

# EXAMINING THE ENERGY CODE: SUCCESSIONS, CHALLENGES, APPROACHES FOR THE FUTURE

## Panelists:

**Gina Bocra** AIA, LEED AP BD+C/ID+C,  
Chief Sustainability Officer, NYC Department of Buildings (DOB)

**Priscilla Richards**  
Program Manager, NYSERDA

**Chris Benedict**, RA,  
Owner, Chris Benedict, RA

**Moderator:** Ellen Honigstock, RA, Director of Education, Urban Green Council

# Energy Code in NYC

## Progress Since 2009

Gina Bocra, AIA, LEED AP BD+C/ID+C  
Chief Sustainability Officer



# Energy Code in NYC

## Building Energy Policy in New York City

- NYCECC in context- what establishes the Baseline?
- Progress- how has NYC improved?
  - Increased stringency
  - Increased enforcement
- Future- where is the code going?
  - Increased stringency
  - Increased enforcement
- Findings and Challenges





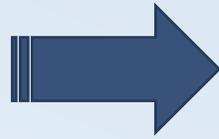
# Energy Code in NYC

## Building Energy Policy in New York City

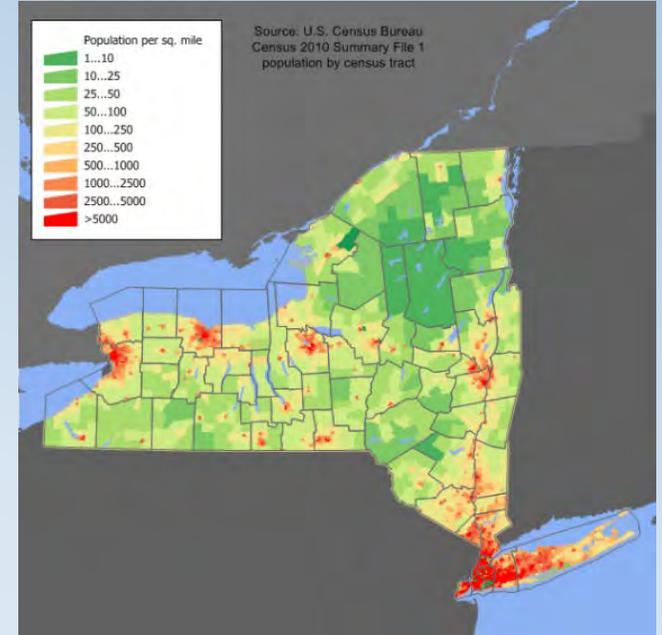
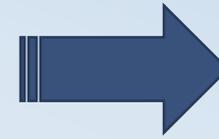
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# Energy Code in NYS



**Establishment of National model codes**



**Establishment of state energy codes**

Photo by David Falconer, Earth graphic by Additceted04, NY State map by JimIrwin. Source: Wikipedia Creative Commons



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# Energy Policy in New York City

