CHICAGO ARCHITECTURE CENTER

EXPLORING THE ISSUE:

# Greening the City

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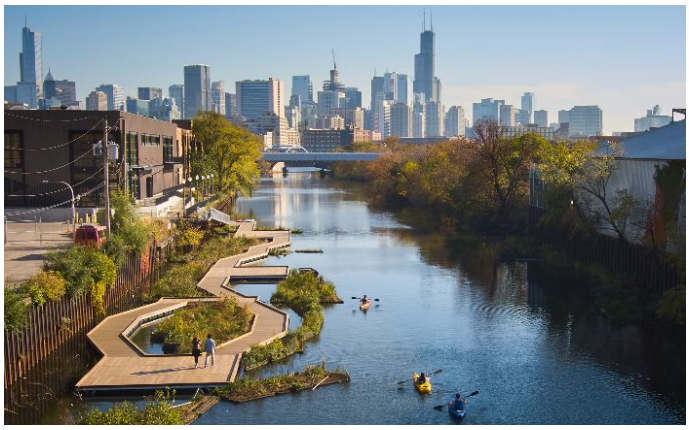
# INTRODUCTION

The first thing to know about climate change is that its impacts differ widely from city to city and around the globe. In Chicago, we're getting wetter and warmer. Built on a swamp, our history is one of persistent flooding that is only set to worsen with intensifying storms and rising water. At the same time, sizzling summers expose huge fluctuations in temperature neighborhood to neighborhood thanks to our uneven urban tree canopy. In 2022, Chicago updated its Climate Action Plan with a set of steps and guideposts for mitigating these harms. It aims to dramatically cut local greenhouse gas emissions and energy consumption over the next 20 years to secure a livable and equitable future. In this paper, we unpack Chicago's most persistent climate issues and the prescriptions and policy responses to date.



The Wild Mile blends recreation and habitat restoration on the North Branch of the Chicago River. Photo: SOM

## Mitigate

Chicago and the nation have been locked in a mode of climate mitigation, with diminishing returns. Worsening floods, hurricanes, tornados, droughts and wildfires understandably provoke reactive responses, but we are almost out of time to make a broader societal transformation to ward off the catastrophe that a warming planet will bring. Mitigation, conservation and de-carbonization must happen in tandem.

In our region, two main climate-related perils endanger residents and impact quality-of-life: the urban heat island and increased flooding and shoreline erosion. Temperatures in urban neighborhoods at the end of the hottest days can exceed outlying areas by as much as 15-20 degrees Fahrenheit, or an average of 7-9 degrees in summer. It took a massive loss of human life in the 1995 heat wave to wake Chicago up to the grossly unequal distribution of tree canopy shade by income and race. There's much work to be done: despite an estimated four million trees within city limits, Chicago's overall canopy coverage decreased from 19% to 16% between 2010 and 2020. Our 2008 Climate Action Plan called for at least one million more in areas of need by 2020; only 77,000 were planted. The 2022 Climate Action Plan promises 75,000 new trees planted in historically underserved neighborhoods by 2026, and as of April 2024 about 41,000 trees had been planted in the public way.

Green roofs are a fun way to cool the city and eat carbon, although they obviously cannot shade our streets. The 2008 action plan did touch off a flurry of roof planting, but is Chicago still a category leader? Yes and no. There are several hundred green roofs across town, and a city ordinance promotes green roof construction on new downtown buildings by offering density bonuses in exchange for minimum 50% plant coverage. Many cities do some version of this. Fewer actually mandate green roofs on new or retrofitted buildings as Denver, Toronto and San Francisco have done. Why not Chicago?

Green roofs also bridge into flood management by increasing the city's porous surfaces. It's part and parcel of the "sponge city" movement that uses urban design and targeted interventions to make the urban landscape more absorbent. This strategy complements essential infrastructure like deep tunnel systems, storm surge barriers and levees that keep cities from literally drowning during intense storms. Chicago's permeable alley program is one example of adaptation at a meaningful scale. Another local effort seeks to construct large cisterns for the capture and slow release of storm water beneath public school gardens and playgrounds.

