

The Windy City gets a makeover

Rahm Emanuel is passionate about updating one of the world's iconic cities. Just don't call them 'infrastructure' improvements. An exclusive interview with the Mayor of Chicago.

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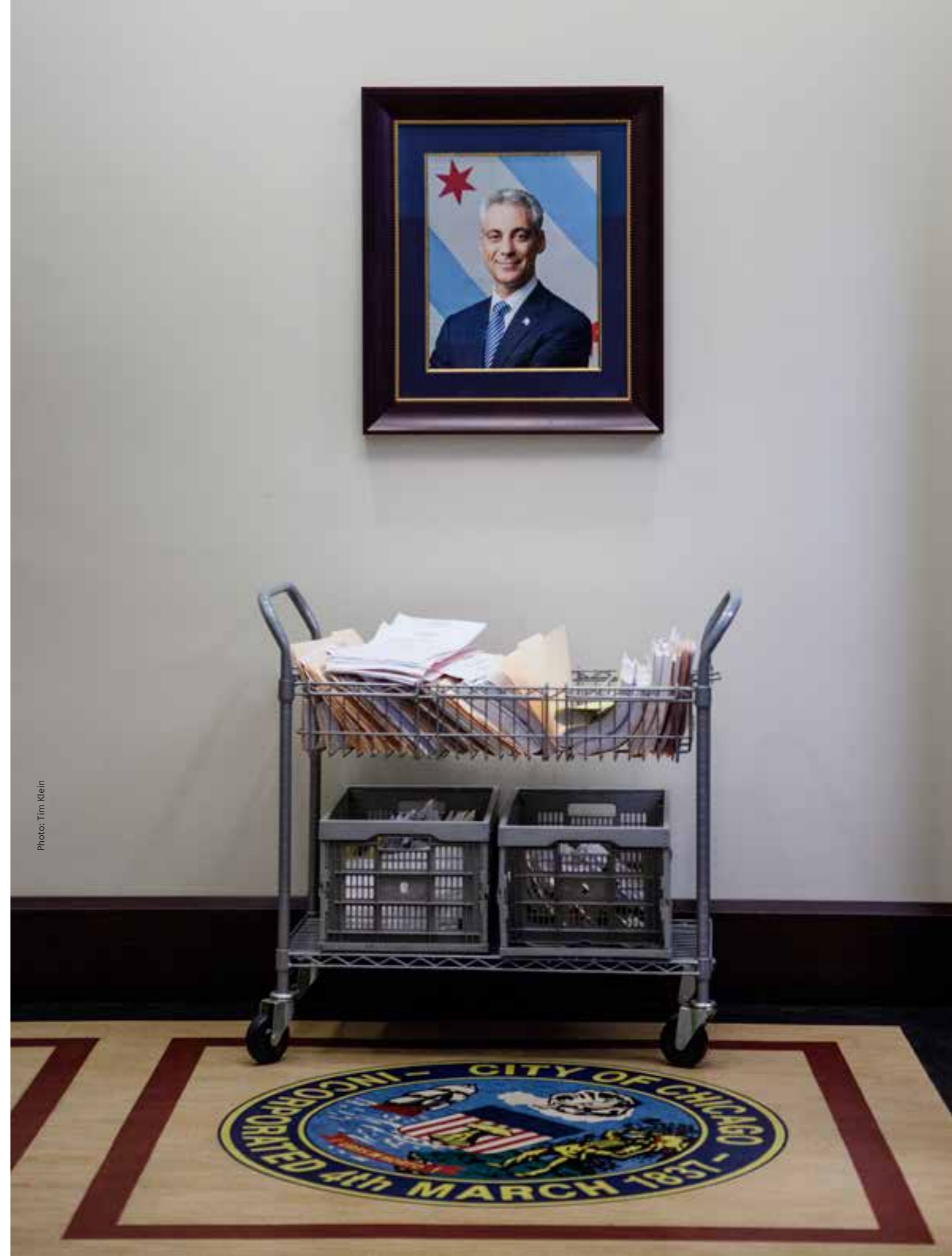


Photo: Tim Klein



Chicago's Mayor Rahm Emanuel believes investment in urban infrastructure can make the city more livable and create jobs throughout the economy.

