Clean Energy Communities (CEC): NYStretch Energy Code-2020 Adoption

Clean Energy Communities Leadership Round

Introduction for Communities Considering Adoption

March 18, 2021

NEW YORK STATE OF OPPORTUNITY. | NYSERDA

Agenda

- NYStretch: A NYSERDA Clean Energy Communities High Impact Action
- Background
- Costs/benefits
- Compliance path
- Case Studies - Canandaigua, New Paltz, Beacon
- Questions and Discussion

Today's Speakers

> Christopher Sgroi, NYSERDA Project Manager, Codes, Products & Standards Team

> Michael DeWein, North Branch Services, LLC

> Josh Stack, Stack Resilience, LLC, PHIUS+ CPHB, LFA & Ambassador

> Moderator: Pat Courtney-Strong on behalf of

Capital District Regional Planning Commission and

Central New York Regional Planning and Development Board,

NYSERDA contractors for Clean Energy Communities in Upstate NY.

CEC Program Points-Based Grants: NYStretch-2020

- Adopt NYStretch Code to reduce energy consumption, operating + utility costs, and greenhouse gas emissions
- **Eligibility:** Jurisdictions that enforce the Uniform Code for private buildings
- Must be enacted and enabled by December 31, 2021
- Earn 1,200 points toward a points-based grant and either a $5,000 or $50,000 action grant
  - First come, first serve and available statewide

Municipality Size by Population	Action Grant Amount	Number of Available Awards
Large (40,000+)	$50,000	40
Small/Medium (0-39,999)	$5,000	100

Chris Sgroi

Program Overview

What is NYStretch Energy Code-2020?

- **Readily adoptable local energy code**
  - Developed by stakeholder group, managed by NYSERDA, public review period
  - On average, 11% more efficient than ECCCNYS-2020
  - Expressly authorized by Article 11 of NYS Energy Law
  - Presented to the NYS Fire Prevention and Building Code Council on July 10, 2020
- **Overlay of IECC-2018/ECCCNYS-2020**
  - NYStretch prepares municipalities for future code cycles
  - Intended to be a 1-cycle stretch; anticipated to be roughly as efficient as the next version of the State Energy Code
- **Based on proven technologies, systems & construction techniques**
  - Integrates best practices from programs such as ENERGY STAR for Homes
  - Does not require builders to use new, unavailable or unfamiliar products
  - Does not require building departments to adopt new means of enforcement

Historic Model Code Efficiency Progression

eia Independent Statistics & Analysis
U.S. Energy Information Administration

Building Sector Energy Consumption

- About **40%** *of all U.S. energy*
- More than **70%** *of all U.S. electricity*
- Accounts for about **40%** *of carbon emissions*

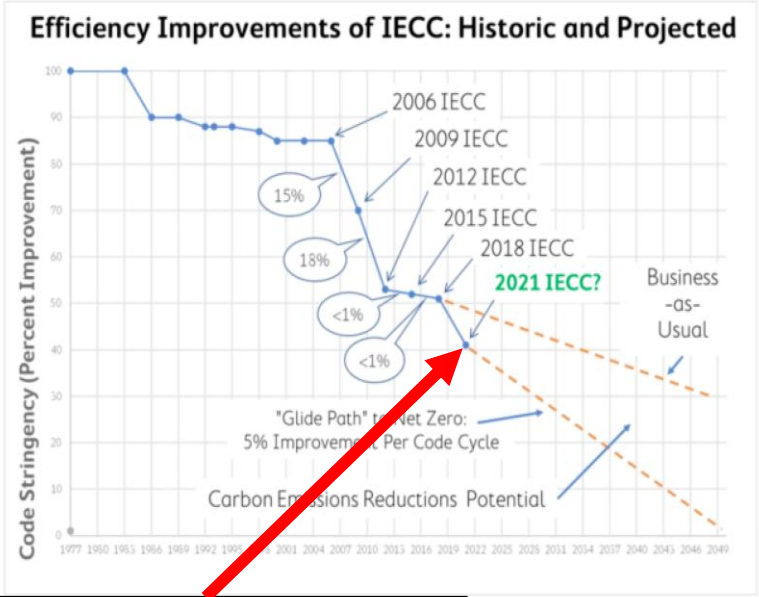
ENERGY | Energy Efficiency & Renewable Energy

