

Energy Efficiency and Housing Advisory Panel

November 18th, 2020
Meeting 5

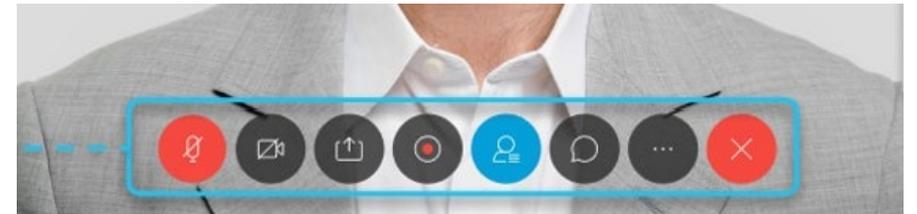


**Climate Action
Council**

Meeting Procedures

Before beginning, a few reminders to ensure a smooth discussion:

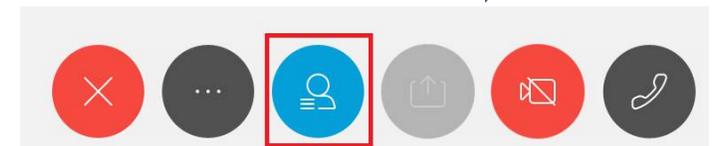
- > Panel members should be on mute if not speaking.
 - > If using phone for audio, please tap the phone mute button.
 - > If using computer for audio, please click the mute button on the computer screen (1st visual).
- > Video is encouraged for Panel members, in particular when speaking.
- > In the event of a question or comment, please use the hand raise function (2nd visual). You can get to the hand raise button by clicking the participant panel button (3rd visual). The chair will call on members individually, at which time please unmute.
- > If technical problems arise, please contact michael.armbruster@nyserda.ny.gov



You'll see  when your microphone is muted



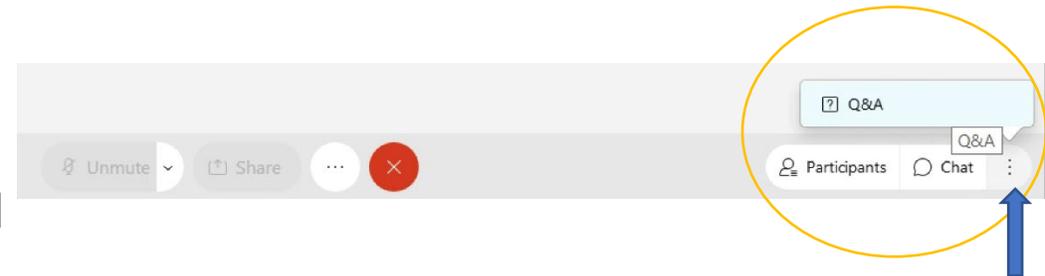
Hand Raise



Procedure for Public Input

The Advisory Panel welcomes public comments and questions both during and in between its meetings

- > To submit feedback to Panel Members and agency staff during the meeting, members of the public can use the WebEx Q&A function located in the right bottom corner.
 - Comments and questions submitted through WebEx will be aggregated and submitted to panel members to be included in deliberations.
- > To submit feedback between Advisory Panel meetings, please email eehpanel@nyserda.ny.gov



Agenda

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- > **Welcome & Meeting Objectives** (5 mins)
- > **Housing Subgroup – Report out from Expert Roundtables** (20 min)
- > **C&I Subgroup – Report out from Working Session** (10 min)
- > **Focal Discussion: Building Codes & Standards** (~ 60 min)
- > **Next steps** (5 mins)

Report-out on Expert Roundtables

Three Expert Roundtables

- **Tuesday November 10th**
 - Builders, Installers and Designers Roundtable – Single Family Housing (SFH)
 - Builders, Installers and Designers Roundtable – Multifamily Housing (MFH)
- **Thursday November 12th**
 - Landlords, Owners and Managing Agents – SFH and MFH

The EE&H Advisory Panel is grateful to 47 external discussion participants who shared their expertise and insights, as well as to public participants for comments and questions

Builders, Designers, and Installers (Single Family)

Critical Barriers

- > Existing housing stock is old and leaky -- focus on insulation and duct work to make heat pumps affordable and comfortable
- > Lack of low-interest financing and insufficient incentives, especially for 1-4 family existing homes.
- > Lack of skilled workforce
- > Gas-based systems are customers' preference and simpler to sell, especially in an emergency change-out.
 - Rate disparities between gas and electric are a disincentive for investment
 - Low consumer awareness or demand for all-electric homes

Top Policy Actions to Consider

- > Incentives needed to make the change, specifically to level the playing field for LMI households and DACs
- > Accessibility and affordability at the forefront
- > Education & outreach to contractors to avoid inconsistent quality and adoption of technologies, which drives up the cost of installation
- > Integrate comprehensive consumer protections into financing programs; invest in consumer outreach and counseling services