Especially buzzy these days are so-called "wild urbanism" projects, which seek to reintroduce nature to the city's interstitial open spaces and waterways. Old-fashioned habitat restoration is part of it, except that these green oases often double as much-needed recreational space. The Wild Mile and Big Marsh Park are celebrated local examples— remediating the river and former industrial land, respectively, and leading with good design.

# A DEEPER LOOK

Every big storm washes away a little more lakefront, hindering public access and threatening buildings at the water's edge in neighborhoods like Rogers Park and South Shore. Rising lake levels only exacerbate the problem. This can be ameliorated by sandbags, break walls and concrete revetments. Surely we need these defenses, but let's also acknowledge that our development patterns are in conflict with Mother Nature—we have laid multi-lane roads, parking lots and structures right up against the lake. A wider green buffer would certainly help control erosion and create new, beautiful places for Chicagoans to enjoy. There is potential to create more park acreage along the lake through the current Redefine the Drive plan for North Dusable Lake Shore Drive. But there's also a real danger off reinforcing an auto-centric lakefront for generations to come, which would be a disservice to the city's stated climate, mobility and equity goals.

## Cut Our Carbons

Mitigation is key, but it won't free us from our climate quagmire. We need radical change in public policy, investment priorities and personal action to slash society's carbon footprint. Buildings are major polluters and energy hogs: roughly 70% of Chicago's greenhouse gas emissions stem from buildings (all types—houses, apartments, office parks and towers, warehouses, etc.). For decades we have built unsustainably, epitomized by Modernism's glut of glassy towers. To attain superior energy performance and resilience, a new generation of net-zero and net-positive buildings is instead drawing lessons from energy-efficient 19th and early 20th century masonry architecture.

Although we find ourselves stuck in a "demonstration" phase, there are a growing number of projects that seek to inspire a sustainable future: Fifth City Commons on Chicago's West Side models sustainability for all in its provision of affordable housing designed to the PHIUS (Passive House) standard; a new civic anchor for the Altgeld Gardens public housing community on the Far South Side is a beautiful new library, day care and community space designed as "net-zero ready" with an array of conservation strategies; and, a new charter school near Midway Airport employs numerous passive heating and cooling strategies and solar arrays in accordance with the Living Building Challenge. It will be net-positive, meaning the school will actually send energy back to the grid.

Mobility is another area for improvement. Chicago is a car city for many, whether by necessity or choice. Our hub-and-spoke "L" system preferences inbound/outbound trips to downtown and creates large service gaps for those who live more than a few miles from the Loop. However, mass transit is one case where the old adage, "build it and they will come," actually holds true. We need ambitious and equitable investment in trains, bus rapid transit (BRT) and a modernized network that connects people to jobs, services and entertainment across the region. We need it for strengthening communities and to further ween ourselves off fossil fuels.

In concert with transit expansion, there is amazing potential in transit-oriented development (TOD) to grow transit ridership and build walkable communities across Chicago. Zoning reforms and the removal of parking mandates help by allowing flexible land uses and higher densities in areas near transit where previously there may have been only low-rise commercial buildings or empty lots. Cycling infrastructure and pedestrian-friendly street design complement this model and help make a car-free lifestyle practical and desirable.


The Academy for Global Citizenship campus on the Southwest Side (top), designed by Farr Associates; and Lucy Gonzalez Parsons Apartments in Logan Square (bottom), an example of equitable transit-oriented development (ETOD), designed by LBBA Architects.

# A DEEPER LOOK

## Retrofit for the Future

It's estimated that 80% of buildings today will still be with us in 2050. In other words, green retrofits must play a leading role in any de-carbonization strategy. Can energy-efficiency become something that building owners covet?

