Energy Stretch Code & Building Performance Standard Programs for Illinois

Phase 1 Report

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Introduction

This report provides an interim update on phase 1 activities to-date by Slipstream and Midwest Energy Efficiency Alliance (MEEA) on behalf of Illinois investor-owned utilities, to investigate and initiate utility energy efficiency program support for energy stretch codes and building performance standards.

This initiative operates under the hypothesis and goal that the utility programs can support the advancement of codes and standards in Illinois to drive additional, attributable energy savings within state regulated utility energy efficiency programs. This could be via a resource acquisition type energy efficiency program or via a market transformation approach. It could also act in concert with a code compliance initiative to form a comprehensive codes and standards program.

Objectives and Structure

This project followed some background research and stakeholder discussion amongst the utilities considering the best paths for utility programs to play a role in codes and standards development. The group of these combined stakeholders, Slipstream, and MEEA made a decision to pursue BPS and stretch codes as the two most probably paths of impact.

Overall objectives of this research and pilot effort are to:

- Engage stakeholders in a process to identify potential utility program support of more stringent codes and statutes that would capture additional energy savings during building retrofits and new construction of commercial and residential buildings.
- Establish a path for cities to implement stretch codes with the aid of utilities
- Establish a path for cities to improve or implement new retrofit codes with the aid of utilities
- Determine savings and attribution methodologies for utility building energy code programs that involve stretch codes and retrofits for existing buildings
- Monitor opportunities for utility involvement in the statewide building energy code amendment and adoption process

Phase 1 of the pilot focuses on technical concept development and an assessment of program savings potential and feasibility for implementation. Following a go/no-go decision by the utilities, phase 2 would begin implementation of utility codes and standards programs within specific jurisdictions and would develop a program savings and attribution methodology.

Phase 1 was structured around the following activities:

- **Technical concept development** – Building on prior research and energy code efforts by Slipstream and MEEA, provide definition of the codes and standards mechanisms proposed for advancement within jurisdictions and highlight precedent programs from other regions.

- **Municipality engagement** – Engage specific municipalities representing all participating IOUs to determine local context for codes and standard programs, identify key stakeholders, characterize opportunities and likelihood for codes and standards actions, and define potential next steps for utility engagement.

- **Policy analysis** – Assess state level policy considerations. This included monitoring any potential state level discussions to define or advance code and standards. It also included engaging the Illinois Stakeholder Advisory Group to begin to understand pathways to claimable savings for a utility codes and standards program.

- **Technical potential analysis** – Research and estimate the gross savings potential of proposed codes and standards program, to inform further pilot program decisions by utilities.

Background & Technical Concept

Codes and Standards Programs

As described in a 2018 white paper by Slipstream (then Seventhwave), several states have energy efficiency programs that are designed to influence the building energy code and allow the utility administering the program to claim savings. (Seventhwave, 2018) California utilities have been actively influencing codes and standards since the late 1990s. States that have more recently developed code programs include Arizona, Massachusetts, Rhode Island, Vermont and Colorado.

Code Landscape in Illinois

Illinois has many of the conditions needed for utilities to engage in program activities related to either advancing building energy codes and/or ensuring compliance with building energy codes. These conditions include:

1. Statewide building energy code
2. Institutionalized process for regularly updating the statewide code that includes opportunities for anyone to offer code amendments
3. Collaborative process for establishing program performance metrics

In addition to this statewide context, there is also allowance for municipalities to engage in code advancement at the local level.

The statewide minimum code is based on the International Energy Conservation Code (IECC), covering both commercial and residential buildings, both of which are currently based on IECC 2018, with Illinois-specific amendments. Illinois' energy conservation code is administered by the Capital Development Board, the construction management agency for Illinois state government. The Capital Development Board also oversees construction of new state facilities. By law, the Capital Development Board must review, on a three-year cycle, the most recent version of the International Energy Conservation Code and adopt it (with amendments) through its administrative rulemaking procedures. This becomes the Illinois Energy Conservation Code (IL-ECC). The next model code, IECC 2021, is expected to be finalized shortly, and the state process for review, amendment and adoption will likely begin in early 2021. This process can take considerable time, with the prior code update requiring 22 months from the first publication of IECC 2018 in August of 2017 to the state's ultimate adoption in July of 2019. This review and adoption timeline may present an important engagement window on *stretch* codes as municipalities prepared for their next, requisite code ordinances and retooling.

While the Capital Development Board is responsible for administering the code and the code update process, local jurisdictions are responsible for enforcing the code. Local jurisdictions must meet minimum compliance documentation requirements.

Additionally, local governments are allowed to adopt stricter energy codes for commercial buildings. Local governments are not allowed to adopt stricter residential codes unless the codes were adopted prior to May 15, 2009 or if a municipality has a population of 1,000,000 or more (only Chicago, effectively). At one time, Chicago had its own energy conservation requirement in its Municipal Code. Since statewide adoption of the IL-ECC, it has moved to follow the statewide code without any additional requirements.

An energy *stretch* code in Illinois would define and enforce an energy code with requirements exceeding those of the state-mandated minimum IL-ECC. A model *stretch* code could be crafted independently by a jurisdiction or could theoretically be defined by state-level policy or working group for optional adoption by any local jurisdictions. To-date no such stretch code definition exists at either the local or state level, though a variety of stakeholders have expressed interest as described further below.

See *Appendix A – Stretch Codes Overview* for a conceptual overview of stretch codes, used to support municipal outreach efforts.

Given the restrictions on residential stretch codes in Illinois, the focus of this research and pilot effort is on commercial applications.

Building Performance Standards

Energy codes are an effective statutory mechanism to drive efficiency within new construction and within naturally occurring renovations or retrofits that trigger code compliance. There are also increasingly examples of statutory mechanisms that mandate proactive energy efficiency improvements in existing buildings. A building performance standard (BPS) is one such mechanism, requiring performance improvement within existing buildings that fall below a defined threshold for actual operating energy performance. A 2020 paper by the American Council for an Energy-Efficient Economy highlights at least ten examples of building performance standards in operation, including New York City; Washington D.C.; St. Louis; Boulder, CO; and Reno, NV (Nadel, 2020).

A BPS could be crafted independently by a jurisdiction or defined at the state level for local adoption, neither of which has occurred to-date in Illinois. A BPS does generally require and leverage energy performance reporting via an energy benchmarking ordinance or similar reporting program. Currently two Illinois jurisdictions— Chicago and Evanston— have community-wide private sector benchmarking ordinances.

See *Appendix B – BPS Overview* for a conceptual overview of building performance standards, used to support municipal outreach efforts.

Feasibility for Municipalities

In order to understand the potential feasibility of a Codes and Standards program, we investigated how five different government groups would potentially take advantage of such a program. The groups were the City of Chicago, the cities of Champaign and Urbana, the City of Evanston, the Metropolitan Mayors Caucus, and the State of Illinois.

Chicago

The City of Chicago represents an opportunity to continue exploratory engagement around both topics that are the subject of this research— advanced energy codes and building performance standards. The next stage of climate action for Chicago is still being developed; it will be guided by forthcoming priorities of the Chief Sustainability Officer (CSO) and the Commissioner of the Department of Buildings, both recently appointed in the summer of 2020. The Mayor and current City Council are also still relatively new, elected in 2019 and heavily focused to-date on political priorities of COVID-19 response and civil unrest. Those topics remain key context to any energy or climate action related discussions, influencing potential program design as well as timing amidst other near-term political priorities.

While the ComEd and Peoples Gas energy efficiency programs operate based on state statutory guidelines, it is relevant for the programs to remain sensitive to other political discussions between city leadership and the companies around various topics such as franchise agreements, rate discussions, COVID-19 response and ethics. Any utility program efforts must also be cognizant of City ethics guidelines regarding direct support from companies, as well as refrain from any sort of policy lobbying.

Since 2018 Chicago has been a member of the Bloomberg Philanthropies American Cities Climate Challenge (ACCC), which funds initiatives and supporting personnel working in coordination with the mayor's office. Immediate next steps for potential utility support are largely related to the work of ACCC and its partners in coordination with the CSO. ACCC activities to-date have included topics such as low-carbon mobility, mitigating congestion, electric vehicle readiness, renewable energy procurement and also code enforcement in support of the Department of Buildings.

On the topic of new construction, two efforts provide context for a discussion around advanced energy codes. First, the Chicago Sustainable Development Policy has operated since 2004. In its current form new developments are required to incorporate sustainability elements, choosing from a menu of strategies across energy, water, transportation, and more, to achieve a requisite number of points, or by obtaining a building certification with similar sustainability requirements. The policy applies only to projects receiving special approvals or financial assistance, primarily large commercial and multifamily developments, and is neither prescriptive nor exclusively energy-focused. Programmatically-speaking, this leaves room for

the policy to be complemented by utility energy efficiency programs and by energy code initiatives.