Chicago Mayor Rahm Emanuel is running late for our interview. He bounds into the room, offering a hand and an apology for his tardiness, explaining that he's just attended a grocery store opening. Emanuel notes my surprise. He is the mayor of the third-largest city in the USA. He is the former chief of staff for US President Barack Obama. What is he doing at a ribbon-cutting for a grocery?

Emanuel smiles. Whole Foods, an upscale health-oriented grocery that normally builds in affluent communities, has just opened its newest store in Englewood, one of Chicago's poorest, high-crime neighborhoods. "It took me three years to get that store," Emanuel says. Organic blackberries and hormone-free beef in a poor, African-American neighborhood is an example of Emanuel's 21st-century view of infrastructure – a view that starts with people instead

of pipes. "I have a broader view of infrastructure than you," Emanuel says. "You probably think of infrastructure as pipes and potholes. Infrastructure in the 21st century includes quality of life."

It's an unconventional view, Emanuel admits. But it's hard to argue with the results. Chicago has been the nation's number-one city for corporate relocations three years in a row, and has been the leader in attracting foreign investment for four years running. That investment, the mayor believes, is a direct result of work in the sometimes boring, always costly realm of infrastructure improvements. "Some people think I've lost my mind over infrastructure," says Emanuel, who in his five years in the mayor's office has spent much of his energy focusing on the nuts and bolts of city life rather than glitzy, headline-sparking projects. "Infrastructure improvements clearly gave

companies the confidence they can recruit the workforce they want, and get them to work efficiently."

What does that mean in real terms? As we speak, the City of Chicago is in the midst of replacing 1,450 kilometers of water pipes, 1,100 kilometers of sewer pipes, and 167,000 catch basins. "We're rebuilding the entire water system," Emanuel says. The city's antiquated water pumping stations, run by steam turbines and boilers, are being retrofitted with the help of Siemens to energy-efficient electric pumps. The updates at one pumping station resulted in about US\$7.5 million annually in energy and operating cost savings, and a reduction of 17,380 tonnes of carbon emissions – the equivalent of taking 2,888 vehicles off the road. Siemens technology upgrades at one water purification plant will save another US\$4 million in energy and maintenance costs.

Photo: Todd Winters

"Infrastructure in the 21st century includes quality of life."

Rahm Emanuel, Mayor of Chicago

Emanuel comes home to rebuild

Emanuel is reshaping Chicago from the inside out, by upgrading the 20th-century foundation on which a 21st-century city is rising. The work is seldom flashy and often takes years, but the hard-charging Emanuel sees it as the kind of work that city leaders around the world must focus on to compete in a global economy and meet the needs of a changing population. Emanuel was born in the city he now leads. He was trained early as a ballet dancer, but turned to the more bruising art of politics in college. At 31, he became the finance committee director for the successful 1992 presidential campaign of Bill Clinton. After serving in the Clinton administration, Emanuel was elected to the US House of Representatives in 2002, representing his hometown. In 2008, Emanuel was named chief of staff to fellow Chicagoan, US President Obama.

He left the White House in 2010 to run for the office of mayor of Chicago, and is now serving his second four-year term. Emanuel recognized that for the city to grow, its infrastructure had to be modernized. "Our streets were a set of potholes," he says. "Our public transportation had slow zones where trains were moving 15 miles per hour [25 km/h]



when they could be going 50." Schools were crumbling, parks deteriorating, and much of the city's water system dated to the start of the last century.

Energy and maintenance savings from just one water purification plant, powered by Siemens switchgear technology, controls, and power transformers, could be as high as US\$4 million per year. "If we hadn't replaced the water system, we'd have replaced the entire system by 2054 anyway, one break at a time," Emanuel says. "Moreover, we're saving two years' worth of water usage [by fixing leaking pipes]. And we're not just replacing pipe," the mayor adds. "We're giving people skilled jobs at the same time. That's something that policy shops don't think about when they talk about infrastructure."

Start with people instead of projects

Emanuel has little patience for the traditional approach to infrastructure. He doesn't even like the word.

"Infrastructure' is a great policy term, but it doesn't get to how people lead their lives," says the mayor. "To the public, it's about getting to and from work. It's about their kids and their neighborhood and their playgrounds. If we are providing more bus services or train services – both of which Chicago now offers –, you can spend more time with your kids before they go to school. That's not how infrastructure is framed in policy meetings, and I've been in a lot of policy meetings in Chicago and in the White House. But it's how people understand what we're doing."

