



NYStretch Energy Code

A Tool for Building Healthier, more Energy Efficient and Higher Quality Buildings

Central New York Regional Planning & Development Board

Lou Vogel, PE, LEED AP, Taitem Engineering, PC

Mike DeWein, North Branch Services

Kevin Stack, BaDT, LEED Fellow & Faculty, HERS Rater

Josh Stack, JD, LLM, Living Future Accredited & Ambassador

NYStretch Energy Code — 2020

An Overlay of the 2018 International Energy
Conservation Code and ASHRAE Standard 90.1-2016

Version 1.0 | July 2019

Agenda

- Logistics
- Clean Energy Communities Introduction
- NYStretch Overview – NYStretch Code Experts
- Q&A

Logistics

- Participants should be muted, no video
- Post questions in the Chat box – questions will be answered throughout via Chat and at end
- Webinar is being recorded and will be shared, including slides

NYSERDA Clean Energy Communities

- Provides first-come, first-served grants, technical assistance, and recognition to local governments that demonstrate leadership in the area of clean energy
- 10 high-impact actions identified by NYSERDA
- If 4 of 10 high-impact actions are completed, municipalities can become designated a Clean Energy Community
- Assistance provided by CEC Coordinators

Grants currently all claimed, new round of CEC expected in Fall 2020

NYStretch is expected to be a component of the new CEC program

High Impact Actions

1. Benchmarking municipal energy use
2. Clean Energy Upgrades
3. LED Streetlight Conversion
4. Clean Fleets - EV or charging station
5. Participate in a Solarize, Solar for All, or Clean Heating and Cooling initiative
6. Adopt the Unified Solar Permit
7. Participate in the Energy Code Enforcement Training program
8. Become a Certified Climate Smart Community
9. Community Choice Aggregation
10. Adopt Energize NY (PACE) Finance



W Manlius St., Village of East Syracuse
before (left) and after (right) LED streetlight
conversion