Second, under administration of the prior mayor and the recently-departed prior Buildings Commissioner, the Department of Buildings recently achieved a transition to the International Energy Conservation Code, part of an ongoing effort to align Chicago's building code with various model codes from the International Code Council and simplify compliance processes. The Department of Buildings expends considerable effort on a three-year cycle to adopt and enforce code updates in concert with the state of Illinois' three-year update cycle. The original ACCC application, submitted by the prior administration, included activities to investigate advanced energy codes that might incorporate both renewable energy procurement and energy efficiency toward a "zero code." Stakeholder engagement around this aspect of the ACCC work may begin soon as a component of broader climate action planning underway by ACCC and its partners, presenting a potential pathway for utility program engagement and/or support.

On the topic of existing buildings, Chicago implemented two successful programs under the prior administration which are key context as the City looks forward. The Retrofit Chicago program is a voluntary program, primarily involving large commercial buildings, to reduce energy consumption via operational and/or capital improvements, providing recognition, technical support and lesson-sharing amongst peer buildings. The Chicago Energy Benchmarking Ordinance requires all buildings over 50,000 square feet to track whole-building energy use, report to the City annually, and verify data accuracy every three years. The law covers less than 1% of Chicago's buildings, but accounts for ~20% of total energy used by all buildings (Chicago.gov, 2018). Energy consumption data and normalized ENERGY STAR® scores are publicly reported in a city-maintained database that leverages ENERGY STAR Portfolio Manager for submissions, along with aggregated electricity and natural gas usage data available from ComEd and Peoples Gas. The city also recently rolled out a program to start posting public plaques with a 4-star labeling system based on ENERGY STAR scores. With some changes in day-to-day administration these programs have continued under the current administration.

Broader climate action planning presents an opportunity to envision the continuity or potential evolution of the programs. While a building performance standard was not a component of the original ACCC application, there is broad public awareness that a benchmarking ordinance is a requisite precursor to a BPS. The voluntary Retrofit Chicago program in some cases may be considered a conceptual precedent or case study for a more statutory program. The recent adoption of a BPS by New York, St. Louis and other U.S. jurisdictions has generated conversation among some stakeholders about the idea of a Chicago BPS. Climate action planning presents an opportunity for broader stakeholder engagement on the topic.

As with all jurisdictions engaged during this research, the ongoing pandemic and resulting economic crisis do materially impact the timing of any program that might be perceived to cause any financial burden on participating buildings. Any potential programs must be crafted

respective of the current financial and operating condition of the buildings and their inhabitants. Calls for social equity also materially shape the way any program must be conceived. At the most fundamental level, any utility program activities must follow the same stated philosophy as the new administration— doing things *with* communities, not *to* communities.

Key stakeholder contacts

1. City of Chicago: Angela Tovar, Chief Sustainability Officer
2. Chicago Department of Buildings: Grant Ullrich
3. NRDC/ACCC: Mary Nicol, Stefan Schaffer, Chris Wheat (all formerly in mayor's office)
4. Elevate Energy: Amy Jewel, Sandra Henry (both formerly in mayor's office)
5. Illinois Green Alliance: Katie Kaluzny (collaborating with mayor's office)

Likelihood of adoption

Climate action planning is expected to continue under the leadership of the new CSO, with a wide variety of strategies considered. Within that framework there is opportunity and interest for exploring the topics of advanced energy codes and building performance standards with stakeholders. There is not yet any definition of scope, goals or timeline of such programs. However, there is a clear expectation that, should such programs be pursued, utility energy efficiency programs would be part of the toolkit to make them viable.

Recommendation

We recommend the utilities continue engagement with the CSO, ACCC and its partners currently exploring a climate action framework for Chicago. The immediate next step would be to discuss and formalize with City leadership and ACCC staff specifically how ratepayer-funded and state-regulated energy efficiency programs can be employed in support of efforts underway. This is especially pertinent for Chicago given their scale and capability to be a regional leader that other municipalities could potentially imitate. Any collaboration is subject to the discretion of the City, ACCC and its partners, but proposed activities related to an advanced energy code or a building performance standard might include:

1. **Technical assistance and research**
    A. Providing definition and precedent research around potential energy code or retrofit programs, for consideration within a climate action framework
    B. Analyzing the potential of such programs to support the City's goals
    C. Assisting in the development of a "taxonomy" of potential participant buildings:
        i. Identifying and characterizing market segments
        ii. Describing technical solutions to achieve compliance
        iii. Developing a correlating taxonomy of technical assistance, incentive and/or financing programs available to participants
    D. Investigating the potential economics of a program

2. **Stakeholder engagement**

A. Representing the voice of the energy efficiency programs during the stakeholder engagement process:
    i. Communicating and investigating how potential city programs might correlate with utility program offerings, goals, budgets and regulations
    ii. Highlighting opportunities for *energy efficiency* within city programs, as defined by utility energy efficiency program state statutes
B. Supporting ACCC stakeholder engagement processes, as appropriate

3. Administration

A. Developing and assisting in any utility program evaluation processes beyond current program evaluation constructs (e.g. a market transformation approach)
B. Exploring opportunities for ongoing formal utility program collaboration and/or administrative support.

Champaign and Urbana

We spoke with both Champaign and Urbana. Their proximity can lead to common policy shared between the two municipalities, so we address them together here.

Urbana – Two policy items help frame the discussion around energy policy in Urbana. This year marks the end of a Climate Action Plan, which has included notable accomplishments in renewable energy procurement and implementation of a voluntary building energy benchmarking. Administered by Urbana, the benchmarking program actually spanned both Urbana and Champaign over several years and included an annual awards celebration. Benchmarking participation came largely from the public sector (including the City and University) and was followed by some energy efficiency interventions. Benchmarking participation has since tapered off without a mandatory requirement or funding for a city platform aside from ENERGY STAR® Portfolio Manager. In 2020 Urbana is now embarking on a comprehensive city plan. While not solely energy- or sustainability-focused, those ideas will be explored for possible incorporation throughout the comprehensive plan. Sustainability efforts are largely overseen by a Sustainability & Resilience Officer and a volunteer Sustainability Advisory Committee. With regard to potential energy programming, city budgets should be considered very limited. Compliance with the current energy code is regarded as satisfactory in Urbana, though the perception of current energy codes by the regional building industry would likely present significant challenges to momentum around more advanced code adoption. The city has seen relatively slow commercial development recently, and any energy efficiency initiatives must not be seen to inhibit development or investment. Rather, they would ideally help enable activity in the commercial sector via incentives and/or financing. A city building improvement plan is currently under development, though still likely years away from construction.

Champaign – Champaign created its first sustainability plan called Champaign Growing Greener Sustainability Plan a few years ago with grant funding, covering diverse areas of energy, water and local food and emphasizing local planning and benefits (as opposed to climate action necessarily). This plan continues to be implemented. The plan includes energy conservation, such as energy efficiency improvements to city facilities, but did not include mandatory requirements. As mentioned above, Champaign previously participated in the community-wide benchmarking program administered by Urbana. Champaign is now also in the middle of updating its Comprehensive Plan and then will begin to focus on a comprehensive neighborhood planning program, renewing a past effort called the Neighborhood Wellness program. Housing attainability and rental housing conditions are an emerging challenge for both Champaign and Urbana, likely making city officials sensitive to anything that would be perceived to increase housing costs. This challenge is relevant, as multi-family buildings are considered commercial building permits. Construction activity is relatively strong in Champaign, with $130 million in construction this year, despite the pandemic. Compliance with the current state energy code is considered satisfactory in Champaign, though here again perceptions of the code by the regional building industry would likely present challenges to a more advanced code. Code updates are a heavy lift and typically garner

concerns about incremental cost. Particularly in light of the COVID-19 pandemic, Champaign budgets should be considered very limited in regard to any potential programming. A previous, formal partnership between Champaign and Ameren around residential improvement incentives was considered successful but was ended abruptly, reportedly without notice despite a contractual agreement and causing consternation among some resident participants. Champaign is very open to renewed collaboration that leverages utility funding.

Initial feedback from both communities suggests there may be opportunities for programming geared toward overlay districts where commercial buildings are concentrated and where life safety and other improvements of existing buildings may be needed. Given the lack of community pull for advanced codes or mandatory retrofit programs, and experiences with prior sustainability initiatives, any programs may need to be opt-in and must offer incentives or financing to building owners. Financing may enable more aggressive energy plans. Property assessed clean energy (PACE) financing is not yet offered in either city or Champaign County but there is awareness by both cities of the potential benefits of PACE for the communities and strong interest for PACE to be executed at the county level.

Initial contacts

- Lacey Rains – Senior Planner, City of Champaign
- Randy Smith– Bldg Safety Supervisor/Public Information Officer, Champaign Fire Dept
- Scott Tess – Sustainability & Resilience Officer, City of Urbana
- Stacy Gloss – Chair, Sustainability Advisory Commission (volunteer), City of Urbana

Likelihood of adoption

Based on municipal context and feedback from initial stakeholders, wholesale adoption of stretch code or building performance standard is not possible in the foreseeable future. Regarding those tactics specifically there is no "pull" from the community for which the utility could provide resources or assistance. A policy "push" from Ameren could even be a community relations concern, regarded with severe resistance and/or suspicion.