For Emanuel, infrastructure is about improving quality of life. "My job as an elected official is to help people understand how what we're doing will change how they lead their lives," he says. Emanuel leans forward in his chair and rattles off a series of examples to prove his point. Improvements to the subway system have knocked 20 minutes off "slow-zone" transit that was creating choke points for commuters. All subway

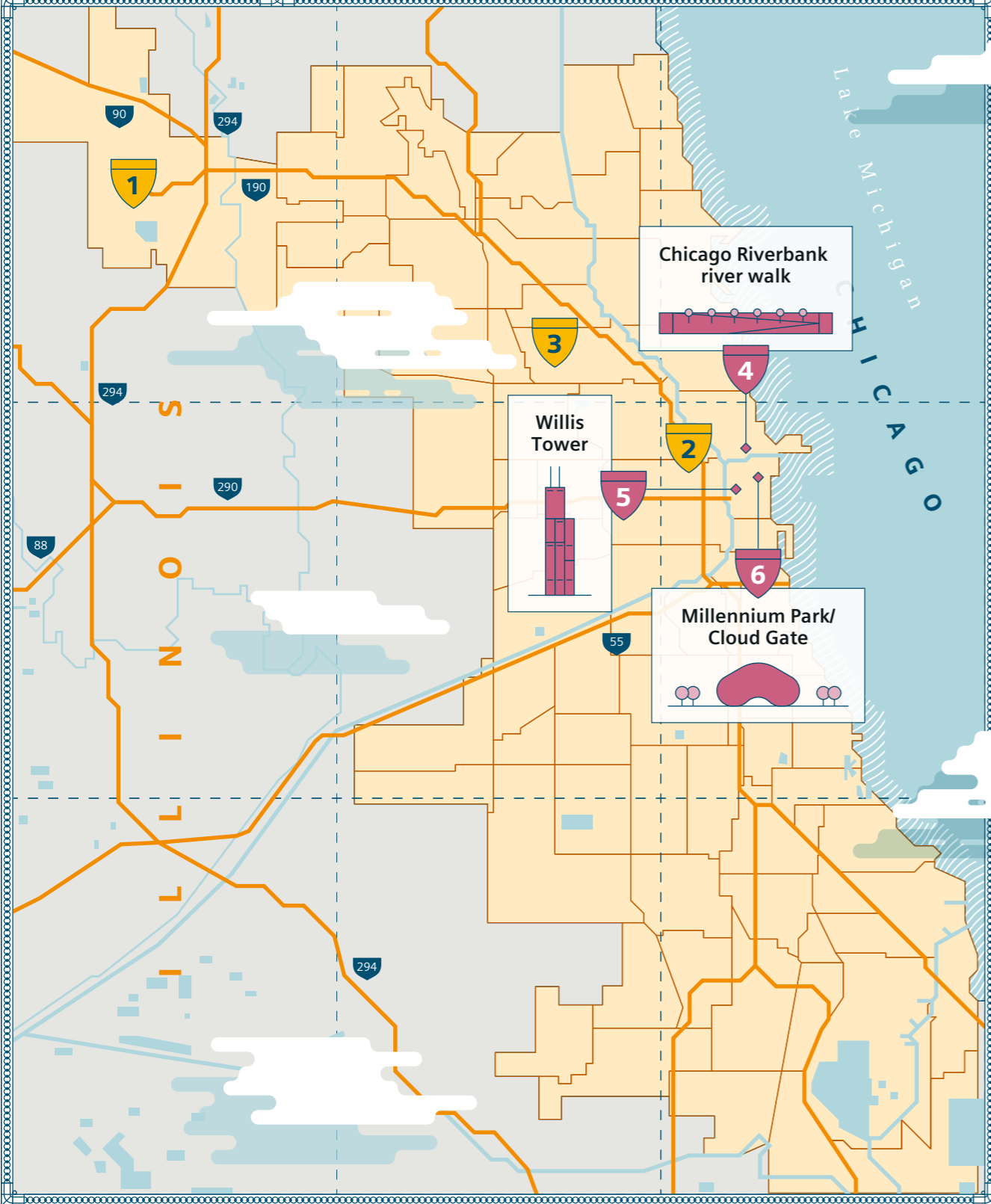
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Mayor Rahm Emanuel

Born in 1959 in Chicago, Illinois, Emanuel has had a distinguished career as a public servant. After working as an advisor to former Chicago mayor Richard M. Daley and on the election campaign of Bill Clinton, Emanuel was a senior White House advisor from 1993 to 1998. From 2003 to 2009, he represented Illinois' 5th District in the US House of Representatives. In January 2009, he gave up his seat to become White House Chief of Staff under President Barack Obama. He was elected the 55th mayor of Chicago on 22 February 2011.