Building Energy Codes Program

Model Building Energy Codes

- Cumulative savings from 2010 to 2040:
- **$126 billion** *energy cost savings*
- **841 MMT** *avoided carbon emissions*
- **12.82 quads** *primary energy savings*

ENERGY-EFFICIENT CODES COALITION



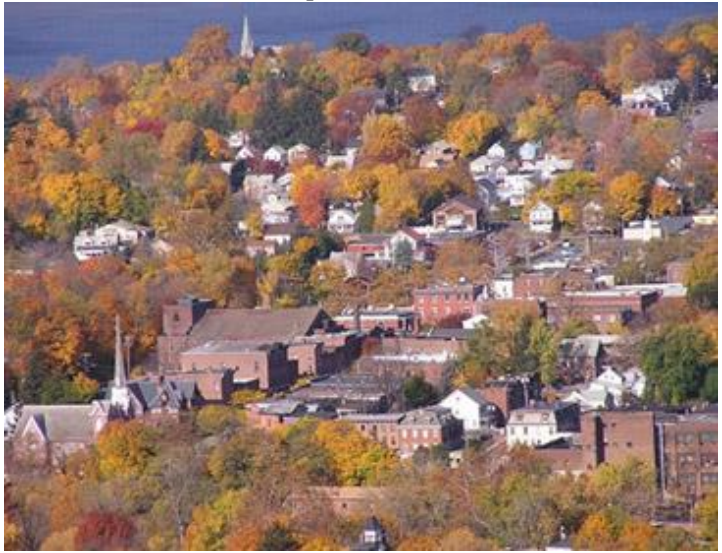
NYStretch-2020

Mike DeWein

Program Specifics

Energy Benefits

> **Energy and cost savings of roughly 11%[1] over ECCCNYS-2020**
> **Cost Effective (1-2% incremental cost for new construction)**
> **Paybacks <10 years**
> **Greater GHG reductions than ECCCNYS-2020**
> **Residential code near net zero**
> **Helps ensure verifiable performance**
> Addresses 40% of our energy use—buildings



1. Based on statewide averages

Non-Energy Benefits

> Long-term benefits of building better today
  - Lower energy use means reduced operating costs, saving building tenants and owners money
  - Money saved in YOUR community is more likely to STAY in the community

> Climate & community benefits
  - Economic opportunity in higher-performance building design, construction and performance verification
  - Increases community attractiveness - more owners and tenants desire green and energy efficient buildings
  - Contributes to more durable and resilient buildings and communities
  - Energy Codes support healthier indoor environments
  - Greater comfort = resident/occupant satisfaction/comfort

NYStretch-2020 vs ECCCNYS-2020: Commercial Differences

> Building Envelope:
  - Improvements to the prescriptive tables, applicable to roofs, walls, floors, slabs, windows, skylights and doors
  - New requirement for thermal resistance of mechanical equipment penetrations > 1% of the total opaque above-grade wall area (MANDATORY)
  - New requirement for thermal break at balconies and parapets (MANDATORY)
  - Air Leakage: Blower door testing required for buildings between 25,000-50,000 SF and < 75ft high (MANDATORY)

> Lighting/HVAC:
  - More efficient lighting power allowances
  - New and amended lighting control requirements

NYStretch-2020 vs ECCCNYS-2020: Commercial Differences (continued)

> Electrification Readiness Measures:
  - New EV ready requirements: breaker space and conduit—applicable to lots powered by building w/ more than 10 parking spaces
  - New solar ready requirements (MANDATORY): new buildings must comply with Appendix CA
  - New whole building energy monitoring and electrical monitoring requirements (some exceptions)
  - New requirement for power conversion system on new traction elevators ≥ 75ft