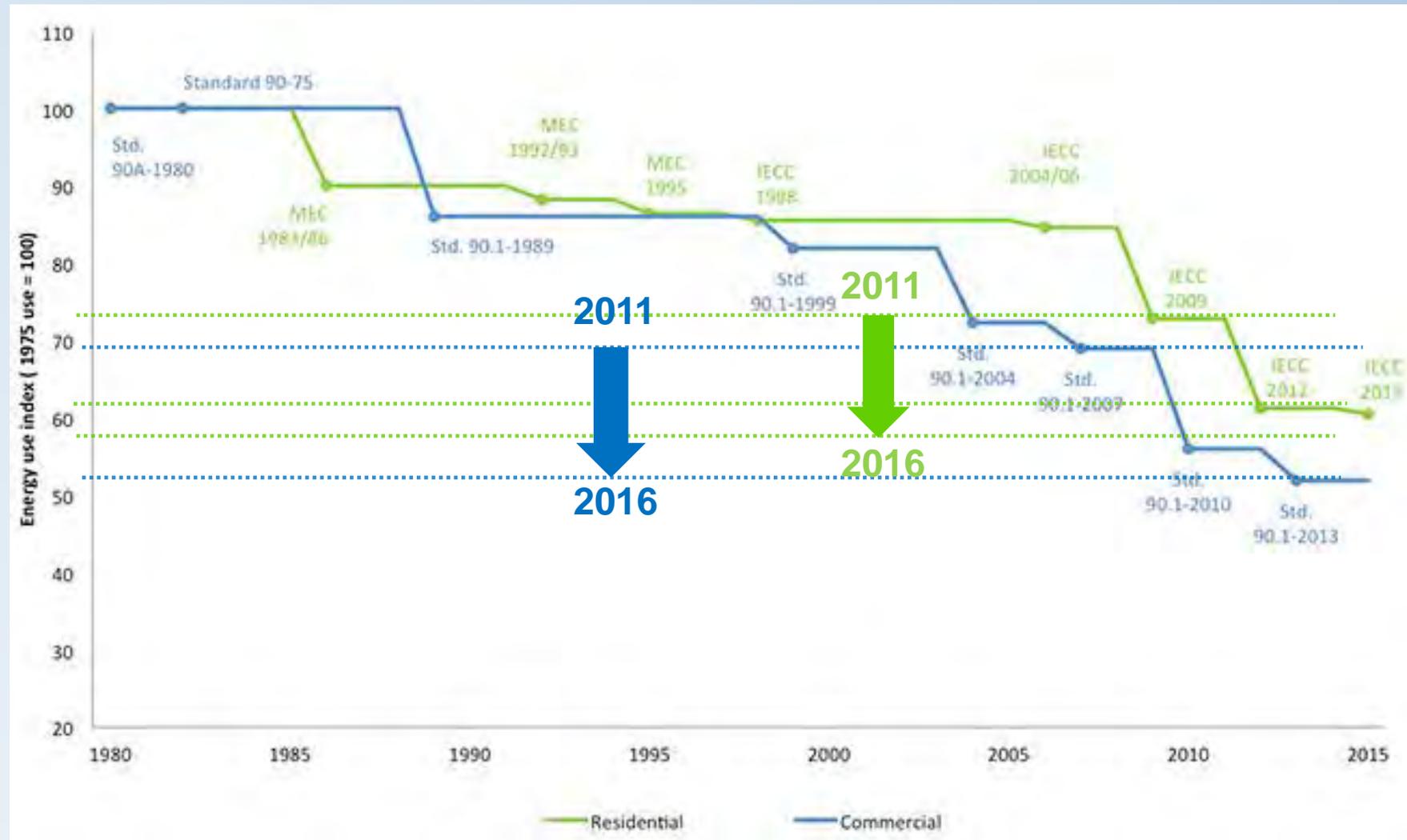
- Increased stringency

Local Law 85 of 2009



Photo by Dmitry Avdeev. Source: Wikipedia Creative Commons

# Context for the NYCECC- Baseline



Source: ACEEE



# Energy Policy in New York City

Increased enforcement

**In 2009, the American Recovery and Reinvestment Act, stipulated that any state that accepted federal funding would have to demonstrate at least 90% compliance with the energy code on *all* permitted projects by 2017**

# Energy Code in NYS

First report on Energy Code Compliance in New York State revealed (based on technical compliance with the envelope provisions):

