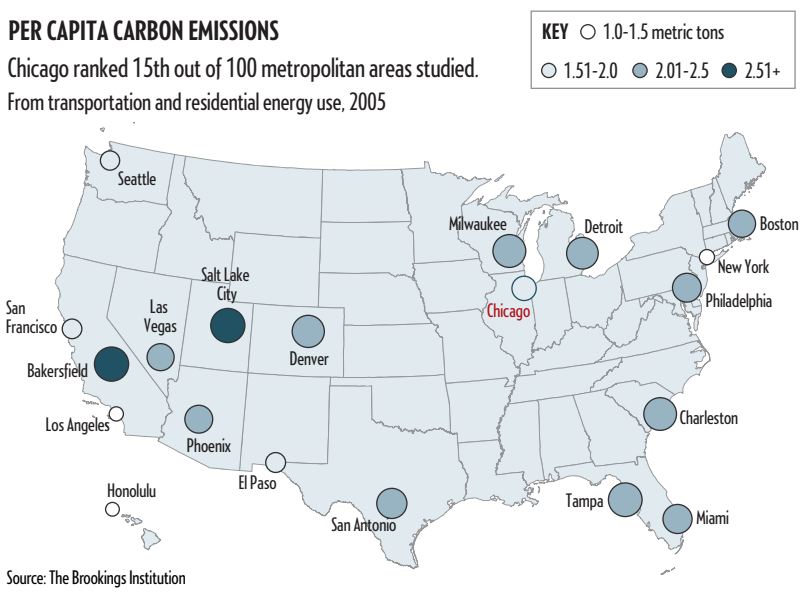
	Window film	Boiler upgrade	Office lighting	Industrial lighting	Recommission HVAC controls
Cost per sq. ft.	35¢-45¢	70¢-$1	$1-$1.50	$1-$1.50	5¢
Annual savings per sq. ft.	5¢-10¢	up to 10¢	25¢-40¢	30¢-80¢	up to 10¢

Note: Estimates don't include utility rebates, incentives or tax benefits. Source: Lime Energy Co.

Sources: Center for Neighborhood Technology, Lime Energy Co., *Green Source Magazine*

PER CAPITA CARBON EMISSIONS

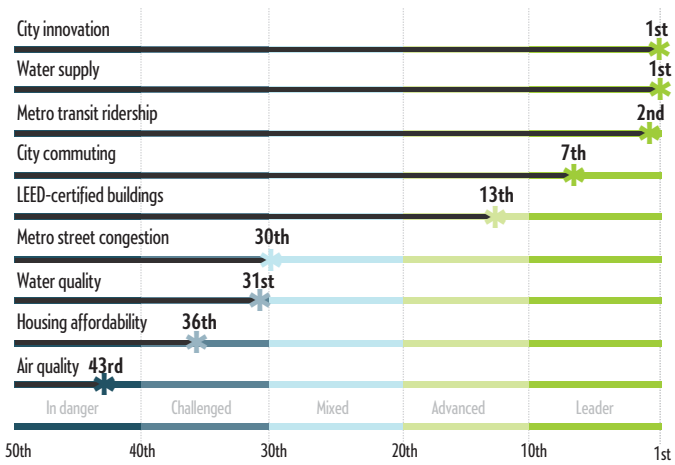
Chicago ranked 15th out of 100 metropolitan areas studied.
From transportation and residential energy use, 2005



Source: The Brookings Institution

SUSTAINABILITY RANKING

Chicago ranks fourth out of 50 cities nationwide

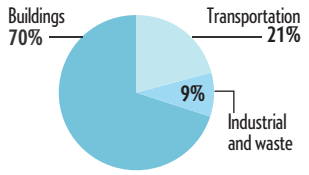


Source: SustainLane 2008 US City Rankings

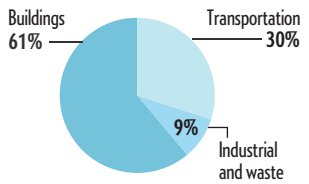
SOURCE OF GREENHOUSE GAS EMISSIONS, 2000

The city and suburbs vary slightly in their emissions mix; the city has more big buildings, but suburbanites drive more.

CHICAGO



SIX-COUNTY AREA



Source: Chicago Climate Action Plan

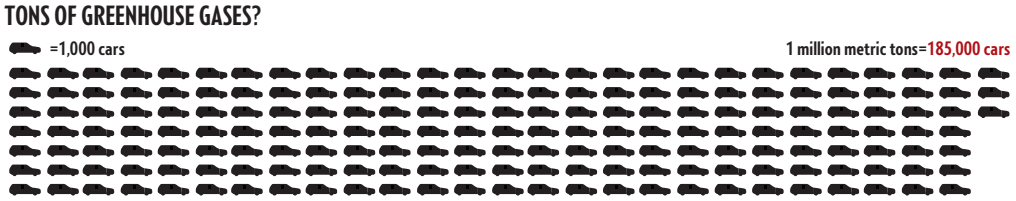
REDUCING EMISSIONS

In 2005, **36.2 million metric tons** of greenhouse gases were emitted in Chicago. That's the equivalent of **12.7 tons per year** for each of Chicago's 2.8 million residents. If the city continues on its current path, it will reach **39.3 MMT** by 2020. Chicago's Climate Change Task Force's goal is to cut emissions to **24.2 MMT** by 2020. That's a **15.1 MMT** reduction.

HOW MUCH IS A MILLION METRIC TONS OF GREENHOUSE GASES?

One metric ton is equivalent to driving 2,500 miles, or about one-fifth of a car.

1 metric ton of emissions



To meet Chicago's goal, its 2.8 million residents need to remove the equivalent of 2.8 million cars.

Source: Chicago Climate Change Task Force