City of Auburn charging station installed at
Lincoln Street Parking Garage

Municipalities Participating in CEC

577

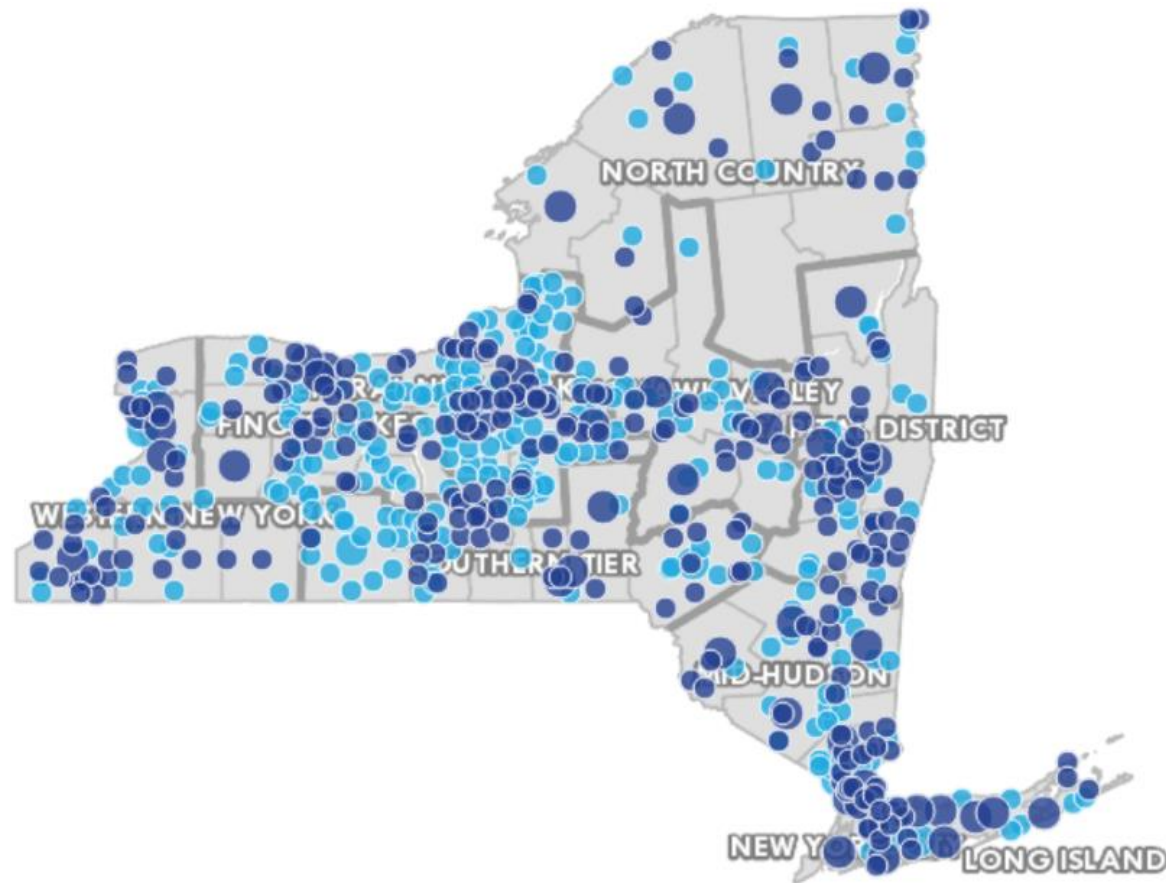
Participating Communities

307

Designated Communities

1,714

Actions Completed



Filter by High Impact Action

(All) ▼

Filter by Region

(All) ▼

Designation Status

■ Designated CEC

■ Participating

Community Size

● Small Community

● Large Community

CEC Coordinators

<https://www.nyserda.ny.gov/Contractors/Find-a-Contractor/Clean-Energy-Community-Coordinators>

- CNY
Amanda Mazzoni: amazzone@cnyrpdb.org
- Finger Lakes
Haylee Ferington: hferington@gflrpc.org
- Southern Tier
Terry Carroll: tc629@cornell.edu

NYStretch Energy Code 2020

- Benefits of a Stretch Code
- Overview of NYStretch Residential & Commercial Provisions
- Available Resources

Benefits of NYStretch Energy Code 2020

- Readily adoptable local energy code.
- Based on proven technologies & construction techniques.

Benefits

- Healthier Buildings.
- Enhanced Autonomy for Communities to Interpret & Apply NYStretch.
- Easier Administration of the Energy Code.
 - Plan Review & Site Inspections by Qualified 3rd Parties
- Reduce operating costs.
- Emphasizes local workforce & economy.

Health

R403.6.2 Balanced and HRV/ERV
R403.6.3 Verification of Ventilation

The current ventilation standard, by definition, is a minimum standard designed to provide merely “acceptable” indoor air quality despite decades of research showing benefits of higher outdoor air ventilation rates.

