

FINAL MINUTES

NYStretch-Energy Code MULTIFAMILY WORKING GROUP Meeting

June 13, 2017 | 2:00 pm – 4:00 pm

Location: WebEx meeting

PARTICIPANTS

Remote: Priscilla Richards, Jim Edelson, Sean Denniston, Mark Lyles, Jeff Domanski, Tom Eisele, Ian Graham, Steve Bluestone, Maria Karpman, Jodi Smits-Anderson, Don Winston, Bing Liu, John Addario, Gina Bocra, Lois Arena, Gina Bocra, Emily Hoffman, Lou Vogel, Michelle Tinner

AGENDA

2:00 – 2:15 Welcome / Roll Call / Review Workgroup Objectives and Schedule Jeff Domanski (IBTS)
Jim Edelson (NBI)
2:15 – 2:30 Scope of Multifamily Buildings in Energy Code Jim Edelson and Sean Denniston (NBI)
2:30 – 3:30 Multifamily NYStretch Measures and “Packages” - Scoping and Discussion (NBI)
3:30 – 3:45 Additions and Remodels
3:45 – 4:00 Discussion and Wrap-up – Next Steps

MINUTES

Review Workgroup Objectives and Schedule

Jim Edelson provided a summary of the NYStretch 2018 project that was conveyed in the 6/8/17 Advisory Group meeting, including indication that:

- The proposed NYStretch 2018 code will exceed the anticipated 2019 New York Energy Conservation Construction Code, with a goal of achieving 20% greater savings than the 2015 IECC based on modeling.
- NYStretch 2018 will focus on energy measures; other “green code” measures will be addressed separately.
- The development of NYStretch 2018 is using a process similar to that used to develop the 2016 NYStretch-Energy code, with the addition of this Multifamily working group which will look at measures in detail and present recommendations to the Advisory group.
- Similar modeling activities will be employed with Bing Liu of PNNL conducting the commercial modeling and Earth Advantage (based in Portland) doing the residential modeling.

A separate group will be formed focused on the modeling to be conducted. Jim invited the multifamily working group members to join the modeling working group.

Jim next described the proposed Structure Diagram for the Multifamily code, including the performance, prescriptive, and efficiency options/savings packages which will be analyzed. Two structure diagrams are required because Multifamily meets falls under Commercial and Residential categories. Residential requires ERI and has its own packages, while Commercial has Air Barrier, Renewable, and two efficiency packages. A similar measures and packages structure was utilized in 2016 NYStretch project, which resulted in a potential 20% savings over IECC-2015.

Discussion/Stakeholder input

- Jim asked the working group to confirm if the ‘two path’ approach should be used which includes two sets of measures vs. using a single 3-4 story ‘arbitrary’ division.

Action item

- A Modeling working group is to be formed and will meet before the next meetings of the Advisory group and working groups.

Scope of Multifamily Buildings in Energy Code

Jim indicated that the proposed energy targets include divisions by building types and climate zones, with modeling based on weighted climate zones and a 10-story building because PNNL is using that prototype for its “high-rise” approach. This component of the 2016NYStretch showed the greatest progress and would require another 5% reduction to achieve 20% savings goal. Energy cost analyses will be adjusted for NYISO grid zones and for New York costs (see slides for details).

Sean Denniston described the Code division for multifamily buildings: buildings under 3 stories fall under the Residential code while buildings with 4 or more stories are Commercial. Low-rise multifamily regulations are a challenge due to focus on single-family buildings, including for plug loads and hot water use; not all factors translate well to multifamily. Similar lack of application of regulations for high-rise, including for hot water use. This results in confusion and inconsistency in efforts in following code (see slide for detail). NYStretch suggested as method to achieve the desired baselines.

Energy Savings Opportunities

Jim and Sean next described the language for NYStretch multifamily measures and “packages” proposed for consideration presented in the ‘straw-man’ document which was shared with the group.

