All-Electric Building Act

The cost of heating new homes in New York State

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About this report

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WHO IS SWITCHBOX?

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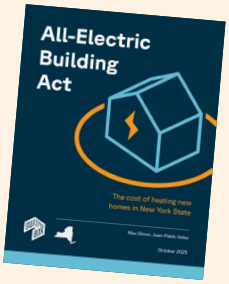

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Introduction

In May 2023, New York became the first state to pass a law requiring all new buildings to be all-electric: the **All-Electric Building Act** (AEBA).

On January 1, 2026, the first part of the AEBA will take effect: residential buildings seven stories and less will be required to be all-electric, as well as commercial and industrial buildings 100,000 square feet and less.[1]

As the state looks ahead to the launch of the nation's first all-electric new construction standard, Switchbox is updating our original 2023 analysis of the AEBA's impact on the affordability of new single-family homes.

As with our previous analysis, we compare the **annual cost of ownership** of an average, newly built single-family home heated with heat pumps with an identical home heated with fossil fuels, either natural gas or propane.

In other words, we estimate the expected difference in mortgage payments and operating costs between all-electric and fossil-fueled homes, since this reflects what homeowners would actually experience under the AEBA.

Note

We have updated our open-source model to account for changes in fuel costs, equipment costs, mortgage rates, inflation rates, utility rebates, and building codes.[2]

Our analysis also reflects the end of the 25C Federal Tax Credit, which is set to expire at the end of 2025 due to President Trump's HR1 law, and which previously covered up to $2,000 of the upfront cost of a heat pump.

Finally, our analysis now includes the cost of hooking up new homes to the natural gas network. This reflects the true cost of natural gas heating in New York State.

1 The AEBA will apply to all new buildings, with a few exemptions, starting on January 1, 2029; see §11-104-6(b) of the New York State Energy Conservation Construction Code.

2 The 2025 Energy Conservation Construction Code of New York State (ECCCNYS) was approved in July 2025. It both implements the AEBA and tightens the state's existing energy code, in line with the 2024 IECC code.

Executive Summary

Once the **All-Electric Building Act** is fully implemented across New York State:

- Households living in newly-built, **all-electric** single-family homes will save approximately **$1,080** per year, on average, compared to those living in homes heated with natural gas or propane.
- These savings will be felt across all of New York State. This includes both the warmest parts of the state (Climate Zone 4), where homes will save approximately **$1,030** a year, on average, and the coldest (Climate Zone 6), where they will save an average of **$2,050** a year.
- Single-family homes built in rural areas, which typically use furnaces that burn **propane**, will enjoy the most significant savings by going all-electric: **$2,650** per year, on average.
- Single-family homes built in urban areas, which would otherwise have been connected to the **natural gas network**, will save **$330** per year, on average, by going all-electric. The annual savings grow to **$920** in Climate Zone 4, which contains New York City, Long Island, and Westchester County.
- Forty-five thousand homes are built every year in New York State.[3] The All-Electric Building Act could therefore electrify **225,000** homes over the next five years, getting nearly a fourth of the way to Governor Hochul's goal of one million homes with electric heating by 2030.[4]

Tip

The All-Electric Building Act applies only to **new buildings**, not existing ones. To accelerate the electrification of heating and lower the bills of households in **existing buildings**, New York State will need to pass additional policies.

