

# 10 facts about all-electric new buildings



1

Chicago's electric **grid can handle** the electrification of all newly constructed buildings.

2

**Heat pumps** work in Chicago's cold climate.

3

**Electrification** of buildings will create jobs.

4

Newly constructed all-electric buildings are **more affordable to build and maintain** in Chicago than gas-powered buildings.

5

Newly constructed electric buildings will have **lower energy bills** than fossil fuel buildings.

6

All-electric buildings are the **quickest and easiest way to reduce climate pollution** from the building sector.

7

Cooking with **induction is healthier** than cooking with gas.

8

**Electrification** of buildings will be equitable.

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Heat pumps are **just as reliable** as fossil fuel heating equipment during power outages.

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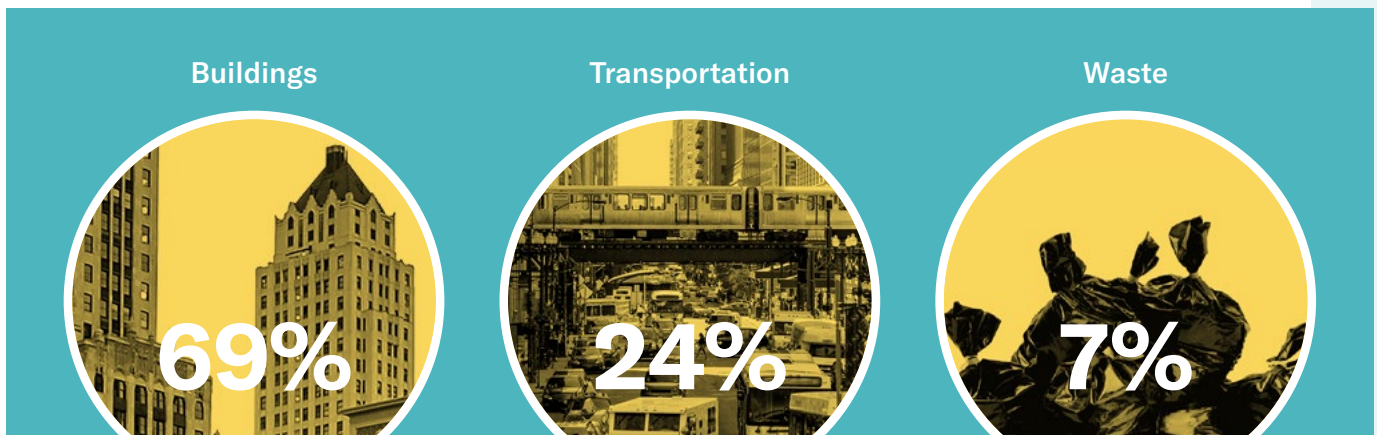
Chicago is **already constructing all-electric** buildings today.



## Introduction

Chicago's buildings are the city's largest source of climate pollution, accounting for approximately 69% of citywide emissions.<sup>1</sup> Chicago's 2022 Climate Action Plan acknowledges the importance of shifting away from fossil fuels to electricity for heating, cooling, and powering our buildings. Building decarbonization is the best opportunity to reduce the city's climate pollution and enhance energy affordability for Chicago families.

## Main sources of greenhouse gases in Chicago



➔ CHICAGO MUST REDUCE GHG EMISSIONS 67% BY 2040

Source: City of Chicago, 2023 Climate Action Plan Addendum

Chicago has committed to reducing its climate pollution by 67% by 2040.<sup>2</sup> To achieve this climate goal and its benchmarks, the City of Chicago must increase the pace at which efficient electric appliances are adopted across the following end uses: space heating, water heating, and cooking. This includes spurring market activity in the next three years (2024-2026) above business as usual to achieve an additional 58,000 heat pump sales, 6,000 heat pump water heater sales, and 34,000 electric and induction stove sales.<sup>3</sup>

The fossil fuel industry and its supporters are spreading misinformation about all-electric buildings, possibly due to concerns about the impact of widespread electrification on their business model. **We've addressed 10 of the top myths about all-electric new buildings so Chicagoans have the facts about electrification.**