100 HARVARD T.H. CHAN SCHOOL OF PUBLIC HEALTH Center for Health and the Global Environment
FOR HEALTH forhealth.org

FOUNDATIONS OF A HEALTHY BUILDING



NYSStretch Energy Code — 2020

VENTILATION

R403.3, R403.3.8, R403.6.2,
R402.6.3, R408

AIR QUALITY

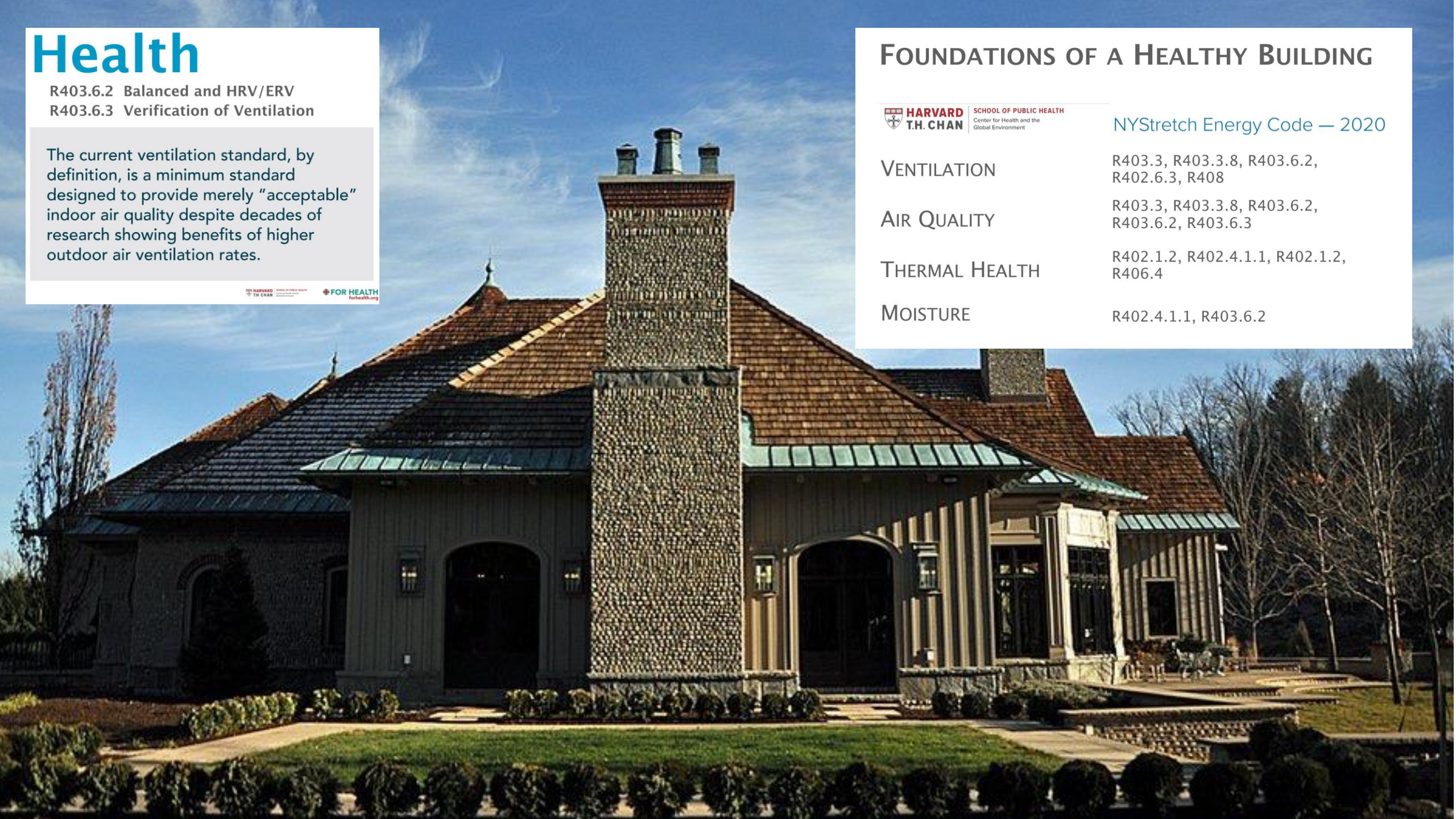
R403.3, R403.3.8, R403.6.2,
R403.6.2, R403.6.3

