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

Central New York Regional Planning & Development Board
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Josh Stack, JD, LLM, Living Future Accredited & Ambassador
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
CEC Coordinators

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

- CNY
  Amanda Mazzoni: amazzoni@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.
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.
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?

Commercial Energy Code History & Projections
ASHRAE 90.1, NYSECCC, NYStretch

Presumed net-zero energy point
2020 ECCCNYS

PRESCRIPTIVE
- R-value (no tradeoffs)
- U-factor (tradeoffs within individual components)
- UA (tradeoffs between envelope components)

SIMULATED PERFORMANCE
- Simulated Performance Alternative R405 (keyed to prescriptive requirements)

ENERGY RATING INDEX (ERI)
- ERI Compliance Alternative R406 (largely independent of prescriptive requirements)

MANDATORY
- HRV/ERV
- SOLAR & EV READY
- GRADE I INSULATION
- HVAC COND. SPACE

2020 NYStretch
<table>
<thead>
<tr>
<th>Climate Zone 5a</th>
<th>2016 Energy Code Supplement</th>
<th>2020 ECCCNYS</th>
<th>2020 NYStretch</th>
</tr>
</thead>
<tbody>
<tr>
<td>WINDOW U-VALUE</td>
<td>0.32</td>
<td>0.30</td>
<td>0.27</td>
</tr>
<tr>
<td>WALL-R VALUE</td>
<td>20 OR 13+5</td>
<td>20 or 13+5</td>
<td>21 INT., 20+5, or 13+10</td>
</tr>
<tr>
<td>INSULATION GRADE 1</td>
<td>???</td>
<td>Manufacturers spec’s</td>
<td>&lt; 2% compress or voids</td>
</tr>
<tr>
<td>DUCT LOCATION</td>
<td>No Req.</td>
<td>No Req.(Exception)</td>
<td>Conditioned space</td>
</tr>
<tr>
<td>DUCT SIZING</td>
<td>No Req.</td>
<td>No Req.</td>
<td>Manual “D”</td>
</tr>
<tr>
<td>DHW DIST.</td>
<td>No Req.</td>
<td>R-2 pipe insulation</td>
<td>DWHR, Length, recirculation</td>
</tr>
<tr>
<td>VENTILATION</td>
<td>Exhaust, Supply or Balanced</td>
<td>Exhaust, Supply or Balanced (No test)</td>
<td>Tested Balanced HRV or ERV</td>
</tr>
<tr>
<td>LIGHTING</td>
<td>60 lm/W &gt;40W</td>
<td>60 lm/W &amp; 45lm/W</td>
<td>65 lm/W &amp; 45lm/W</td>
</tr>
<tr>
<td>ELECTRICAL POWER PKG.</td>
<td>No Req.</td>
<td>No Req.</td>
<td>Solar Ready &amp; EV Service Equip</td>
</tr>
</tbody>
</table>
## Economics: Single Family and Multifamily by Climate Zone

<table>
<thead>
<tr>
<th>Climate Design Zone</th>
<th>Single-family</th>
<th>Multifamily</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Annual Energy Cost Savings ($/dwelling unit)</td>
<td>Total Incremental Costs ($/dwelling unit)</td>
</tr>
<tr>
<td>4A-NYC</td>
<td>$301</td>
<td>$1,910</td>
</tr>
<tr>
<td>4A-balance</td>
<td>$301</td>
<td>$2,463</td>
</tr>
<tr>
<td>5A</td>
<td>$351</td>
<td>$2,202</td>
</tr>
<tr>
<td>6A</td>
<td>$372</td>
<td>$1,506</td>
</tr>
<tr>
<td>NY State</td>
<td>$348</td>
<td>$2,057</td>
</tr>
</tbody>
</table>

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 NYStretch Energy Code-2020
## Vertical Fenestration – U-Factors