> Miscellaneous
  - Amendments to additional efficiency packages
  - New efficiency requirements for commercial kitchen equipment
  - Amendments to commissioning requirements, including new requirement for air barrier commissioning and new commissioning requirements for existing buildings

> Download the full NYStretch-2020 overlay and/or comparison document, available here: **www.nyserda.ny.gov/stretchenergy2020**

Cost & Savings Impact: Commercial Construction

> **Statewide weighted average[1] results—9 building types, 3 climate zones:**

- Percent savings: 7.1%
- Incremental cost: $1.14/ft^2
- Simple payback: 10.5 years[2]

1. Based on prescriptive and mandatory provisions. Results will vary depending on building and construction type, location in NYS and compliance path
2. Before NYSERDA or utility incentives, federal tax credits, C-PACE Financing, etc.

Cost & Savings Impact: Commercial Construction (Continued)

> Weighted averages by climate zone[1]:

Climate Zone	Construction Weight	Energy Cost Savings	Incremental First Cost[2]	Simple Payback
4A	71%	5.5%	$ 0.85/SF	11.0
5A	21%	10.5%	$ 1.81/SF	9.8
6A	8%	9.9%	$ 1.96/SF	10.5

1. Based on prescriptive and mandatory provisions. Results will vary depending on building and construction type, location in NYS and compliance path
2. Before NYSERDA or utility incentives, federal tax credits, C-PACE Financing, etc.

NYStretch-2020 vs ECCCNYS-2020: Residential Differences

> Building Envelope:
  - Efficiency in amendments to prescriptive tables
  - Windows slightly better but Energy Star windows qualify

> Lighting/Plumbing/HVAC:
  - More efficient lighting (MANDATORY)
  - New hot water supply requirements
  - Duct system must be in conditioned space
  - New requirement for duct system sizing per ACCA Manual D (MANDATORY)
  - New requirement for balanced ventilation, HRV/ERV required in CZ 5/6 (MANDATORY)

> Electrification Readiness Measures:
  - Solar and EV ready: breaker space in panel and conduit

> ERI Compliance Alternative:
  - Lower ERI index

> New Passive House compliance alternative:
  - Passive House Institute US (PHIUS) or Passive House Institute (PHI)
  - Must also comply with mandatory requirements

Maximum ERI	
ECCCNYS-2020	**NYStretch-2020**
62	50

> Download the full NYStretch-2020 overlay and/or comparison document, available here: **www.nyserda.ny.gov/stretchenergy2020**

Cost & Savings Impact: Residential Construction

> Statewide weighted average[1] results—2 building types, 3 climate zones:
  - Percent savings: 21.5%

Building Type	Incremental Cost (per dwelling unit)[2]	Simple Payback (years)
Single family	$2,156	5.5
Multifamily	$1,590	9.7

1. Based on prescriptive and mandatory provisions. Results will vary depending on building and construction type, location in NYS and compliance path
2. Before NYSERDA or utility incentives, federal tax credits, C-PACE Financing, etc.

Cost & Savings Impact: Residential Construction (Continued)

> Weighted averages by climate zone[1]:

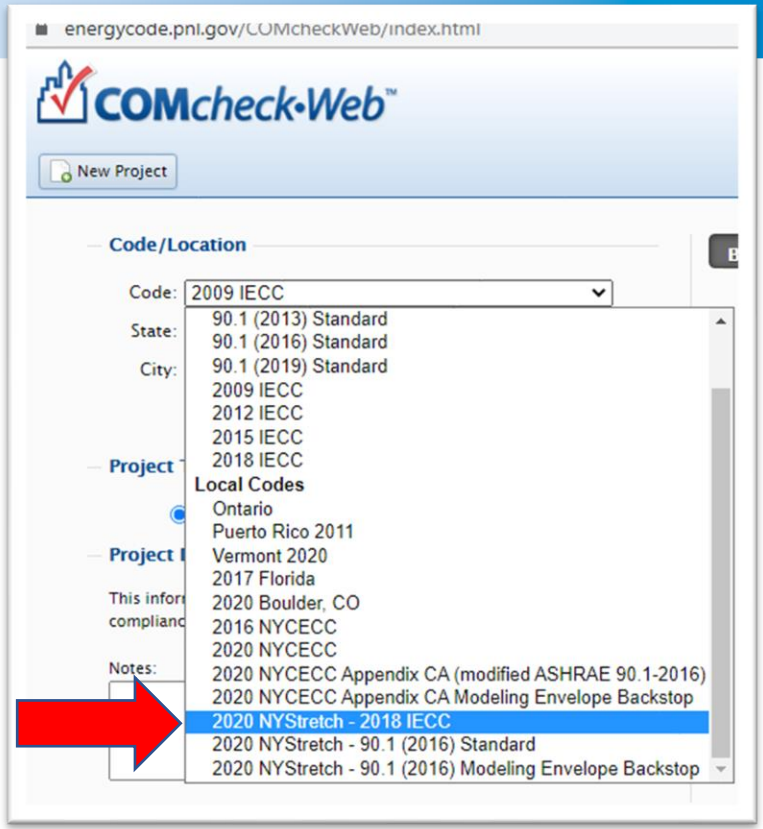
Climate Design Zone	Single-family			Multifamily		
	Total Annual Energy Cost Savings ($/dwelling unit)	Total Incremental Costs ($/dwelling unit)	Simple Payback (Years)	Total Annual Energy Cost Savings ($/dwelling unit)	Total Incremental Costs ($/dwelling unit)	Simple Payback (Years)
4A-NYC	$265	$1,910	7.2	$156	$1,625	10.4
4A-balance	$264	$2,463	9.3	$148	$1,488	10.1
5A	$407	$2,202	5.4	$198	$1,745	8.8
6A	$431	$1,914	4.4	$205	$1,791	8.7
NY State	$389	$2,156	5.5	$165	$1,590	9.7

1. Based on prescriptive and mandatory provisions. Results will vary depending on building and construction type, location in NYS and compliance path
2. Before NYSERDA or utility incentives, federal tax credits, C-PACE Financing, etc.

COM*check* and RES*check* for NYStretch

NYStretch-2020 is supported NOW on COM*check* and RES*check* Web

- Free, commonly used compliance software that most building departments and permit applicants are familiar with
- Developed by Pacific Northwest National Laboratory with funding from U.S Department of Energy
- NYStretch-2020 is an option only on COM*check* and RES*check* Web
- 3rd party review where desired
- https://www.energycodes.gov/software-and-web-tools
- **Reminder: will not include local amendments**