**Residential- 61%**

**Commercial- 36%**

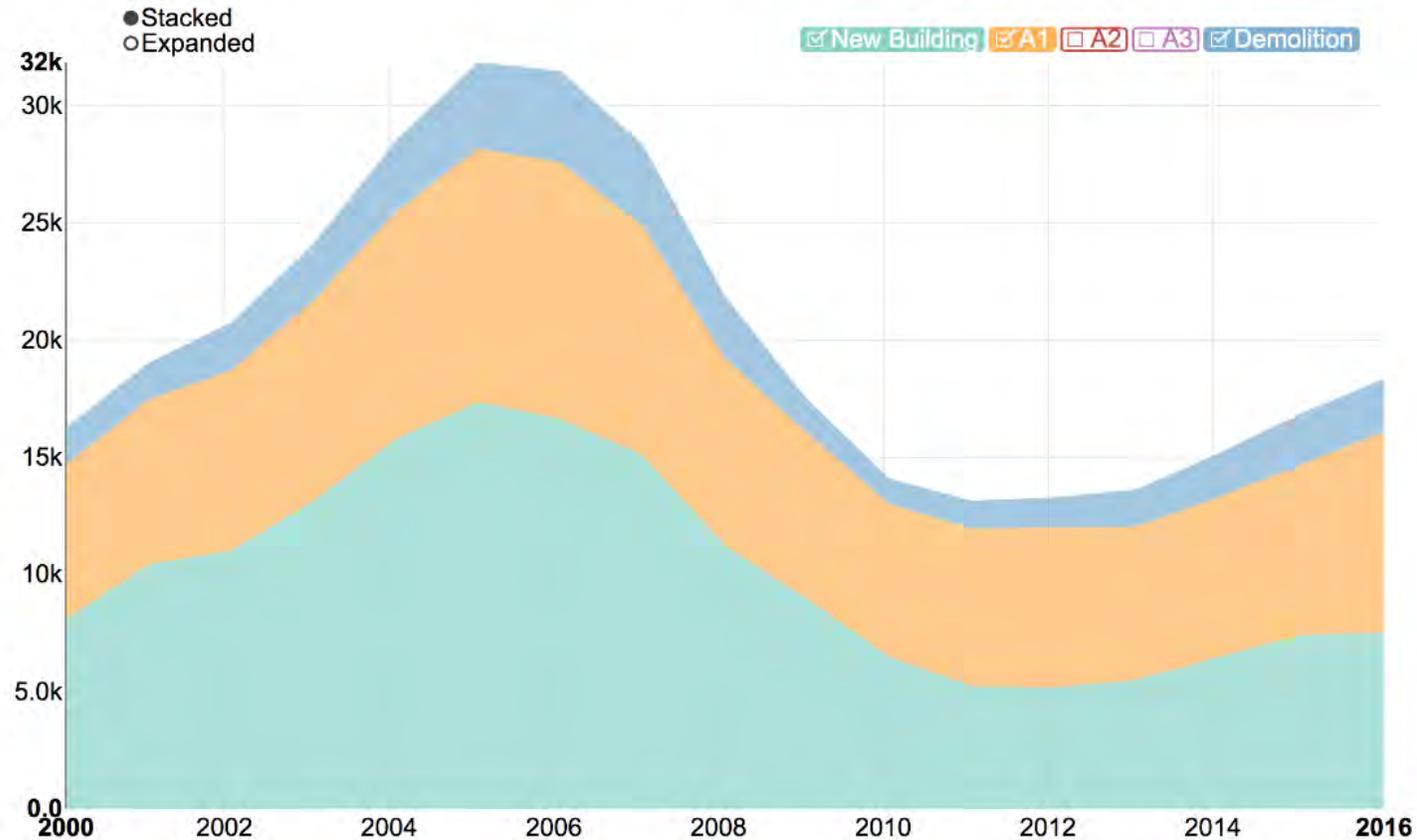


# Energy Code in NYC

## Local Law 85 of 2009

- NYC establishes its own Energy Code
- DOB establishes the Energy Code Unit in 2013, starting with New Building applications
- *One City Built to Last* Plan calls for increased enforcement in 2014

### NYC Construction Permits Issued 2000 - 2016

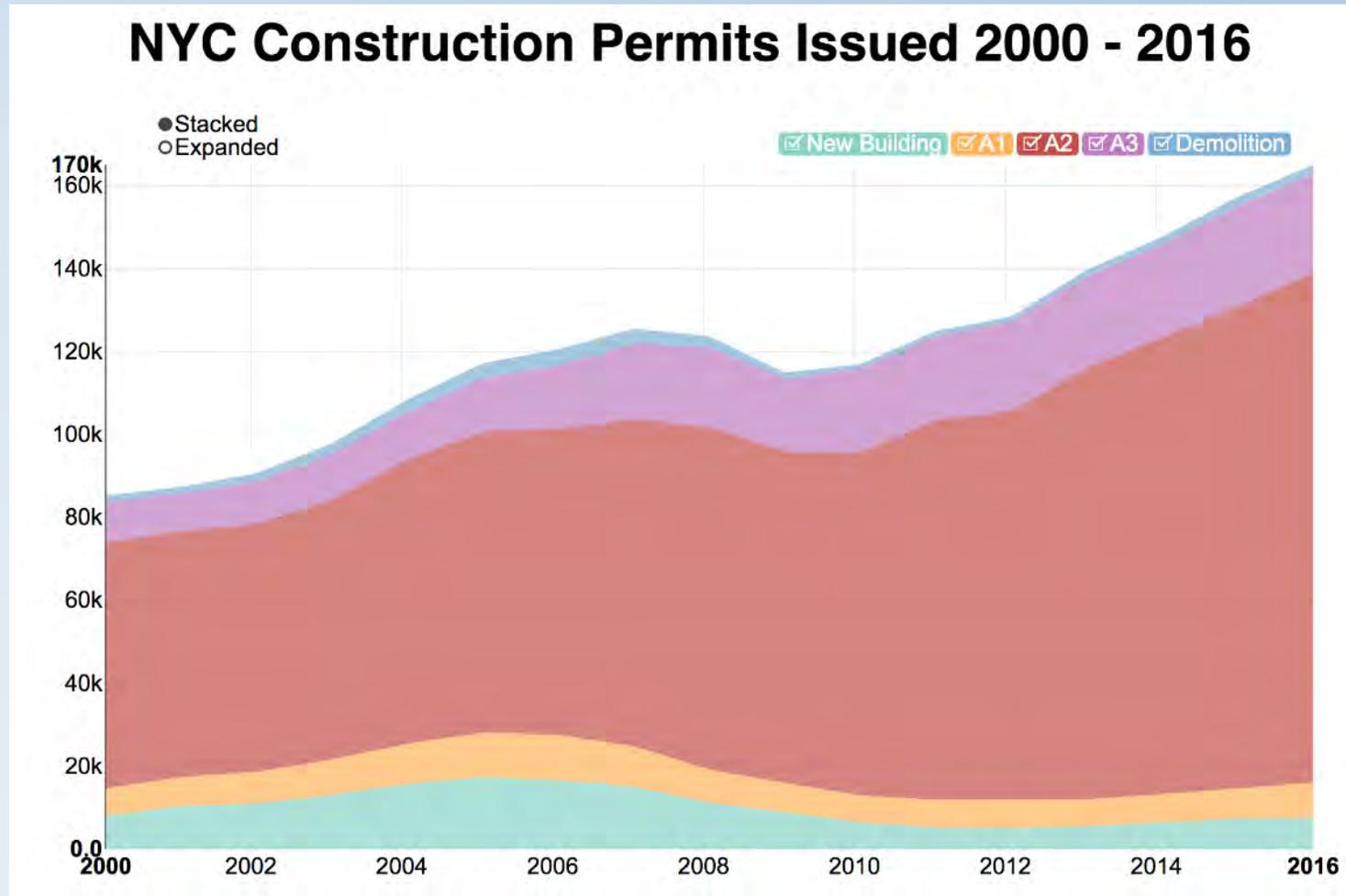




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# Energy Code Enforcement

## 2015 DOB Alterations Pilot

- 12 month study to establish a review strategy for alterations to existing buildings
  - Test filters for high-risk energy projects (current process and future process considerations)
  - Test inspections strategies for agency *audits*
  - “Test” compliance in the alterations market



