

NYC ENERGY CODE PILOT

Overview + Q/A

August 20, 2021

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AGENDA

1. Introduction (DOB)
2. Pilot Overview (PNNL)
3. Q & A Discussion

BACKGROUND LEGISLATION

- **LL32 of 2018**
 - Requires NYC to adopt Stretch Code in 2019/2022
 - In 2025, for buildings $\geq 25,000$ sqft, requires NYC to adopt a performance-based code
- **LL97 of 2019**
 - Sets annual GHG limit for buildings $\geq 25,000$ sqft
 - Starting in 2024
- **OneNYC 2050**
 - Carbon neutrality and 100% clean electricity by 2050

PILOT STUDY GOALS

- **Testing Approaches to Align Code with Legislation**
 - **LL32:** Performance based option is currently in the code as Appendix CA Section 11 and Appendix G
 - Expensive, time-consuming, simple buildings may not benefit from whole building modeling
 - **LL97:** Align code with GHG emissions limits
 - First step in approaching alignment with code
 - **OneNYC 2050**
 - Flexible pathway to achieve deep energy savings

The logo for NYC Buildings, featuring the letters 'NYC' in a large, bold, white, sans-serif font. A small 'TM' trademark symbol is located to the upper right of the letter 'C'.

NYCTM

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NYC Performance Pilot Q&A Workshop