Builders, Designers, and Installers (Single Family)

Top Policy Actions to Consider (Continued)

- > Mitigate high cost of electrification through rate design to incentivize electric buildings; give a special rate to affordable housing.
- > Require all-electric in the code for new construction to send a market signal
- > Increase the price on carbon
- > Provide better access to resources for homeowners on upgrade benefits, risks and financing options.
 - Outreach and incentives to help homeowners plan ahead to avoid "like-for-like" emergency replacements

Industry actions to reduce GHG and the impact of COVID-19

- > Opportunity to combine upgrades for indoor air quality with efficiency improvements.
- > Programs and applications need to be available online and easy for homeowners and contractors to access remotely.
- > Homeowners are spending more time in their homes and are investing in home comfort and safety.
- > Tension between energy consumption and increased ventilation rates for improved indoor air quality; address through energy recovery

Builders, Designers, and Installers (Single Family)

Promising Models from other Jurisdictions or Industries

- > Energy Scores for homes being sold (Oregon's Home Energy Score system, for example)
- > Training for realtors akin to flood requirements
- > HUD Energy Efficiency and Green Building standards
- > Auto industry practice of bringing in young engineers and technicians who embrace and implement new technologies.
- > California: Mandates for electric vehicles with goal of zero emissions by 2035
- > Retrofit regulations in Denmark that require no fossil fuels

Builders, Designers, and Installers (Multifamily)

Barriers to scaling in multifamily

- > Gas is cheap and electric is expensive; higher utility cost reduces cash flow for debt service to cover borrowed monies to pay for upgrades.
 - Higher cost than affordable housing can bear – this should drive down the cost of operation, not increase expenses
- > Pre-electrification improvements (e.g. electrical panel, electric service) needed
- > Technical challenge for large, tall multifamily retrofits.
- > Concerns about losing square footage to insulation, ventilation equipment.
- > Better data is needed
 - For cost modeling
 - To assess the technology performance
- > Need more qualified contractors
- > Inability to plan for electrification all at once
 - Utility companies will only allow for current demand, not future

Builders, Designers, and Installers (Multifamily)

Top policies or actions the Panel should consider

- > Smart devices or analytics to deepen understanding of what is needed and broaden awareness of change
- > Cash for Clunkers-style program aimed at fossil fuel-based heating systems, air sealing and insulation
- > End the free 100' rule for new natural gas hookups; address high cost of utility upgrades to electrify a multifamily building
- > No new gas hookups in new construction
- > Look for ways to make gas cleaner through biogas and the addition of hydrogen
- > District systems or block grids
- > GHG mandate or carbon tax
- > Make community solar more accessible
- > Public awareness campaign regarding the laws to drive consumer demand

Builders, Designers, and Installers (Multifamily)

Industry actions to reduce GHG and the impacts of COVID

- > Adopting Passive House technologies is also beneficial to address COVID air quality and circulation concerns
- > In higher ed industry, a lot more HVAC technologies and indoor air quality
- > Need a strategy for fresh, outside air, particularly in dense areas. Looking at ductless mini splits with UV lighting to reduce COVID spread between rooms
- > Tension between COVID-safe building operations and energy consumption
- > Consider how NY state public health dollars can help drive the good health outcomes of building electrification

Examples from other jurisdictions to consider

- > Sacramento, CA approach to electrification
- > Modular construction practices (Vermont, Massachusetts, Canada)
- > Vancouver, BC strategies – exterior panelized system approaches to drive more efficiency and resiliency
- > Wastewater heat recovery, common in Europe

Landlords, Owners, and Managing Agents

Critical Barriers:

- Older housing stock needs other improvements first to address health, safety, deferred maintenance
- High cost, need more generous incentives
 - Cash-flow problem, not a financing problem
- Different challenges and drivers for owners upstate versus downstate
- Grid capacity and age – lack of faith in the grid to handle the increased demand
- Rate disparity between gas and electricity; utility allowance not structured to accommodate heat pumps.
- Not a lot of leeway in regulated housing to accomplish these goals – especially with new rent laws
- Certain existing laws run counter to investing to efficiency/electrification upgrades or operating efficiently
- Workforce shortage for installing and maintaining high efficiency equipment; engineers trained to oversize equipment.