The municipalities are, however, potentially interested in other forms of collaboration with Ameren. Creative discussion suggested a few ideas:

- **Ameren engagement on a PACE financing offering**— PACE is regarded as a viable reinvestment driver for the existing building stock in both communities. Initial discussions proposed the novel idea of Ameren collaboration with PACE program administration at the county level.
- **Incentive program collaboration** – Strong, opt-in incentive programs are considered requisite to driving any energy efficiency investments in the Champaign/Urbana private sector. The breadth of the Ameren program portfolio was not discussed during interviews but may warrant more extensive conversations with city officials and community stakeholders. The cities have in the past collaborated with Ameren in the promotion of energy efficiency programs, and it may be valuable to again explore

applications of the current portfolio as well as potential gaps in serving the community and any shortcomings of past utility/city collaborations.

- **Energy benchmarking assistance** – Small and medium sized cities will have difficulty providing the resources to launch and maintain a standalone energy benchmarking program. However, a benchmarking platform administered by others could be adopted by cities like Urbana and Champaign who lack benchmarking resources but have an interest in potential programming that leverages real world data to prioritize and call attention to energy efficiency opportunities in a way that clearly benefits their communities.

Recommendation

Currently, we do not see opportunity for direct engagement with Champaign and Urbana to advance energy stretch codes or building performance standards, the original focus of our investigation. A more limited engagement around a set of public facilities is also not recommended as it would be considered a re-run of prior energy efficiency efforts. However, there may be opportunity for alternative engagements between the Ameren energy efficiency program and city leadership, as described above. Should the Ameren energy efficiency portfolio see opportunity for such exploration, a stakeholder engagement process is recommended via several channels:

- Additional local officials such as:
    - Community development officials, building safety departments and other officials within city administrations
    - Champaign County leadership
    - Champaign County Regional Planning Commission
- Local community groups such as:
    - Champaign Sustainability Network
    - Champaign Developers Forum
- Urbana comprehensive city plan process
- Broader discussions regarding a potential statewide benchmarking platform

Lastly, while Champaign and Urbana are not members of the Metropolitan Mayors Caucus, they do frequently coordinate, and if a municipality/utility initiative is crafted in the northern regions of the state out of that engagement channel (see below) there may be opportunity for program collaboration with municipalities downstate in an aligned fashion.

Evanston

The city of Evanston is presently beginning a stakeholder engagement process around their climate action plans, including the adoption of an energy stretch code, providing an immediate opportunity for ComEd and Nicor to support its development and investigate synergies with the utility energy efficiency programs.

Evanston also does have a benchmarking ordinance[1] that passed in 2016. They do not have any *immediate* plans to pursue a retrofit ordinance, but this is in no small part due to the ongoing COVID-19 pandemic and resulting economic hardship imposed on the commercial building sector. Evanston has made the decision to suspend reporting on their benchmarking ordinance in order to appease the struggles of small businesses due to the pandemic. They will resume mandatory benchmarking eventually and have expressed interest in exploring a retrofit ordinance sometime in the future. When that process does begin, it will likely begin with a strong public engagement process first.

In the meantime, the largest opportunity for Evanston right now is around building energy codes. The City of Evanston has plans to explore a stretch energy code for new commercial buildings within their city limits through a public engagement process. City officials are already supportive in theory, but having a transparent and public process around its adoption is a key component for the City to continue supporting the effort. The City is also open to exploring utility involvement in the adoption and implementation of the policy, but would like to participate in development of compliance assistance to ensure it works within Evanston's current permit approval processes (meaning the dissemination of the program *may* need to happen through the City permit process itself) and addresses the biggest potential non-compliance concerns. Evanston is also interested in technical assistance, such as understanding the energy savings potential of a stretch code. Evanston has also expressed interest in obtaining assistance with increasing compliance with their current energy codes; fixing any issues with non-compliance with the state code first is likely an important talking point to adopting a stretch code that goes beyond the state code.

The stretch code public engagement process is about to begin in Evanston in earnest. City staff has already been primed, but the City is awaiting the final publication of the 2021 IECC (expected in October 2020). As Illinois is expected to adopt the 2021 IECC (potentially amended), the final version of the 2021 IECC will determine the policy language under consideration for a stretch energy code. Once it is published, Evanston will likely begin public stakeholder meetings.

While utility energy efficiency programs are mandated and regulated by the state, it should be noted that Evanston's franchise agreement with ComEd expired in September 2020 and has not

[1] https://www.cityofevanston.org/home/showdocument?id=5568

yet been renewed. City officials involved in energy or sustainability planning may also be engaged in franchise agreement discussions with the company.

Initial stakeholders

- Kumar Jensen – Chief Sustainability and Resilience Officer at City of Evanston

Recommendation

We recommend engaging Evanston leadership to discuss and formalize specifically how ratepayer-funded and state-regulated energy efficiency programs can be employed in support of stretch code advancement efforts they have underway. Proposed activities might include:

1. **Technical assistance and research**
    A. Providing definition and precedent research around advanced energy codes
    B. Researching and presenting stretch code technical pathways for stakeholder discussion
    C. Analyzing the energy potential of such programs to support the City's goals
    D. Investigating the potential economics of stretch codes and offering solutions to financial concerns
2. **Stakeholder engagement**
    A. Representing the voice of the energy efficiency programs during the stakeholder engagement process by:
        i. Communicating and investigating how potential city programs might correlate with utility program offerings, goals, budgets and regulations
        ii. Highlighting specific opportunities for improved energy efficiency within the stretch code, as defined by utility energy efficiency program state statutes
        iii. Supporting adoption of the stretch code by highlighting program elements that facilitate its implementation for the building sector (such as technical assistance and incentives)
3. **Administration**
    A. Developing and assisting in any utility program evaluation processes beyond current program evaluation constructs (e.g. a market transformation approach)
    B. Exploring opportunities for ongoing formal utility program collaboration and/or administrative support.

Strategic Importance

We also emphasize that while Evanston alone, with a population of ~74,000, represents a relatively small incremental energy savings opportunity, its position as the first-moving, lead municipality is of strategic importance to the regional opportunity for stretch codes. Evanston has an opportunity to create a model and a case study for other municipalities to follow, and for the utility programs to help propagate.

Metropolitan Mayors Caucus

A large opportunity lies in building momentum for collective action across the Chicago metropolitan region. The Metropolitan Mayors Caucus (MMC) represents an opportunity to engage an array of municipal leaders together and has a history of successful shared initiatives around clean energy goals. Under the recent SolSmart initiative, for example, 45 Illinois communities were recognized for their efforts to encourage solar energy growth and remove obstacles to solar development at the local level; the largest participation by far of this national effort.[2]

Recently, 131 communities encompassing 6 million residents have adopted the Greenest Region Compact[3], a collaborative framework for sustainability goals that has resulted in tangible activities. The Greenest Region Compact includes initiatives such as energy benchmarking, setting energy use goals, increased compliance with energy codes, and adoption of stretch codes. The MMC is also one of four city-regions in the United States chosen to work with the European Union to create a regional climate plan aligned with the Global Covenant of Mayors for Climate and Energy[4].

MMC initiatives are typically at the behest of its member mayors, as opposed to proposed by external parties. However, initial discussions with MMC indicate potential interest from a group of mayors to engage the utilities in a broad, exploratory discussion around municipality/utility program collaboration. Initial conversations with MMC staff highlighted that elected officials generally see appeal in programs that could lead to *recognition* for the community or programs that provide valuable services to their community, particularly to low-income constituents. Voluntary or public sector focused programs may be more likely in the near term, but for some municipalities more statutory programs like energy stretch codes or performance standards may be of interest, particularly if tied to overarching community energy planning, goals and recognition. There is widespread interest in the overarching activity of community energy planning— defined somewhat differently for the various communities based on their makeup, needs and priorities. Utilities could potentially fill needs for support and technical assistance around a variety of activities like policy support, energy profiling, stakeholder engagement support, data tracking and reporting, incentive program partnerships, financing and public recognition.

Any engagement should also be cognizant of a likely desire by mayors for such a collaboration to put the cities in the public-facing leadership role. Branding an initiative publicly as utility-led may be perceived to create political barriers, and some cities have expressed concern with being publicly tied to ComEd during its current legal situation. But mayor's offices are typically short

[2] https://mayorscaucus.org/solsmart/

[3] https://mayorscaucus.org/initiatives/environment/rec/

[4] https://globalcovenant-usa.org/news/gcom-usa-regional-and-metro-scale-climate-leaders-announced/

on technical and administrative support to achieve their goals, so partnership with utility program efforts is a distinct possibility.

While representing 275 communities in the Chicago region, the MMC only has 4 communities with energy or sustainability managers. COVID-19 has impacted all of these communities in myriad ways, especially those without dedicated energy employees. One option may be to explore how energy efficiency policies may assist these communities in COVID-19 recovery, as this may be an immediate priority, and energy efficiency may have a clear correlation to reducing energy bills and improving indoor air quality in buildings.

