



NYSERDA

NYStretch Energy Code

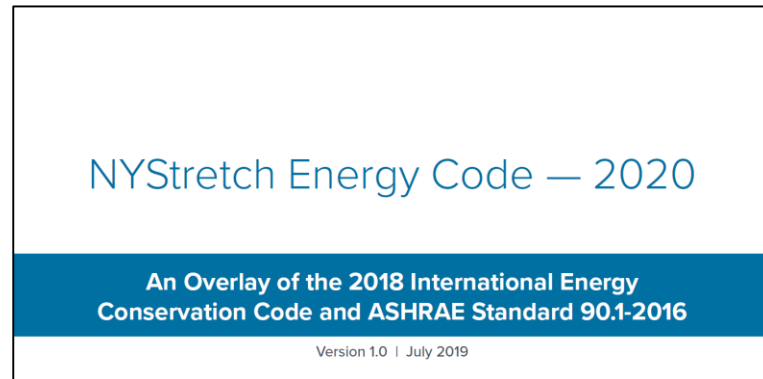
PACE Land Use Law Center Conference

December 5, 2019

**Marilyn Dare, Senior Project Manager, Energy Codes
NYSERDA**

Agenda

- Overview of Climate Leadership and Community Protection Act
- Why have Building Energy Codes?
- NYStretch Energy Code 2020:
 - Overview
 - Benefits and economics
 - Comparison to 2020 ECCCCNYS
 - Available resources
 - Timeline
- Q & A



New York Climate Leadership and Community Protection Act



NYSERDA

Climate Leadership and Community Protection Act (CLCPA) – Overview

- > Most aggressive greenhouse gas reduction goals of any major economy: 40% by 2030, 85% by 2050
- > 70% renewable energy by 2030, 100% zero-carbon electricity by 2040
- > Path to carbon neutrality
- > Codifies clean energy targets
- > Commitments to environmental justice, disadvantaged communities, and just transition
- > First statutory Climate Action Council

CLCPA by the Numbers, Targets Codified into Law

**Carbon neutral economy, mandating at least an
85% reduction in emissions below 1990 levels**

40% reduction in emissions by 2030

100% zero-carbon electricity by 2040

70% renewable electricity by 2030

9,000 MW of offshore wind by 2035

6,000 MW of distributed solar by 2025

3,000 MW of energy storage by 2030

185 Tbtu on-site energy savings by 2025

Energy Efficiency

New Efficiency: New York

- > New utility energy efficiency investments of \$1.6 billion

Additional existing activities and support:

- > NYSERDA's Clean Energy Fund (\$2 billion over 10 years)
- > Currently authorized utility programs (\$1.21 billion)

185 TBtu
end-use savings
in buildings and industrial sector
below forecasted energy use in 2025
by 2025

equivalent to fueling
and powering more than
1.8 million New York homes
by 2025

delivering **nearly one-third**
of the greenhouse gas
emissions reductions needed
to meet **40% reduction by 2030**

Why have Building Energy Codes?

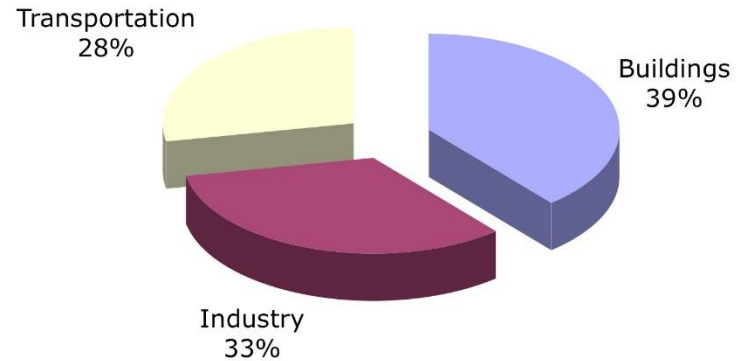


Energy challenges



Environmental challenges

Building energy consumption
compared to industry and transportation



Source: US Energy Information

Today's challenges plus building energy consumption make Energy Codes a central part of a sustainable future.

Why have Building Energy Codes?

Save money and reduce energy consumption in newly built buildings.



Protect the natural environment from unnecessary emissions.



With progress in terms of stringency, scope & enforcement: all provide new jobs/opportunities to enhance workforce skillsets.