August 20, 2021

Pacific Northwest National Laboratory

Michael Tillou

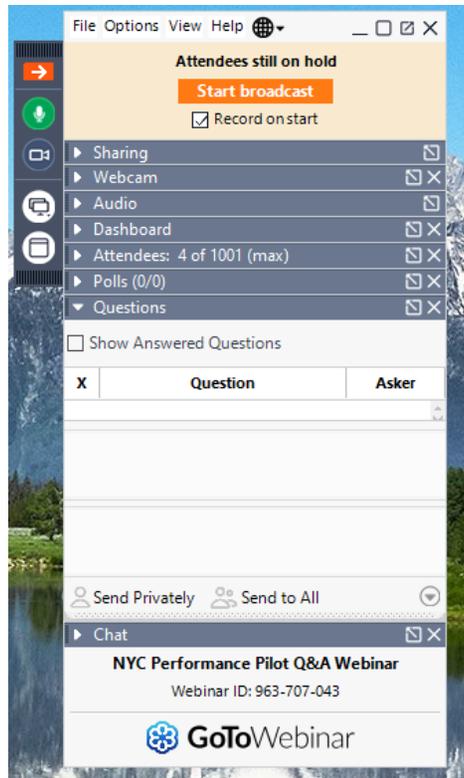


PNNL is operated by Battelle for the U.S. Department of Energy





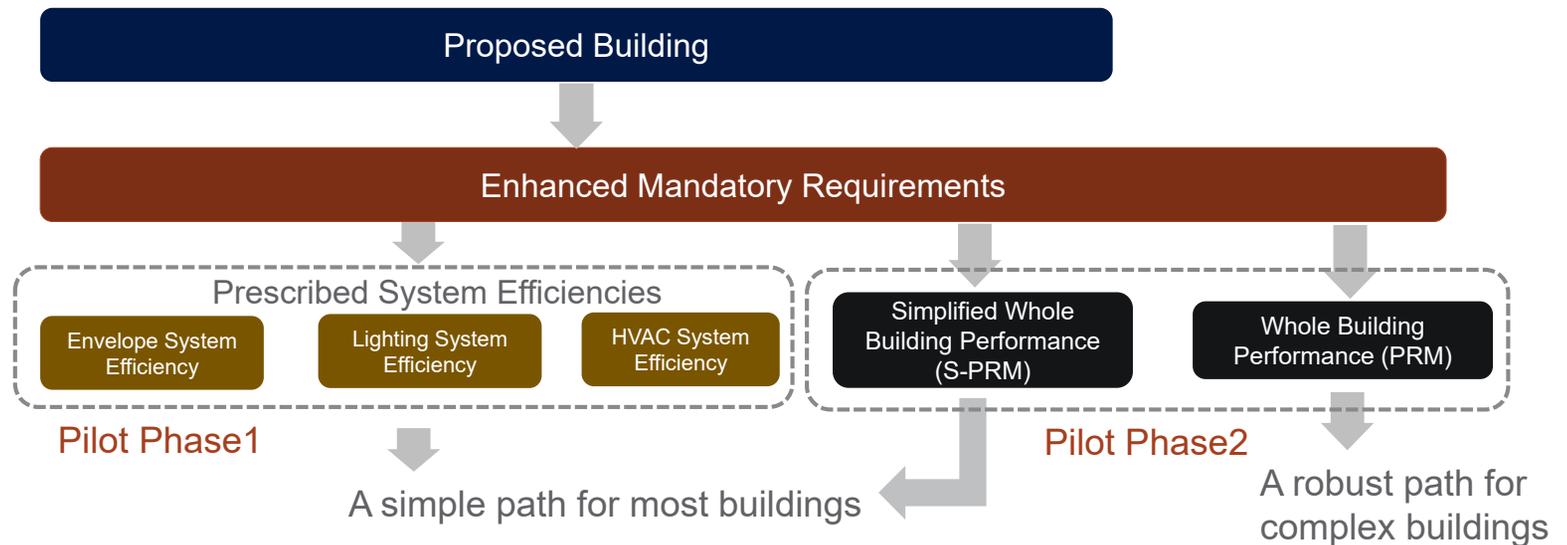
Workshop Housekeeping



Please submit questions by typing them into the questions box or by raising your hand so we can unmute you.

PNNL's Vision of a 100% Performance Based Code

- No 'Prescriptive Path'
- 'Enhanced Mandatory Requirements' and target system efficiencies for envelope, lighting and HVAC (incl. SHW)
- Maintains Whole Building Performance Path using PRM and eventually the new Simplified PRM (S-PRM) being developed by PNNL



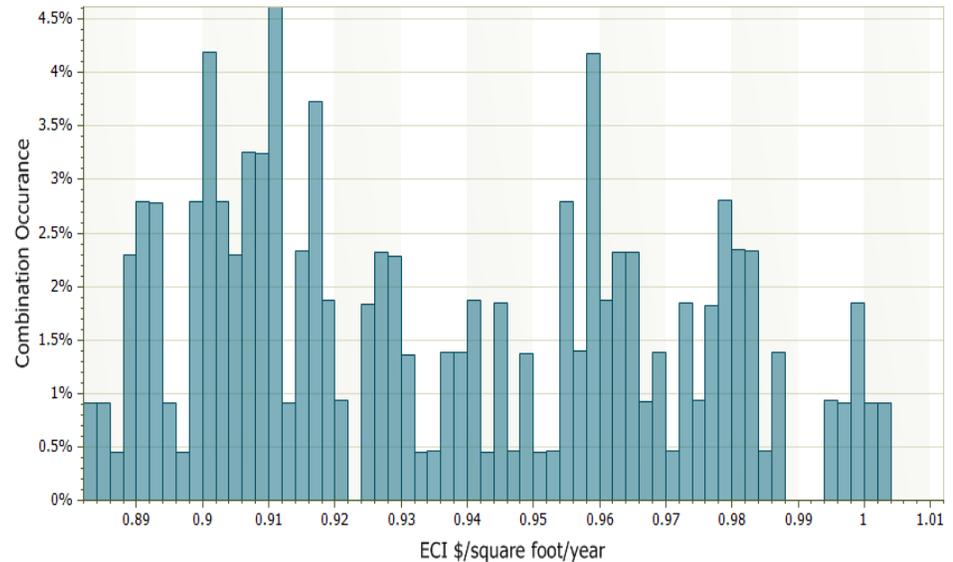
Performance Pilot –System Performance

Prescriptive path does not prescribe energy use or recognize good design choices

- Multitude of prescriptive options – each judged independently
- Each combination chosen results in very different energy use

Varying just six prescriptive parameters resulted in a 14% variation in annual energy cost:

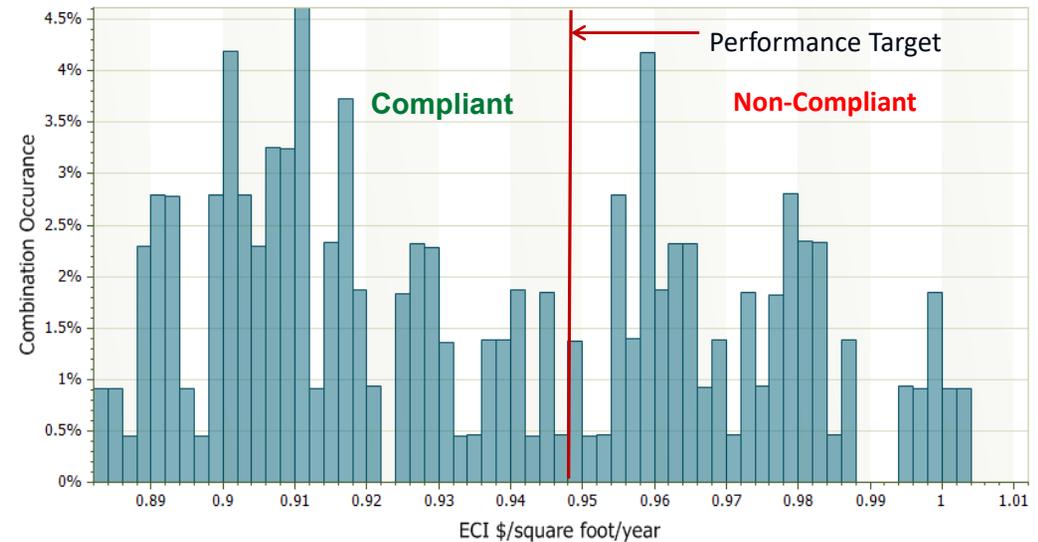
- Medium Office Building
- Climate Zone 5A