Landlords, Owners and Managing Agents

Top policies or actions the Panel should consider

- Boost to Low-income Housing Tax Credit, HTC and Brownfield Credits for decarbonization; would require federal action
- State level exemption for property taxes on the excess funds required to get to net zero energy
- Funding, incentives with long-term certainty to allow owners/developers to plan
- Relief from demand charges from utility companies for properties attempting net zero
- Better electric rate for electrification
- Update codes and standards
- Workforce development / job creation
- Direct, increased assistance to communities of color to invest in building upgrades
- Engagement and outreach on local and tenant level – drive awareness, directly engage residents to participate in solutions

Examples from other jurisdictions to consider

- Netherlands using smartphones to allow individuals to track usage
- Time-of-sale requirements for real estate transactions – tie compliance to closings
- Don't mimic NYC LL97 – some buildings are already as efficient as they can be but will still be fined

Landlords, Owners and Managing Agents

Measures harder to achieve in affordable housing versus market-rate

- Regulated housing does not have a lot of leeway or ability to be flexible to adapt and incorporate these policies due to both regulation and cash flow restrictions
- Some HVAC requirements in design guidelines manual are very conservative; creates design challenges for spec'ing certain technologies (e.g. ductless mini splits)
- Huge pressure from local governments upstate not to create new burdens on landlords – COVID economic impacts are significant

Better leveraging outreach and engagement

- Important to engage tenant population; tenant behavior drives energy use. Children can be engaged and influence parents.
 - Consider an Influencer Campaign
- Engagement opportunity around workforce development and economic return for residents
- Find key champions and validators; identify clear actions people can take – think differently about the way people get info
- Speak to what residents and communities are concerned about; meet them where they are
- Value resident's time
- Making energy use data more accessible to residents - NYC energy grade prompting conversations between property owners and tenants

Landlords, Owners and Managing Agents

Potential unintended consequences to consider

- Ensure the financial burden does not fall on low-income communities
- Non-profits and small businesses are strained; need to lay out timeframes and resources to not exacerbate their situation
- Follow principle of a just transition
- The more you tighten the envelopes, the more the engineering becomes important
- With extensive air sealing and insulation strategies, buildings become predominantly cooling rather than predominantly heating and humidity becomes a bigger issue
- Moving away from fossil fuel often creates more cost for buildings with oil tanks and asbestos etc.
- Increase in expenses due to higher utility costs of electricity in some locations – this will impact operations and ability to borrow money to pay for upgrades

Roundtable Roundup

Identified Barriers

- > Insufficient access to low-interest financing and to incentives that are needed to cover high upfront costs
- > Older housing stock needs pre-electrification improvements (e.g. health, weatherization, electrical service)
- > Rate disparity between electric and gas makes gas more attractive
- > Lack of skilled workforce for both installation and operations & maintenance

Policy Actions to Consider

- > Incentives with long-term certainty that help make building decarbonization both accessible and affordable
 - Particular focus on disadvantaged communities and LMI households
- > Changes to electric rates and to policy for gas hook ups
- > Extensive workforce development
- > Education and awareness campaigns for general public to drive consumer demand and for contractors/installers

Commercial & Institutional Subgroup Report-Out

Commercial & Institutional Subgroup Policy Options under Discussion

Mandates that require energy efficiency improvements and on-site emissions reductions in buildings and appliances with hard dates as a market signal

- Building Codes for new construction and major renovation to (1) meet low-EUI targets, (2) eliminate on-site combustion of fossil fuels, and (3) require rooftop solar PV and EV-readiness by **20??**
- Appliance Standards prohibit sale/installation of fossil fuel hot water and space heating starting **20??**
- Appliance Standards that regulate the efficiency of plug loads starting **20??**
- Building Performance Standards for existing large non-residential buildings to meet a zero on-site GHG by 2050 and interim targets starting in **20??**
- Efficiency improvement and “electrification-readiness” requirements at point of sales/lease starting in **20??**

Financing and incentives for building efficiency and electrification at scale

- Fund pilots for electrification and grid-interactivity
- Incentives for technology adoption (e.g., heat pumps, sub-meters, EV chargers)
- Emissions-based incentive calculations in addition to energy efficiency-based
- Improve utility price signals for load flexibility
- Utility financing for electrification infrastructure
- Federal tax law changes for depreciation of electrification/efficiency capital; federal tax credit parity with solar
- Funding for code enforcement

Training and education of building decarbonization to improve behavior and operations for health and comfort

- Train building operators and staff through continuing education or certificate programs.
- Large-scale public awareness campaign
- Education on the various incentive programs or mandates
- Community-based hubs, trusted leaders, collective purchasing programs
- Consumer education on performance, economics, indoor environmental quality, value proposition, and energy supply choices when transitioning away from fossil fuels.

Information to increase market adoption and accelerate the transition to energy efficient, all-electric buildings

- Publish resources for detailed capital planning of all-electric efficient buildings, how to be electrification-ready
- Mandatory energy benchmarking and disclosure for buildings larger than 25,000 square feet
- Aggregated building consumption data available statewide.
- Third-party verified environmental product declarations for materials/equipment

Resilience and climate adaptation strategies for all-electric buildings and hazard mitigation planning