THERMAL HEALTH

R402.1.2, R402.4.1.1, R402.1.2,
R406.4

MOISTURE

R402.4.1.1, R403.6.2



NYStretch Residential Buildings



SINGLE FAMILY



LOW INCOME MULTIFAMILY

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

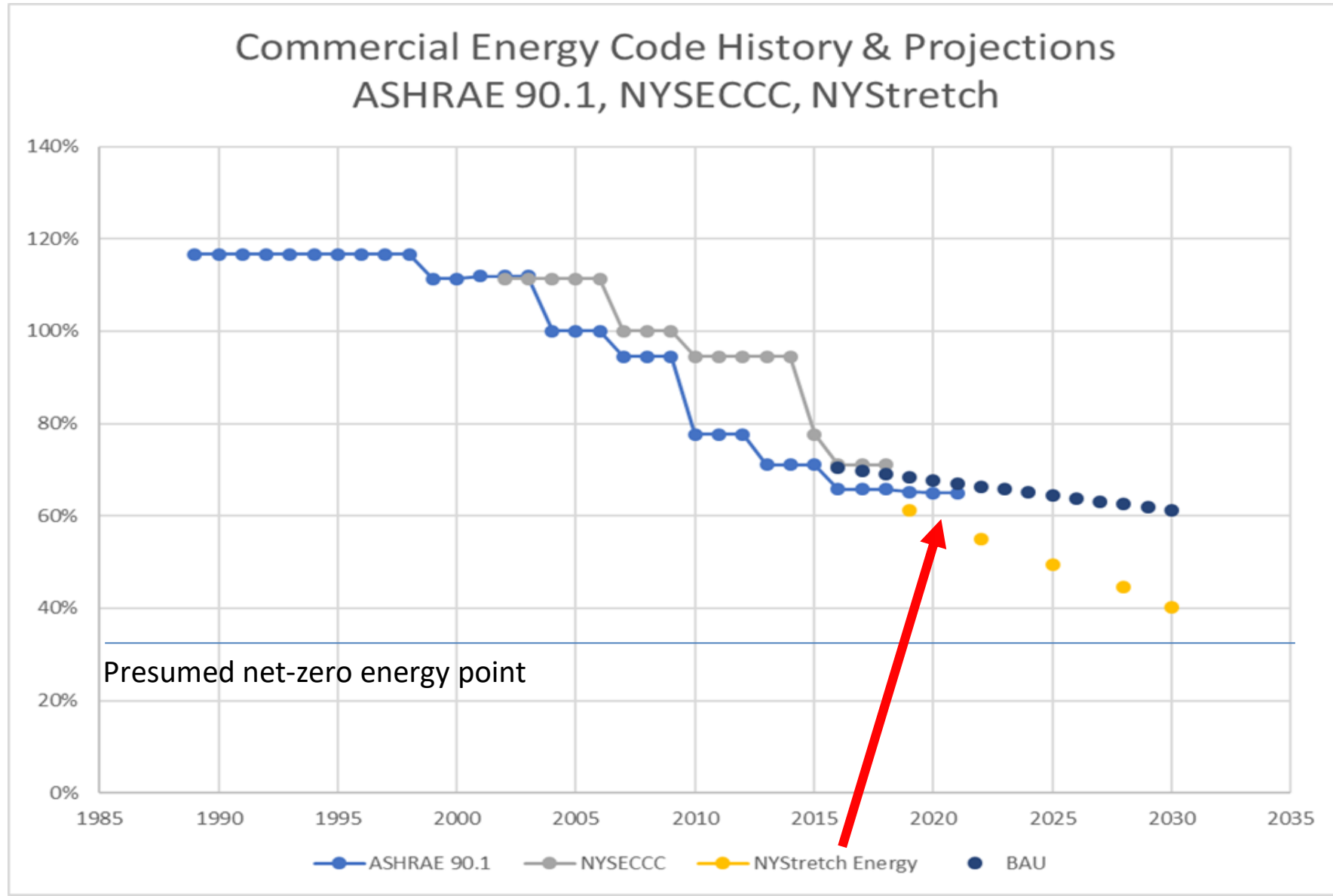
6,000 MW of distributed solar by 2025

3,000 MW of energy storage by 2030

185 Tbtu on-site energy savings by 2025

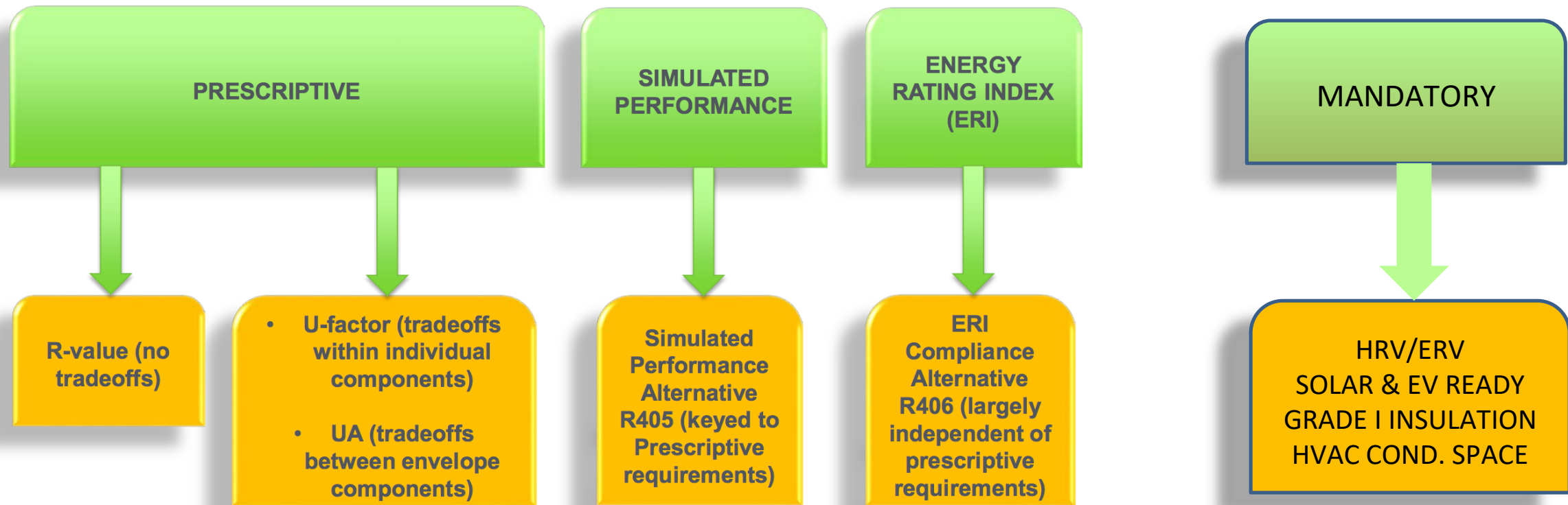


What is a Stretch Energy Code?



2020 ECCCNY

2020 NYStretch



Climate Zone 5a	2016 Energy Code Supplement	2020 ECCCCNYS	2020 <u>NYStretch</u>
WINDOW U-VALUE	0.32	0.30	0.27
WALL-R VALUE	20 OR 13+5	20 or 13+5	21 INT., 20+5, or 13+10
INSULATION GRADE 1	???	Manufacturers spec's	< 2% compress or voids
DUCT LOCATION	No Req.	No Req.(Exception)	Conditioned space
DUCT SIZING	No Req.	No Req.	Manual "D"
DHW DIST.	No Req.	R-2 pipe insulation	DWHR, Length, recirculation
VENTILATION	Exhaust, Supply or Balanced	Exhaust, Supply or Balanced (No test)	Tested Balanced HRV or ERV