**FACT**  
**1**

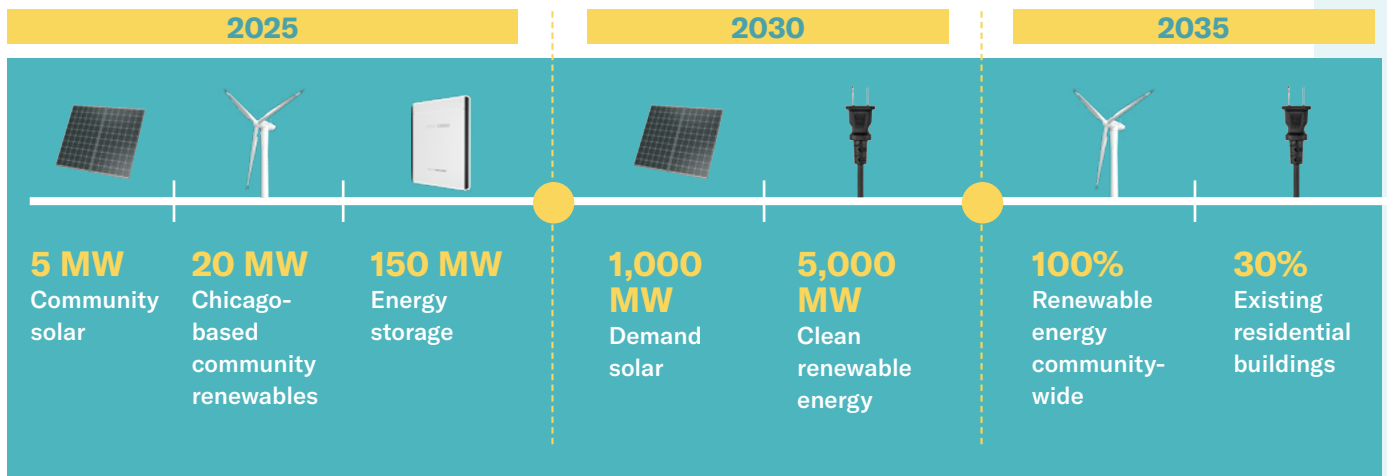
**Chicago's electric grid can handle the electrification of all newly constructed buildings.**

Only a small percentage of buildings in Chicago are newly constructed — less than 1% — which means that the additional impact on the electric grid will be limited.<sup>4</sup> These newly constructed, well-insulated, all-electric buildings will also be highly energy efficient, using less energy for space heating and air conditioning than existing fossil fuel-powered buildings.

ComEd, the electric utility that serves Chicago and most of Northern Illinois, is well-prepared to expand building electrification as consumers switch from fossil fuel-powered appliances to efficient electric ones. The utility leads the U.S. in electric grid reliability. In fact, ComEd's investments in grid modernization have increased overall reliability 80% since 2011, resulting in fewer and shorter outages. ComEd filed multiyear grid and rate plans that outline the grid work required to support the expansion of renewables and beneficial electrification while maintaining and improving the system to continue this level of reliability.<sup>5</sup>

1. City of Chicago, [2022 Climate Action Plan](#).
2. City of Chicago, [2023 Climate Action Plan Addendum](#), May 2023.
3. Rewiring America, [Local Pace of Progress Tool](#).
4. Rewiring America, [A Community Scale Approach to Decarbonizing Buildings](#), November 15, 2023.
5. ComEd, [ComEd Named Most Reliable Electric Utility in America](#), November 2, 2023.

**City energy policy goals**



Renewable energy has repeatedly proven its ability to enhance grid reliability in the toughest situations—while reducing consumer costs. A recent example was during Winter Storm Elliott in December 2022, when despite frigid temperatures causing almost 40% of gas-fired power plants to go offline along with several coal plants, renewable generation remained resilient.<sup>6</sup> PJM, the regional transmission organization that is responsible for coordinating wholesale electricity across 13 states including Illinois, also plans to increase electric grid capacity and predicts estimated electricity demand growth of 1.7% per year for summer peaks, 2% for winter peaks, and 2.4% for net energy over a 10-year planning horizon starting in 2024.<sup>7</sup>

6. Utility Dive, [Gas-fired generation accounted for 70% of unplanned outages in Winter Storm Elliott: PJM](#), July 18, 2023.
7. PJM, [PJM Publishes 2024 Long-Term Load Forecast](#), January 8, 2024.

**FACT**  
**2**

## Heat pumps work in Chicago's cold climate.

The latest research shows that even in extreme cold, heat pumps operate at more than twice the efficiency of fossil fuel or electric resistance heating systems.<sup>8</sup> Cold climate heat pump technologies are tried and true: Norway is installing heat pumps at a faster rate than anywhere else in Europe. As of 2021, Norway had over 60 heat pumps installed per 100 households, followed by Sweden and Finland (around 45 each).<sup>9</sup> The chilly New England state of Maine is also leading the charge for heat pump installations in the US—surpassing its goal of installing 100,000 heat pumps two years ahead of schedule and setting a new goal to install 175,000 heat pumps by 2027.<sup>10</sup>

In ComEd's cold climate heat pump pilot conducted in 2018, the heat pumps demonstrated excellent performance in meeting tenants' heating needs. During the polar vortex in late January 2019, with temperatures dropping to the -20s in Chicago, there were no tenant complaints. Surveys indicated that 64% of tenants felt their apartments were more comfortable after the installation of heat pumps. Overall, 90% of surveyed tenants and property managers expressed satisfaction, stating that they would recommend the ductless mini-split heat pumps.<sup>11</sup>

8. Gibb, Duncan & Rosenow, Jan & Lowes, Richard & Hewitt, Neil. (2023). Coming in from the cold: Heat pump efficiency at low temperatures. Joule. 7. 10.1016/j.joule.2023.08.005.