Why have Building Energy Codes?

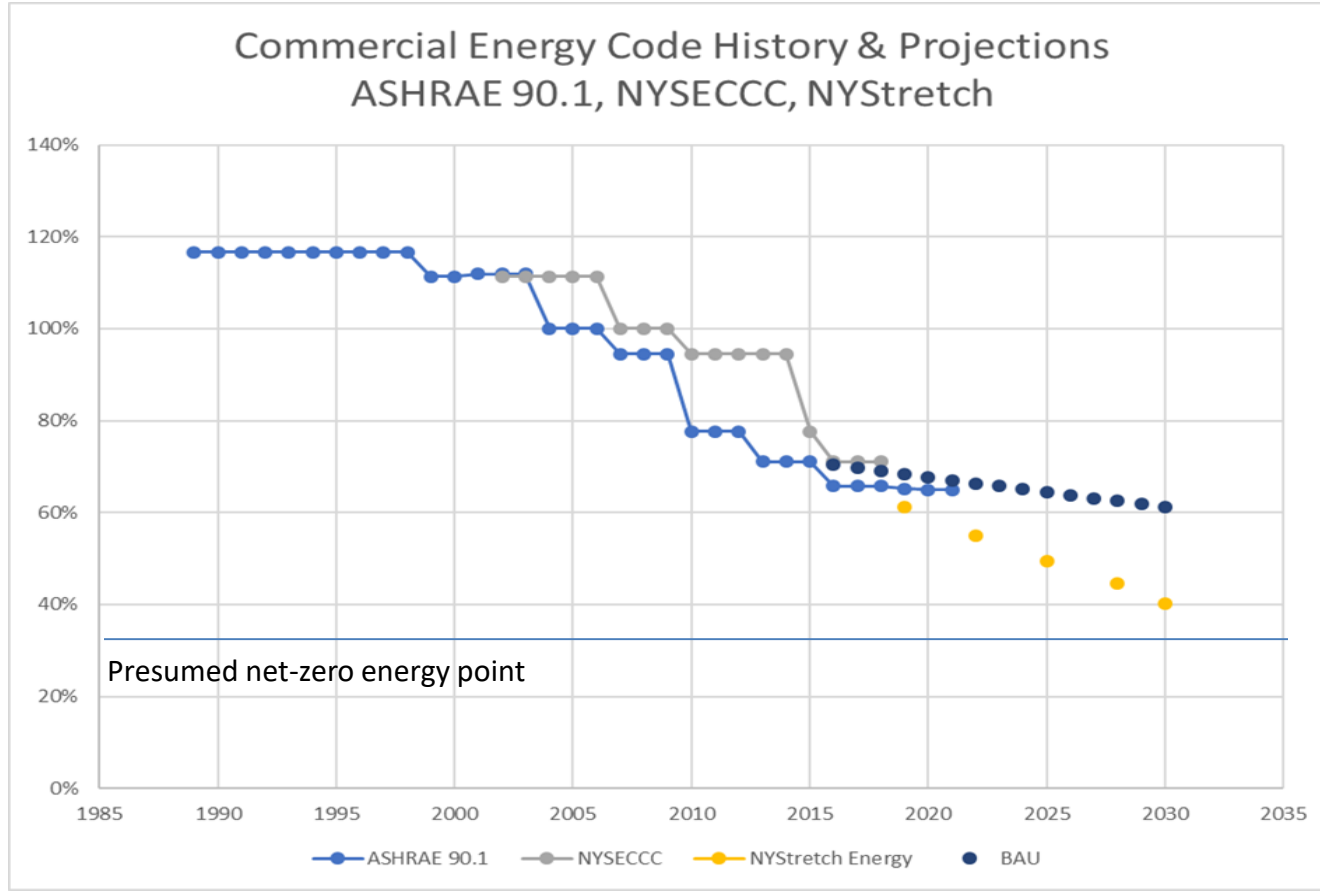


Support energy conservation
and efficiency actions

Safeguard owners and tenants from long-term financial burdens that can result from short-term design/construction decisions.



What is a Stretch Energy Code; why is it important?