LIGHTING		60 lm/W >40W 50 lm/W=15-40W 40 lm/W > 15W	65 lm/W & 45lm/W
ELECTRICAL POWER PKG.	No Req.	No Req.	Solar Ready & EV Service Equip

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 CZ5: 19.6%

Aggregated savings over 4 foundation types /3 fuel configurations: electric heat pump, gas heat w/electric A/C, Oil heat w/electric A/C

Commercial Buildings

NYStretch – CNY, WNY & Southern Tier



Compliance Paths for Commercial Buildings

2020 NYS Prescriptive Path

ASHRAE 90.1-2016 Prescriptive Path

ASHRAE 90.1-2016 Energy Cost Budget, i.e. Section 11

ASHRAE 90.1-2016 Performance Path, i.e. App. G

As amended by



Vertical Fenestration – U-Factors



Fenestration – Climate Zone 5 (U-Factors)

	2020 ECCC NYS	ASHRAE 90.1 2016	2020 NYS Stretch
Fixed Fenestration	0.38	0.38	0.36
Operable Fenestration	0.45	0.46	0.43
All other	As above	0.31	0.27
SHGC	0.36 – 0.58 per overhang	0.36	0.38 – 0.61
Skylight U-Value	0.5	0.50	0.48
Skylight SHGC	0.4	0.40	0.38