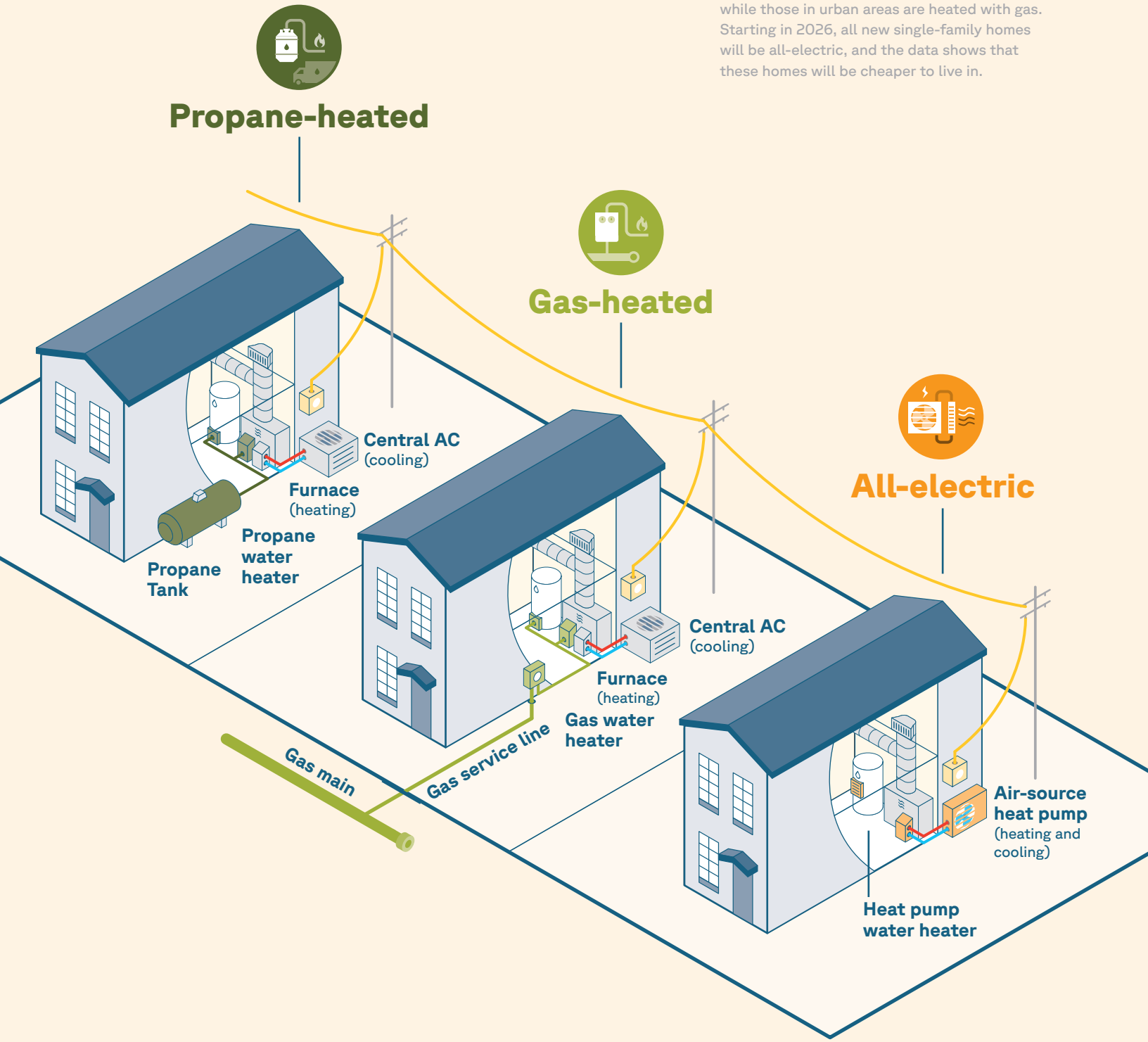
> "Households living in newly-built, all-electric single-family homes will save approximately $1,010 per year..."

3 According to the Census Bureau's Building Permits

4 See Governor Hochul's 2022 State of the State Address.

Figure 1: The three types of newly-built single-family homes compared in this report.

Today, new single-family homes in New York's rural areas are largely heated with propane, while those in urban areas are heated with gas. Starting in 2026, all new single-family homes will be all-electric, and the data shows that these homes will be cheaper to live in.



Findings

SAVINGS BY FUEL TYPE

When it comes to heating new homes, New York State is a tale of two fuels: natural gas and propane.

Homes built in urban areas are typically hooked up to the natural gas distribution network, which requires building service lines to each building, and possibly extending gas mains.

Homes built in rural areas are typically heated with delivered propane.