Performance Pilot –System Performance

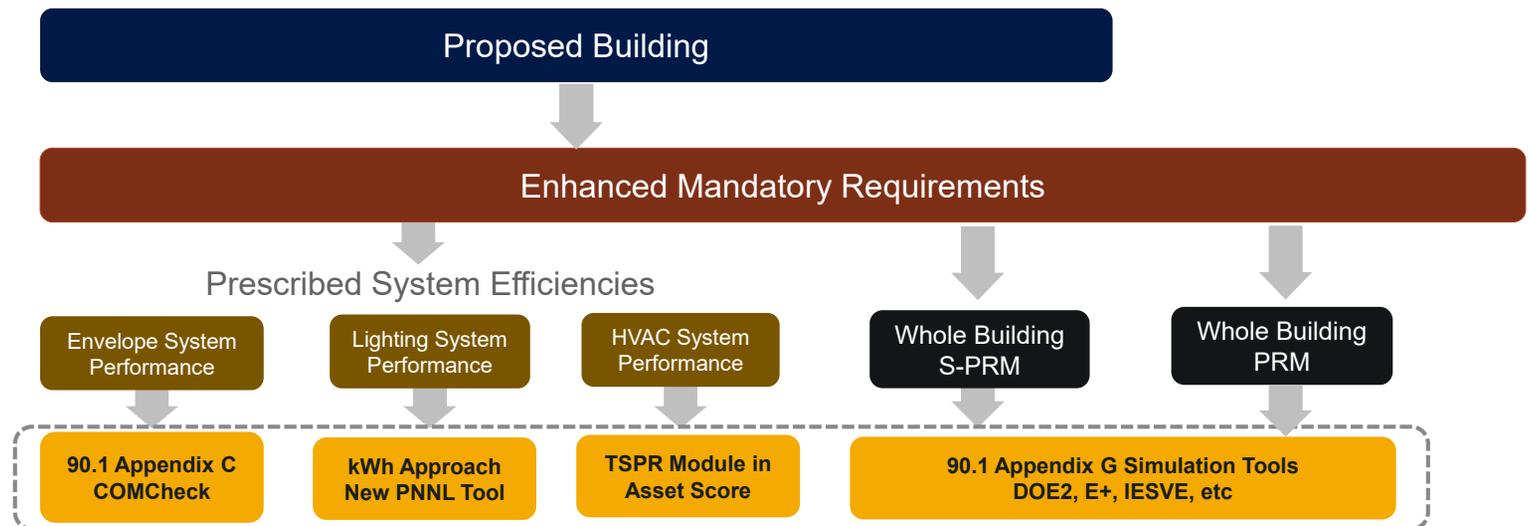
- Establishes a fixed performance target
- Maintains design flexibility.
- Uses hourly simulation based on simplified building geometry & defaults
- Reduced design team effort requiring only 4 to 8 hours compared to 40 to 100+ hours for whole building simulation



Performance Pilot – Proposed Process

Develop a performance-based code using a System Performance approach and develop a pilot program for testing.