The Chicago Energy Benchmarking Ordinance requires property owners of commercial, institutional and residential buildings larger than 50,000 square feet to verify energy efficiency each year. Participating properties represent approximately 20% of total citywide carbon emissions. The data collected helps produce an Energy Star score that is either a badge of honor or a mark of shame. Common sense holds that building owners will chase favorable scores as more tenants demand environmentally friendly real estate.

Similarly, an architect-led effort called the 2030 Commitment seeks pledges from U.S. firms to reform their design processes and set targets to achieve carbon neutrality by 2030, for a 70% reduction in greenhouse gas emissions through new work. It is a pressure campaign starting to pay dividends, with more than 1,000 firms pledged to date including many large corporate firms. Roughly one-in-ten pledged firms are based in the Chicago area. It's not a mandate, but this may be the most realistic way to get the industry fully invested in sustainable design.

Examples of ambitious green retrofit in Chicago are small in number but dramatic in range, from the Willis Tower's recent $500 million modernization to the renovation of the old Lawson YMCA apartment building in River North as an affordable and highly energy-efficient place to live. City government has also committed to sourcing 100% renewable energy for powering all of its operations and municipally-owned buildings by 2025, and for all buildings in Chicago by 2035. Add this to the CTA's commitment to electrify their entire bus fleet by 2040 and the progress is palpable, but only with an accountable and well-resourced plan to get us there.

## Make the Switch!

incentives are out there for builders and homeowners to electrify appliances and convert to renewable energy sources with greater ease. Here's a handy guide for making the switch to electric at home. And this rebate and tax credit locator includes a range of Energy Star-certified electric appliances.

## Make No Little Plans

The 2022 Climate Action Plan offers a blueprint for meeting our commitments to goals of the Paris Agreement. Chicago was the first large American city to release a comprehensive Climate Action Plan back in 2008, but it has been action deferred. The new plan includes five pillars for achieving a 62% reduction in greenhouse gas emissions by 2040: 1) Retrofitting homes and businesses for energy-efficiency and clean energy; 2) Reducing waste through citywide composting and reuse of materials; 3) Delivering a zero-emission transportation network; 4) Transitioning away from fossil fuels in city operations and city-owned buildings; and 5) Making investments in community health and resilience.

In Mayor Brandon Johnson's first full year in office, some strides were made in a couple of key areas: environmental justice and green building retrofit. $15 million was allocated to the existing Green Homes Chicago program to extend free energy-efficient upgrades like insulation and heat pumps retrofit to hundreds of income-qualifying households. The new Clean and Affordable Buildings Ordinance leverages federal dollars to help lower building emissions, create green jobs and save residents money on utility bills. And the mayor awarded grants to 22 businesses and non-profits to make investments toward neighborhood stormwater management, electric vehicles and renewable energy. Lastly, the City is currently seeking damages from big oil and gas companies for "deceiving Chicago consumers about the climate dangers associated with their products."