Under the All-Electric Building Act, new single-family homes will be heated with highly efficient electric air source heat pumps.[5]

Living in these all-electric homes will be cheaper than living in homes heated with fossil fuels, on average, regardless of whether the home would have been built with natural gas or propane.

The savings, however, will vary by fuel type (Table 1).

5 The 2025 Energy Conservation Construction code of New York State forbids the use of electric resistance systems bigger than 2kW for habitable spaces, so we assume that to comply with AEBA, builders must use heat pumps (for more info, see p. 16).

Geography	% new homes on natural gas	Heat pump savings vs. natural gas	% new homes on propane	Heat pump savings vs. propane
Statewide	58%	$330	24%	$2,650

Table 1: Average yearly savings by fuel type

All-electric homes that would have otherwise been built with natural gas hookups will save $330 per year on average, while those that would have been built with propane will save $2,650 per year on average.

Why the difference? It comes down to fuel costs.

While homes heated with natural gas cost more to build than those with propane—because the cost of a new natural gas service line[6] far exceeds the cost of a propane tank—as an

6 Our analysis excludes the cost of extending natural gas mains, due to limited data from utilities on the per-household cost of doing so. Our estimates of natural gas savings are therefore conservative; savings are very likely to be higher in reality.

energy source, propane is significantly more expensive than natural gas, and these fuel costs are ultimately what drives greater savings for homes that would have otherwise been heated with propane.

SAVINGS BY CLIMATE ZONE

The All-Electric Building Act will save New Yorkers money in every part of the state, but the savings vary significantly by climate zone.