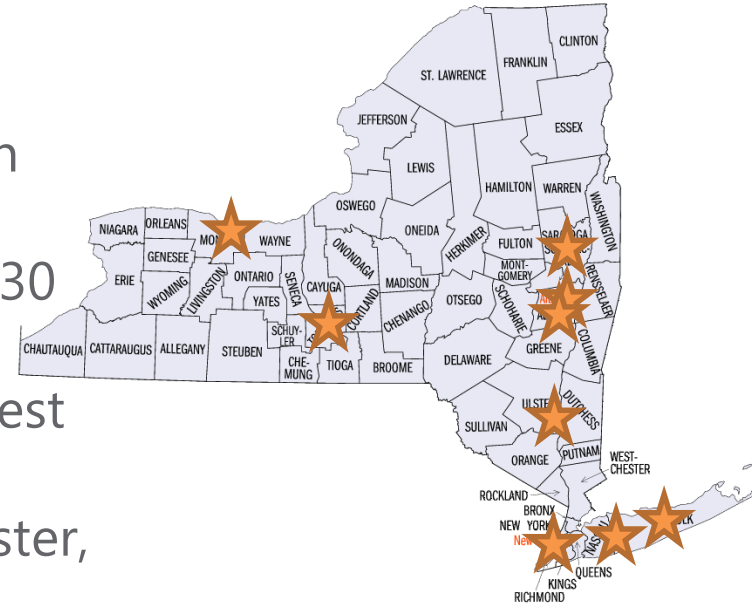
What is NYStretch Energy Code 2020?

- Readily adoptable local energy code that is more efficient than NYS's base energy code.
- A pivotal tool in supporting energy/climate goals.
- Calls for higher energy efficiency standards for new and renovated construction projects.
- **Roughly 11% more efficient than 2020 ECCCNY.**



NYStretch – Community interest

- New York City local law to adopt NYStretch in this code cycle.
- Ithaca using NYStretch as part of their Green Building Code.
 - Goal: Carbon-neutral community by 2030
- Other communities already expressing interest in NYStretch include:
 - Albany, Bethlehem, Marletown, Rochester, Lower Hudson Valley towns and cities, Towns on Long Island



Why should a community adopt NYStretch?

- Saves energy and money:
 - Uses less energy, reduce operating costs
- Helps the environment:
 - Reduces greenhouse gas emissions and reliance on fossil fuels
- Boosts the local economy:
 - Develops local workforce, builds expertise in newer technologies, creates more green jobs



NYStretch - Benefits

- Improves community growth:
 - Increases community attractiveness as more home/business owners and tenants look for green & energy efficient buildings
- Increases property values:
 - New and renovated buildings benefit from long-term energy and cost savings



NYStretch vs. 2020 ECCCNY

Economics

- Commercial Savings and Incremental Cost

Weighted average **Statewide** results:

- Percentage Savings: 7.1%
- Incremental Cost: \$1.14 / SF
- Simple Payback: 10.5 years

Based on prescriptive and mandatory provisions. Results will vary depending on building and construction type, location in NY State, and use of performance compliance paths.



NYStretch vs. 2020 ECCCNY

Economics: Commercial Building types in **CZ 4 (White Plains)**

Prototype	Energy Cost Svgs	Incremental First Cost	Simple Payback
Large Offic1	4.1%	\$ 0.28/SF	3.1
Standalone Retail	15.4%	\$ 3.89/SF	15.6
Secondary School	8.0%	\$ 0.61/SF	6.0
Large Hotel	8.5%	\$ 1.77/SF	9.6
Full-service Restaurant	13.3%	\$ 5.59/SF	5.5
Outpatient Healthcare	6.2%	\$ 3.10/SF	12.9
Warehouse	13.3%	\$ 1.03/SF	18.4
10-Story HR Apt	3.0%	\$ 0.43/SF	13.5
20-Story HR Apt	3.4%	\$ 0.47/SF	11.5

NYStretch vs. 2020 ECCCCNYS

Economics: Commercial Results by Climate Zone

Prototype	Construction Weight	Energy Cost Svgs	Incremental First Cost	Simple Payback
Climate Zone 4A	71%	5.5%	\$ 0.85/SF	11.0
Climate Zone 5A	21%	10.5%	\$ 1.81/SF	9.8
Climate Zone 6A	8%	9.9%	\$ 1.96/SF	10.5

NYStretch vs. 2020 ECCCNY

Economics

- Residential Savings and Incremental Cost

Weighted average **Statewide** results:

- Percentage savings 19.7%
- Annual Energy Cost Savings: \$278 / dwelling unit
- Incremental Cost: \$1,795 / dwelling unit
- Simple Payback: 6.4 years

Based on prescriptive and mandatory provisions. Results will vary depending on building and construction type, location in NY State, and use of performance compliance paths.



