

## 10 Facts About All-Electric New Buildings

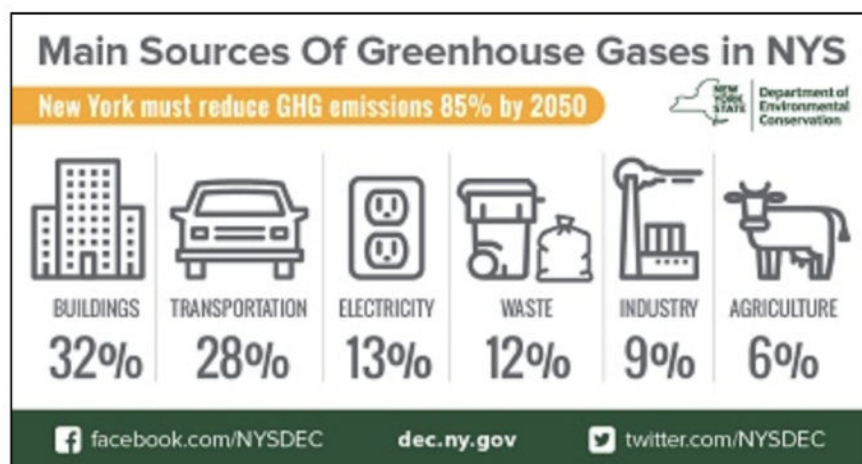
February 2023

- **Fact #1:** New York's electric grid can handle the electrification of all newly-constructed buildings.
- **Fact #2:** Heat pumps can be used in cold-climate upstate New York.
- **Fact #3:** Heat pumps are no less reliable than fossil fuel space heating equipment during power outages.
- **Fact #4:** Electrifying newly constructed buildings will benefit areas outside of NYC.
- **Fact #5:** Newly constructed all-electric buildings are more affordable to build and maintain.
- **Fact #6:** The All-Electric Buildings Act is the quickest and easiest way to make an impact on reducing carbon emissions from the building sector.
- **Fact #7:** Newly constructed electric buildings will have lower energy bills than fossil fuel buildings.
- **Fact #8:** Newly constructed buildings with heat pumps reduce carbon emissions no matter their generating source of energy and will be zero-emission buildings as New York transitions to carbon-free energy by 2040.
- **Fact #9:** Electrification of newly constructed buildings will create jobs.
- **Fact #10:** Electrification of newly constructed buildings will be equitable.

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## Introduction

New York's buildings are the state's [largest](#) source of carbon pollution. The [highest impact solution](#) for reducing this pollution is to power heating, cooling, and the appliances in our buildings with clean electricity rather than fossil fuels. Electrification is thus a central strategy for achieving New York's long-term climate goals.



The **All-Electric Buildings Act** ([Gallagher A.920-A](#)) / ([Kavanagh S.562-A](#)) would electrify *new construction* in New York State. It requires all new single-family and low-rise buildings to be carbon pollution-free by 2024, and all remaining new construction by 2027, with limited exceptions.

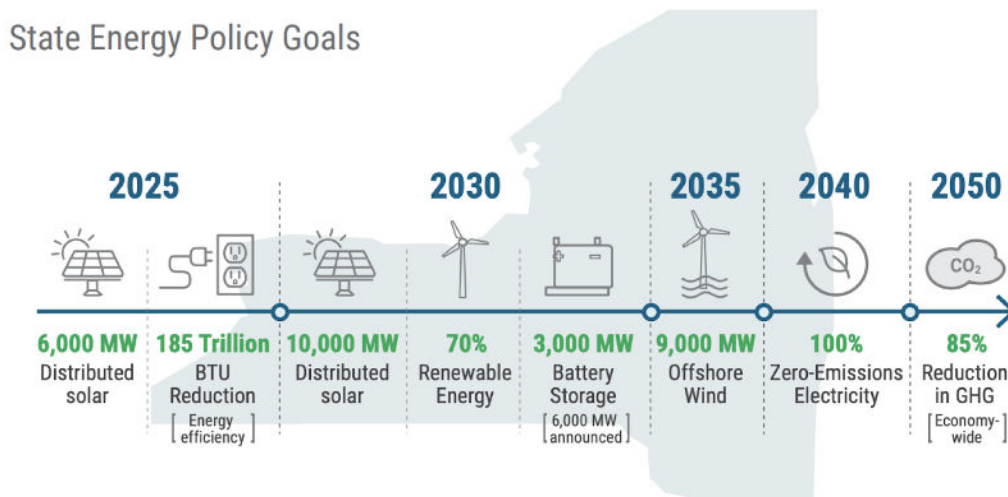
The All-Electric Buildings Act was introduced during the 2021-22 legislative session and has been reintroduced in 2023. Passing this bill is critical for public health, utility savings, and a livable climate. Polluters are attempting to block the All-Electric Buildings Act by circulating myths about electrifying new construction. We've addressed ten of these myths so New Yorkers have the facts about electrification:

→**Fact #1:**

## New York’s electric grid can handle the electrification of all newly-constructed buildings.

New York’s electric grid has a generating capacity of about 41,000 megawatts and experiences a peak electric demand of 31,000 megawatts, which means we currently have a surplus of 10,000 megawatts of power.<sup>1</sup> Within this 10,000-megawatt surplus, the state maintains 6,000 megawatts in a [reserve margin](#), about 20 percent over the peak demand.<sup>2</sup> This leaves a surplus of 4,000 megawatts on top of the peak demand and reserve margin.

New York has over [7.4 million housing units](#). In her 2023 State of the State, Governor Hochul [announced](#) a statewide strategy to build 800,000 new homes over the next decade: 80,000 new units per year.<sup>3</sup> One megawatt will meet the needs of [800 to 1,000 homes on average](#), so an increase of 80,000 homes per year will only generate a need for 80 to 100 additional megawatts of capacity per year. With 4,000 megawatts of surplus generation capacity, New York has more than enough existing capacity to meet the increased energy demand to electrify newly constructed homes for many years to come.



<sup>1</sup> [Gold Book](#) page 4 and [NYISO Reliability Study](#) page 19, based on summer peak 2022.

<sup>2</sup> [NYISO Reliability Study](#) page 19, based on summer peak 2022.

<sup>3</sup> This is a significant increase over the current rate of construction of new homes in New York, which averages around [40,000 units per year](#). 40,000 new homes per year would require just 40 to 50 additional megawatts of capacity.

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According to NYSERDA's [Power Grid Study Report](#), 12,890 MW of new generation has been developed in New York since 1999 and the state is accelerating the development of additional generation to replace fossil fuel generation that will be retired by 2030. Furthermore, transmission expansion programs are underway and have positioned the state to achieve its 2030 climate goals. New York will add 6,000 megawatts of distributed solar by 2025 (and 10,000 megawatts by 2030); 3,000 megawatts of battery storage by 2030; and 9,000 megawatts of offshore wind by 2035.<sup>4</sup> The [Champlain Hudson Power Express](#) (CHPE) connection from Hydro Quebec to New York City is scheduled to come online for New York City by 2026 and add 1,250 megawatts of hydropower electricity by 2030, enough to power over one million homes.

Newly constructed, well-insulated, and all-electric buildings will be highly energy efficient, with space heating energy demand reduced by 57 to 90 percent and air-conditioning energy demand reduced by 9 to 57 percent compared to existing fossil fuel-powered buildings.<sup>5</sup>

## → Fact #2:

### Heat pumps can be used in cold-climate upstate New York.

The truth is that cold-climate heat pumps are taking off, and [New Yorkers love them](#). In 2021, [more than 21,500 heat pumps were installed](#) across New York State. The [latest research](#) shows that heat pumps are two to three times more efficient than gas or electric resistance systems in winter temperatures, and the newest models operate with 100 percent capacity to 5°F and good performance down to negative 13°F.<sup>6</sup>

Cold climate heat pump technologies are tried and true: Norway is installing heat pumps at a faster rate than anywhere else in Europe — [and Maine is installing heat pumps faster than Norway!](#) Households living in cold climate states like [Maine](#), Massachusetts,

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<sup>4</sup> [New York State Climate Act § 14; Chapter 735 of the Laws of 2019.](#)

<sup>5</sup> NYSERDA, [Integration Analysis Appendix G](#), December 2022, page 35.