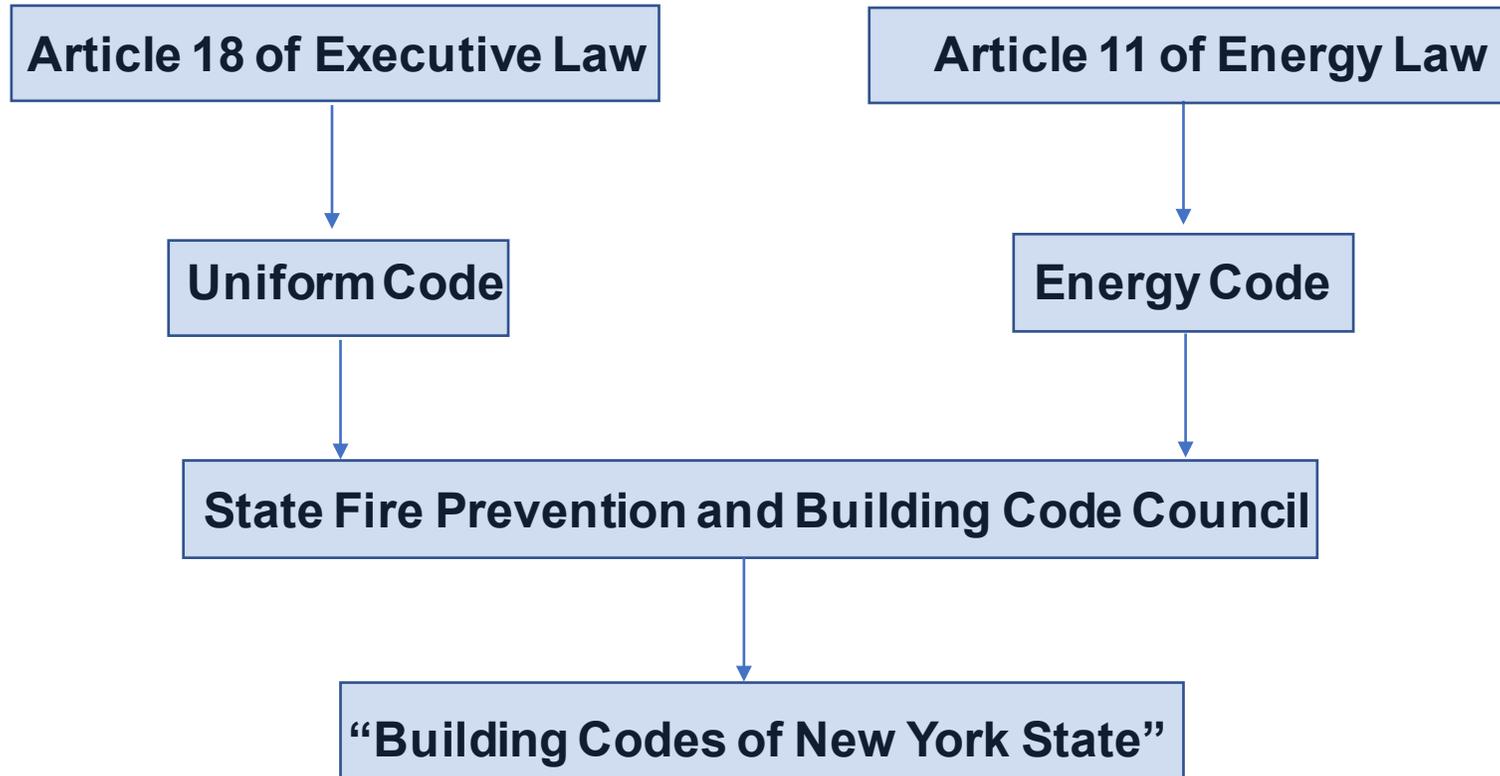
- Balanced and reliable electricity grid (including micro-grids and localized energy systems).
- Electrification paired with supplemental heating source can provide resilience benefits.
- Electrification paired with batteries (need to define and size critical loads and resilience duration)
- Emergency power generation alternatives to fossil-fuels

Cross-panel Issues

- Eliminate subsidies for natural gas
- Utility/ISO support for grid-interactive buildings
- Capacity planning to support electrification
- The future of District Steam
- Harmonize building codes and credentialing of trades and professionals across jurisdictions
- Property tax impacts of capital improvements

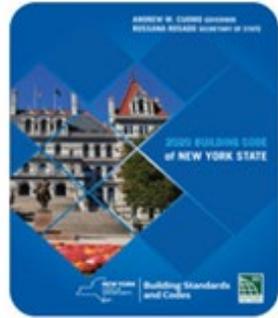
Focal Discussion: Building Codes and Standards