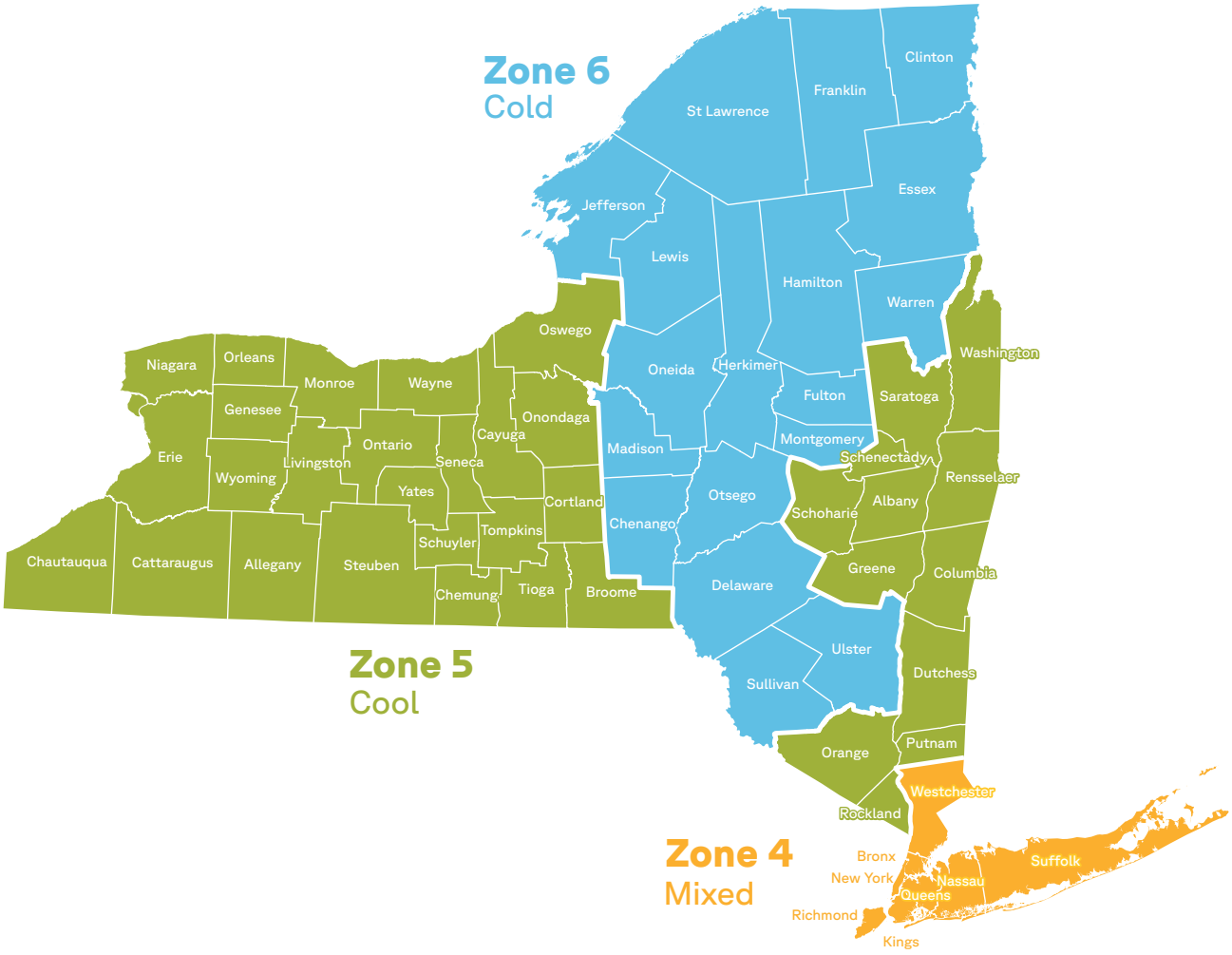


Figure 2: New York State climate zones

New York State contains three distinct climate zones (see Figure 2), reflecting how cold it gets in the winter. Colder homes require more energy to heat, all else equal: The colder the local climate, the higher the system's capacity needs to be, and the more expensive it is to heat.

Table 2 shows how much money households purchasing new single-family homes in each climate zone would save under the All-Electric Building Act.

Geography	Average yearly savings	Share of new construction
Climate Zone 4	$1,030	23%
Climate Zone 5	$680	53%
Climate Zone 6	$2,050	24%
Statewide	$1,080	100%

Table 2: Average yearly savings by climate zone

All-electric homes will be cheaper to live in than fossil-fueled homes, on average, in every climate zone.

But the savings will vary by climate zone:

- **Climate Zone 6** covers the Catskills, Mohawk Valley, and the Adirondacks—the coldest parts of the state. It contains 24% of new construction in New York State, and would see the highest savings at $2,050 a year, on average, largely because homes are currently being built to use expensive propane.
- **Climate Zone 4** covers New York City, Long Island, and Westchester County—the warmest parts of the state. Natural gas predominates here. This zone contains 23% of the state's new construction, and would see the second highest savings at $1,030 a year, on average.
- **Climate Zone 5** covers the Hudson Valley, Capital Region, and the Western half of the state. It contains the majority (53%) of the state's new construction. Households in Zone 5 would save $680 a year, on average, under the All-Electric Building Act.

SAVINGS BY FUEL TYPE AND CLIMATE ZONE

In New York State, the climate is highly correlated with fuel type: in the warmest zone, 93% of homes are heated with natural gas, whereas in the coldest zone, 67% of homes are heated with propane.

Therefore, the climate zone savings in the previous section partially reflect the savings associated with the fuel type that dominates in each area.

To get a clearer understanding of what will be driving savings across the state, we need to look at both fuel type and climate zone together (Table 3).

Geography	% new homes on gas	Savings vs. gas	% new homes on propane	Savings vs. propane
Climate Zone 4	93%	$920	7%	$2,380
Climate Zone 5	78%	$130	22%	$2,640
Climate Zone 6	33%	$200	67%	$2,960
Statewide	58%	$330	24%	$2,650

Table 3: Average yearly savings by climate zone and fuel type (natural gas and propane)

The data reveals the full picture: propane is consistently more expensive to heat with than natural gas, regardless of climate zone. In Climate Zone 6, for example, homes that would have used propane will save $2,960 by going all-electric, while homes that would have used natural gas will save $200.