Initial stakeholders

- Edith Makra, Director of Environmental Initiatives at Metropolitan Mayors Caucus

Likelihood of adoption

There is broad awareness by MMC members of energy codes as a tool to support community energy goals, with some members even recently engaging at the national level to update the model code, IECC 2021. Further direct engagement with mayors via the MMC will be required to understand the likelihood and timing of adopting energy *stretch* codes, as well as interest in programs addressing existing buildings. As described above, there will likely be interest in municipality/utility collaboration under the broad heading of community energy planning. Even if an engagement starts as voluntary or public sector focused, it could lay foundations for more statutory or private-sector focused energy efficiency mechanisms in the future. Furthermore, based on its unique position as advisor and convener to 130+ communities on sustainability topics, the MMC channel should be considered mandatory for building momentum across the region.

Recommendation

Hold an exploratory discussion with a group of MMC mayors to explore their needs and interests under the broad realm of community energy planning. Under this heading we can explore interest in the specific ideas of energy stretch codes or retrofit ordinances, per the original intent of this research project. We can also address opportunities for utility support around energy planning more broadly across public sector energy uses, low-income services, voluntary residential or commercial/industrial program collaboration, smart cities initiatives, COVID-19 recovery opportunities, and more.

Subsequent activities would be contingent upon the interest and priorities of MMC members.

Conclusions from Municipal Engagement

Initial outreach indicates that potential pathways exist to advance stretch codes and building performance standards, with city-led stakeholder engagement imminently starting on both topics. Activities range from immediate- to long-term, as summarized in Table 1. Evanston and Chicago can likely serve as pilot engagements, followed by a scaling channel through a group of mayors in the MMC who are interested in community energy programming and regional cooperation.

It should also be noted that codes and standards programs have a relatively long time horizon for planning and implementation compared to traditional resource acquisition programs. Ordinances require stakeholder engagement processes to arrive at an ordinance, which may be followed by working groups to develop details and administration of a code or standard before full launch. With regard to utility program year savings forecasting, it is important to keep in mind construction timelines and state adoption cycles in the case of stretch codes and multi-year compliance cycles in the case of a BPS.

Table 1 - Summary of municipal engagement opportunities

	Stretch Codes	**BPS**	**Energy Planning**
Evanston	**Immediate:** City-led stakeholder engagement expected to start in Fall 2020. *Note: Also interested in state energy code* ***compliance*** *via separate MEEA-led code compliance program*	**On hold**: Benchmarking challenges due to COVID-19. No BPS activity currently planned.	*See MMC, below.*
Chicago	**Near term:** City & partners expected to lead stakeholder engagement process in 2020/21.	**Near term:** City & partners expected to lead stakeholder engagement process in 2020/21.	*Not discussed.*
Metropolitan Mayors Caucus (representing 130+ jurisdictions)	**Near/medium term:** Strong interest by MMC mayors around codes may result in near term explorations of *stretch* codes. MMC is the channel for regional momentum.	**Near term:** Requisite benchmarking programs not currently in place beyond Chicago and Evanston. But strong interest in community energy programs may present a path to retrofit	**Near term:** Strong interest and collaborative framework for community energy programs. In need of external support.

	*Note: Also interested in state energy code **compliance** via separate MEEA-led code compliance program.*	policies. MMC is the channel for regional momentum.	
Urbana/Champaign	**Long term:** Currently no community "pull" for stretch codes, so likely no activity absent broader region/state momentum.	**Long term:** Would require benchmarking support. Currently no community "pull" for BPS, so likely no activity absent broader region/state momentum.	**Near term:** Strong interest and collaborative framework for community energy programs. In need of external support.

Another lesson learned is the connection between code compliance and stretch code adoption. Improved compliance with the base state energy code can indirectly help facilitate the adoption of stronger codes. First, many mayors will not want to take the initiative for a stretch code if their jurisdiction is struggling with compliance of the state code. Second, certain cities have strong energy code compliance, while others do not. This can potentially make it more difficult for jurisdictions to adopt stronger policies if they hear the argument that people will just build "on the other side of the border" to take advantage of the weaker energy code. While this rationale has not been actually observed in practice (people usually build based on location, rather than what the code is), the argument has proven to deter policy progress and make mayors less likely to adopt stretch codes. Strong overall statewide energy code compliance, especially as the base energy codes are updated, can thus indirectly influence the likelihood of stretch code adoption. If possible, code compliance should be taken into consideration when advancing and creating programs around stretch energy codes.

Statewide Policy Engagement

We also recommend continued monitoring of state level policy activities that might facilitate or change the adoption and momentum of stretch codes or building performance standards broadly across the state. For example, state-level policy could create a framework for the development of a standard Illinois energy stretch code or building performance standard that would be available for voluntary adoption by municipalities. This type of development would be a large help in either type of statute gaining traction more broadly.

Such a framework would likely create a stakeholder working group to draft and maintain the standards, within which the utility energy efficiency programs could have a voice and provide assistance (in which the utility program could have a significant role). Slipstream and MEEA continue to monitor state level policy developments that might *support* our current efforts, but advancement of stretch codes or building performance standards by individual municipalities is possible today and is not *contingent* upon state action toward standardization.

Another possibility is that the current energy code adoption process, which is on a three-year cycle, decides to adopt a very strong state code rather than adopting a national model energy code and amending it, like the state typically does. The adoption process, which will begin in early 2021, should be monitored closely. As mentioned in the Slipstream 2018 white paper[5], utility support in advancing the state energy code is also a potential claimable energy savings opportunity for the utilities. Since the IECC 2021 model code is already published nationally, the specific opportunities to influence the state's adoption into IL-ECC 2021 would be around any potential amendments to the model code. This opportunity has not been quantified in this interim report and requires further investigation with state level officials. The utilities are not voting members in the Illinois statutory code adoption process, so other indirect channels for support and attribution would need to be explored to drive adoption of higher efficiency amendments to the model code.

Initial stakeholders

- Illinois Capital Development Board (CDB)
- Illinois Governor's office and/or energy task force
- Municipalities, code officials and other stakeholders engaging in adoption process

Likelihood of adoption

By statute the state of Illinois is required to review and consider for adoption the latest version of IECC within a year of its publication, meaning in 2021 the state will begin its IECC 2021 review process shortly and through much of 2021. At this point no indication has been made of

[5] *Code Advancement Programs: Opportunities in Illinois.* Prepared for ComEd by Seventhwave (now Slipstream), 2018.

potential amendments or incorporation of optional appendices that will be considered by the Capital Development Board, voting code committee members or other public stakeholders.

Model stretch codes or building performance standards could alternatively be produced via new Illinois energy policy, but there is currently little clarity on the likelihood or timing of any such legislation.

Recommendation
Immediate next steps would involve a discussion with the Capital Development Board to discuss this opportunity. This discussion would be around two topics:

1. **Development of the IL-ECC 2021 base code** – What is the expected adoption schedule? Is IECC 2021 expected to be adopted in full, or with amendments? If specific amendments are being considered, could the utility program assistance help drive toward more advanced energy efficiency more viable?
2. **Development of a state model stretch code within IL-ECC 2021** – Through our research we have found potential interest from municipalities in a stretch code, and it may be advisable to create a unified stretch code to avoid municipalities adopting myriad individual versions. Could a model stretch code be incorporated within the current statutory code update process, for example as an optional appendix? If so, can the utilities provide assistance in its development?

If there is willingness from the state to develop a stretch code with the code adoption process, the utility programs can help facilitate input from municipal and code official stakeholders. And as described in detail above, the utility programs would work with municipalities to adopt the ultimate stretch codes— whether following a state model code or developing their own.

We would also likely engage the governor's office staff or energy task force to let them know opportunities for energy codes to support climate goals immediately without new legislation.

Evaluation Framework

Based on conversations with stakeholders in a special IL-SAG session on July 22, 2020, two potential pathways exist for utilities to claim savings from a codes and standards program. Stakeholders expressed opinions that either pathway could be acceptable, and the preferred option depends on the nature of the ultimate program. They recommended focusing first on designing codes and standards programs to be effective, addressing the opportunity and needs of partner jurisdictions. Then the evaluation method can be selected and further developed, based on the program design. In either case attribution methodologies will be key, accounting for upfront activity to support codes and standard development followed by savings later when actual energy-saving projects are realized. Interaction between statutory programs and opt-in incentive programs should also be addressed.

Leverage current resource acquisition program

One evaluation path essentially leverages codes and standards programs to drive increased participation within the current portfolio of utility energy efficiency programs. Programs currently exist in all utility portfolios to encourage buildings to voluntarily surpass the requirements of the state baseline energy code in new construction and applicable renovations. Implementation processes and infrastructure are in place to calculate and claim modeled ex ante energy savings of the built project compared to a theoretical code baseline. If municipal stretch codes mandate that *all* construction activity within the jurisdiction would be required to surpass the state baseline, all projects would demonstrate ex ante savings. Existing program frameworks can be used to calculate and submit ex ante savings on a unit basis. Voluntary program enrollment could be increased naturally or due to deliberate education and technical assistance collaborations between the municipalities and utility programs.

Similarly, all utilities currently offer programs to realize energy savings within existing buildings via voluntary capital and operational improvements. A statutory retrofit program would drive increased enrollment in those programs.