For this effort, PNNL modeled two sets of measures and code baselines and crossed sectors. This resulted in significant difference in energy outcomes.

See the “2018 NYStretch – Range of Multifamily Provisions (PROPOSED)” PDF file for detail.

The discussion of the proposed options described in the straw document was very interactive.

Discussion/Stakeholder input

- **Structural Options.** Sean and Jim described three options for addressing the R-2 occupancy/multifamily code for both low-rise and high-rise applications with respect to existing residential and commercial code requirements, including use of commercial code for all multifamily options, creating amendments to the commercial and residential code for multifamily provisions, or creating an independent set of multifamily amendments (see document for detail). Sean indicated Boulder, CO has chosen Option #1.
- General agreement that this is a large effort to address. Code requirement challenges discussed included high-rise lighting requirements, commercial air barrier test option, residential envelope

requirements, ASHRAE 90.1 compliance associated with combined codes, and four-story commercial/residential buildings in New York City.

- Jodi suggested better to focus on assembling ‘best options’ for NYStretch rather than addressing differences between residential and commercial codes.
- Ian agreed with Jodi and suggested focusing on gaps, including reexamining R2, R3, and R4, and revisions in commercial multifamily and residential low-rise residential codes and assemble best options, which Jim indicated is Option 2.
- NBI’s Multifamily “prescriptive guide” measures table was presented, which are based on modeled results based on iEC2015 and using average of climate zones 4, 5, and 6.
- **Modeling** discussion focused on the limited nature of low-rise models, inclusion of Appendix G baseline requirements, and interest in using a HERS-based approach for low-rise and high-rise applications, and Maria Karpman’s modeling efforts on multifamily which indicates ability to comply with technology adoption.
- **Increased Stringency** section presented proposed values for windows, building envelope, infiltration, thermal bridging, fan efficiency, ventilation, space conditioning, lighting, appliances, and monitoring/metering provisions with indication of referenced sources for each provision.
- Technical discussion of **Windows** included: inclusion of a “climate zone shift” per IECC method, structural issues associated with windows (e.g. role of frames vs. curtain walls) – which was also considered in the Commercial Working Group; prevalence of existing products in the marketplace (e.g., Energy Star labeled windows), and thermal bridging
- Jodi asked if possible to include an optional testing/inspection approach, prior to post-installation blower-door testing, to enhance ability to confirm window/envelope installation practices are optimized. Sean suggested commissioning inspection of joints between components could be mandatory requirement. Jim indicated that the commissioning section of IECC does not address enclosure, so is an area that language could be added. Ian and Gina indicated that NYC had considered language in terms of integrity and inspection for high rise buildings (“air barrier continuity plan”) before adoption of last version of Code, which requires looking at every joint but have not done rule-making process to give industry time to adjust to requirements. A plan is being developed with methodology for testing each section. While it may be some time before enacted, language has been developed.
- Jodi shared observation that windows have shown 20% failure compared to labeled performance for leakage. Lois suggested that installation can lead to these problems as observed on passive house projects.
- During discussion of the two **Building Envelope Systems** (i.e., Exterior Walls and Roof) it was observed that these systems are opaque, and that a comparison of residential envelope sections would be valuable. The two system approach was included because of differences in cost-effectiveness – i.e., attic installation is relatively easy while stacking insulation on roof deck may not be as it can affect structural issues, including parapet height requirements.
- **Infiltration Requirements.** Jim indicated that much of 2016 NYStretch language will be used but considering how to combine with testing for the low-rise residential. A sampling approach is presented in the draft document based on LEED methodology (see document for detail). There was disagreement on ability to test high-rise facilities. Sean stated that they are considering allowing compartmentalization of dwelling unit vs. building level, which is allowed in LEED, HERS and other above code testing. There was general agreement to not have testing alone be the requirement for this provision.
- The **Thermal Bridging** section was not included in 2016 NYStretch but was presented to NYStretch 2018 Commercial Working Group. Discussion topics included: observation that this is

a challenging area for prescriptive provisions and that much of NY has continuous thermal envelope requirement; balconies and juncture between windows/units are challenging.

