

## ZEB pathway advocate comments, January 2022

### Key Points:

1. Delaying building electrification will only increase costs in New Jersey
2. Building codes that encourage all-electric and net-zero energy are cost effective.
3. Stretch codes work and are gaining in popularity
4. The building industry opposes stretch codes and stronger energy codes despite their benefits, even after they have been implemented and are working effectively. The gas industry has joined this long-standing and organized opposition.

### Explanations:

1. **Delaying building electrification will only increase costs.** Research shows that electrification and investments in building efficiency are key components of low cost decarbonization. The NJ EMP and analysis in the IEP, evaluated precisely this question. The IEP low electrification scenario was more costly than electrification that reached 90% by 2050.
  - a. New Jersey is not alone here – New York, Maryland, and others have also found that electrification is important to reduce the cost of decarbonization
    - i. New York Climate Action Council's [draft scoping plan](#). In addition to NYC, the governor has proposed statewide all-electric new construction in her budget.
    - ii. Maryland's [building energy transition plan](#)
  - b. Research also shows that RNG is not a cost-effective or feasible option at scale for buildings. This was addressed in New Jersey's IEP analysis, and a wide range of decarbonization studies support this conclusion.
    - i. <https://www.nrdc.org/experts/merrian-borgeson/report-renewable-gas-pipe-dream-or-climate-solution>
    - ii. <https://rmi.org/building-electrification-a-key-to-a-safe-climate-future/>
2. **Building codes that encourage all electric and net zero are cost effective** and avoid the need for more costly retrofits. They also avoid substantial costs of building gas distribution lines, paid for by all NJ gas customers.
3. **Consumers will not pay more for energy in all electric homes for most of New Jersey. New analysis of operating costs by Acadia Center shows lower costs for the average NJ home. (the report will be released shortly).**
  - a. Average NJ home saves between \$50 and \$240 from switching from gas to electric ASHP and water heater; depending on gas prices.
  - b. South Jersey home, saves 13%
  - c. NJNG home, saves 22%
  - d. PSE&G consumers. The combination of higher electric rates and low gas rates make it difficult to show annual savings with current rate structures. The PSE&G territory is the only area where this combination would result in somewhat higher energy bills for some households when gas prices are very low. With higher gas prices (such as this Winter 21-22) this operating cost penalty largely disappears.
4. **New construction NZE homes are cost-effective.**

- a. RMI's [Economics of Zero Energy Homes](#) looked at NZE-ready and NZE homes in IECC climate zones 4 and 5 (both relevant to New Jersey).
  - i. This analysis showed NZE-ready homes were cost-effective across a range of geographies, on a few dimensions – operating costs paying back modest upfront costs, and that **very modest upfront cost difference** falling within a narrow consumer 'willingness to pay' threshold based on market research.
  - ii. The report also has a chapter on cost compression in NZE homes as projects and familiarity grows.
- b. It's chicken or the egg – multiple data points showing that builder costs can come down quickly when they actually start doing these types of projects with some frequency
  - i. as one example, see pages 22-23 of this [NYSERDA presentation](#) sharing learnings from the Empire Buildings Challenge
  - ii. Built Environment Plus (the Mass. affiliate of US Green Building Council) has also seen this in [actual upfront cost data](#) on Net Zero Energy-Ready projects. Also all-electric.

**5. Stretch codes work and are popular with towns and consumers.**

- a. In Massachusetts, 299 out of 312 towns have adopted stretch codes, starting in 2009.
- b. NY and MD are currently contemplating new construction policies.
- c. NYC just passed an emissions cap on new construction (meaning, all-electric) with support from ConEd.

**6. The building industry opposes improved energy codes despite their benefits.**

- a. Improved energy codes have greatly benefited consumers over the past 20 years but are **always opposed by the building industry**.
- b. The recent fight at the International Code Council over the 2021 code is a great example. The gas utilities and building industry players fought against attempts to speed up electrification in building codes.
- c. The building industry and developers, specifically the National Association of Home Builders, have been scrutinized by Congress for deploying their disproportionate influence over the ICC.

**7. Stretch codes are effective at lowering energy bills at low cost**

- a. The cost of new construction may decline under a ZEB code for new homes and buildings in New Jersey. (see *RMI Economics of Zero Energy Homes*)
- b. ZEB code policies can be designed to reduce higher upfront costs to consumers. MA provides incentives to builders to cover increased construction costs, so that consumers do not face higher prices.
- c. New code policies can also seek ways to reduce cost for builders, by supporting improved permitting, digitized plans, etc.