Market transformation approach

A mature program may be better served using a "top-down" market transformation (MT) approach to savings evaluation. While the IL-SAG market transformation policy is still in development, it is expected that this approach accounts for program impacts on the market in aggregate, likely using a longer purview than individual program years. Instead of calculating savings on a unit basis, MT accounting processes might for example develop procedures for market characterization and participation within participating jurisdictions. Such procedures are subject to future development.

Attribution

Under either the RAP or MT approach, a key assumption is that the utilities influenced the implementation of the statutory municipal codes or standards programs themselves. This would allow program attribution on an ongoing basis after the statute is in place and projects

are statutorily mandated to comply. A key component of a utility codes and standards program engagement with municipalities will be documentation of engagement and influence on the programs themselves. Attribution methodologies are subject to future development, but IL-SAG members expressed that other markets have utilized various approaches such as negotiated attribution or Delphi panels and implied that these methods could be applicable in Illinois as well. It will also be important to create an attribution framework that can be adjusted or recalibrated as a program evolves.

Financial Incentives

Under either the RAP or MT approach, key questions remain about the need and eligibility for customer financial incentives from energy efficiency programs. Preliminary feedback from municipalities suggests that ongoing utility financial incentives may be regarded and lend significant stakeholder support as part of the solution package to make adoption of a stretch code or BPS viable within a community. In some examples of other U.S. jurisdictions with a stretch code or BPS in place, the policies were crafted to ensure that utilities would still be able to serve and claim savings from complying buildings, with customer incentives remaining after adoption of the statute.

Service Territory Technical Potential

As a starting point to gauge the broad potential of stretch code or BPS utility initiatives, we estimated total gross savings potential across service territories. While not expected to be achieved immediately, this technical potential provides an informative upper bound to program potential if broad adoption and market transformation is achieved.

Savings Estimation – Methodology

We started the savings estimation process with a thorough literature review to understand how stretch codes can be implemented and potential savings. A pathway with achievable goals for customers, while maximizing savings, is critical to the success of a stretch codes programs and can enable utilities to develop programs to deliver maximum savings.

The most efficient new construction building is a net zero facility and stretch codes can be channeled to achieve this target. While zero energy buildings (ZEB) require significant design and construction effort, it can be achieved in discrete steps with gradual increase in new construction energy efficiency towards the net zero goal. Based on projected building efficiency and construction trends, the Department of Energy has laid out a path by which that states can adopt zero energy code policy by 2030, new construction compliance with zero energy code by 2040 and all existing building retrofits be complete by 2050 (Northeast Energy Efficiency Partnerships, 2017)

We reviewed how stretch codes have been implemented in other U.S locations. In 2010, Massachusetts implemented performance based stretch code as an appendix to the state building code. It requires that new construction buildings use 20% less energy than the current base code. In 2018, New York's stretch code program's target was 10-15% increase in efficiency beyond IECC 2015 (Northeast Energy Efficiency Partnerships, 2017). Seattle's 2015 Commercial Seattle Energy Code sets an EUI target, which needs to be met through simulation and within three years of measured performance. Boulder, CO is working towards a zero energy goal by 2030 with energy targets set by building type. It is important to note that the net zero ready targets do not include the impact of renewable energy integration (Carbonnier, 2019).

New Buildings Institute has developed zero energy targets for various building types based on their Getting to Zero database and various other simulation studies. 70% of the data for this target setting is from measured data, and the rest was based on simulation studies. Table 2 provides site EUI for net zero enabled new construction targets for climate zone 5A (Carbonnier, 2019).

Table 2- Zero energy enabled new construction targets for Climate zone 5A

Building Type	**Site EUI target (kBtu/sf/yr)**
Primary school	28
Low rise apartment	24

Medium office	24
Small office	18
Secondary school	25
Public assembly	30
Standalone retail	26
Mid-rise apartment	26
Strip mall	39
high-rise apartment	33
Warehouse	11
Small hotel	38
Fire station	33

We used these targets in developing the stretch code pathways discussed in this report. We used data from the 2019 ComEd New Construction program as baseline for current new construction performance and developed two different pathways for stretch code towards this goal.

Stretch Codes

Baseline savings

We estimated savings potential from stretch code using the following steps –

- Estimate current annual savings from energy efficiency programs (Baseline savings, IECC 2018)
- Estimate savings under IECC 2021, based on IECC 2021 proposals under review (Baseline savings, IECC 2021)
- Estimate statewide potential savings from stretch codes
    - Option 1 – Accelerated code pathway
    - Option 2 – 15% increase in savings from current code version
- Apportion savings to Illinois utilities

The first step in our analysis was to document current claimable savings from IECC 2018. We used the ComEd New Construction program as the benchmark to estimate baseline savings. We used 2019 as the baseline year and documented major building types, total square footage and actual savings reported.

The five major building types were offices, hospitals, multifamily, warehouse and supermarket. Together, these five building types accounted for 21,711,889 sq.ft, 21,900,390 kWh and 398,132 therms. This represents 86% of total 2019 program square footage. This current rate of savings from the ComEd new construction program is 1.01 kWh/sf and 0.0183 therms/sf.

IL may adopt IECC 2021 as the statewide energy code sometime in 2021, which will impact savings from energy efficiency programs. We reviewed IECC 2021 and projected variation in ComEd new construction program participant gross savings under the new code. Our estimate

for "baseline" gross savings *from program participants* under IECC 2021 is 0.7 kWh/sf and 0.0198 therms/sf. The variation in gross energy savings from IECC 2018 to IECC 2021 is -0.31 kWh/sf and -0.0015 therms/sf.

In the prior code update cycle, IECC 2018 was published in 2017 and adopted in July 2019 by Illinois. In this study, we are assuming a similar timeline for IECC 2021 adoption, although there may be delays due to COVID-19.

Option A. Accelerated Code Pathway

A potential pathway for stretch codes in Illinois is to adopt (anticipating or approximating as needed) the next version of the code, three years ahead of its statewide adoption mandate. For instance, if this pathway for stretch codes was adopted in 2021, new construction will require compliance with the anticipated IECC 2024, including the reference to the ASHRAE 90.1-2022 alternative compliance path. The next code cycle beginning 2024, will require compliance with IECC 2027, including potentially again referencing ASHRAE 90.1-2025 and so on. This pathway will offer increased savings ahead of the standard code adoption cycle.

We reviewed decrease in energy use from each ASHRAE code cycle since its inception in 1975. While the initial code cycles showed higher reduction in building energy use (14%), the most recent reduction has been 7.5% and 6.8% from 90.1.2013 and 90.1.2016, respectively (Northeast Energy Efficiency Partnerships, 2017). We assumed 6.8% as the 'typical' reduction in energy use per code cycle till buildings achieve net zero ready status.

Using the accelerated code pathway, the savings is about 0.75 kWh/sf and 0.0212 therms/sf, compared to typical ComEd new construction program participant gross savings under the IECC 2021 baseline of 0.7 kWh/sf and 0.0198 therms/sf (Table 3)

Option B. 15% increase over current code version

An alternate option to the accelerated code pathway is set a standard reduction in building energy use with each code cycle. NEEP recommends a stretch code policy that exceeds current state adopted building energy code by 10-20% (Northeast Energy Efficiency Partnerships, 2017). For instance, new construction commercial buildings in 2021 will need to be 15% more efficient than ASHRAE 90.1.2019 or IECC 2021. The next code cycle starting 2024 will require 15% higher efficiency than the 2021 targets, and so on. This pathway will offer increased savings ahead of the standard code implementation cycle. The savings target could be adjusted by municipalities depending on resources available to advance energy efficiency. In territories without wide access to technical support and incentives from utility energy efficiency programs, the target energy reduction percentage can be adjusted (e.g. 10%) based on available resources and expected compliance rates.