CHICAGO

Known affectionately as "Windy City" or "Chi-Town", Chicago is the third-largest city between the US East and West Coasts. In its 180-year history, it has seen many changes, most notably after a great fire devastated large parts of the city in 1871.



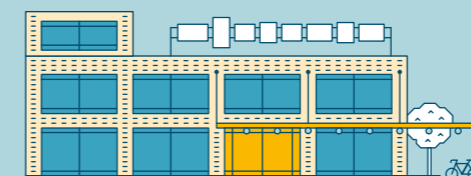
1 O'Hare International Airport

Siemens Desigo CC building management system in Terminal 3: Climate control, fire detectors, user-friendly remote management access.



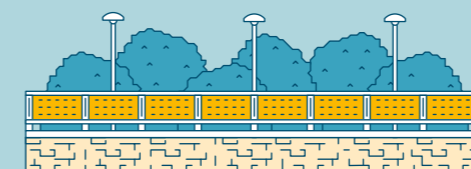
2 Fulton Market

Former meat packing plant transformed into restaurants and shops serviced by a new train stop.



3 The 606

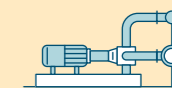
4.3-km stretch of old rail line converted to walk and bike path connecting four neighborhoods



City Hall's major projects

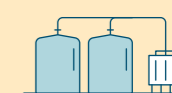
Rebuilding the municipal water supply system

Updates at one pumping station generated **ca. US\$7.5 million** annually in cost savings and eliminated **17,380 tonnes** of carbon emissions.



Water pipes		1,450 km	TO BE REPLACED
Sewer pipes		1,100 km	
Catch basins		167,000	

Upgrades at one water purification plant will save another **US\$4 million** in energy and maintenance costs.



Retrofitting public buildings "Retrofit Chicago Energy Challenge"

	62 buildings		4 million m ² of building space
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PPP-funded program intended to save **20%** in energy costs within **5 years**.

At 2015 rate of **11.7%** energy savings, participating companies save **US\$6.4 million per year**.

UI Labs – "Chicago's R&D backbone"

UI Labs
First-of-its-kind innovation accelerator brings together top researchers from business and academia to apply digital convergence, computing, and big data to the reinvention of cities.

Partners: Microsoft, Accenture, Commonwealth Edison, Siemens.

Projects: Network of sensors and cloud-based analytics on performance of storm water system and monitoring of underground infrastructure such as gas, water, and power lines.

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At the heart of the business district is the Chicago River, flanked by the city's iconic skyscrapers and a popular destination for tourists and locals.

Chicago: America's 'Second City'

Population: 2.7 million
 Visitors: 52 million (2015)
 GMP: US\$640 billion (2015)
 Area: Over 600 km²
 Population density: 4,627 residents per km²
 Ranked 6th-most walkable large city in the USA (2016)

cars now have 4G wireless communication capability, allowing commuters to work, browse the internet, and communicate.

O'Hare International Airport, one of the busiest airports in the world, is getting a major facelift. Terminal 3 at O'Hare is the first spot in the USA to integrate Siemens Desigo CC, a building management system that manages climate control automatically, with 40,000 data points, 100 fire detectors, and user-friendly remote access for management monitoring and access. The system can compare trends over various time periods to assess the best way to optimize energy efficiency while maintaining the comfort of busy travelers.

Common-sense energy savings and 21st-century jobs

City-owned buildings have been retrofitted with more energy-efficient heating and cooling systems and controls. "We've saved US\$20 million a year through retrofitting of city government buildings," Emanuel says. Another project pushed by the mayor, the Retrofit Chicago Energy Challenge, now encompasses 62 buildings and 43 million square feet of building space, making it one of

the largest voluntary efficiency programs in the country. Funded through public-private partnerships, the program has the goal of saving 20 percent in energy costs within five years. Current participants haven't reached that target yet, but at the 2015 rate of 11.7 percent energy savings, participating companies save US\$6.4 million per year. "The Energy Challenge moves the City of Chicago and its residents forward by reducing costs for building owners, cutting carbon pollution, and putting people to work in 21st-century jobs," the mayor points out. "Working together to create and apply common-sense energy-saving initiatives like this one is a true win-win that makes our environment safer and our economy stronger for every Chicagoan."