Economics: Single Family and Multifamily by Climate Zone

Climate Design Zone	Single-family			Multifamily		
	Total Annual Energy Cost Savings (\$/dwelling unit)	Total Incremental Costs (\$/dwelling unit)	Simple Payback (Years)	Total Annual Energy Cost Savings (\$/dwelling unit)	Total Incremental Costs (\$/dwelling unit)	Simple Payback (Years)
4A-NYC	\$301	\$1,910	6.3	\$176	\$1,625	9.2
4A-balance	\$301	\$2,463	8.2	\$167	\$1,488	8.9
5A	\$351	\$2,202	6.3	\$172	\$1,751	10.2
6A	\$372	\$1,506	4.1	NA	NA	NA
NY State	\$348	\$2,057	5.9	\$171	\$1,591	9.3

Aggregated Energy Cost Savings in CZ4-NYC: 19.6% in CZ4-balance: 19.4%

NYStretch Costs/Benefits-Climate Zone 4A-NYC

Single-Family Home with Gas Furnace and Electric AC

	Costs				Benefits		Net		
	Total Incremental Cost	Increase in Down Payment + Mortgage Fees	Increase in Annual Mortgage Payment	Increase in Annual Property Tax	Annual Energy Cost Savings	Non-Energy Benefits	Year 1 Cash Flow	Year 2+ Cash Flow	Simple Payback
Homeowner	\$1,910	\$418	\$68	\$34	\$214	Increased home value & thermal comfort	-\$295	\$124	9 years

Single-Family Home with Electric Heat Pump

Homeowner	\$1,931	\$418	\$68	\$34	\$549	Increased home value & thermal comfort	\$42	\$462	3 years
-----------	---------	-------	------	------	-------	--	------	-------	---------

NYStretch Costs/Benefits-Climate Zone 4A-Balance

Single-Family Home with Gas Furnace and Electric AC

	Costs				Benefits		Net		
	Total Incremental Cost	Increase in Down Payment + Mortgage Fees	Increase in Annual Mortgage Payment	Increase in Annual Property Tax	Annual Energy Cost Savings	Non-Energy Benefits	Year 1 Cash Flow	Year 2+ Cash Flow	Simple Payback
Homeowner	\$2,463	\$544	\$88	\$45	\$231	Increased home value & thermal comfort	-\$430	\$114	11 years

Single-Family Home with Electric Heat Pump

Homeowner	\$2,463	\$544	\$88	\$45	\$499	Increased home value & thermal comfort	-\$162	\$384	5 years
-----------	---------	-------	------	------	-------	--	--------	-------	---------

NYStretch vs. 2020 ECCCNY

NYStretch requirements include:

Building Envelope:

Improved window performance, increased insulation requirements, air leakage testing, air barrier commissioning, mandatory mechanical ventilation

Lighting/Electrical:

Reduced interior and exterior lighting power, lighting controls, whole-building energy monitoring

Compatibility:

Renewable and electric vehicle readiness

Miscellaneous:

Commercial kitchen equipment efficiencies; introduces Passive House compliance path

NYStretch vs. 2020 ECCCNY

Common FAQs

- **Does NYStretch apply to major renovation projects as well as new construction?**
 - Yes, in the same manner that the ECCCNY is applicable to major renovations.
- **Does NYStretch require installation of solar panels for commercial buildings?**
 - No, but it does require commercial buildings to be solar-ready.
- **Won't developers avoid my community if we adopt NYStretch?**
 - We already know of many builders and developers who have embraced better than code construction to differentiate themselves.