Building Codes of New York State

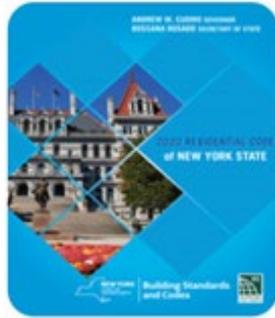


Building Codes of New York State

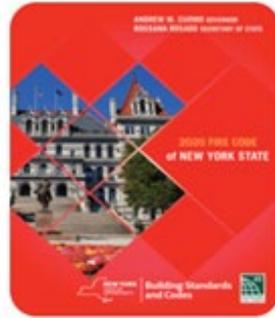
The Uniform Code



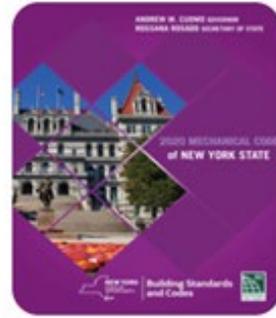
2020 Building Code



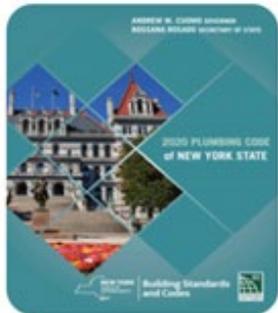
2020 Residential Code



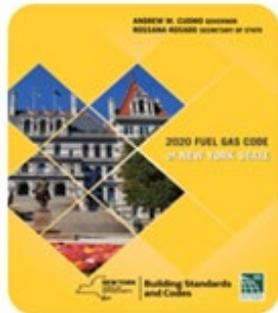
2020 Fire Code



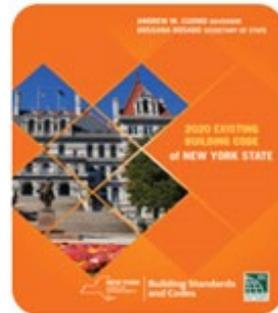
2020 Mechanical Code



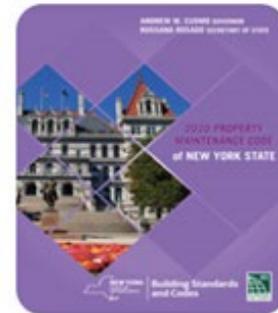
2020 Plumbing Code



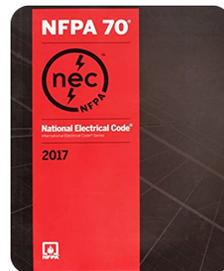
2020 Fuel Gas Code



2020 Existing Building Code



2020 Property Maintenance Code



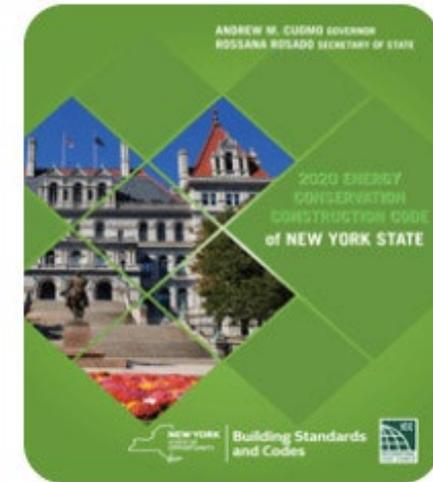
2017 Electrical Code

- Mandatory Statewide, except jurisdictions larger than 1 million residents (i.e., NYC)
- Local jurisdictions enforce the codes
- Local jurisdictions may adopt more restrictive local standards upon approval from the Code Council

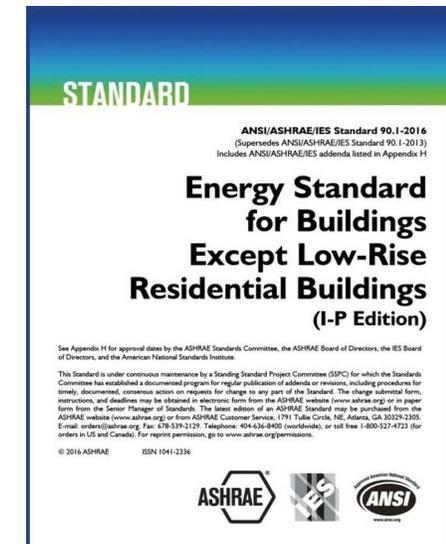
Building Codes of New York State

The Energy Code

- Two parts: Commercial and Residential
- Federal preemption of efficiency criteria for specific equipment
- Mandatory Statewide
- Local jurisdictions may adopt a local energy standard, provided that it is more restrictive and it is filed with the Code Council
- Provisions for:
 - new construction
 - certain alterations/modifications/additions to existing buildings, but does not apply retroactively



2020 Energy Conservation Construction Code



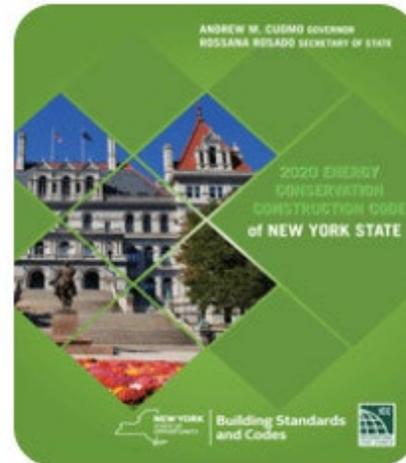
International Code Council

- Formed in 1994, consolidated three legacy organizations
- Codes developed through a consensus process
- Updated on a 3-year cycle
- Opportunity for Advocacy:
 - Anyone can propose a code change
 - Several State Agencies (including DOS and NYSERDA) are members with voting rights
- New Zero Code appendix to the 2021 IECC