Using this pathway, the savings estimate is about 0.81 kWh/sf and 0.0228 therms/sf, compared to typical ComEd new construction program participant gross savings under the IECC 2021 baseline of 0.7 kWh/sf and 0.0198 therms/sf (Table 3)

Table 3- Savings per square foot - Baseline and Stretch code pathways

Code version	Electric savings (kWh/sf)	Gas savings (Therms/sf)
IECC 2018	1.01	0.0183
IECC 2021	0.70	0.0198
Accelerated code pathway	0.75	0.0212
15% increase over current code	0.81	0.0228

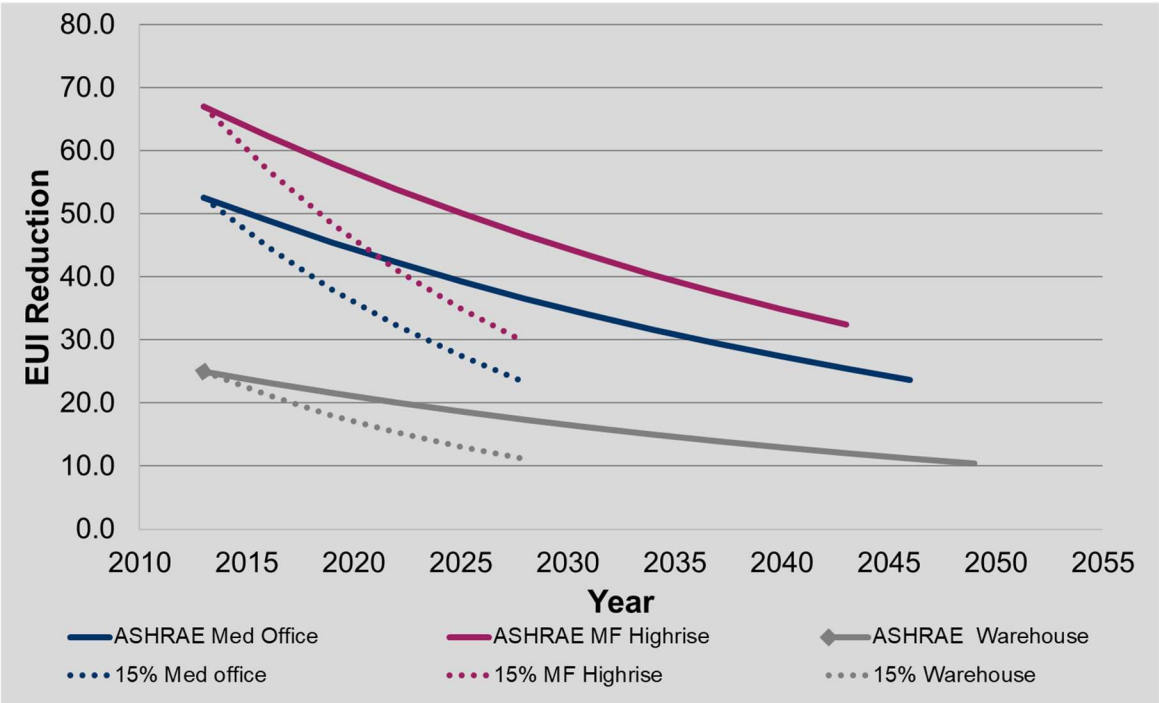


Figure 1: Stretch code pathways - Accelerated code and 15% target reduction

Table 1Figure 1 illustrates the two stretch code pathways discussed in this report towards the net zero enabled new construction in Illinois for three major building types – medium office, high-rise multifamily and warehouse. As seen in Figure 1, the accelerated code pathway achieves goal EUI's between 2040-2050, while the 15% reduction achieves the target by 2030.

Illinois statewide savings potential

We used the projected savings per square feet from stretch codes to new construction square footage across Illinois to calculate the statewide savings potential from stretch codes.

We used Dodge data from the year 2019 to determine total commercial new construction across the state (67,139,000 sf). We assume that historically 50-60% of new construction square footage has participated in utility energy efficiency programs via the dedicated new construction offerings or other prescriptive or custom programs. Table 4 shows the current baseline savings and potential savings from the suggested stretch code pathways.

Table 4- annual gross savings from Stretch Code adoption

	Annual gross savings from new construction offerings IECC 2021 (Baseline)	**Potential annual savings from stretch codes - Accelerated Code**	**Potential annual savings from stretch codes - 15% target**
Total NC area	53,711,200	53,711,200	53,711,200
Percentage participation in EE programs	60%	100%	100%
Area impacted	32,226,720	53,711,200	53,711,200
Electric savings (kWh/sf)	0.7	0.75	0.81
Gas savings (therms /sf)	0.0198	0.0212	0.0228
Statewide gross potential electric savings (kWh)	22,571,912	40,215,622	43,262,830
Statewide potential gas savings (therms)	638,149	1,136,969	1,223,120
Increase in savings compared to IECC 2021 baseline (%)	-	**78%**	**92%**

Savings potential by utility territory

As the final step in stretch code savings calculation, we apportioned savings potential by utility territory.

We used County Permit Allocation database for 2017 to estimate claimable savings for each utility territory. **Error! Reference source not found.** illustrates potential electric and gas annual gross savings for program years 2022-2024, where a stretch code would deliver savings beyond a forthcoming statewide IECC 2021 baseline savings for each utility in Illinois.

Table 5: Stretch code annual gross savings technical potential by utility territory

Utility	Annual program area (sf)	Annual gross savings from new construction offerings IECC 2021, (Baseline)	Potential annual savings from stretch codes - Accelerated Code	Potential annual savings from stretch codes - 15% target	Average increase in gross annual savings
ComEd (kWh)	48,474,208	16,975,906	36,294,487	39,044,584	20,693,629
Ameren Elec (kWh)	5,519,745	*TBD*	4,132,843	4,445,996	*TBD*
Ameren Gas (therms)	4,714,154	*TBD*	99,790	107,351	*TBD*
Nicor (therms)	32,472,094	321,504	687,376	739,459	391,914
Peoples/North Shore (therms)	16,807,706	166,412	355,789	382,748	202,856

Note that due to conservative assumptions for construction activity and savings per square foot in this study, projected IECC 2021 (Baseline) program savings may differ from projections generated by administrators of current programs.

Actual savings may vary considerably based on myriad factors such as actual new construction square footage per year, the ultimate stretch code pathway adopted, code adoption timelines, building type mix, etc. This study illustrates two hypothetical stretch code pathways that deliver 6.8% and 15% energy reduction, respectively, compared to the code baseline.

Pathway to Net Zero Enabled new construction

We estimated the time required for buildings to achieve net zero enabled (NEB) status using stretch code pathways. We used New Building Institute's recommended targets for NEB's in climate zone 5A and evaluated both stretch code pathways towards this end goal (Carbonnier, 2019).

Using the accelerated code pathway, the energy use in buildings drops by 6.8% for every stretch code cycle and allows major new construction building types to achieve the targets 2037- 2046. Using the 15% standard reduction pathway, the energy use in buildings drops by 15% per stretch code cycle, and this allows for reaching target energy use indices between 2025 – 2034. Figure 1 shows the pathway to net zero enabled new construction in Illinois from adopting one

of the two stretch code pathways discussed in this report. These targets do not include the impact of renewable energy in new construction.

Building Performance Standard

A Building Performance Standard (BPS) is a policy that establishes high performance targets for existing building stock and drives buildings to achieve it. Because it is typically performance-based, it can be achieved by a broader and/or deep approach to any components of building performance, achieved by whole building tune-ups, audits, lighting upgrades etc., over the course of a BPS compliance period. While a BPS may establish long term goals for the building stock towards achieving a policy goal, e.g. carbon neutrality, the specific building upgrades are at the discretion of the building owner and designer. Thus, buildings can likely participate in utility energy efficiency programs to achieve their higher performance, benefiting from technical assistance and cost incentives and/ or rebates. The process also increases collaboration between cities, utilities and the private sector to promote long term energy efficiency (Institute for Market Transformation).

As the first step in developing BPS programs for Illinois, we reviewed existing BPS initiatives across the country to understand performance targets and timeframe to achieve the goals. A recent ACEEE report identified six BPS programs in operation in North America, another six proposals pending and numerous other with policies that can be considered stepping stones to a proper BPS (Nadel, 2020). Table 6 provides a sample of such programs operational or under development across the U.S., which can inform assumptions for the technical savings potential of future programs.

Table 6- Sample of Building Performance Standards across the U.S. (Nadel, 2020)

City	Timeline	Basis	Savings target
New York City	First cycle 2024-2029	Carbon emissions intensity	Commercial, multi-family buildings >25,000 sf 40% reduction by 2030, 80% reduction by 2025.
Washington, DC	First cycle 2021-2026	ENERGY STAR score	Commercial, multi-family buildings >10,000 sf Three pathways: • Reduce Energy Star score to below set target by building type • Reduce normalized energy use by 20% • Implement a set of prescriptive requirements which will result in a 20% energy use reduction
St. Louis, MO	First cycle 2021-2025	Site energy intensity	Commercial, mult-family buildings >50,000 sf Top 65th percentile of site energy use by property type are required to improve building performance.

Cambridge, MA (Pending)	5-year cycle	GHG emissions (2019-2020 baseline)	Commercial, >25,000 sf. Carbon neutral by 2050. 20% emissions reduction every 5 years, in each building. 80% reduction by 2040; zero emissions by 2050.
Colorado (Pending)	First cycle 2024-2029	GHG emissions (2005 baseline)	Public >5000 sf and private >50,000 sf. 20% GHG reduction by 2030. 90% reduction by 2050. 4 compliance pathways, including EnergyStar target, EnergyStar score, EUI score and EUI targets. improvements.
Montgomery County, MD (Pending)	TBD	TBD	Commercial, >50,000 sf. Pending >25,000 sf and multifamily buildings. County considering Washington, DC approach.