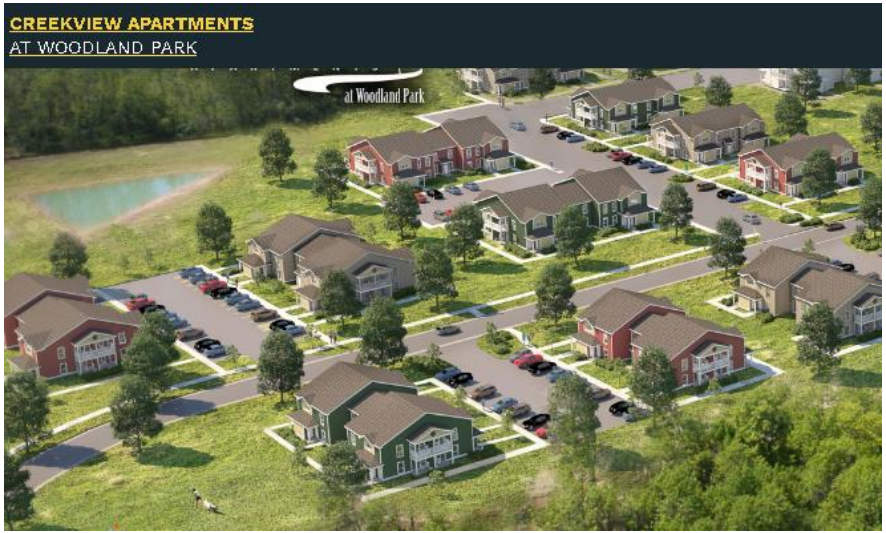


Josh Stack

The Builder's View

Case Studies: Buildings that Meet or Exceed NYStretch-2020

> CreekView Apartments, Canandaigua, NY
  - Developed by: Baldwin Real Estate Development
  - Net Zero Energy – All Electric
  - ERV
  - PHIUS+ 2015 Certified
  - Passive building principles



WUFI Passive Results

All 12 buildings exceeded the strict PHIUS+ 2015 targets which included:

- Heating Demand: 6 kBtu/sf/yr
- Cooling Demand: 2.2 kBtu/sf/yr
- Heating Load: 3.38 Btu/hr/sf
- Cooling Load: 4 BTU/hr/sf
- Source Energy: 6,200 kWh/person/yr
- Air Tightness: 0.05 CFM50/sf of enclosure

Source: Project team lead, Sustainable Comfort

Case Studies: Buildings that Meet or Exceed NYStretch-2020

> Zero Place, New Paltz, NY

- Developed by: Net-Zero Development LLC.
- Designed by: Integral Building & Design, Inc.
- GSHP for space conditioning
- Thermal storage tanks for the central DHW system to serve the entire building
- Unitary ERV's for ventilation
- High output Solar PV arrays on roof and solar awnings
- Thermal enclosure: ICF Walls, Spay Foam slabs and roof areas, and high-R fenestration.
- All-in rental model: smart building controls, CO2-activated demand-controlled ventilation, Heat Pump clothes dryers, induction cooktops
- (20) EV car charging stations plus e-bike charging stations.

Best Practices & Implementation Examples: City of Beacon

- HVRC worked with Beacon throughout 2019 on CEC Action Items
- HVRC identified NYStretch interest, “Flag Bearers,” political lay of the land
- Handoff to NYSERDA and CR Team who held several virtual meetings on details and next steps (initial meeting - late January 2020)
- CR Team follow up discussions with City Code Enforcement Officers; built their comfort level with NYStretch implementation
- CR Team presented at live, March 9, 2020 City Council workshop
- City Council adopted NYStretch at council meeting, March 17, 2020
- The Circuit Riders provide assistance at any point along the way!

NYStretch – Community Interest

- New York City's 2020 Energy Code is NYStretch-2020, with amendments
- Town of Bedford, Village of Hastings-on-Hudson, City of Beacon, Village of Montour Falls and the Village of Dobbs Ferry all adopted NYStretch-2020
- The Town and City of Ithaca using NYStretch-2020 as part of their Green Building Code
  - Goal: Carbon-neutral community by 2030
- Many other municipalities are considering NYStretch-2020 adoption (illustrated on this graphic)
- SUNY Construction Fund uses NYStretch-2020 as baseline energy code for all building projects
- **140 grants available statewide – but don't delay!**

NYStretch and Existing Buildings

- Triggers are the same
  - ECCCNYS-2020 and NYStretch-2020 apply to existing buildings the same way
  - Only applies to new work—elements of the building that aren't part of the project scope do not require updating
- Commercial building commissioning and air barrier requirements
  - Will apply to alterations and additions where applicable to the project scope
- No new existing building requirements for residential construction
- "In new buildings"
  - Requirements that refer to "in new buildings," even if mandatory, are NEVER mandatory for existing building projects