<sup>6</sup> More details can be found [here](#).

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Pennsylvania, and New York stand to save an average of [\\$753](#) a year on their utility bills from electrification.<sup>7</sup>

→ **Fact #3:**

**Heat pumps are no less reliable than fossil fuel space heating equipment during power outages.**

Knowing you'll stay warm during a power outage is comforting. Many fossil fuel heating appliances rely on electronic subsystems, and so require electricity to work. [Gas furnaces](#) on the market today still need electricity to power their electronics and fans so they don't necessarily increase household resilience.<sup>8</sup>

New technologies are coming to market that will keep electric machines running when the grid goes down. Electrification therefore has the potential to *increase* household energy reliability as more homes install solar plus battery systems with "islanding" capability, and as more consumers purchase electric vehicles that can be used as backup energy systems. 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, can continue working when the power grid goes out, and can serve as distributed storage to assist in grid stability.

Utility-scale battery storage will also enable grid resilience: in January 2023, New York Governor Kathy Hochul [announced](#) plans to double the state's energy storage deployment target from 3 GW to at least 6 GW by 2030.

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<sup>7</sup> [Electrifying space and water heating](#) with heat pumps would save New York households \$586 per year on average, Maine households \$1,071 on average per year, Massachusetts households \$716 on average per year, and Pennsylvania households \$640 on average per year.

<sup>8</sup> Gas furnaces rely on electricity for the thermostats, the furnace controls, and the fan to circulate air through the house.

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→**Fact #4:**

**Electrifying newly constructed buildings will benefit areas outside of NYC.**

The All-Electric Buildings Act would cover all of New York State. Since it only applies to new building construction, it would yield the greatest impacts where development is surging, such as in the Hudson Valley, Rochester, and the Capital Region. New York City has already adopted an all-electric buildings mandate, so the city will not be impacted by the NYS All-Electric Buildings Act.

Upstate New York has inherent advantages that can facilitate the transition of homes from fossil fuel heating systems to heat pumps. For example, upstate homes are likely to have ample outdoor space for air-source heat pump outdoor units and ground-source heat pump ground loops. Where gas infrastructure is less developed, as in many rural areas and on Long Island, newly constructed buildings will benefit from significant energy bill savings by using energy-efficient heat pumps instead of delivered fuels.<sup>9</sup>

→**Fact #5:**

**Newly constructed all-electric buildings are more affordable to build and maintain.**

All-electric homes are being built every day in New York and across the country. A recent [analysis](#) found that new all-electric, single-family homes were less expensive to build than new mixed-fuel homes that rely on gas for cooking, space heating, and water heating.<sup>10</sup> The All-Electric Buildings Act has a provision that seeks to ensure that energy affordability and the supply of affordable housing are maintained through electric rate design, subsidy programs, and new policies. Notably, electric appliances and systems [reduce operating costs, too](#).

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<sup>9</sup> New York State Climate Action Council, [Scoping Plan](#), page 179.

<sup>10</sup> Cost savings over the 15-year period of the study were as high as \$6,800 in New York City, where all-electric homes resulted in 81 percent lower carbon emissions compared to mixed-fuel homes.

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New York State is advancing decarbonization and housing affordability at the same time. NYSERDA, Homes & Community Renewal, the Department of Public Service (DPS), and the Department of State are working on a plan to achieve [two-million climate-friendly homes](#) by 2030. This builds off the governor’s \$25 billion, five-year housing plan approved in the 2022-23 State Budget, which will create clean, all-electric affordable housing. Additionally, DPS is improving its [Affordable New Construction Program](#) to help public housing agencies deliver incentives for more affordable housing.