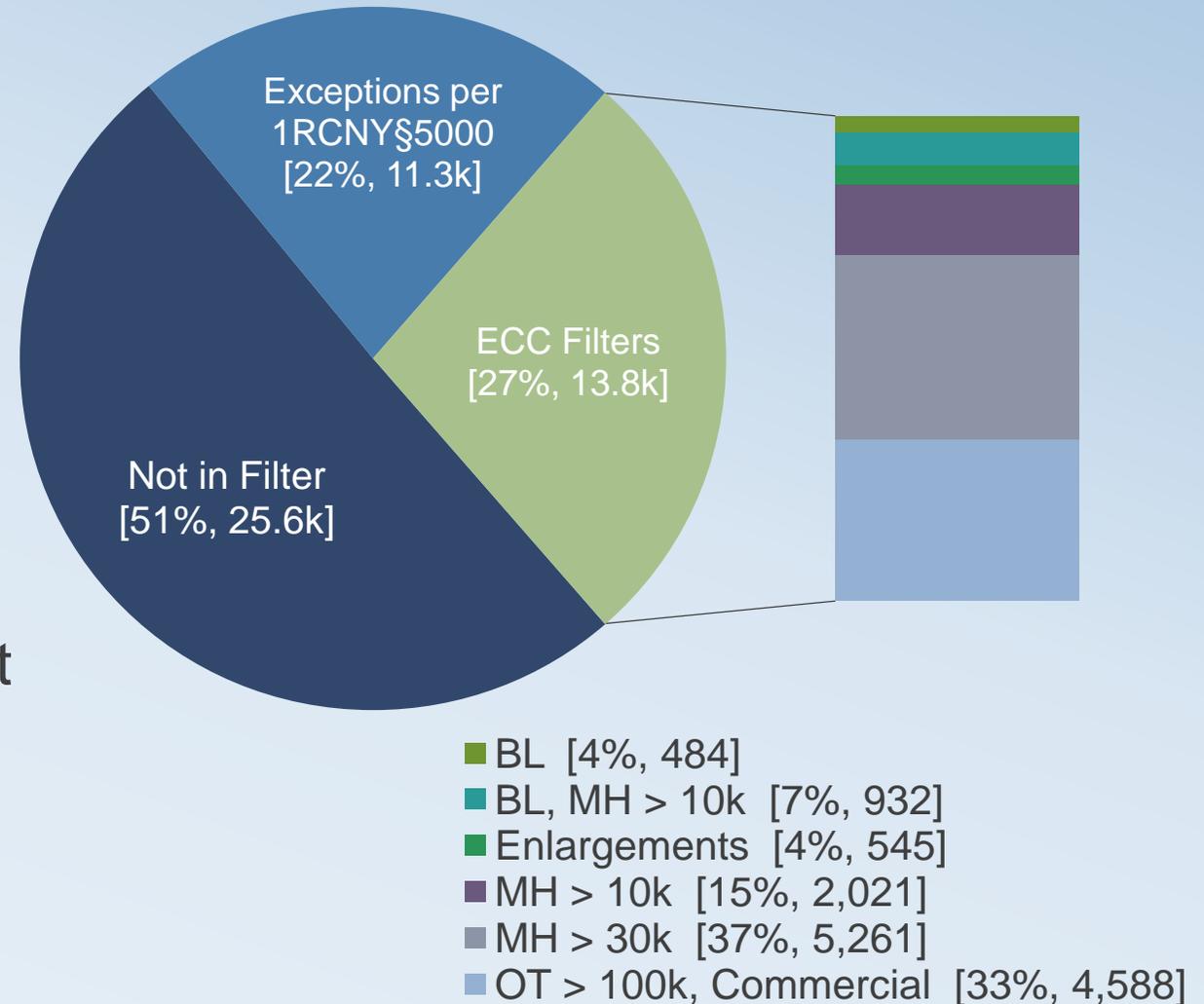


# Energy Code Enforcement

Alt2 Applications [100%, 51k]  
Audit Selection Breakdown  
Pilot Year : 9/20/15 to 9/2016