9. Gibb, Duncan & Rosenow, Jan & Lowes, Richard & Hewitt, Neil. (2023). Coming in from the cold: Heat pump efficiency at low temperatures. Joule. 7. 10.1016/j.joule.2023.08.005.

10. Canary Media, Heat pumps sold so fast in Maine, the state just upped its target, July 2023.

11. Energy Futures Group and Natural Resources Defense Council, 2022 Summer Study on Energy Efficiency in Buildings.

**FACT**  
**3**

## Electrification of buildings will create jobs.

More than 12,000 workers in Chicago are already focused on making buildings cleaner and more efficient—twice as many as those employed in buildings powered by fossil fuels. Jobs in the clean building industry range from replacing old insulation in homes and fitting new pipes for heating and cooling in buildings to installing electric stoves and heat pumps. ComEd has a list of over 150 heat pump-trained contractors working across their service territory who are eligible to offer heat pump discounts, including several based in the Chicago area.<sup>12</sup> ComEd's heat pump training program is open to all Illinois contractors, allowing the number of qualified installers to increase along with the demand for efficient, electric appliances.<sup>13</sup>

The vast majority of clean building jobs are related to the electrification of buildings and do not require higher education. On average, these jobs overwhelmingly provide healthcare (80%), and annual wages range from an average \$57,700 for installers to an average \$83,100 for electricians.<sup>14</sup>

The Climate and Equitable Jobs Act (CEJA) has social justice and equity provisions that will support this growing workforce, and help communities transition toward a renewable and electric future. This includes the Energy Transition Workforce Commission's forecasting of anticipated changes to the workforce through 2050, and grant programs to promote economic development in communities with a high concentration of fossil fuel-related jobs.

12. ComEd, Home Heating and Cooling Distributor/Service Provider/Contractor Lookup.

13. ComEd, Air-source Heat Pump Training

14. E2, The Economic Benefits of Advancing Clean Building Policies in the Windy City, January 25, 2023.

**FACT**  
**4**

**Newly constructed all-electric buildings are more affordable to build and maintain in Chicago than gas-powered buildings.**

All-electric homes are less expensive to build and operate than homes that rely on natural gas.<sup>15</sup> A 2022 report by Energy Futures Group finds that Chicago residents who live in newly built all-electric homes stand to save between \$15,000 (multi-family) to \$20,000 (single-family) over a 20-year period compared to living in a newly built home that uses gas appliances.<sup>16</sup> All-electric new construction in particular yields significant cost savings because builders are able to avoid substantial costs associated with both running gas pipes within the home and connecting to the gas utility's distribution system.

The savings potential is even greater when factoring in the incentives available at the federal and local levels for all-electric new construction. The Inflation Reduction Act provides tax credits and rebates to help homeowners, building owners, and even renters purchase and install appliances such as electric heat pumps, heat pump water heaters, induction stoves, and other electrification investments. Low-to-moderate income (LMI) households in Cook County would be eligible for an average of \$10,922 in Electrification Rebates through the IRA, and non-LMI households would be eligible for an average of \$4,699 in tax credits.<sup>17</sup>

The Federal New Energy Efficient Home Tax Credit (45L), which is available now through 2032, also allows builders and developers to claim up to \$5,000 in federal tax credits for each new dwelling that meets energy-efficiency requirements.<sup>18</sup> For builders of affordable housing, this incentive can be stacked with the existing Low-Income Housing Tax Credit (LIHTC) to further reduce upfront costs.<sup>19</sup>

The ComEd's Electric Homes New Construction program also provides incentives to builders in Chicago to build all-electric single-family homes, duplexes, small multi-family, 2-4 flats, and accessory dwelling units (carriage houses, garage conversions, or in-law units). These incentives range from \$3,000 to \$5,000 per unit depending on square footage, and are available now until December 31, 2024.

15. RMI, *The Economics of Electrifying Buildings: Residential New Construction*, December 2022.

16. Energy Futures Group Report, *Cost Savings and CO2 Emissions Reductions of Residential Electrification in Peoples Gas Territory*, Published November 2022.