NYStretch Resources

- Template legislation: resolution/legislation template to help facilitate local adoption
- Single volume code manual: to aid in consistent interpretation among code officials
- Training: for Code Officials, Architects, Builders
- Updated REScheck and COMcheck tools
- FAQs document
- NYSERDA staff or Outreach Coordinators available for guidance/meetings
- Hotline for technical and interpretation assistance

Timeline

- NYStretch Energy Code 2020 Available now
- Template legislation, FAQs, Fact Sheets Available now
- Cost Effectiveness Analyses Reports Available now
- Training Opportunities Commence Q4/2019
- Single Volume Code Manual Q1/2020
- Updated RESCheck and COMCheck tools Q1/2020
- 2020 ECCCNY goes into effect 3/2020

www.nyserda.ny.gov/stretchenergy2020

NYStretch Website and Toolkit

NYSERDA

Business
& Industry

Communities
& Governments

Residents
& Homeowners

Innovators
& Investors

Researchers
& Policymakers



SUBSCRIBE

Pick a topic, get updates!

Find A Program

Find a Contractor

About

Cc

Energy Codes: Training,
Support Services and
Stretch Codes

Energy Code Training
and Support Services

NYStretch Energy Code-
2020

Resources

NYStretch Energy Code-2020

NYStretch Energy Code – 2020* Version 1.0 (NYStretch) is now available. as a statewide model code for New York jurisdictions to use to meet their accelerating the savings obtained through their local building energy code. NYStretch will provide savings of roughly 11% over the 2020 Energy Conservation Code (ECCCNYS) when that energy code is released by the State.

NYStretch is a stretch code that:

- Is readily adoptable with minimal changes by local governments
- Is in enforceable language
- Is coordinated with the New York State Uniform and Energy Codes
- Is about one cycle ahead of the next New York State Energy Code
- Lowers energy use and greenhouse gas emissions associated with
- Is cost-effective and regionally appropriate

Download NYStretch

It is NYSERDA's intent to release a version of NYStretch that will overlay & release of that code by New York State Department of State. NYStretch 1.0 does not reflect changes the New York State Fire Prevention and Code Commission (ECCCNYS). Visit the Department of State Uniform Code and Energy Code the 2020 ECCCNYS.

NYStretch Toolkit

To help your community adopt NYStretch, see NYSERDA's free, online toolkit below. It provides resources to support your community through the adoption process. The toolkit includes a fact sheet describing NYStretch and its benefits, reports on estimated benefits and costs of meeting NYStretch for the most common new building construction projects, an Adoption Guide with model resolution language, and Frequently Asked Questions with responses.

Cost Analysis Documents:

The reports summarize the energy savings and cost-effectiveness analysis of the residential and commercial provisions of the NYStretch.

- Read the [Commercial Cost Analysis Report](#) [PDF]
- Read the [Residential Cost Analysis Report](#) [PDF]

Adoption Guide

Review the [Adoption Guide](#) [PDF] to learn about available NYSERDA support and steps to adopt NYStretch in your community. Also see the [Sample Model Energy Code Resolution](#) [DOCX] document for your use.

Frequently Asked Questions:

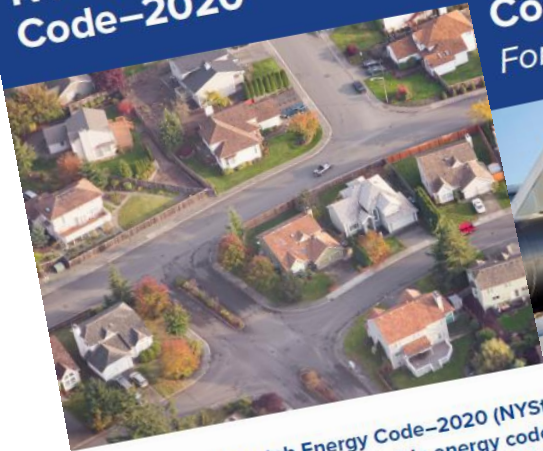
Read the [FAQ document](#) [PDF] on NYStretch. If you have further questions, contact the NYSERDA codes team - codes@nyserd.ny.gov

Fact Sheets

To learn more about NYStretch, read the [General Fact Sheet](#) [PDF] or contact codes@nyserd.ny.gov for more information

NYStretch Fact Sheets

NYStretch Energy Code–2020



The NYStretch Energy Code–2020 (NYStretch) is a voluntary, readily adoptable energy code that sets higher efficiency standards in new and renovated construction projects.

