Stretch Energy Codes:

Helping Practitioners Reach the Moon

NESEA Building Energy NY
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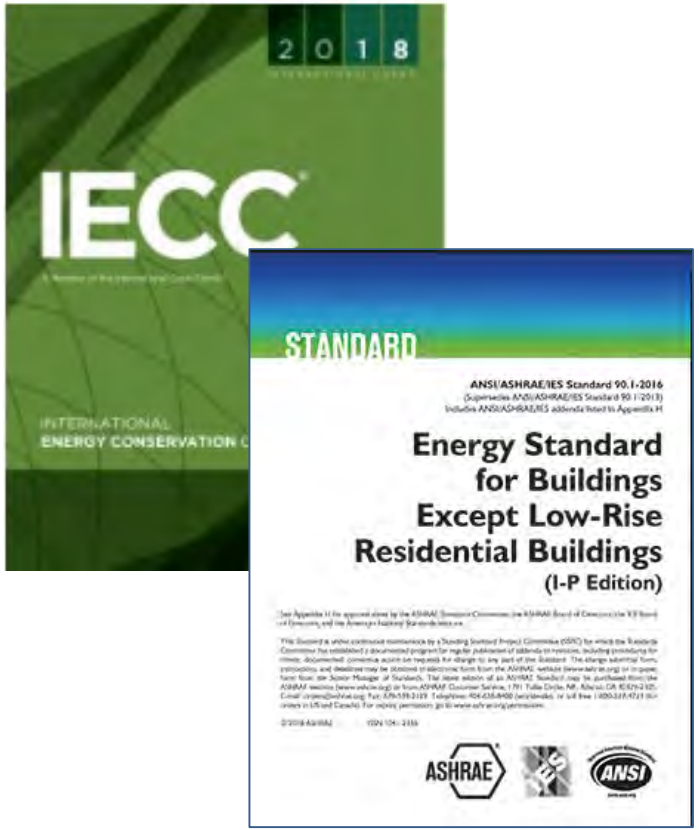
NYSERDA

- Stretch Energy Code Concept and Objectives
- Development Process
- Modeling Results
- What's next: timing, tools and training

How some people feel about energy codes…



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How I hope you'll feel when you leave…

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2018 NYStretch Energy Code

Stretch Code Supplement to the 2019 New York State Energy Conservation Construction Code

Ithaca Green Building Policy

NYC Buildings

New York City Energy Conservation Construction Code

Why do we need Stretch Energy Codes?

- To achieve zero energy / zero carbon goals:
  - New York State goals:
    - 40% reduction in GHG emissions by 2030 (from 1990 levels)
    - 80% reduction by 2050
    - 185 TBtu cumulative annual site energy savings by 2025
  - NYC and Ithaca, NY goals:
    - 80% reduction in carbon by 2050.

"If you aim at nothing, you will hit it every time"

Author Unkown

Why do we need Stretch Energy Codes?

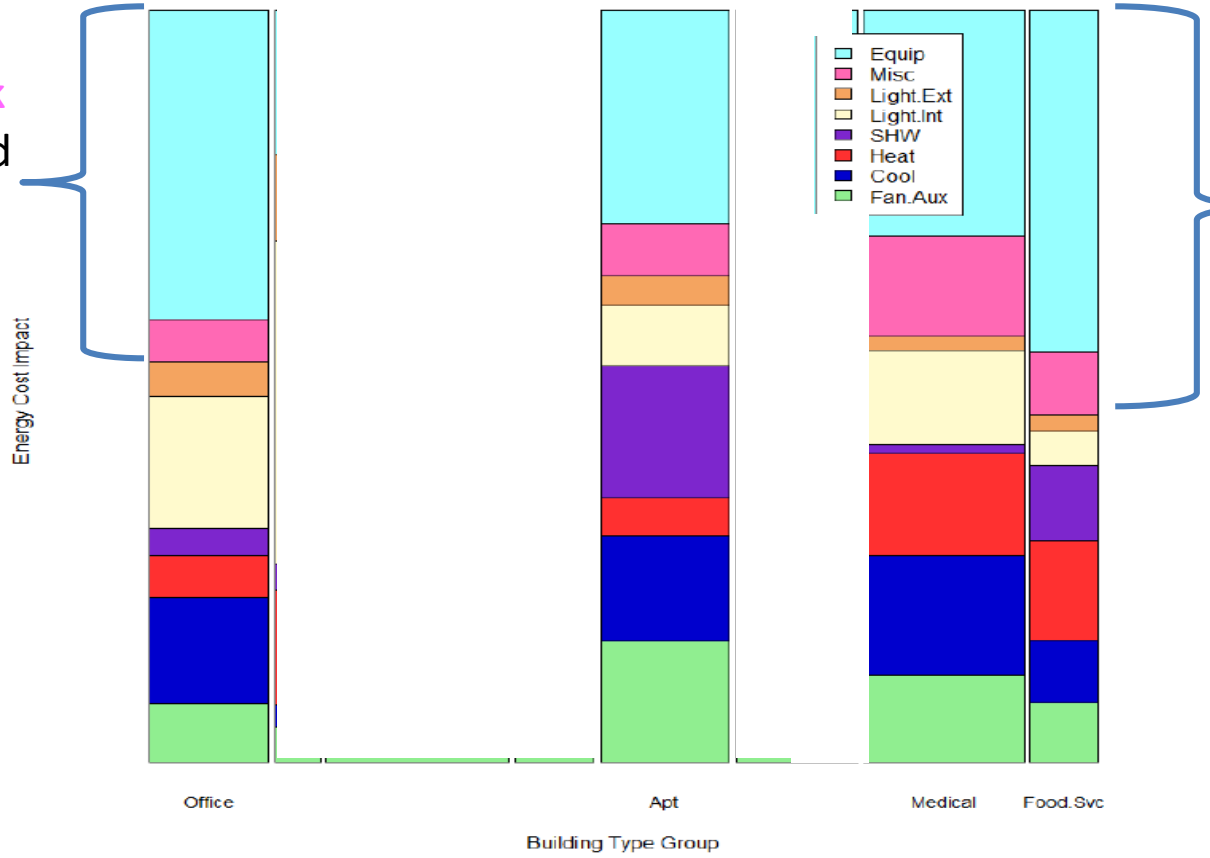
National model codes cannot support these goals.