Local Amendments to NYStretch-2020

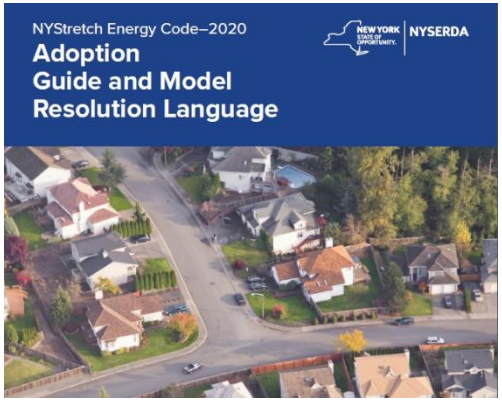
- **Municipalities can amend NYStretch-2020**
  - To qualify for CEC points/grants, must be able to demonstrate the code as adopted is no less stringent than NYStretch-2020 as published by NYSERDA
  - NYSERDA does not have resources to perform savings/impact analysis for amendments
- **Filing with Department of State**
  - Building Code Council may have questions about local amendments
- **Tools, training and resources**
  - Nothing developed by NYSERDA to support NYStretch-2020 enforcement and compliance will reflect local amendments

Third Party Inspection & Verification

- **Only a few new requirements in NYStretch-2020 for testing and verification**
  - Commercial air barrier testing, new construction (optional)
  - Commercial air barrier commissioning, new construction
  - Commercial HVAC/service hot water commissioning, alteration & addition
  - Residential mechanical ventilation performance verification, new construction/alteration & addition if applicable
  - Residential passive house compliance option (this is a new compliance option, not mandatory)
- **Who is responsible for securing the third party inspection/verification?**
  - Permit holder, unless otherwise required by the municipality
  - Municipalities are not required to hire or train building department staff to perform this work, only to enforce that the work is performed and documented
- **Third party qualifications?**
  - Certified by a reputable organization to perform the required inspection or performance verification
  - Example: RESNET certified HERS Rater if opting to follow the ERI Compliance Alternative

Resources

- NYStretch Circuit Riders—technical and adoption support
- Adoption Guide & Model Local Law, comparison document, cost effectiveness analysis and FAQs
- Training and code enforcement tools/checklists (coming soon)
- Single volume code book, integrating the state code and NYStretch-2020 overlay into one resource (coming soon)
- NYStretch-2020 for RES*check* and COM*check*
- Hotline for technical and interpretation assistance
- **www.nyserda.ny.gov/stretchenergy2020**
- **Reminder: resources will not reflect local amendments to NYStretch-2020**



Getting Started with Clean Energy Communities: Call Your Community Coordinator

> Find a coordinator in your region:

- https://www.nyserda.ny.gov/All-Programs/Programs/Clean-Energy-Communities/Find-A-Coordinator

RESOURCES:

- NYStretch Website
- Leadership Round Guidance Document Program Opportunity Notice (PON) 3298.
- Here is a link to the High Impact Action Toolkits. Each HIA is supported by resources created by NYSERDA to guide municipalities through the program.
- Review the Adoption Guide to learn about available NYSERDA support and steps to adopt NYStretch in your community. Also see the Sample Model Energy Code Resolution document for your use.

NYStretch-2020 Support for Communities Technical, Strategy

NYSERDA NYStretch Circuit Rider Program
Christopher Sgroi - NYSERDA Project Manager
christopher.sgroi@nyserda.ny.gov

Putnam, Dutchess, Long Island, Hudson Valley and Other Statewide Counties

Sam Bowles - PM
Newport Ventures
sbowles@newportventures

Margo Thompson
Newport Ventures
mthompson@newportventures.net
518 377-9410

Matt Evans
Newport Ventures
mevans@newportventures.net

Westchester, Capital & N. Country
Mike DeWein
North Branch Services
dewein53@gmail.com
518 369-7545

Southern Tier & WNY
Lou Vogel
Taitem Engineering
lvogel@taitem.com
(607) 277-1118 x125

CNY, Mohawk, and Finger Lakes
Kevin and Josh Stack
Northeast Green Building Consulting
josh@resilience.law
(315) 478-6016