## Findings

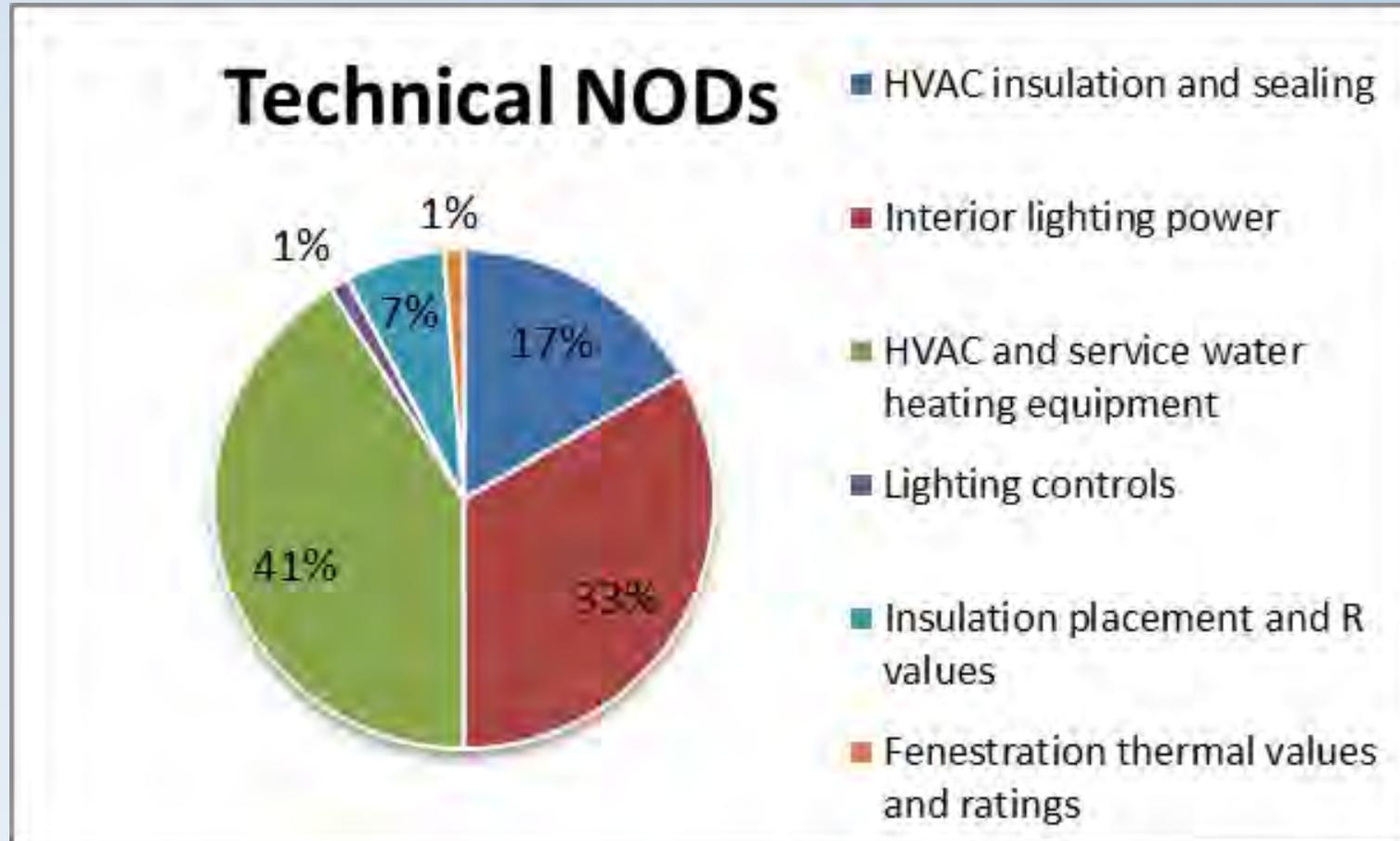
- Noncompliance issues in plan examination
  - Boiler and Mechanical systems-controls
  - Lighting systems- controls
  - Façade alterations were falling out of the filters
- 75% of projects had technical objections in the first review



# Energy Code Enforcement

## Findings

- Noncompliance issues in inspections
  - Many issues were related to post-approval drawing changes
  - Most deficiencies identified in the field could be remedied
- 36% of projects received a “Notice of Deficiency”





# Energy Code in NYC

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# Future of the Energy Code in NYC

**Intro. 1629 of 2017** (EUI targets for buildings 25,000 sq.ft. and greater)

A local law to amend the New York city Administrative Code, on adoption of more stringent energy efficiency requirements for buildings and energy use intensity requirements for new and substantially reconstructed buildings

- Adopt a 2019 and 2022 code that is 20% more stringent than ASHRAE 90.1
- 2025 - New buildings and additions - **38 kBtu/sf/yr**
- 2025 - Substantial renovations - **42 kBtu/sf/yr**





# Future of the Energy Code in NYC

## Implement the alterations strategies:

- Applying the filters that were successful
  - Creating logic in the new all-electronic application process to further narrow the universe
  - Auditing by applicant
  - Auditing “non-filtered” jobs
- Inspecting highest-risk jobs
- Auditing the third-party inspectors





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# Energy Code in NYC

## What are the barriers and obstacles?

- Industry inertia (education)
- Federal preemption of appliances and equipment
- Resources

## What has been surprising?

- Initial shock of low compliance
- Low adoption of the performance path (less than 1% of projects)

## Challenges

- More stringent Energy Code with less complexity and no less flexibility
- More enforcement, enforcement, enforcement!

**Thank You!**

**Email DOB's energy team at**  
**[energycodes@buildings.nyc.gov](mailto:energycodes@buildings.nyc.gov)**  
**[gbocra@buildings.nyc.gov](mailto:gbocra@buildings.nyc.gov)**

**For more on energy codes of the future:**  
**[http://www.pnnl.gov/main/publications/external/technical\\_reports/PNNL-24009.pdf](http://www.pnnl.gov/main/publications/external/technical_reports/PNNL-24009.pdf)**

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**NYSERDA**

# **Stretch Energy Codes**

**A Strategy for Accelerating Market  
Adoption of Low Carbon Buildings**

**Northeast Sustainable Energy Association  
BuildingEnergy NYC - October 12, 2017**

# Reforming the Energy Vision (REV)

REV is a comprehensive strategy to build a clean, resilient, and affordable energy system for all New Yorkers, with a focus on three core approaches to drive transformation