New York city and Washington, DC., have two of the most rigorous and well-established BPS in the U.S. New York City's Local Law 97 (LL 97) targeted at the largest 50,000 buildings in the city, which represents 5% of the building stock but uses 60% of all energy use in buildings. It sets carbon intensity limits for 20% of the worst performing buildings in its first cycle from 2024 – 2029, and for 75% of the worst GHG emitting buildings in the next cycle from 2030 – 2034. While NYC's targets are based on carbon emissions, DC uses Energy star score for target setting and to measure progress. DC requires a performance standard for each building type category that is no lower than the median Energy Star score for that building type. Buildings owners can choose one of three potential pathways, which includes reducing Energy Star score to below set a target, reducing normalized energy use by 20%, or implementing a set of prescriptive requirements which will result in a 20% energy use reduction (Majersik, 2019).

In 2020, St. Louis, Missouri has passed the first BPS in the Midwest with a target for 100% GHG emissions by 2050. The ordinance is targeted towards all commercial buildings over 50,000 sf. Buildings in the top 65th percentile of site energy use by property type are required to improve building performance in each BPS cycle. The first implementation period is May 2021 – 2025 and will continue to operate on a four-year cycle (Cliff Majersik, 2020).

A few other jurisdictions have implemented a prescriptive approach to improve efficiency of specific building components. While this approach is not as comprehensive as a BPS, the process can still increase savings in the existing building stock. Austin, TX requires all multifamily properties with EUI over 150% of the average to reduce energy use by 20%. The Boulder Building Performance Program in Boulder, CO requires all lighting upgrades to be complete between 2021-2025. It also mandates energy audits and retro-commissioning every 10 years in facilities over 20,000 sf. New York City's Local law 88, 132, 134 requires lighting upgrades for compliance with New York City Energy Conservation Code standards by 2025. Local law 87 requires ASHRAE level 2 audit and RCx every 10 years in facilities over 50,000 sf (Nadel, 2020).

Another indicative precedent for a local BPS is the Retrofit Chicago Energy Challenge, a *voluntary* program by which dozens of commercial buildings have pledged to implement operational improvements and equipment upgrades to achieve 20 percent energy reduction over 5 years (Retrofit Chicago, 2014).

Chicago savings potential – BPS

We estimated potential savings in Chicago from adopting a building performance standard. We used the Chicago benchmarking database (Chicago.gov, 2018) as the baseline for current energy use across the city. Informed by the precedent programs noted above, our assumed, hypothetical target is 15% energy use reduction in existing buildings over 65th percentile by site EUI on a five-year cycle. In other words, the highest energy use in each building category (top 35th percentile) in this scenario would be mandated a retrofit that will lower its energy use by 15% in each BPS cycle. Assuming a BPS ordinance is passed in 2021, Table 7 and Table 8Table 7 summarizes energy consumption and gross savings from the first cycle of implementing a BPS by major building type and across the city, respectively (2022 – 2026) .

Table 7: Annual energy consumption by Chicago benchmarked building stock, pre- and post-BPS.

	Office	Hotel	Multifamily	School	Hospital	Other
Baseline electric use (MWh)	2,527,876	427,308	2,035,464	417,312	638,170	744,874
Post BPS electric use (MWh)	2,290,570	378,702	1,832,976	371,680	570,503	686,108
Baseline gas use (therms)	25,039,007	17,694,864	142,309,578	21,995,031	29,996,498	16,467,702
Post BPS gas use (therms)	21,779,488	15,394,403	124,834,112	19,443,740	26,743,582	14,787,800

Table 8: Chicago BPS gross savings technical potential for one compliance cycle of 5 years

	Annual fuel consumption of benchmarked building stock (>50,000sqft)	Potential savings from BPS in one compliance cycle (5 years)	Overall energy reduction from BPS across benchmarked building stock after one compliance period
Baseline electric use (MWh)	6,791,004		**10%**
Post BPS electric use (MWh)	6,130,539	660,465	
Baseline gas use (therms)	253,502,680	30,519,555	**12%**
Post BPS gas use (therms)	222,983,125		

The assumptions used in this savings estimate were based on goals or results from various precedent programs, as illustrated inTable *6- Sample of Building Performance Standards across the U.S.* Table 6.

Technical gross savings potential for a BPS is a function of quantity and type of existing building stock, assumed portion of building stock subject to the retrofit mandate, target improvement in those buildings, and the compliance timeframe. Savings estimates will vary significantly based on those assumptions. For purposes of this study, Table 8 illustrates savings potential for a BPS that mandates improvements over the 65th percentile of each building type category in terms of site energy use intensity and achieves 15% energy reduction in those buildings.

While retrofits are mandated for the high energy users, the pathway to compliance is at the discretion of building owners. This continuous improvement cycle should drive higher uptake in utility energy efficiency programs both for the technical assistance and incentives to lower cost of upgrades.

Key Outcomes

Phase 1 research has indicated a potential path forward on a municipal energy codes and building performance standards program, starting with the leading cities of Evanston and Chicago, and scaling via engagement through the Metropolitan Mayors Caucus (MMC).

In the case of stretch codes, stakeholder engagement is expected to start immediately in Evanston, serving as a regional test case for advanced code adoption. Shortly thereafter, Chicago will likely start stakeholder engagement on stretch codes in the context of broader climate action planning. In both cases, there is likely need for utilities to provide assistance in the process and to coordinate utility programs to enable city policy, indicating utility attribution for successful implementation. A group of mayors affiliated with the MMC has been highly engaged in the national IECC model code development and regional sustainability initiatives through the MMC; utilities have an opportunity to engage this group to evaluate interest and program opportunities to support scaling of stretch codes through the region. Meanwhile in early 2021, the state is expected to begin review of IECC 2021 for adoption as the minimum code for all Illinois jurisdictions[6]. This state process may effectively set the tempo and converge with advanced code considerations by Illinois municipalities, making 2021 a crucial and definitive year for code activity.

If there is opportunity for a building performance standard in Illinois, it would likely start with the City of Chicago, which currently has an active benchmarking program in place as well as a successful voluntary large commercial retrofit program. Chicago is likely to consider a BPS in the context of broader climate action planning in partnership with the American Climate Cities Challenge. A utility program partnership, including ongoing customer assistance and incentive programs, would be critical in making a BPS program possible and beneficial to all. There is also opportunity to engage a larger number of sustainability-focused mayors through the MMC to understand opportunities to advance a BPS regionally.

Conversations with Urbana/Champaign and with the MMC indicate strong, immediate interest in collaborative community energy planning programs between municipalities and the utilities, to explore opportunities aside from an immediate, statutory stretch code or BPS. Such exploratory engagements could be adapted into phase 2 of this research and pilot or pursued in parallel but related scope.

Another consideration is the likelihood of other jurisdictions to follow suit with adopting stretch codes or a BPS after the early adopters of Chicago, Evanston and the first few in the MMC. It is likely that municipalities already struggling with compliance of energy codes, or with neighbors struggling with compliance, are more likely to request compliance assistance before being able to adopt something stronger; this challenge should be considered when

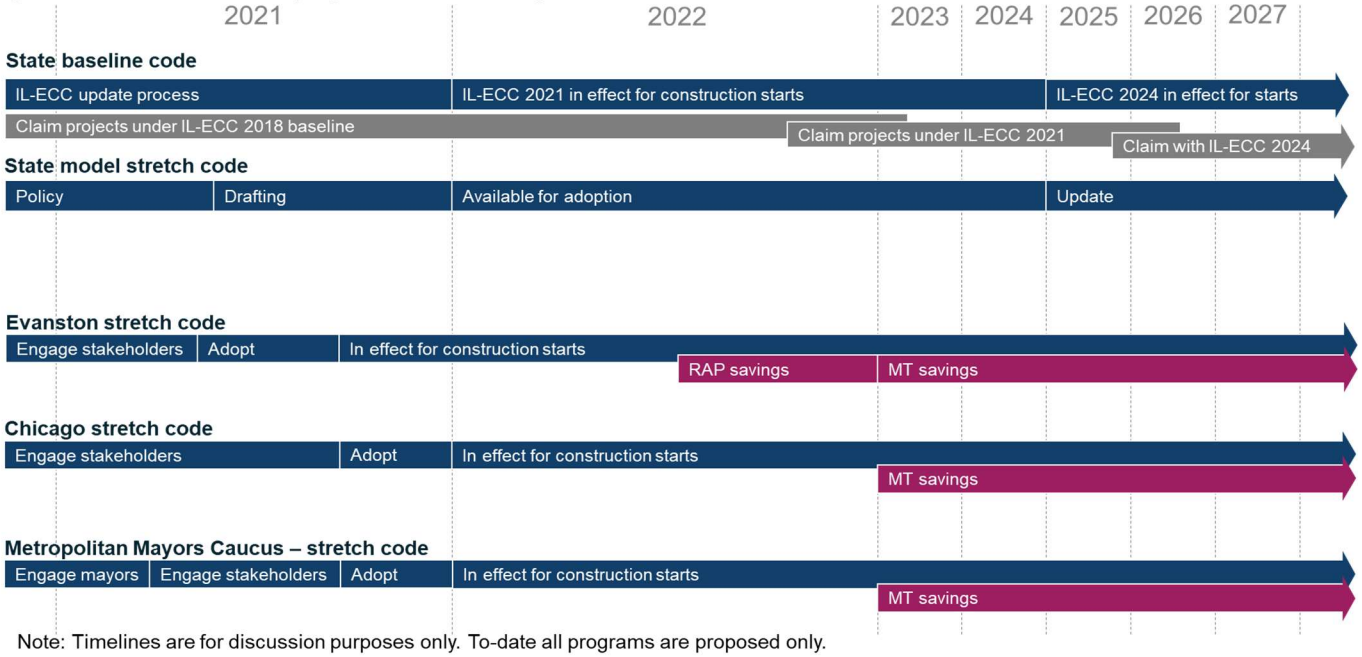
[6] Chicago is the only municipality that can adopt its own code stronger than the state code, and they may forego adopting the state code for their stretch code.

creating a program. Some municipalities have expressed the need for a tailored approach to policies and programs; at the same time many also expressed interest in participating in policies or programs that have already been tested. Considering a program's replicability for many different types and sizes of cities will ensure the biggest success.