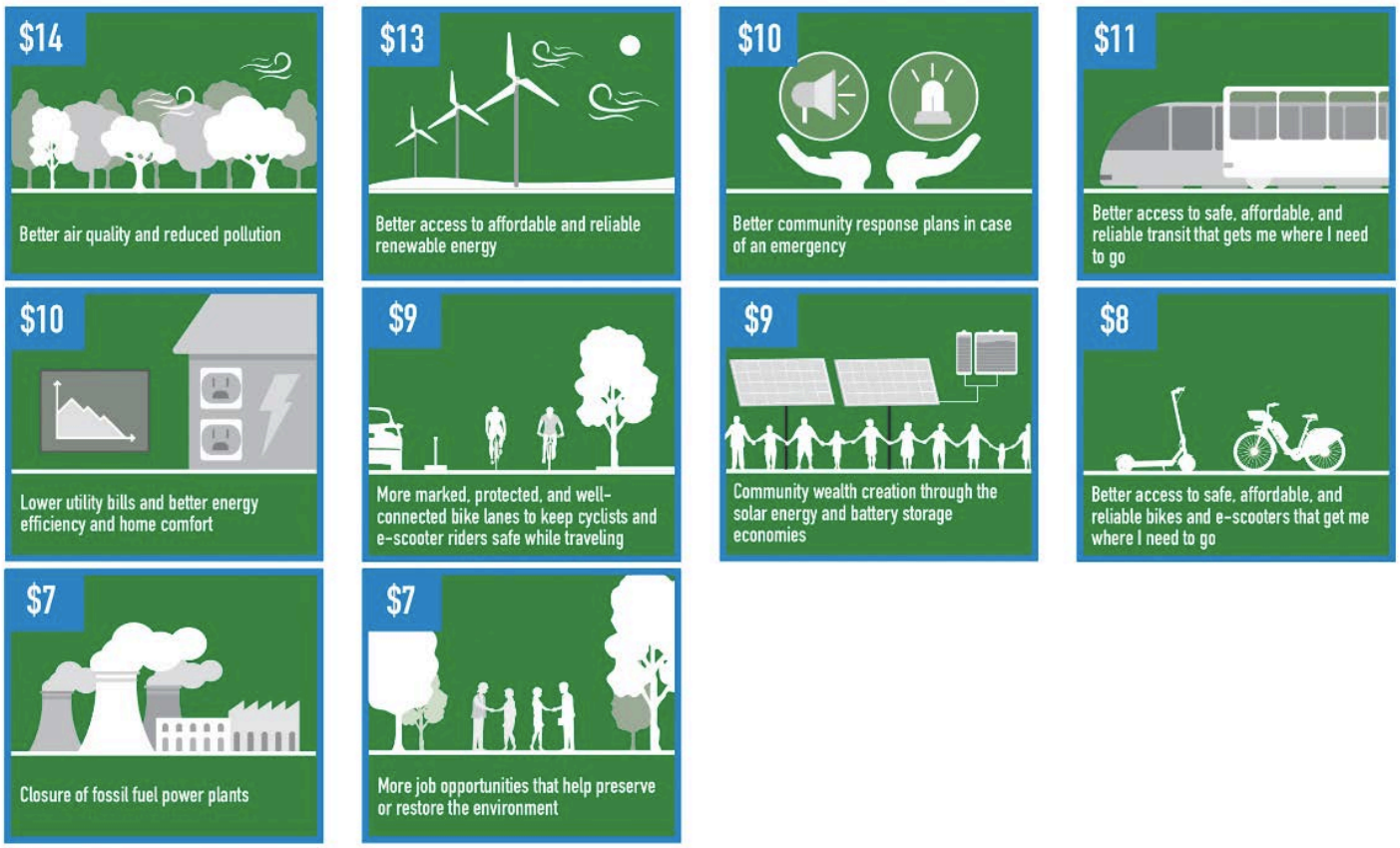
Mayor Johnson also re-established the City's Department of Environment to better manage policy measures and budget allocation toward climate mitigation, pollution, and waste. We hope the funding only grows.

# A DEEPER LOOK

**Conclusion**

The U.S. has lost ground to many other countries in meeting its de-carbonization pledges. Years have been wasted. We hope that federal policy will course-correct, but states and municipalities cannot sit idly by. Our local leaders must recognize the urgency and act now. Without enforceable climate policies for Chicago, we risk continuing a pattern of broken promises. We need clear communication about where we're excelling or not, appropriate staffing and a funded plan to help the city reach its carbon-free potential. One hopes that real progress comes through the execution of the 2022 Climate Action Plan—the goals are laudable indeed.

We also need to take into account the very real prospect of Chicago becoming a safe harbor for "climigrants," or those people fleeing fires, floods, droughts and extreme heat in other parts of the country. This is already underway, gradually, but as Hurricane Katrina proved, millions can be displaced almost overnight.




How every $100 dollars of funding to fight climate change should be allocated according to community input for the 2022 Chicago Action Plan.
Source: City of Chicago via Streetsblog Chicago