When buildings are built above and beyond the minimum requirements of the 2020 Energy Conservation Code of New York State (ECCCNYS), they can make meaningful strides in mitigating energy costs over those built to the 2020 ECCCNYS. The savings will pay back the additional cost of construction in less than 10 years.



NYStretch Energy Code–2020 For Elected Officials

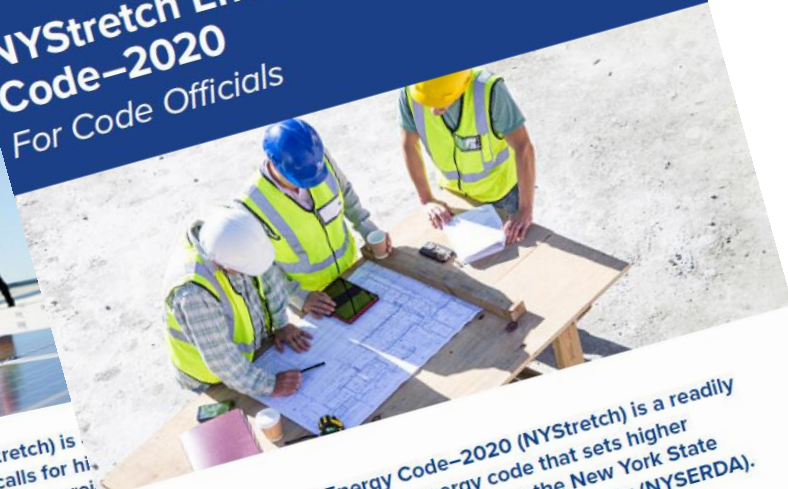


The NYStretch Energy Code–2020 (NYStretch) is a voluntary, readily adoptable energy code that sets higher efficiency standards in new and renovated construction projects. By adopting NYStretch, you can lead the way to a cleaner, more attractive community by increasing property values, improving energy efficiency, and providing long-term value and comfort for residents and businesses.

To achieve New York State's ambitious energy goals, new and renovated buildings must meet the minimum code requirements of the 2020 Energy Conservation Code of New York State (ECCCNYS). The efforts pay off—buildings that are built to NYStretch requirements save **10–12%** in energy costs over those built to the 2020 ECCCNYS, with the savings paying back the additional cost of construction in less than 10 years.



NYStretch Energy Code–2020 For Code Officials



The NYStretch Energy Code–2020 (NYStretch) is a readily adoptable, enforceable energy code that sets higher efficiency standards, developed by the New York State Energy Research and Development Authority (NYSEDA). NYStretch prepares you for the new technologies and strategies in future code requirements.

By reaching beyond the minimum code requirements of the 2020 Energy Conservation Code of New York State (ECCCNYS), NYStretch is a pivotal tool in supporting community energy and sustainability goals. The efforts pay off—buildings that are built to NYStretch requirements save **10–12%** in energy costs over those built to 2020 ECCCNYS, with the savings paying back the additional cost of construction in less than 10 years.



NYStretch FAQs

NYStretch Energy Code–2020

Frequently Asked Questions



NYSEF

NY-Stretch Energy Code–2020

Frequently Asked



NYSERDA

RESIDENTIAL BUILDING QUESTIONS

GENERAL QUESTION

1. What is a stretch energy code?

A stretch energy code is simply code that can be adopted by 16 states of Massachusetts, and it ensures constituents enjoy reduced protecting the environment while order to prevent a patchwork of Authority (NYSERDA) developed

2. What is the NYStretch Energy Code–2020?

NYStretch Energy Code–2020 energy than the forthcoming 2020

This fact allows NYStretch to be 2020 ECCCNYS with a standard building type. Many of the codes. To a large degree, NYSt

3. Why did NYSERDA develop NYStretch?

NYSERDA and its team of stakeholders provide a stretch code that is market, and delivers energy an jurisdictions to accelerate the s

The 2020 ECCCNYS will be the State. However, technologies a minimum code requirements. It significantly reduce energy con

Developers often build homes capital costs than energy-efficient costs to renters, tenants, and c initially, long-term energy and c

Adopting a stretch code also p can increase property values a energy-efficient homes. Multipl to search for green or energy-e and initiatives, which often incl

17. How does a new home meet the residential requirements of NYStretch?

The compliance paths include the same paths as in the ECCCNYS, including versions of RESCheck™. NYStretch also allows for Passive House approaches.