Things to Consider Moving Forward

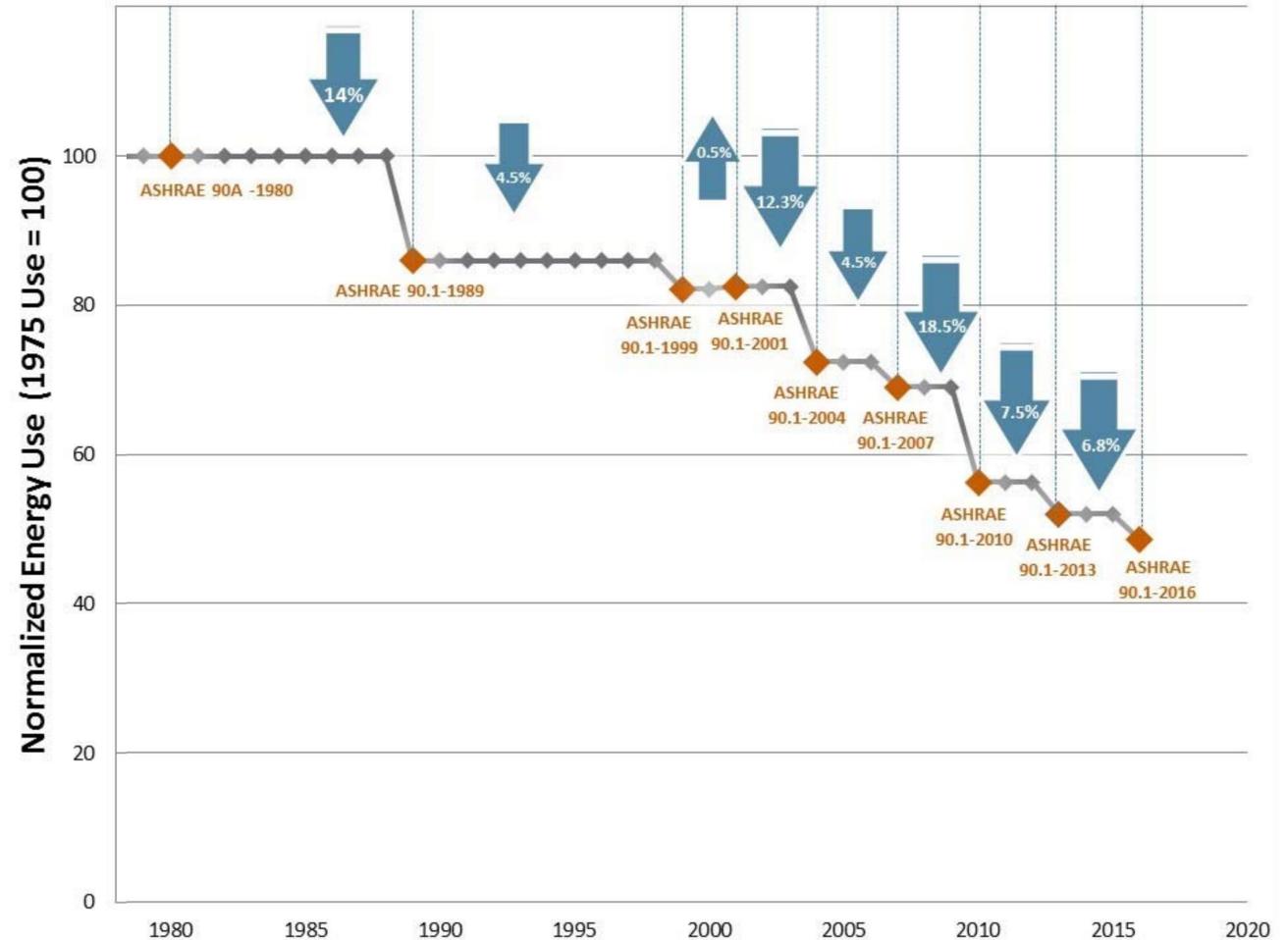
- Energy Code vs Uniform Code
 - Consider the overlap
- Current focus is on energy efficiency
 - DOE determinations
 - 10-year payback
 - Impact to regulated parties must be evaluated and balanced with the benefits