Skype school lessons are available in English and Spanish at the city's public libraries on subjects from English to Calculus. The city rebuilt 325 playgrounds in the city from top to bottom and converted 4.3 kilometers of old rail line into a walk and bike path connecting four neighborhoods. Called "The 606" after the name of the abandoned industrial track, the route is now dotted with public art, similar to the High Line in New York City. Train stations are

being rebuilt from the ground up, and a river walk is now lined with up-scale restaurants.

"Imagine what that does to property values," the mayor says. "Imagine how that keeps people in the city longer, after they have children. Infrastructure is not just an airport, it's not just a road, it's not just public transportation," he adds. "Infrastructure needs to include quality of life. It has a ripple effect through the rest of the economy."

Half of the city's streets will be replaced by the time his term ends in 2020. "We're going to put 18,000 people to work for a decade on roads projects," Emanuel says. "That's a big win. And guess what, people get a new road with it. Are they excited about their road being ripped up? No. But they are excited when it's all done and they see a visible benefit. They see a new school in their neighborhood, and they see a visible benefit. They see a better train station and a new train, because we're replacing all our rail cars. Those are big wins for them."

UI Labs: Chicago's R&D backbone

Helping fine-tune that vision is the UI Labs, a first-of-its-kind innovation accelerator launched after Emanuel took office to bring together top researchers from business and academia to figure out how to apply digital convergence, computing, and big data to the reinvention of cities. Microsoft, Accenture, Commonwealth Edison, and Siemens are partnering with the City of Chicago to study how technology can help run cities more efficiently. Emanuel calls UI Labs the "backbone for research and development" for Chicago and its companies. One project aims to develop a network of sensors and cloud-based analytics to report on the performance of the city's storm water system, and for the monitoring of underground infrastructure such as gas, water, and power lines.

Infrastructure projects aren't cheap. To address costs, Emanuel was instrumental in the creation of the Chicago Infrastructure Trust in 2012, a public-private partnership

designed to provide alternative financing for innovative infrastructure projects, such as energy-retrofitting government buildings and Chicago's museums and zoo. Next up is "smart lighting." Chicago has more streetlights than any other city in the world, as Emanuel points out. "There's a long-time policy that streetlights should allow everyone to see sufficiently well at night to put their key in their front door." But the city has numerous kinds of lights – "there's no real efficiency."

With the help of the Infrastructure Trust, the city is developing plans to replace every single one of them, switching from antiquated high-pressure sodium lamps to energy-efficient LEDs. "No city has ever replaced all its lights," Emanuel says. "I think the biggest replacement scheme so far was in Houston, and they replaced just 12 percent of their lights." Energy savings are just one aspect of the project. The light poles will be equipped with smart technology, allowing them to carry Wi-Fi and cell phone signals. Sensors can be added to alert maintenance when a light is about to burn out. Cameras could be added.

A future comes into view

The mayor knows it will be years until his infrastructure investments pay off, and that those efforts are

often overshadowed by other headline-grabbing problems. But the mayor is playing a long game, believing that the mundane momentum built by replacing pipes and streetlights will improve quality of life for decades to come. "I try to get people to understand the investments we're making," says Emanuel, who believes quality of life is the economic engine of the modern city. "Getting to and from work and enjoying your neighborhood is 21st-century infrastructure," he states.

The mayor is unsure where he'll be in 20 years, but with every new water pumping station and retrofitted office building, the vision of Chicago's future is becoming clearer. "Chicago is going to be younger," Emanuel says. "People will want housing close to their work. And quality of life will be more important than today." With that, the mayor bounds out of his seat, heading off to his next appointment. Halfway to the door, he turns around and restates his credo one more time: "You have to understand how people lead their lives," Emanuel says. "If you do that, that's a win for everybody." ■

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Smart grid: Chicago's regular street plan was laid down by the city's founders, with eight streets to every mile running westwards from Lake Michigan and 16 aligned north-south.

Photos: Todd Winters; Plainpicture