- There was significant discussion of methods to calculate U-factor of thermal breaks, which is a weakness in the code that is commonly not understood so is a critical area to address. Sean referenced there are a number of methods that could be used, including suggested method using weighted U-factor vs. R factor of cavities. Lois indicated that Passive House approach may be a simpler option to consider which gives a reduction factor to reduce R value of wall. Ian asked about Appendix A related calculation requirements which NYC Department of Buildings reviewers emphasize. Lois indicated that COMCHECK doesn't prompt to go to Appendix A. Gina suggested value of creating another level of de-rating of assemblies based on types of connections used as this could make things simpler. Steve suggested it would be valuable to know in more detail what plan examiners are looking for – and that they may need greater education.
- Ian emphasized need for understanding of COMCHECK “black box”, including ratio of framing to insulation, and need for sufficient understanding of building aspects, particularly connections to buildings (e.g., claddings).
- **Fan Efficiency.** It was suggested that the current, Energy Star-labeled fan is insufficient as there are fans available on the market, from multiple manufacturers, that are upwards of 10 times more efficient – though it is important to confirm whether motor or gear efficiency should be the unit of focus. Don and Ian expressed concern at considering only one factor when prescribing requirement as designers may choose a product for other reasons, including acoustic properties, and that one factor can be problematic in terms of other factors.
- **Ventilation Requirements.** Discussion on this topic included: potential importance of ‘balanced’ ventilation strategies because of tighter envelopes; the potential for overdesign – e.g., when an entire living space could be treated as kitchen; mechanical ventilation applications and possible inefficiencies, as when ventilation requirements require complete replacement; the role and requirements for corridor pressurization and use of trash rooms, which are commonly used as ventilation paths.
- **Thermostat/Space Conditioning.** While the focus is on use of remotely programmable thermostats (ASHRAE/IECC requires 7 day programmable), concern over potential data privacy, lack of use by consumers, and associated cost without benefit was expressed. Interface design and ensuring sufficient wifi/gateway access were discussed as key aspects to consider.
- **Interior Lighting Efficiency.** Brief discussion (towards end of meeting) focused on use of vacancy vs. occupancy controls, potential outlet vs. fixture requirements, and targeting living rooms and bedrooms.
- **Exterior Lighting** discussion noted acceptance of move to LED requirement, which marketplace is showing to be cost-effective.
- **Appliances.** There was discussion of whether it could be possible to require Energy Star in the code (e.g., federal pre-emption requirement), perhaps as a separate multifamily provision or package, with potential focus on specific appliances, such as dishwashers and laundry machines. NBI has modeling on that.
- **Additional Packages.** In brief discussion allowed by time limit, Sean explained that these options allow selection based on evaluation of what would work in a location, and encourages working group to review and comment. Ian commented that the wall U-values suggested can be very challenging, to which Sean indicated the challenge is intentional and could lead to 6-8% savings. There was concern expressed that federal pre-emption prevents high-efficiency water heaters in base code, and that low-flow plumbing fixtures were in the plumbing code so were

not possible to address; Jodi indicated that the Department of State is considering changes to address that area.

Action items:

- NBI to make summary table of savings benefit results from proposed provisions using site energy, source energy, and cost-based approaches.
- NYSERDA/Priscilla to share Maria's modeling data, which includes incremental cost information (confirm)
- NYSERDA / NBI to schedule Priscilla: Next Advisory Group – not yet identified, but likely pushed from August 9th... Later August or early Septmeber.
- NBI to do a comparison of residential Building Envelope System approaches go share with the working groups.
- Jim/NBI will do research and provide information on availability of fans (and other?) products and associated implications of characteristics (e.g. efficiency vs. noise level).