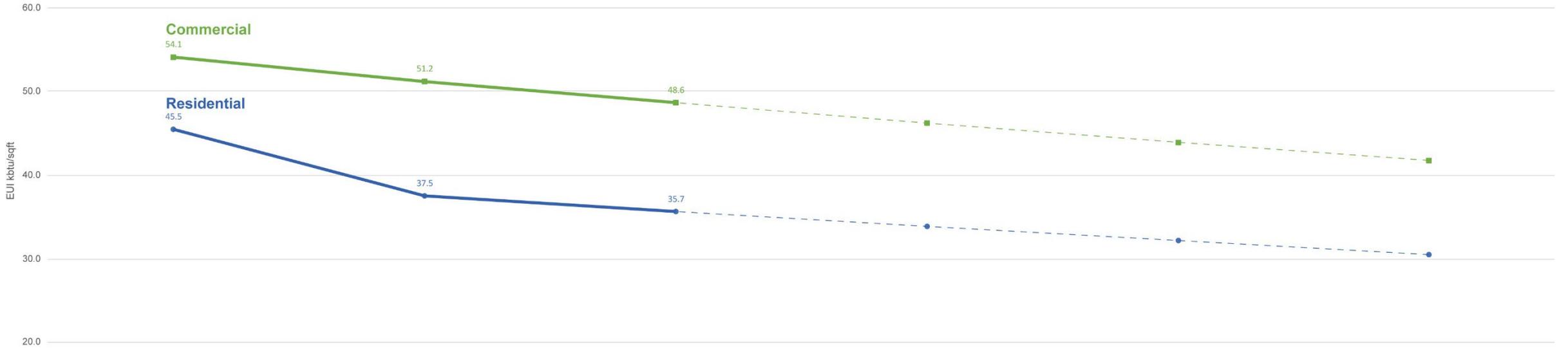
2020 Energy Conservation
Construction Code

Energy Code Progression (National Standard)

- **Historically, significant improvements have been made in energy efficiency**
 - Over 50% energy use reductions in last 40 years
- **NYS has committed to develop Stretch Energy Codes to allow local governments to voluntarily adopt a more stringent standard**
 - New York City, the City of Beacon, and the village of Hasting-on-Hudson have adopted the Stretch Energy Code as the legal standard for energy efficiency