### Fenestration – Climate Zone 5 (U-Factors)

<table>
<thead>
<tr>
<th></th>
<th>2020 ECCC NYS</th>
<th>ASHRAE 90.1 2016</th>
<th>2020 NYS Stretch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Fenestration</td>
<td>0.38</td>
<td>0.38</td>
<td>0.36</td>
</tr>
<tr>
<td>Operable Fenestration</td>
<td>0.45</td>
<td>0.46</td>
<td>0.43</td>
</tr>
<tr>
<td>All other</td>
<td>As above</td>
<td>0.31</td>
<td>0.27</td>
</tr>
<tr>
<td>SHGC</td>
<td>0.36 – 0.58 per overhang</td>
<td>0.36</td>
<td>0.38 – 0.61</td>
</tr>
<tr>
<td>Skylight U-Value</td>
<td>0.5</td>
<td>0.50</td>
<td>0.48</td>
</tr>
<tr>
<td>Skylight SHGC</td>
<td>0.4</td>
<td>0.40</td>
<td>0.38</td>
</tr>
</tbody>
</table>
## Appendix CB: Rated R-Value

### Table CB102.2; Climate Zone 5

<table>
<thead>
<tr>
<th></th>
<th>2020 ECCC NYS</th>
<th>ASHRAE 90.1 2016</th>
<th>2020 NYS Stretch</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Roofs</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insulation Entirely Above Roof Deck</td>
<td>R-30ci</td>
<td>R-30ci</td>
<td>R-33ci</td>
</tr>
<tr>
<td>Attic and other</td>
<td>R-38</td>
<td>R-49</td>
<td>R-53</td>
</tr>
<tr>
<td><strong>Above-Grade Walls</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metal Framed</td>
<td>R-13+R-7.5ci</td>
<td>R-13+R-7.5ci</td>
<td>R-13+R-11ci</td>
</tr>
<tr>
<td>Wood-Framed and other</td>
<td>R-13+R-3.8ci or R-20</td>
<td>R-13+R-3.8ci or R-20</td>
<td>R-13+ R-9ci or R-19 + R-5ci</td>
</tr>
</tbody>
</table>
### Appendix CB: Rated R-Value, cont.

<table>
<thead>
<tr>
<th>Table CB102.2; Climate Zone 5</th>
<th>2020 ECCC NYS</th>
<th>ASHRAE 90.1 2016</th>
<th>2020 NYS Stretch</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Below Grade Walls</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below Grade Walls</td>
<td>R-7.5ci</td>
<td>R-7.5ci</td>
<td>R-7.5ci</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Group R: R-10ci</td>
<td>Group R: R-10ci</td>
</tr>
<tr>
<td><strong>Floors</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mass</td>
<td>R-10ci</td>
<td>R-14.6ci</td>
<td>R-15ci</td>
</tr>
<tr>
<td></td>
<td>Group R: R-10.4ci</td>
<td>Group R: 16.7ci</td>
<td>Group R: R-16.7ci</td>
</tr>
<tr>
<td>Joist/Framing</td>
<td>R-30</td>
<td>R-30</td>
<td>R-30</td>
</tr>
<tr>
<td><strong>Slab-on-Grade Floors</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unheated Slabs</td>
<td>R-10 24” below</td>
<td>R-15 24” below</td>
<td>R-15 24” below</td>
</tr>
<tr>
<td>Heated Slabs</td>
<td>R-15 24” below + R-5 full slab</td>
<td>R-20 24” below + Group R: R-20 48” below</td>
<td>R-20 48” below + R-5 full slab</td>
</tr>
</tbody>
</table>
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 ≤ 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
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

<table>
<thead>
<tr>
<th>Resource</th>
<th>Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>NYStretch Energy Code</td>
<td>Available now</td>
</tr>
<tr>
<td>Legislation Template, FAQs, Fact Sheets</td>
<td>Available now</td>
</tr>
<tr>
<td>Cost Effectiveness Analyses</td>
<td>Available now</td>
</tr>
<tr>
<td>Training Opportunities</td>
<td>Q2 2020</td>
</tr>
<tr>
<td>Single Volume Code Manual</td>
<td>Q2 2020</td>
</tr>
<tr>
<td>Updated REScheck and COMcheck tools</td>
<td>Q2 2020</td>
</tr>
<tr>
<td>2020 ECCCNYS Effective Date</td>
<td>May 12 2020</td>
</tr>
</tbody>
</table>
Questions?

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Thank you!