Appendix CB: Rated R-Value

Table CB102.2; Climate Zone 5

	2020 ECCC NYS	ASHRAE 90.1 2016	2020 NYS Stretch
Roofs			
Insulation Entirely Above Roof Deck	R-30ci	R-30ci	R-33ci
Attic and other	R-38	R-49	R-53
Above-Grade Walls			
Mass	R-9.5ci Group R: R-11.4ci	R-9.5ci Group R: R-11.4ci	R-13.3ci Group R: R15.2ci
Metal Building	R-13+R-13ci	R-0+R-15.8ci Group R: R-0+R-19ci	R-13+R19ci Group R: R-13+R19.5ci
Metal Framed	R-13+R-7.5ci	R-13+R-7.5ci	R-13+R-11ci
Wood-Framed and other	R-13+R-3.8ci or R-20	R-13+R-3.8ci or R-20	R-13+ R-9ci or R-19 + R-5ci

Appendix CB: Rated R-Value, cont.

Table CB102.2; Climate Zone 5

	2020 ECCC NYS	ASHRAE 90.1 2016	2020 NYS Stretch
Below Grade Walls			
Below Grade Walls	R-7.5ci	R-7.5ci Group R: R-10ci	R-7.5ci Group R: R-10ci
Floors			
Mass	R-10ci Group R: R-10.4ci	R-14.6ci Group R: 16.7ci	R-15ci Group R: R-16.7ci
Joist/Framing	R-30	R-30	R-30
Slab-on-Grade Floors			
Unheated Slabs	R-10 24" below	R-15 24" below	R-15 24" below
Heated Slabs	R-15 24" below + R-5 full slab	R-20 24" below Group R: R-20 48" below	R-20 48" below + R- 5 full slab

Additional Requirements

Structural and Mechanical Penetrations

- Structural elements that penetrate building envelope (balconies, parapets) shall have continuous insulation or thermal break of at least R-3 **(Mandatory)**
- Mechanical equipment penetrating greater than 1% of wall area shall be calculated as a separate wall assembly with U-factor of 0.5 **(Mandatory)**

Air Leakage Testing

- New buildings between 25k and 50k SF and $\leq 75'$ in height shall be tested with blower door **(Mandatory)**
- Air leakage tested at 75 Pa ≤ 0.4 cfm/sf conditioned surface area

Lighting – Occupant Sensors

- Adds: corridors & dining areas
- Means of egress: occupancy sensors; dimming

Additional Requirements

Exterior Lighting

- Dim 50% (vs. 30%) if no activity for 15 minutes
- Includes parking areas



Interior Lighting Power Allowance

- Reduced lighting power density



Exterior Lighting Power Allowance

- Reduced lighting power density



Bldg Energy Codes Program

Additional Requirements

Equipment

- New efficiency requirements for elevators & kitchen equipment

Electric Vehicles

- If >10 parking spaces, available panel capacity & conduit for 5% of parking spaces (not less than 2)

Renewables

- Solar-ready zone; about 40% available roof area, space in electric panel and a pathway for conduit **(Mandatory)**

Whole Building Energy Monitoring

- Applies to all new buildings
- Metering for all supplied energy to building
- *Exceptions*
 1. *Buildings < 25,000 sf*

NYStretch Code Commissioning

Required for:

- Any building greater than 25,000 SF
- Air Barrier Commissioning
- Required for alterations large enough to meet criteria, e.g. greater than 40 tons cooling

Resources & Timeline

NYStretch Energy Code	Available now
Legislation Template, FAQs, Fact Sheets	Available now
Cost Effectiveness Analyses	Available now
Training Opportunities	Q2 2020
Single Volume Code Manual	Q2 2020
Updated REScheck and COMcheck tools	Q2 2020
2020 ECCCCNYS Effective Date	May 12 2020

NYStretch Energy Code 2020

Questions?

NYSERDA, codes@nyserda.ny.gov

Marilyn Dare, marilyn.dare@nyserda.ny.gov

Mike Dewein, dewein53@gmail.com

Kevin Stack, kevin@buildinginnaturesimage.com

Josh Stack, josh@resilience.law

Lou Vogel, Southern Tier lvogel@taitem.com

Thank you!