- Use of energy cost metric favors low-cost fossil fuels
- Still many unregulated loads.
- Not adequately considered:
  - Heat pumps
  - electric vehicles
  - renewables, etc.

Buildings built today will still be standing in 2050.
To meet these goals, we need to be building more efficiently **NOW**!

Why do we need Stretch Energy Codes?

Blue and **Pink** = Unregulated loads



Blue and **Pink** = Unregulated loads

Figure S.1. Commercial energy cost impact by end use U.S. weighted, after 90.1-2013

Stretch Energy Code Concept

- Add certain unregulated systems to the energy code.
- Increase stringency requirements where technology exists.
- Achieve greater energy savings and reduce GHG emissions
- Include **Mandatory** and **voluntary** mechanisms
- Signal to the market where future codes are going

So what is NYStretch-Energy 2018?

- Establishes a consistent standard for use by all municipalities.
- Adoption by municipalities allowed by NYS Energy Law.
- “One-cycle” stretch beyond IECC 2018 / ASHRAE 90.1-2016.
- Multiple compliance paths.
- Introduces a passive house compliance path

So what is NYStretch-Energy 2018?

"Overlays" NYS code for local adoption

- Vetted, ready-to-adopt code for local communities.
- Allows testing in market before statewide adoption.
- 10-12% more energy efficient than next version of NYS Energy Conservation Construction Code.

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Stretch Code Strategies

One-Cycle Stretch

- Builds on national model codes
- Continued NYStretch-Energy development
  - Statewide adoption proposed for 2022

Stretch-to-Zero

- Test approaches to move towards zero-energy code
- Reduce building loads/integrate clean generation

Carbon-focus

- U.S. Climate Alliance (NY, CA, WA and others)
  - Carbon-focused development for future state codes

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Development Process

- Advisory Group guidance
- Working Groups: Residential, Commercial, Multifamily
- Iterative energy modeling to predict savings
- Public comment period

Development Process-Roadblocks

- Federal preemptions – unable to require greater efficiency than federal levels.
- Ensuring technologies are readily available.
- Ensuring requirements are cost effective.
- Geographical / urban / density differences across NY State

Development Process – Commercial Modeling Results

Building Type	Prototype	% Savings over 90.1-2013
Office	Large Office	5.6%
Retail	Standalone Retail	21.2%
Education	Secondary School	13.4%
Lodging	Large Hotel	12.3%
Apartment	20-story Apartment	10.1%
	10-story Apartment	9.8%
Healthcare (Outpatient)	Outpatient Health Care	8.3%
Warehouse & Storage	Warehouse	27.6%
Restaurant	Full-service Restaurant	14.8%
Weighted average Savings Across all Climate Zones		**12.1%**

What's next: Timing, Tools, and Training

- Release of Stretch Statewide — Q4 2018
- Toolkit: Cost analysis, FAQ, adoption guide for jurisdictions — Q4 2018
- COMCheck, RESCheck for stretch — Q4 2018 – Q1 2019
- Single volume stretch code — Q2 2019
- Pilots/assistance for stretch adoption — Q2 2019
- Training for As and Es, code officials, etc. — Q2/Q3 2019

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NYC Department of Buildings

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Nick Goldsmith, Sustainability Coordinator
City of Ithaca and Town of Ithaca, NY

What have we learned?

- Stretch energy codes - a tool to reach carbon reduction goals.
- Introduce currently unregulated loads / technologies to achieve greater savings and advance national model codes.
- Jurisdictions can adopt NYStretch Energy as is, or incorporate it into other policies / strategies to meet their local needs.

What have we learned?

- Requires everyone – architects, engineers, designers, jurisdictions – to think differently about how buildings are planned / designed.

- Provides opportunities to all involved.

Questions?

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- Resources:
  - New Efficiency: New York
    https://www.nyserda.ny.gov/About/Publications/New-Efficiency
  - New York City Carbon Challenge:
    - http://www.nyc.gov/html/gbee/html/challenge/nyc-carbon-challenge.shtml
  - Aligning NYC with The Paris Climate Agreement:
    - https://www1.nyc.gov/site/sustainability/codes/1.5-climate-action-plan.page
  - Ithaca Green Building Policy:
    - http://www.ithacagreenbuilding.com/