- **Regulatory Reform** (PSC) – reshaping NY’s electric industry and utility business practice to encourage the cleanest, most advanced, and efficient power system operation
- **Market Activation** (NYSERDA) – addressing market barriers and gaps; redesigning NY programs to accelerate clean energy market growth and unlock private clean energy investment
- **Leading by Example** (NYPA) - deploying innovative energy solutions across State-owned buildings, university campuses, and State vehicle fleets

## REV Clean Energy Goals for 2030

[ny.gov/REV4NY](https://ny.gov/REV4NY)

**40%** **Reduction**  
in greenhouse gas emissions from 1990 levels

**50%** **Generation**  
of New York State's electricity must come from renewable energy sources

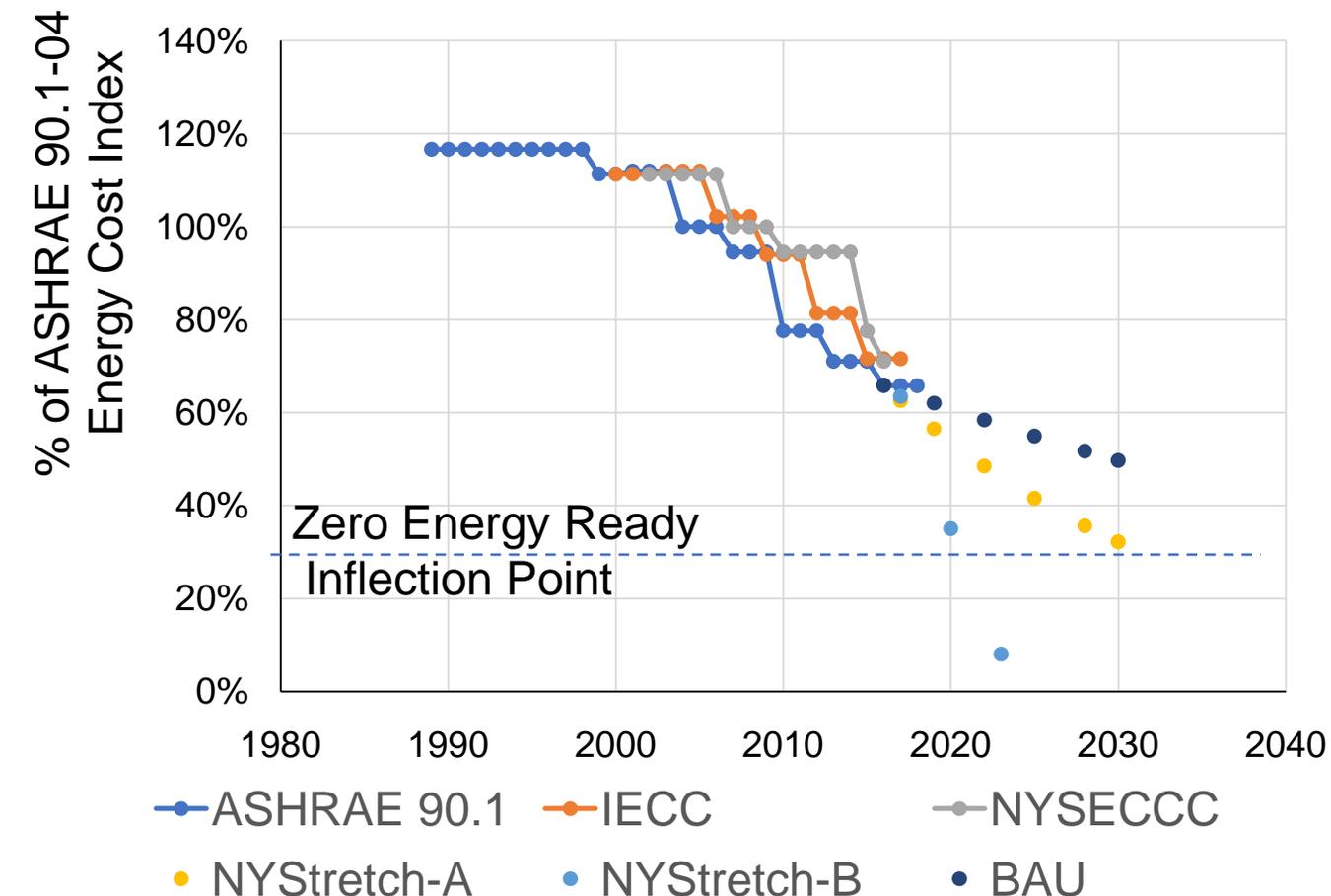
**23%** **Decrease**  
in energy consumption of buildings from 2012 levels

# Stretch Energy Code Concept

- Mandatory or voluntary mechanisms
  - Adopted by cities
  - Used for public buildings
  - Tax or other incentive programs
- Results in more energy savings than a base energy code
- Signals where future codes are going
- Can work in tandem with utility programs - regulatory, timing, and savings

# Stretch Code Strategies

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



## “One-Cycle Stretch”

- Build on national model codes
- NYStretch-Energy
  - 2015 version this year
  - 2018 version next year
  - 2021 version by 2021

## “Stretch-to-Zero”

- Test approaches for towards zero codes in New York State
- Address unregulated loads
- Address onsite generation

# Stretch Codes in Context

Part of NYSERDA's suite of code-related activities:

- ✓ Improving compliance
- ✓ Strengthening enforcement
- ✓ Accelerating adoption
- ✓ Supporting enactment