This is why the All-Electric Building Act will have such a profound impact on rural New York: it will eliminate the propane premium that has been burdening residents in the coldest parts of the state for decades.

SAVINGS OVER TIME

In the preceding section, we showed the annual savings that New Yorkers can expect to see by living in an all-electric home, versus a fossil-fueled one. But what about the total savings over time?

Statewide, we estimate that the average household will save a total of **$12,050** over 15 years from living in an all-electric home, compared with a fossil-fueled one.[7]

Since a household's annual savings will vary by climate and fuel, its savings over 15 years will as well (Table 4).

7 In real 2025 dollars, assuming a conservative 4% discount rate to account for the time value of money.

Geography	15-year savings vs. gas	15-year savings vs. propane
Climate Zone 4	$10,280	$26,410
Climate Zone 5	$1,490	$29,330
Climate Zone 6	$2,260	$32,890

Table 4: Fifteen-year present value savings by climate zone and fuel type

Appendix

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DATA & METHODS

Overview

To estimate the costs or savings for an average household that would result from passage of the All-Electric Building Act, we analyzed the **annual life-cycle cost** to heat and cool both the air and water of an average single-family home using different HVAC technologies in keeping with the 2025 Energy Conservation Code of New York State:

- **All-electric homes**: ducts, cold-climate air-source heat pumps (HSPF2 > 8.1, SEER2 > 15.2, ≥70% efficiency at 5°F) and heat pump water heaters.
- **Gas-fueled homes**: ducts, a high-efficiency furnace (AFUE > 95%), central AC (SEER2 > 15.2), gas water heater (UEF > 0.81), and the cost of new service line hookup.

- **Propane-fueled homes**: ducts, a high-efficiency furnace (AFUE > 95%), central AC (SEER2 > 15.2), propane water heater (UEF > 0.81), and a propane tank.

The **annual life-cycle cost** for a home includes fuel costs, maintenance costs, mortgage payments on HVAC, water heater equipment, and propane tank or new service line costs (if relevant).

To calculate the **annual savings** for all electric homes compared with fossil-fueled homes, we calculated the difference in **annual life-cycle cost** between (1) all-electric and gas-fueled homes, and (2) all-electric and propane-fueled homes across every county in New York State.

Using county-level data on climate zones, utility rebates, and utility service line costs, we calculated blended averages to estimate statewide, zone-wide, and fuel-type-specific annual and 15-year savings.

> **Note**
>
> The Excel model underlying our report is open-source, and viewable here, along with all the assumptions and data inputs we used.

Assumptions

Our analysis assumes:

- **Single-family homes**, the most common type of new residential construction in New York State.
- The **average square footage** of newly constructed single-family homes in the Northeast, from the US Census.
- All-electric homes will use cold-climate **air-source heat pumps**, not ground-source heat pumps or electric resistance, and **heat pump water heaters**, not electric resistance water heaters.
- **Entry-level** cold-climate air-source heat pumps, which are more likely to be selected builders, not premium high-efficiency models.

- Homes with **ducted heating and cooling** only, given their prevalence in new construction in New York State. In other words, fossil-fueled homes were assumed to be heated (and cooled) by a high-efficiency furnace and central A/C, not a boiler, regardless of fuel type.
- New state-wide **building envelope codes** from the 2025 Energy Conservation Construction Code of New York State.
- 5-year averages for October to March **fuel costs** for electricity, natural gas, and propane, from the Energy Information Administration (EIA)
- Current **equipment costs** for new furnaces, A/C condensers, heat pump condensers, gas water heaters, and heat pump water heaters.
- The ducts and air-handlers are similar for all-electric vs. fossil-fueled homes, so we excluded them from the model and compared only heat pump condensers vs. furnaces and AC condensers.
- Labor and other soft costs are similar for installing heat pumps vs. furnaces and ACs, so we excluded them from the model and compared only equipment costs.
- The sunsetting of the **air-source heat pump rebates** for new costruction offered by utilities through the New York State Clean Heat program at the end of 2025. Heat pump water heater rebates are still being offered, and included in the model.
- The sunsetting of the **25C Federal Tax Credit** for heat pumps at the end of 2025.
- Data on the prevalence of different **heating systems and fuels** by climate zone, from NYSERDA surveys.
- **New housing construction counts** by county, from the US Census.
- Households bear the **cost of new gas service line** hookups, which vary by utility, in line with the expected repeal of the 100-foot rule.