**8. Energy codes reduce energy consumption in new buildings**

- d. Evidence from Mass: MA stretch code set a standard of 60 HERS when the baseline for buildings was 65 HERS. The third stretch code, now under development will reach about 45 HERS.
- e. The national labs continue to affirm the value of modern building codes. The Pacific Northwest National Labs, found that updating the New Jersey building code to the most

recent commercial building code (ASHRAE 90.1-2019) would on average save \$847,000 in the year while reducing CO2 and other emissions.

[https://www.energycodes.gov/sites/default/files/2021-07/Cost-effectiveness\\_of\\_ASHRAE\\_Standard\\_90-1-2019-NewJersey.pdf](https://www.energycodes.gov/sites/default/files/2021-07/Cost-effectiveness_of_ASHRAE_Standard_90-1-2019-NewJersey.pdf)

### Responses to common arguments:

**Objections 1: The state doesn't have enough information to yet establish a zero energy code adoption timeline.**

Some of this is circular. In other markets, policy signals have been important to get industry, supply chains, etc. moving.

**Objection 2: Stretch Codes cannot be adopted under the current Uniform Construction Code and if so, they would create a patchwork of code adoption standards across the state.**

The roadmap is confusing about whether stretch codes can be adopted under NJ law. If new legislation is required, it should say so more clearly.

Stretch codes would be limited to one option (at least initially), so that there would only be two options across the state - the baseline code, or the stretch code. Builders in MA managed to continue building to two codes, as more and more towns adopted the stretch code.

**Objection 3: The state does not have enough information about grid impacts to implement electrification requirements in codes**

Other states have studied this issue and found that current grid capacity is sufficient to get started on building electrification, and that future grid improvements if they are needed at all, are far down the road. New Jersey should also study grid impacts of electrification, but it is not a reason to slow down the adoption of new building codes.

- PEPCO in DC did an [electrification study](#) on grid impacts, and found that they can handle the increased load.
- Urban Green Council's recent study [Grid Ready](#) showed similarly how electrification can be rolled out broadly in NYC while managing grid capacity. There were four key takeaways:
  - Building electrification poses no immediate risk to the grid, and NYC's winter power demand could grow by 42 percent before exceeding summer demand;
  - Almost every network area in NYC has at least 100MW of capacity to electrify heating and hot water. That's enough room to convert about 300 multifamily buildings in each area before we see any winter peaks;
  - Residential communities in outer boroughs will likely be the first to see winter demand exceed summer since low-rise buildings are easier to electrify but have large heat and hot water loads;
  - Energy efficiency and demand flexibility upgrades are highly effective at shaving peak demand, and if they're integrated with heat pumps then almost half of NYC's building area could electrify before the winter peak crosses the summer peak.

Objection 4: The state should take a more gradual approach to building decarbonization using what's currently been adopted by the state and a focus on slow transition to renewable energy.

- See below

Objection 5: Stretch Codes and Electrification requirements would create further inequity in lower income communities that can't afford to adopt more expensive mandates.

- Highly efficient, zero combustion housing also tends to have a variety of important health, comfort, and resilience benefits. (better ventilation and improved air quality, better envelopes provide safety during extreme weather, etc)
- New affordable housing in New Jersey, funded by NJHMFA, already requires Energy Star certification and offers Green Points for additional measures.
- Programs can be developed to support the development of affordable housing and reduce energy bills for low income households.
  - [New York State Homes and Community Renewal's \(HCR\) Clean Energy Initiative](#) with NYSERDA is providing additional funding and technical assistance for new and existing affordable housing, which could then provide a gateway into HCR's green building standards
  - [California's BUILD program](#)
  - Pending also, [Maine's ARPA package](#) includes green affordable housing development programs.
- Rate reform to protect low-income energy bills in all-electric buildings, should also likely be considered.
- Current inefficient housing disproportionately impacts low-income individuals and communities to color.