<http://www.nyserdacodetraining.com/>

# One-Cycle Stretch: What is NYStretch-Energy?

“Overlay” code, or alternative compliance path,  
for local adoption

+ More rigorous than base energy code

+ Results in buildings that achieve  
greater energy savings and reduced  
GHG emissions

+ Anticipates successor code advancements, culminating in a statewide Net  
Zero Energy code by 2028/30



# One-Cycle Stretch: 2018 NYStretch–Energy Objective

- Provide readily-adoptable code language for local governments that will deliver energy efficiency performance significantly above anticipated 2019 Energy Conservation Construction Code of New York State
- Generally aiming for energy savings of 20% beyond ASHRAE 90.1-2013 / 2015 IECC

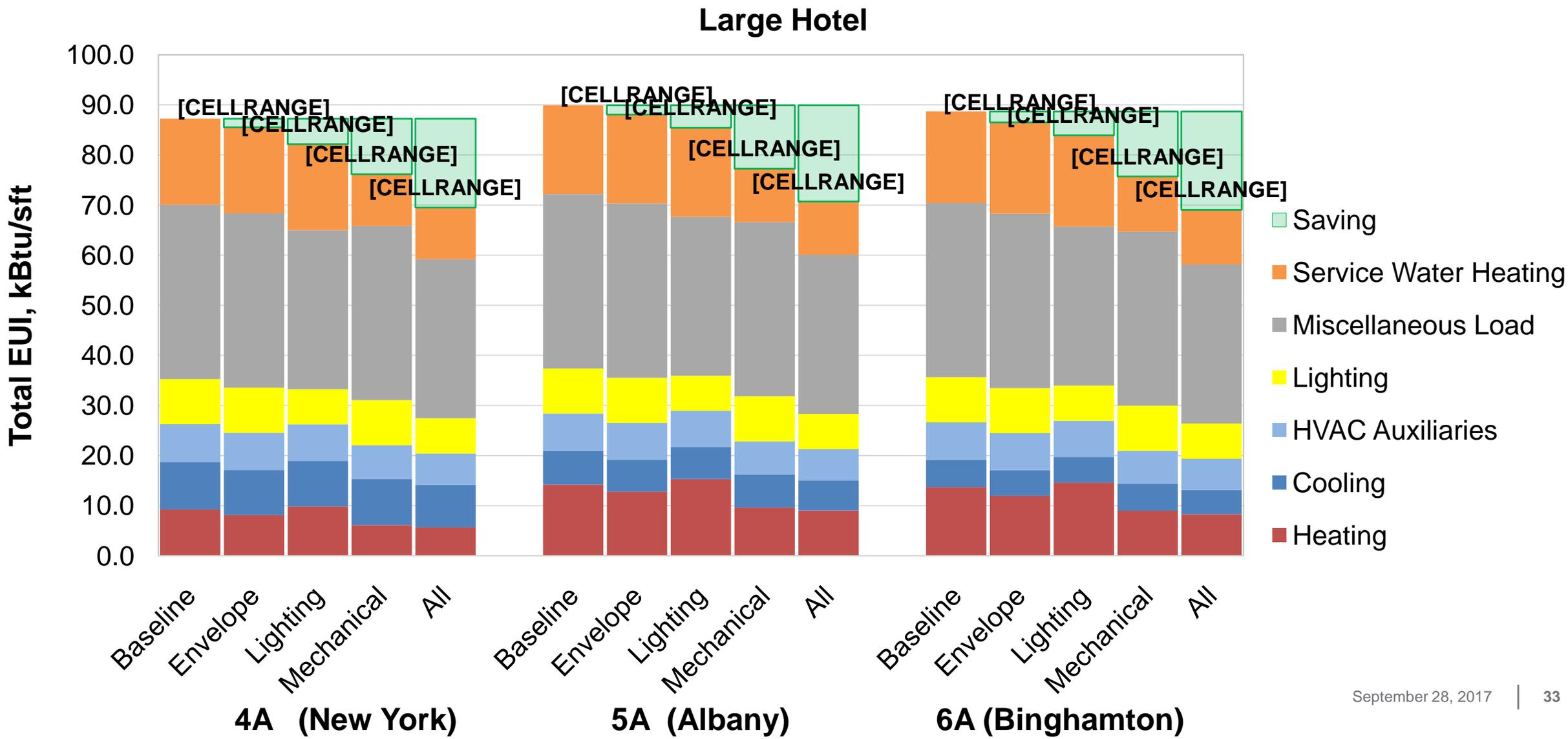
# One-Cycle Stretch: 2018 NYStretch-Energy Development Process

- Advisory Group guidance - Make it rigorous but straightforward and achievable; backstop for best practices in building design/engineering
- Residential, Commercial and Multi-family Working Groups- Will review technical issues and help prepare detailed language
- Iterative energy modeling to predict savings and fine-tune
- Incremental cost analysis to understand cost-effectiveness
- Public comment period
- Toolkit to support adoption