17. Rewiring America's Electric Potential Map, Cook County, IL.

18. IRS, *Energy Efficient Home Improvement Credit*.

19. Slipstream, *Do it right the first time: Electrify the Residential New Construction Market*, November 2022.

**FACT**  
**5**

**Newly constructed electric buildings will have lower energy bills than fossil fuel buildings.**

Energy Futures Group's 2022 report on Chicago also found that residents living in all-electric new multi-family and single-family homes could see energy bill savings upwards of \$1,000 in the first year alone. Various electrification measures contribute to cost reduction: space heating electrification brings the highest savings, ranging from over \$7,000 to nearly \$17,000 over 20 years (depending on building type and eligibility for IRA incentives), followed by water heating electrification, with 20-year savings ranging from about \$700 to over \$3,000.<sup>20</sup>

20. See Energy Futures Group's full report and methodology here: <https://energyfutures-group.com/wp-content/uploads/2022/11/Peoples-Gas-Electrification-Economics-2022-Nov.pdf>.

Complete electrification not only helps customers avoid the cost of gas but also eliminates the fixed monthly gas charges to pay for its infrastructure, which have been notoriously high in Peoples Gas territory—the natural gas utility that serves Chicago. Electric equipment also proves to be significantly more efficient than gas equipment in crucial applications. Analysis conducted by the Rocky Mountain Institute in each of the 48 continental states found that heat pumps were **at least 200% efficient** in every climate. This means that for every kWh of electricity a heat pump consumes, it produces 2 kWh equivalent of heat. These efficiency savings can make it cheaper to operate an efficient electric appliance than a fossil-fuel-powered appliance. Households who fully electrify can also transition to ComEd’s lower electric heating rate, which reduces the cost of electric space heating and all other electricity uses in a home. These savings can add up and lead to lower energy bills for residents of newly all-electric homes.

**FACT**  
**6**

**All-electric new buildings are the quickest and easiest way to reduce climate pollution from the building sector.**

Newly constructed buildings are the easiest to electrify because builders and developers can design them to maximize the efficiency and operation of electric technologies such as heat pumps and heat pump water heaters. Constructing new buildings to be all-electric can also mitigate additional climate pollution and contribute to the city’s emissions reduction goals.

A 2022 analysis by Energy Futures Group finds that all-electric buildings can result in 50% less climate pollution over 20 years compared to building homes with fossil fuels.<sup>21</sup> Emissions would be reduced by 30% in the first year alone since the PJM electric grid in Illinois, which supplies electricity to Chicago, is over 80% renewable (including nuclear power) as of 2022.<sup>22</sup> Climate pollution reductions would be halved over the 20 years thanks to the Climate and Equitable Jobs Act requirement to achieve 100% zero-emissions in the power sector by 2045.<sup>23</sup> Chicago’s goal is even more ambitious—100% renewable electricity community-wide by 2035.

21. Energy Futures Group Report, *Cost Savings and CO2 Emissions Reductions of Residential Electrification in Peoples Gas Territory*, Published November 2022.

22. PJM, *2022 Illinois State Infrastructure Report*, Published May 2023.

23. NRDC, *Illinois Passes Nation-Leading, Equitable Climate Bill*, September 2021 standards that file for a building permit starting in 2025.”

**FACT**  
**7**

**Cooking with induction is healthier than cooking with gas**

The modern version of electric stoves—induction stoves—are better than gas stoves in every category: performance, versatility, efficiency, and health. They are the safer and healthier choice for any homeowner or renter. They run on electricity and use electromagnets to heat cookware directly rather than the stove’s entire surface. That means there are no open flames or gas leaks to worry about. There are also no harmful emissions like nitrogen monoxide or benzene— a harmful chemical that is emitted by gas stoves that is linked to leukemia and other types of cancer—that can have negative health impacts comparable to second-hand smoke.<sup>24</sup>





Induction stoves are also far more efficient than gas stoves. Ninety percent of an induction stove's heat transfers directly to the cookware compared to 40 percent for a gas stove. They can therefore boil water two to three times faster than a gas stove and have a surface that is much easier to clean than the grates of a gas stove.<sup>25</sup> Induction stoves are also compatible with most modern cookware and are available in portable one- and two-burner versions that make it even easier for renters to electrify.