→ **Fact #6:**

**The All-Electric Buildings Act is the quickest and easiest way to make an impact on reducing carbon pollution from the Building Sector.**

New York State’s climate law requires the state to reduce its carbon pollution by 40 percent from 1990 levels by 2030.<sup>11</sup> Because the building sector is the greatest source of this carbon pollution (32 percent),<sup>12</sup> the state can’t meet its climate mandate without electrifying buildings as quickly as possible. The All-Electric Buildings Act requires that all *new* single-family and low-rise buildings be carbon pollution-free by 2024, and all remaining new construction by 2027. New single-family and low-rise buildings are the easiest building types to electrify, and thus help take the pressure off more difficult-to-electrify buildings in the sector.

The All-Electric Buildings Act is only one part of the strategy necessary to decarbonize New York State’s economy. Every new home built with gas appliances locks in carbon pollution for decades to come. New York must keep pace with the more than [90](#) cities and counties in the US that have adopted similar building electrification policies. The All-Electric Buildings Act is aligned with the New York State Climate Action Council’s Scoping Plan and would put the state on track to meet Governor Hochul’s commitment to two-million [climate-friendly homes](#) by 2030.<sup>13</sup> [New York City](#) and [Ithaca](#) have already taken steps to power new

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<sup>11</sup> New York State Climate Action Council, [Scoping Plan](#), page 1.

<sup>12</sup> Ibid. page 48.

<sup>13</sup> Ibid. page 187. “[By] 2025: Adopt State codes that prohibit building systems or equipment used for the combustion of fossil fuels in new construction statewide of single-family and low-rise multifamily residential buildings having three stories or less (and additional alterations as applicable). These requirements should apply to construction of buildings subject to residential codes and standards that file for a building permit starting in 2025.”

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buildings with electricity instead of connecting to fossil fuel sources. [Beacon](#) introduced a bill in November 2022 banning gas-burning heating and cooking appliances in new buildings, and more cities are preparing to follow suit. It is time for the state to lead.

**→Fact #7:**

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

The All-Electric Buildings Act will lower energy bills. A [recent analysis](#) found that the All-Electric Building Act could save residents of new all-electric homes an average of \$904 on home energy bills annually. Much of the [grassroots support](#) for the All-Electric Building Act is in response to the high costs of heating oil.

Bob Howarth, a Climate Action Council member and a professor of ecology and environmental biology at Cornell University, said that fossil fuel-free homes will [save residents money](#) on energy bills from day one, and homeowners will have more than broken even and started pocketing savings within six months of moving into their new home.

Energy burden, which is a measure of the percentage of household income spent on energy bills, is a major issue in New York State. Fossil fuels — not renewables — are at the center of this problem. Residential natural gas heating prices this winter were forecasted to be [34 percent higher than last winter](#), while residential electric heating prices will be only [7 percent higher](#) (and that is due in large part to natural gas power generation). As more of our electricity is generated by renewable sources, New York households will become even less burdened by volatile fossil fuel costs.

**→Fact #8:**

**Newly constructed buildings with heat pumps reduce carbon pollution no matter the generating source of the energy, and will be completely zero-emission as New York transitions to carbon-free energy by 2040.**



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Even under conservative modeling assumptions, [98 percent of U.S. households would cut their carbon](#) pollution by installing heat pumps today — no matter the fuel mix of their grid-generated electricity. Heat pumps are long-term, climate-appreciating investments: as the grid gets cleaner, the total emissions impact of any electric appliance will continue to decrease. Notably, the All-Electric New Buildings Act will take effect at the same time that New York delivers upon its 70 percent by 2030 renewable energy mandate and 100 percent by 2040 zero carbon pollution mandate.