# 2018 NYStretch-Energy Timetable

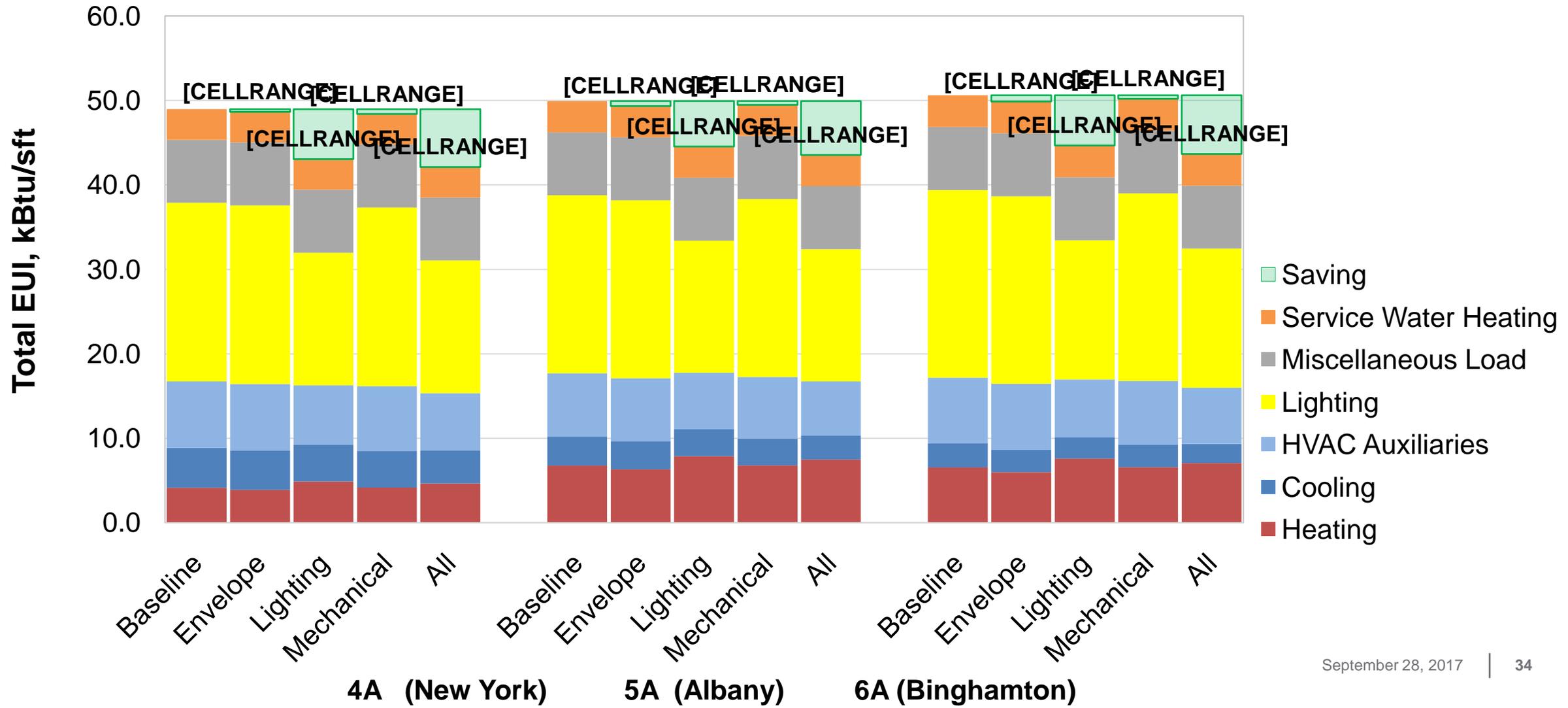
MILESTONE	DATE
Kickoff	June 8, 2017
1 <sup>st</sup> Round Technical Working Group meetings	July 2017
NYStretch-Energy Advisory Committee (Meeting 2) PRESENT DRAFT ENERGY ANALYSIS	September 2017
2 <sup>nd</sup> Round of Technical Working Group Meetings	October 2017
NYStretch-Energy Advisory Committee (Meeting 3) PRESENT FINAL ENERGY ANALYSIS	December 2017
NYStretch-Energy draft	December 2017
Legal review	January 2018
Public comment	February/March 2018
Toolkit update	May 2018
Final NYStretch-Energy	May 2018

# Preliminary Results Large Hotel



# Preliminary Results Stand-alone Retail

## Stand-alone Retail



# Stretch-to-Zero

## Objectives:

1. Develop path to an energy code that:
  1. Addresses all aspects of a building's energy use and energy production;
  2. Moves market in a prompt and supportive way without being disruptive; and
  3. Leads New York State to a stretch-to-zero code as baseline by 2030.
2. Identify major construction trends and their influence on energy codes (e.g., production trends, digitalization, BIM, etc.).
3. Identify proven technologies/systems to incorporate into stretch energy codes.
4. Test towards zero-energy approaches for applicability in New York State.

# Benefits of Stretch Codes

- Lower building operating costs/increased energy savings
- Increased occupant comfort
- Improved resiliency (with regard to power disruptions)
- Real-life testing in New York markets
- Stimulates R&D and commercialization of products/systems to improve energy efficiency performance
- Provides consistency while leveraging developed above-code infrastructure
- Alignment with utility programs

# Thank you!

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The Perfect Energy Code  
A one-act play  
by  
Chris Benedict and Henry Gifford

# **EXAMINING THE ENERGY CODE: SUCCESSSES, CHALLENGES, APP ROACHES FOR THE FUTURE**

## **QUESTIONS**