Projected Stretch Energy Code Progression

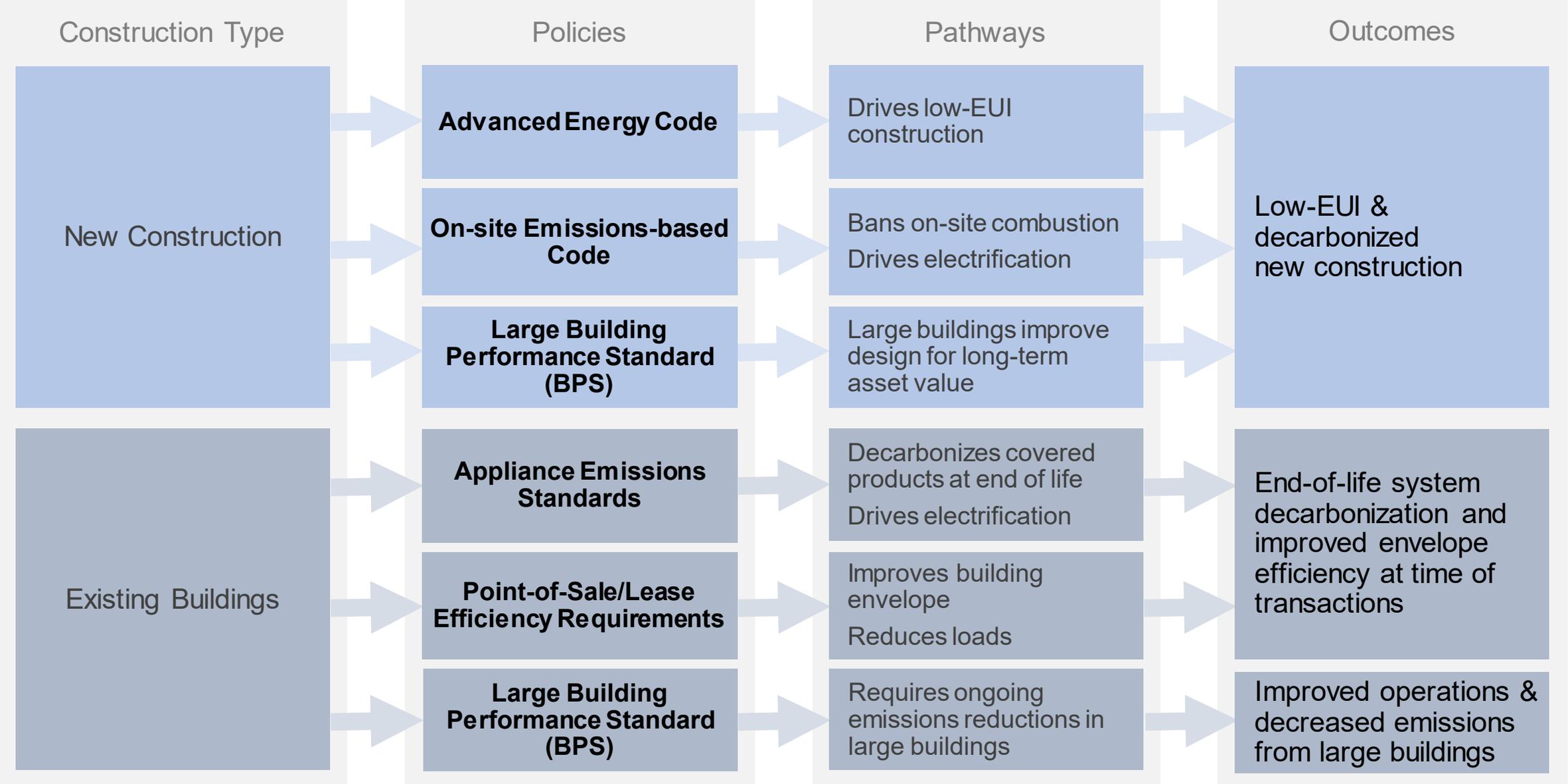


	Baseline NYSECCC	2020 NYStretch	2023 NYStretch	2026 NYStretch	2029 NYStretch	2032 NYStretch
Energy savings over previous code:		5%	5%	5%	5%	5%
		19%	5%	5%	5%	5%
Mandatory Systems & Practices:		High Performance Envelope Solar and EV - ready	Improved envelope Electric-ready			
		High Performance Envelope Solar-ready	Improved envelope Electric-ready			
Technical Gaps:			Thermal bridging, ERV, air sealing, contractor training	Low GWP refrigerants		
			Air-seal testing, ERV, contractor training	Low GWP refrigerants, Grid Interactive systems		
Economic Gaps:			Fuel cost disparity betw een gas and electricity	Cost compression, LMI challenges		
			Fuel cost disparity betw een gas and electricity	Cost compression, LMI challenges		

Summary of Key Codes & Standards Policy Terms

- **Advanced Energy Code**
 - Energy code that is more stringent than the national model codes to reach lower energy use intensity (EUI) through improved envelope efficiency, equipment specifications, and lighting power
- **On-site Emissions-based Code**
 - A construction code that limits the on-site emissions from new construction and significant renovations
- **Building Performance Standard/Mandate**
 - A law to limit energy consumed or emissions from buildings that are more stringent over time by specific dates
- **Appliance Standards**
 - Appliance Efficiency Standards: Regulate the energy or water efficiency for products sold or installed in New York State not preempted by Federal rules
 - Appliance Emissions Standards: Limit the emissions for products sold or installed in NYS
- **Point-of-Sale/Lease Efficiency Requirements**
 - Prescriptive improvements to buildings required prior to a sale or to buildings/spaces/units prior to a lease
- **Electrification-Ready Code Provisions**
 - Heat pump ready: Upgrades to building/unit electrical panel and wiring/outlets at the location of the appliances in order to accommodate future heat pump installation
 - EV ready: Upgrades to building electrical panel and wiring/outlets to accommodate future installation of EV charging equipment in parking spaces
 - PV ready: Upgrade to building electrical panel to accommodate future installation of solar PV panels on the roof

Potential Decarbonization Pathways



Potential Approaches and Illustrative Timeline

	Single Family	Multifamily	Commercial
ENERGY CODE (New Construction and Major Renovation)			
Continued Reduction of EUI	3-yr revision (2023, 2026, 2029)	3-yr revision (2023, 2026, 2029)	3-yr revision (2023, 2026, 2029)
Zero On-Site GHG Emissions	2025	2030	2030
APPLIANCE STANDARDS (New and replacement equipment)			
Improved Efficiencies for non-Federally preempted equipment	2023		
Prohibit new and replacement fossil fuel combustion hot water systems (through GHG emission regulation)	2025	2030	2030
Prohibit new and replacement fossil fuel combustion space heating systems (through GHG emission regulation)	2030	2035	2035
BUILDING PERFORMANCE MANDATE (Large Existing Buildings)	N/A	N/A	2030-interim GHG target 2050-zero onsite GHG
POINT OF SALE/LEASE REQUIREMENTS (Existing Buildings)	2030 -Envelope & Efficiency Requirements	2030 - Envelope & Efficiency Requirements, Electrification Ready	2030 - Electrification Ready
BUILDING CODE (New Construction and Major Renovation)			
Require Solar PV on Rooftops	2023		
Require EV-Readiness/Heat pump-Readiness	2023		

Next Steps

Next Steps

- > Climate Action Council meeting on November 24th, 2pm EST (<https://climate.ny.gov/>)
- > Further collaboration, review and refinement of options/recommendations through subgroups
- > ID areas and begin reach out for cross-sector collaboration
- > Deeper dives into disadvantaged communities impacts and recommendations
- > Review and incorporation of survey results
 - Survey open through November 30, 2020; email eehpanel@nyserda.ny.gov for the survey link