The initial *Power Grid Study*, delivered by the Department of Public Service and NYSERDA in January 2021, concluded that the public policy transmission projects already approved by the NYISO and Public Service Commission, together with NYPA priority projects, position the state to achieve the 70 percent by 2030 renewable energy requirement of the Climate Leadership and Community Protection Act (CLCPA).<sup>14</sup>

**→ Fact #9:**

**Electrification of newly constructed buildings will create jobs.**

Approximately 100,000 new jobs in energy-efficient construction and clean heating and cooling will be created through the electrification of the building sector, including electric new construction.<sup>15</sup> As such, in-state engineering, building, and HVAC contractor companies and manufacturers will expand to serve the growing New York and regional markets.<sup>16</sup> Clean energy jobs do not only include heat pump installation but also jobs throughout the entire supply chain, including equipment manufacturing and ancillary electrical work.<sup>17</sup>

As New York leaves fossil fuels behind and transitions to cleaner alternatives, the state will follow the Climate Action Council's Scoping Plan in ensuring displaced workers are supported and will benefit from the transition to clean energy. Public comments from trade unions and fossil fuel workers were integrated into the Scoping Plan, which recommended the creation of an Office of Just Transition to design, implement, and resource workforce development and training efforts to this end. A Worker Support and Community Assurance Fund is also detailed in the Scoping Plan.<sup>18</sup>

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<sup>14</sup> [Initial Report on the New York Power Grid Study](#), page 84.

<sup>15</sup> New York State Climate Action Council, [Scoping Plan](#), page 180.

<sup>16</sup> Ibid. pages 179-180.

<sup>17</sup> Ibid. page 74.

<sup>18</sup> Ibid. pages 84-92.

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→ **Fact #10:**

## Electrification of newly constructed buildings will be equitable

The Public Service Commission, responsible for overseeing New York’s gas and electric utilities, has adopted the goal of reducing the energy burden of all low-income utility customers to less than 6 percent of household income. In 2016, the commission calculated that approximately 2.3 million New York households faced energy burdens above that target level.<sup>19</sup> The current level of energy bill payment assistance is inconsistent with the commission’s goal, and to make matters worse, hundreds of thousands of income-eligible customers are not enrolled in energy affordability programs.<sup>20</sup>

Low-income residents living in all-electric buildings will save a lot of money on energy bills, with space heating energy demand projected to be 57 to 90 percent less than for typical buildings. Electrification will thus substantially reduce the overwhelming share of household income that many low-income households and people of color spend on energy.<sup>21</sup> Additionally, the electrification of new buildings will lower these residents’ exposure to [notoriously volatile fossil fuel prices](#), making energy bills not only more affordable but also more predictable.

New York’s Scoping Plan, the blueprint to meet the state’s climate and equity mandates, emphasizes a concerted effort to drive increased workforce diversity and equity statewide through recruitment efforts, retention policies, and promotion opportunities.<sup>22</sup> Businesses in disadvantaged communities, minority-and-women-owned businesses, service-disabled veteran-owned businesses, employee-owned businesses, cooperatives, design and installation firms, community-based organizations, start-ups, and unions will receive targeted financial support to ensure access to contracting and procurement opportunities in the transition away from fossil fuels.<sup>23</sup>

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<sup>19</sup> [Case 14-M-0565, Order Adopting Low-Income Program Modifications and Directing Utility Filings](#) (issued May 20, 2016) page 14.

<sup>20</sup> [Case 14-M-0565, Petition of the City of New York to Re-Examine Statewide Utility Low Income Program Discounts](#) (filed January 11, 2020).

<sup>21</sup> New York State Climate Action Council, *Scoping Plan: Appendix B*, page B-5.

<sup>22</sup> New York State Climate Action Council, *Scoping Plan*, page 71.

<sup>23</sup> *Ibid.* page 80.

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## **Conclusion:**

The gas industry and its beneficiaries are spreading myths about all-electric buildings because economy-wide electrification threatens its current business model. The truth of the matter is that zero-pollution buildings can dramatically improve energy affordability for New York families while simultaneously improving our air quality and health. In addition, if New York is to meet its 2030 and 2050 emission reduction mandates under the state's Climate Law, all buildings, both new and existing, will have to be zero-pollution structures. The All-Electric Buildings Act will jumpstart that process while incorporating affordability protections for New Yorkers.