Buildings & envelopes

For each climate zone in New York State (Zones 4, 5, and 6), we modeled the heat loss of a typical new construction single-family home: 2,534 sq ft.[8]

To estimate the insulation for the building envelope, we followed the 2025 Energy Conservation Code of New York State (ECCCNYHS-2025).[9]

We assumed a two-story, single-family home, with a conditioned basement (not included in the square footage). We followed code minimums on insulation, air exchange, and foundation design. We modeled one home for each climate zone.

We followed guidance from NEEP on sizing the maximum BTU/h capacity at 125% of the BTU/h needed to warm a home in each zone from its reference 5-year average coldest temperature.[10,11]

We estimated a weighted average temperature for each climate zone, weighted by the percent of new home construction in each county.

To simplify our analysis, we excluded solar irradiance (which would reduce the BTUs required per year, further advantaging heat pumps).

8 New Residential Construction, August 2022

9 2025 ECCCNYS

10 Guide To Sizing & Selecting Air-Source Heat Pumps in Cold Climates

11 ENERGY STAR Certified Homes County-Level Design Temperature Reference Guide

New gas service line hookups

Connecting new buildings to the gas system requires building service lines and potentially extending gas mains. To estimate these costs, we used the cost per foot of service line connections, along with the average length of new service lines from a 2022 joint rate filing (up to 100 feet, since this is the portion currently paid for by ratepayers) for each utility.[12]

While some new residential construction may also require gas main extensions, and these are partially subsidized as well, we excluded these costs due to quality issues with the data provided by the gas utilities.

In other words: our estimates of the life-cycle costs of gas-heated homes exclude major infrastructure costs, and are quite conservative. We are likely underestimating the

12 Modernized Gas Planning Process: Cost of Extending Service to New Customers

savings from all-electric single-family homes compared with gas-heated ones.

We associated every county that has natural gas hookups available with the utility that services a plurality of that county, and then took a blended average cost for each climate zone, weighted by the percent of new homes built in that county.[13]

13 2019 Building Permits Survey New construction per county

Heating systems & fuels

Since 88% of new construction in New York State is built with central air conditioning,[14] we assumed that each home would have ducting, and would then have EITHER:

14 2019 Residential Building Stock Assessment

- **Conventional heating / cooling**: a high-efficiency furnace, a 50 gal. hot water heater using natural gas (0.04 mcf/day) or propane (1.16 gal./day), and central AC, OR
- **Air Source Heat Pump heating / cooling**: a ducted Air Source Heat Pump and 50 gal. Heat Pump Hot Water Heater (HPHW, UEF > 2.2).

The 2025 Energy Conservation Construction code of New York State forbids the use of electric resistance systems bigger than 2kW for habitable spaces,[15] and so we assume that to comply with AEBA builders must use heat pumps.

15 ECCCNYS §R403.7.1: At 100% efficiency, a 36K BTU electric furnace would draw 10.5kW, more than five times the legal limit. Therefore, ducted homes could not be heated with electric resistance.

Since installation costs for central AC plus furnace or boiler would be on par with the cost of installing an ASHP, and since the installation costs for a conventional vs. heat pump water heater would be similar, we took labor installation costs out of the model and included only device costs.

To **calculate device cost estimates** for the heating systems themselves, we used current sticker prices available in catalogs for units meeting code minimums, for at least the design size required of the simulated home in each climate zone.

To be code compliant, a residential building needs 10 energy efficiency credits, which we assumed would be earned through choosing a high-efficiency heat pump[16] instead of a much tighter building envelope, though the effects on operating costs would be similar. We used an HSPF2 of 10 for the ASHPs in our model, because it was the median of the actual systems that we used to estimate cost across all Climate Zones, despite being above the code minimum.