18. For residential buildings, is additional testing equipment and verification required to meet the NYStretch compared to the 2020 ECCCNYS?

Yes. For example, a provision in NYStretch requires that a mechanical ventilation system be tested and verified to ensure it is working properly so as to deliver the expected performance and energy savings.

19. How much energy will each new home save if built to meet NYStretch?*

On average, residential buildings that meet NYStretch can save an estimated 19.7% in terms of energy cost compared to those built to the 2020 ECCCNYS. Likewise, a homeowner would see, on average, an estimated 19.7% reduction in their utility bill over the course of one year. The prescriptive residential provisions of NYStretch were modeled using whole building energy simulation software to quantify energy savings beyond what will be expected under the 2020 ECCCNYS.

**Note that these savings strictly reflect energy efficiency components and do not include any energy offset by renewable energy generation such as solar photovoltaic (PV) panels. Additional savings would be realized for projects that include renewable generation technologies.*

20. How much more does it cost to build a new home to meet NYStretch compared to the current 2020 ECCCNYS?

There are multiple ways to comply with NYStretch. Third-party incremental cost analyses show that incremental costs range from \$1,506 to \$2,463 per home for single family homes. Multifamily apartments will have incremental costs ranging from \$1,488 to \$1,750 per dwelling unit.

NYStretch–Average Residential Savings, Costs, and Payback

Building Type	Annual Energy Cost Savings (\$/home)*	Incremental Cost of Construction (\$/home)*	Simple Payback (years)*
Single Family Home	\$348	\$2,057	5.9
Multifamily Unit	\$171	\$1,591	9.3
Weighted Average NY State	\$278	\$1,795	6.4

*Results will vary depending on building and construction type and location in NY State.



NYStretch Adoption Guide

NYStretch Energy Code—2020

Adoption Guide and Model Resolution Language



3. Adopting NYStretch and filing with Dep

The steps to adopt NYStretch require the same procedural amendment, including adherence to the procedures Law. For detailed instructions on adopting a local law entitled “*Adopting Local Laws in NY State*,” available [Adopting_Local_Laws_in_New_York_State.pdf](#)

When a municipality decides to adopt NYStretch, NY be filed *within 30 days of promulgation or adoption* documentation that must be submitted with the NYS *Conservation Construction Code** is as follows:

- **Exhibit A: NYStretch Energy Code 2020 (available at nyscrda.ny.gov/stretchenergy202)**
- **Exhibit B: a copy of the local energy code adopted by the Municipality, or any amend**
- **Exhibit C: A description of the provisions in**
- **Exhibit D: The cost-effectiveness analysis | the NYStretch is more stringent than the 2**

A. Sample Model Energy Code Resolution

Jurisdiction Name

City/Town, NY

[Municipal Governing Body] [Resolution Reference Number]

Resolution to Adopt Amendments to Article [# pertaining to e.g., Building Code, Building Energy Code, Energy Conservation, etc.] **[or “to Add provisions for a local energy code under Article #”]** of the [Municipal] Code

Information

Department:
[MUNICIPALITY]
Attorney

Sponsors:
[Chief Executive of Municipality]

Category:
Local Laws

Functions:
None

Financial Impact

None.

Body

WHEREAS, to prevent a statewide patchwork of stricter energy codes, the New York State Energy Research and Development Authority (NYSERDA) developed the NYStretch Energy Code – 2020 (NYStretch);

WHEREAS, a stretch energy code is simply an energy code that is more stringent than the minimum base energy code that can be voluntarily adopted by local jurisdictions. NYStretch is a model stretch code that will be ten to twelve percent (10-12%) more efficient than the minimum requirements of the base energy code, the 2020 Energy Conservation Construction Code of New York State (2020 ECCCNY);

WHEREAS, some New York State municipalities have adopted stricter energy standards to ensure reduced energy costs for its residents and businesses;

WHEREAS, under NY Energy Law § 11-109, the [Municipality] of [Name of Municipality] is authorized to adopt a local energy code more stringent than the 2020 ECCCNY;

WHEREAS, [additional clauses entered by municipality as deemed necessary regarding introduction of NYStretch];

NYStretch Energy Code 2020

Questions?

codes@nyserderda.ny.gov

marilyn.dare@nyserderda.ny.gov

Thank you!