While induction ranges can come at a higher price point than some gas stoves, federal incentives can help offset the upfront cost, including an \$840 rebate for low-to-moderate-income households.<sup>26</sup>

24. American Chemical Society, [Gas and Propane Combustion from Stoves Emits Benzene and Increases Indoor Air Pollution](#), June 2023

25. Rewiring America, [Watts the deal with induction?](#), July 2023

26. Rewiring America, [Cook faster, better, and safer without gas](#)

**FACT**  
**8**

**Electrification of buildings will be equitable.**

The American Rescue Plan Act of 2021 –also called the COVID-19 Stimulus Package– helped the City of Chicago build a \$188 million foundation of funding toward environmental justice and climate action. Implementation is underway to electrify 1-4 unit homes of low-income families (\$15m),<sup>27</sup> issuing grants to environmental justice organizations and small businesses toward climate infrastructure (\$10m), electrifying affordable housing (\$6m), and developing community solar (\$5m), to name a few. In its research, the City found that despite the cold climate, heat pumps and electrification can make a big difference in reducing energy costs and energy burden in Chicago's older homes and low and moderate-income communities.<sup>28</sup>

Illinois' Climate and Equitable Jobs Act (CEJA) also contains several equity provisions. CEJA created a Clean Jobs Workforce Network Hubs Program, with 13 delivery hub sites, that leverage community-based organizations to make sure equity-focused populations have access to clean energy-related jobs.

27. At or below 80% area median income of the city.

28. Rewiring America, [A Community Scale Approach to Decarbonizing Buildings](#), November 15, 2023.

**FACT**  
**9**

**Heat pumps are as reliable as fossil fuel heating equipment during power outages.**

Many of the heating devices using fossil fuels today already rely on electronic parts, and require electricity to operate. Even modern gas furnaces require electricity for their electronics and fans, so they may not enhance household resilience.<sup>29</sup>

Electrification has the potential to boost household energy reliability. New technologies are emerging that will ensure that electric devices can keep running during grid failures. Increasingly, solar and battery systems (including electric vehicle batteries) are capable of storing excess power and reserving it for later use in the event of a power outage. These backup energy sources will help us achieve the level of resilience we currently lack.

29. Gas furnaces rely on electricity for the thermostats, the furnace controls, and the fan to circulate air through the house.

Homes with fossil fuel appliances will not be able to take advantage of the powerful electrical backup systems increasingly found in garages and driveways, including “vehicle-to-grid” (V2G) technologies available today that act as a mobile energy storage system and can keep homes warm and lit when power outages occur. Induction stoves, which are all-electric, are now available with built-in [lithium-ion batteries](#). A battery-powered stove can deliver more power for cooking, continue working when the power grid goes out, and even serve as distributed storage to assist in electricity reliability.

**FACT  
10**

## Chicago is already constructing all-electric buildings today.

Residential and commercial builders and developers in Chicago are already starting to build all-electric. As of January 2024, Greenline Homes has 26 new construction, net-zero ready, all-electric homes underway or completed in both the Woodlawn and Bronzeville communities in Chicago.<sup>30</sup> ComEd’s All-Electric New Construction program has also completed 17 projects, with 32 more underway. ComEd also has a retrofit program that has carried out electrification retrofits of 56 homes and counting.<sup>31</sup>

The new Salesforce Chicago Tower, one of the largest commercial building developments in downtown Chicago, was built to be all-electric to align with Salesforce’s commitment to achieve net-zero emissions and to benefit from the City of Chicago’s Clean Energy Transition.<sup>32</sup> Google’s highly anticipated redevelopment of the iconic Thompson Center is also planned to be built all-electric to align with its ambitious goal to operate on 24/7 carbon-free energy by 2030.<sup>33</sup>

Affordable housing developers in Chicago are also transitioning to all-electric new construction. The Garfield Green Sustainable Apartment Development by Preservation for Affordable Housing, for example, comprises 43 all-electric affordable apartments in East Garfield Park.<sup>34</sup> Similarly, Galleria 89, an energy-efficient affordable housing complex on the South Side, is also being developed as an all-electric property, resulting in a significant 40% reduction in tenants’ monthly utility bills.<sup>35</sup>

Throughout the city, in both residential and commercial sectors, there are exciting case studies of builders, developers, and building owners embracing the shift toward our all-electric future.

30. Illinois Green Alliance, [Chicago All-electric Homes Webinar + Open House](#), June 2022.

31. See [Business Wire’s](#) article for more information on the retrofit program.

32. Salesforce, [Salesforce Celebrates Construction Milestone as it “Tops Off” Chicago Tower](#), May 2022.

33. Google, [A first look at the plans for our new Chicago office](#), December 2023.

34. C40 Reinventing Cities, [Chicago’s Fifth City Commons breaks ground!](#), July 2023.

35. Energy News Network, [Chicago company brings climate-friendly development to communities that need it most](#), January 2023