16 ECCCNYS2025 §R408.2.2 and §R408.2.2.1 define heat pump minimums for Climate Zones 4 vs Climate Zones 5 and 6. The HSPF2 requirements are lower (7.8 HPSF2), heating capacity ratio requirements are absent, for Zone 4.

Utility rebates

New York State offers rebates for heat pump water heaters in new construction under the **Clean Heat** program. Rebates for air-source heat pumps are no longer available for new construction (though they are still available for existing homes), and so we have removed them from the model.

The precise incentives for heat pump water heaters vary by participating utility (Central Hudson, ConEd, ConEd O&R, National Grid, PSEG, NYSEG and RG&E.)

To estimate the Clean Heat rebates for every climate zone, we:

- Collected rebate amounts for each heat pump water heater from each participating utility[17]
- Assigned each county in the State to the utility with the greatest coverage in that county
- Assumed that current utility incentive programs will be renewed in the future at the same levels e.g. Central Hudson's Clean Heat funding will be renewed with more funding at the current rebate levels
- Did not apply the 25C Federal tax credits for heat pumps, given changes from H.R. 1 phasing them out at the end of 2025[18]
- Took a blended average rebate for each climate zone, proportional to the new construction permits from each county

17 Clean Heat eligibility and rebate amounts for ConEd, PSEG-LI and all other investor-owned electrical utilities.

18 Bipartisan Policy Center: One Big Beautiful Bill Act Energy Provisions

Heating system costs, with rebates and mortgage

We assumed that building owners would repay home-building costs via a mortgage, since, given the competitive nature of the housing market, differences in construction costs would likely be passed on to home purchasers.

For each climate zone, we:

- Calculated the annual mortgage payments for homes with conventional heating/cooling, including amortizing gas hookup costs
- Calculated the annual mortgage payments for homes with ASHPs

- Subtracted these figures to get the **difference in yearly up-front cost repayments**
- We used a **6%** mortgage interest rate as a benchmark, the current prevailing rate for New York State as of October 14, 2025[19]

19 Zillow Mortgage Rates: New York, current rates for a 30-year mortgage, 680-740 credit score, 20% down

Fuel costs

For each climate zone, we calculated the **total BTUs** per year required to heat each home to 70°F, using:

- Average Heating Degree Day estimates for that zone. We used the midpoint of the IECC Climate Zone definitions, along with EPA-derived adjustments per zone due to climate change[20]
- We used a simplified version of Manual J, the physical (block) model used for sizing HVAC systems by contractors[21]

20 Climate Change Indicators Heating and Cooling Degree Days

21 ACCA Manual J Residential Load Calculation

For every climate zone, we calculated the **annual fuel cost** by dividing these **total heating energy** by the **heating efficiencies for each device** and multiplying by the dollar per unit (mcf, gallon, or kWh) cost for each.

For each of these fuels, we used **2020-2025 price averages for winter months** (November to March) for New York State from the United States Energy Information Administration (EIA) and NYSERDA data.[22,23]

22 Monthly avg. statewide residential gas prices residential electricity prices

23 Monthly avg. statewide propane prices

Maintenance costs

We gathered cost estimates on equipment maintenance from speaking with several knowledgeable HVAC contractors.

Annual life-cycle savings estimates

For each climate zone and fuel type combination—climate zones 4/5/6, natural gas vs. propane—we added together:

- the **difference in yearly up-front cost repayments**
- **yearly fuel costs**
- **yearly maintenance costs**

To produce the **annual savings estimates** for each of these combinations.

Finally, to produce the **statewide annual savings estimates** on p. 5, and the **zone-wide** savings estimates in Table 2, we calculated blended averages using the proportion of new construction that uses each fuel within each climate zone.

Fifteen-year life-cycle savings estimates

To produce the **15-year savings estimates** on p. 11 we calculated the present value of real annual savings over 15 years using a 4 percent discount rate.

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