It is important to realistically consider the timing of a claimable savings for either a stretch code or BPS program. Hypothetical timelines are illustrated for stretch code and BPS initiatives in

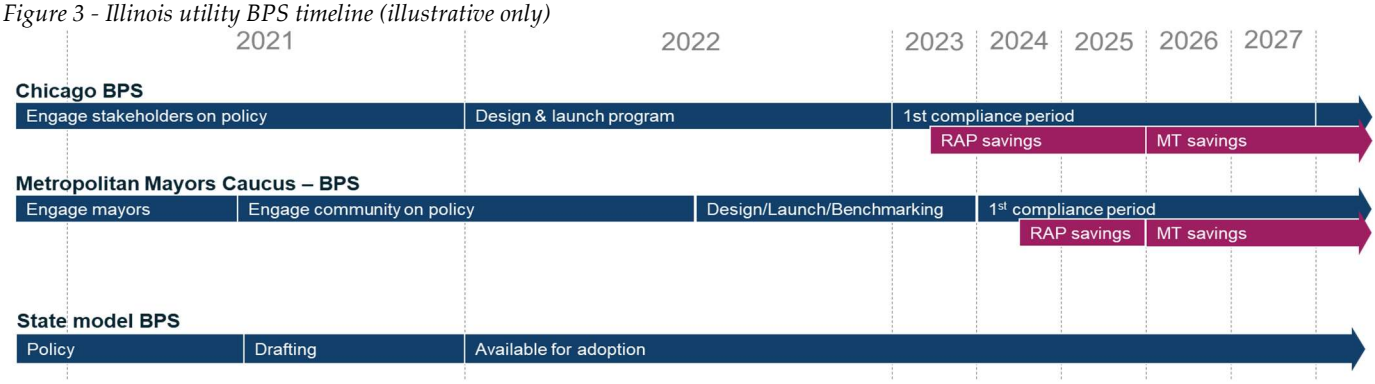
Figure 2 and Figure 3, respectively. Policy and drafting progress may require a multi-year engagement with cities and stakeholders, made more complicated by the ongoing pandemic and economic fallout. Program adoption would be followed by new construction timelines of a year or more and BPS compliance cycles of perhaps five or more years. As such, significant savings may not result until the program year 2023 and beyond. Claiming larger savings later is very common to these types of programs.

Figure 2 - Illinois stretch codes program (illustrative only)



Note: Timelines are for discussion purposes only. To-date all programs are proposed only.

Figure 3 - Illinois utility BPS timeline (illustrative only)



Note: Timelines are for discussion purposes only. To-date all programs are proposed only.

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Appendix A – Stretch Codes Overview

Stretch Codes

Helping Cities Meet Energy Goals in Illinois

Energy codes are among the most cost-effective tools to meet a municipality's energy and climate action goals. Codes are the best path to impact the energy use and emissions of new construction and significant renovations in communities. While the Illinois energy code is a mandatory statewide code, local governments can set more ambitious standards for many buildings. We recognize that they may need direction and assistance to set those standards.

If Illinois cities want to meet their own climate goals, cities need other options for improving the baseline energy requirements for buildings. This is where we can help.

What is a Stretch Code?

A stretch code defines a higher level of energy efficiency or sustainability than the adopted statewide base code or available model energy code. A stretch code can be envisioned as the future base code; it may contain aspects to consider for the next baseline code adoption. Stretch codes can be developed on their own (typically by/for municipalities) or as part of the larger state energy code (either as a separate state code or in an optional appendix). Once a stretch code is adopted, it becomes the mandatory baseline requirement for that jurisdiction.

A stretch code is a great option for jurisdictions that have set climate or energy goals. The stretch code also allows entities to test and showcase the feasibility and cost-effectiveness of cutting-edge technologies and processes before they are considered for inclusion in the next baseline code. Because the building and enforcement community knows what to expect for upcoming codes, stretch codes also accelerate market development, adoption and acceptance of more energy efficient codes in the future.

Stretch Code in Illinois

For commercial buildings, jurisdictions can already set standards stronger than the state energy code. Jurisdictions cannot adopt an energy code stronger than the state code for residential buildings except for jurisdictions over 1 million in population, or that have adopted an energy code prior to 2006; no jurisdiction has yet chosen to do so. Legislation or administrative action is likely needed to permit residential stretch code adoption. It is not required for commercial buildings, but legislation instructing the state to create a state stretch code for jurisdictions would allow for uniform enforcement and assistance, and encourage stakeholder input and state buy-in for the stretch code.

Stretch Code Examples

It is recommended for jurisdictions to pursue the same stretch code for adoption. Below are some components of a possible stretch code.

- ✓ Simple improvement of prescriptive or mandatory requirements found in model energy codes.
- ✓ Simple improvement of code efficiency from a performance perspective.
- ✓ Improvement of the energy code by consulting energy use indices such as the Energy Use Index (EUI), Zero Energy Performance Index (zEPI) number and Home Energy Rating System (HERS) Index.
- ✓ Improvement of energy efficiency through adoption of codes or standards that are above the baseline code and might include non-energy-efficiency measures, like the International Green Construction Code (IgCC) or Leadership in Energy and Environmental Design (LEED), or inclusion of EV-ready, solar-ready or other non-efficiency measures.

Technical Assistance

We are here to help. The Illinois investor-owned utilities are exploring the option of providing assistance with adoption of and compliance with stretch codes. This could include—but is not limited to—technical assistance, policy drafting, economic impact analyses and stakeholder engagement. Your feedback is essential to this effort.

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Appendix B – BPS Overview

Building Performance Standards

A municipal tool for equity, jobs and carbon reduction

Building Performance Standard ordinances are a municipal tool to equitably reduce energy costs in existing buildings while creating jobs in the efficient and clean energy economy. Buildings account for about 40% of all energy use in United States, so a BPS is also an opportunity for cities to lead their community on carbon reduction. **Illinois utilities can potentially help your municipality with adopting this approach.**

What is a Building Performance Standard (BPS)?

A Building Performance Standard sets energy use or carbon emissions thresholds for commercial buildings within a jurisdiction. Property owners report actual energy consumption of their buildings on a set cadence (e.g. biennial) or upon certain triggers (e.g. sale or lease of property). Buildings found to exceed their energy or carbon threshold are required to make operational and/or capital improvements to reduce energy consumption and bring the property into compliance. Participation requirements and thresholds are typically differentiated by size (e.g. buildings over 50,000 square feet) and sector (e.g. multi-family rental, office, etc.). Performance thresholds typically target the worst-performing buildings first. The BPS policy may chart stepped reductions over time, coinciding with broader city equity, jobs or carbon goals.

Building Performance Standard Examples

A growing number of U.S. jurisdictions have already enacted a BPS. These include:

- St. Louis, MO – Join upcoming webinar June 24, 2020 to learn more; free for city officials.
- Washington State
- New York City
- Washington, D.C.
- Boulder, CO

Enacting a Building Performance Standard

According to the Institute for Market Transformation, "effectively implementing a BPS requires more than just passing a law."[1] It requires broad and equitable stakeholder engagement during the policy/ordinance development process. Then owners and energy service providers must be engaged in ongoing fashion during operation, with ordinance education and compliance assistance as appropriate. Tools and processes will be developed for compliance reporting; for example, adopting the U.S. Department of Energy's Portfolio Manager platform.

Many building energy improvements are low-cost or even no-cost, particularly for the worst-performing buildings. Where capital outlays are required, programs exist to further improve the financial outcome of energy optimization or retrofits. A BPS can be aligned to leverage incentive programs, such as state-mandated utility energy efficiency programs that provide technical assistance and financial incentives. Property Assessed Clean Energy (PACE) programs currently launching in many Illinois counties can also provide attractive financing for building owners and overcome the owner/tenant "split incentive" hurdle to capital investment.

1 https://www.imt.org/why-is-it-time-performance-standards-are-gaining-traction/

Technical Assistance

The Illinois investor-owned utilities are here to help. We are currently exploring partnership opportunities with municipalities to assist with the adoption and operation of Building Performance Standards. In the adoption phase this could include economic impact analyses, stakeholder engagement, policy writing and process/tool development. During operation it could include education, compliance assistance and integration with incentive programs and financing. We look forward to your feedback on this potential tool.

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