Indeed, the American Council for an Energy-Efficient Economy (ACEEE) recently released an updated analysis on household energy burdens (i.e. those that pay more than 6% of income on energy bills) and found that high energy burdens remain a persistent national challenge. ACEEE finds groups like Black, Hispanic, older adults (65+), renters, and low-income multifamily building residents have disproportionately higher energy burdens than the median household. Specifically in the mid-atlantic region (NJ, NY, and PA) the median average for low-income energy burden is 9.6% while the regional median is 3.4%. <https://www.aceee.org/sites/default/files/pdfs/ACEEE-01%20Energy%20Burden%20-%20National.pdf>

## Compelling examples of ZEB working well in other states

### Massachusetts is instructive for NJ.

Building associations oppose stretch codes, even if they are very popular, widely adopted, don't raise costs, etc.

MA developed its first stretch code in 2009, against opposition from Building association. At the time, several cities were using other authorities to adopt energy requirements, such as LEED certification. Cities were using their zoning authority, and more were interested in doing the same. The administration explained to builders that there would be a patchwork of requirements, by town, if the state did not adopt a stretch code. The statewide stretch code gave two options - the base code, and one stretch code that towns could adopt. Builders agreed that it would be better to have one stretch code, but still did not like it, predicted that nothing would get built, and costs would be higher, etc.

The state adopted the stretch code at the same time they adopted green communities, which started with \$10M in funding from RGGI, and provided incentives for municipalities to go through the

process to become a green community. There were 5 criteria, one was the adoption of the stretch code. The first year, 12 communities became green, 12 years later there are 275 (out of 312) that are green, and **299 have adopted the stretch code**. Budget is now \$20M. If a town adopts a stretch code, they qualify for additional funding.

MA carefully chose the energy standard, to be cost-effective, and started at **HERS 60** score. The standard was based on analysis of what is cost effective. MA is now developing the third statewide stretch code, and will move from 1 option to 2 options. The next stretch code under development is aiming for about 45 HERS, and will be more electrification focused. A second option will be a Zero Energy stretch code.

### **MA built support through analysis and facts**

The code is performance based, which is business friendly and provides flexibility in meeting increasingly stringent HERS goals. MA did analysis of the cost to meet the new code for several types of specific homes and buildings in a specific community. The Building association objected to specific price estimates, and began to lose the narrative about cost.

Some small housing builders became supporters; they build to this code anyway.

### **New York Stretch code**

NYStretch Energy Code – 2020\* Version 1.0 (NYStretch-2020) is available. NYStretch-2020 is a supplement to the 2020 Energy Conservation Construction Code of New York State (State Energy Code), developed by NYSEERDA, and available for voluntary adoption by local governments as a more stringent local energy code. On average, the NYStretch-2020 supplement improves the State Energy Code's efficacy by roughly 10%, and is a model for New York jurisdictions to use to meet their energy and climate goals by accelerating the savings obtained through their local building energy codes.

The NYStretch-2020 supplement is:

- Readily adoptable
- Written in enforceable language, familiar to building departments
- Coordinated with the New York State Uniform and Energy Codes
- Intended to be about one cycle ahead of the current State Energy Code
- Cost-effective and regionally appropriate

### **FURTHER REFERENCES**

#### **Cost Analysis of Zero Energy Buildings:**

- <https://builtenvironmentplus.org/zero-energy-buildings/>
- [https://rmi.org/wp-content/uploads/2018/10/RMI\\_Economics\\_of\\_Zero\\_Energy\\_Homes\\_2018.pdf](https://rmi.org/wp-content/uploads/2018/10/RMI_Economics_of_Zero_Energy_Homes_2018.pdf)
- <https://www.nytimes.com/2021/11/16/business/net-zero-homes.html>

#### **Stretch Codes:**

- **FAQ for Massachusetts municipalities:**  
[https://www.northfieldma.gov/sites/g/files/vyhlf991/f/uploads/qa\\_for\\_the\\_stretch\\_code.pdf](https://www.northfieldma.gov/sites/g/files/vyhlf991/f/uploads/qa_for_the_stretch_code.pdf)
- [https://newbuildings.org/code\\_policy/stretch-codes-advanced-codes/](https://newbuildings.org/code_policy/stretch-codes-advanced-codes/)

- [https://neep.org/sites/default/files/media-files/building\\_codes\\_and\\_electrification\\_brief.pdf](https://neep.org/sites/default/files/media-files/building_codes_and_electrification_brief.pdf)
- <https://neep.org/building-energy-codes-and-benchmarking/codes-tracker>