- Use PPNL developed tools
- PNNL funding exists to provide modest updates to the current PNNL Tools





Envelope System Performance – NYCECC 2020 Appendix CA COMCHECK

PNNL Performance Pilot.cck - COMcheck 4.1.4.3 Code: 2020 New York City Energy Conservation Code, Appendix CA (modified 90.1-2016)

File Edit View Options Code Help

Project Envelope Interior Lighting Exterior Lighting Mechanical Requirements

Location

State New York

City New York

Climate zone: 5a

Building Envelope Area Types Interior Lighting Method and Areas Exterior Lighting Areas

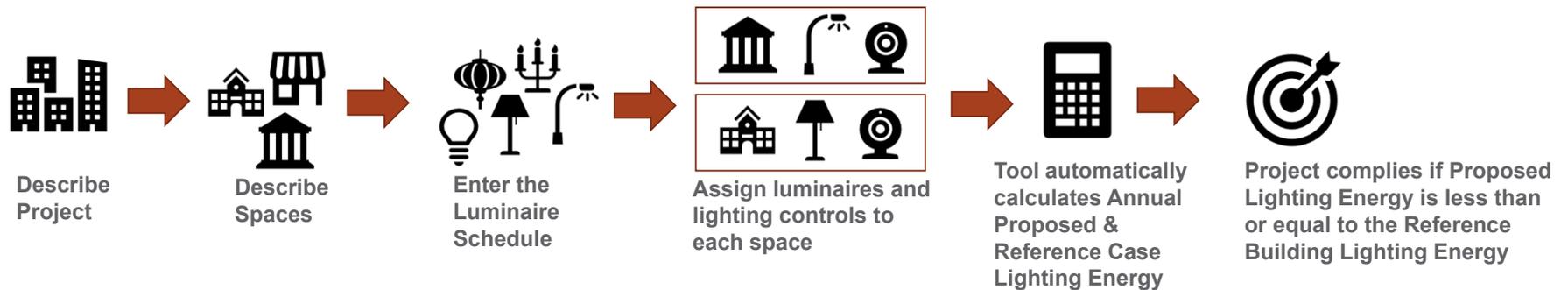
0.0 Overall building height (feet above-grade)

Add Delete Duplicate

- Uses familiar COMCheck interface
- Adds functionality for spandrel panel curtain walls
- Reference case uses independent baseline envelope U-value criteria similar to Appendix G whole building approach (ie: Walls: steel framed, Roof: insulation above deck)
- Fixed reference case allows envelope performance to be improved without mandating specific envelope component improvements.

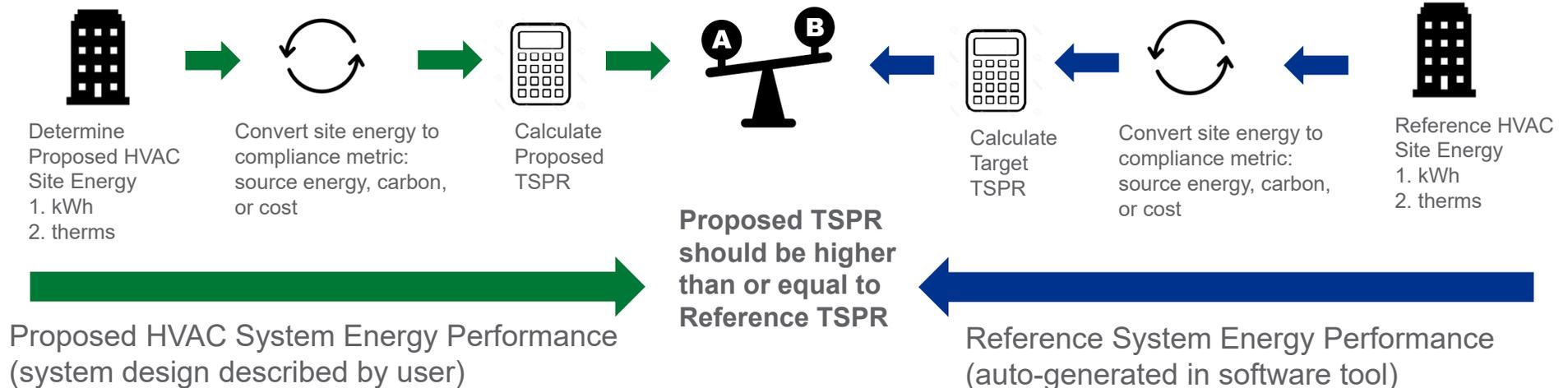
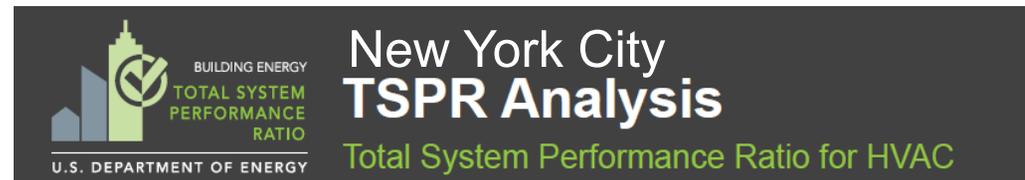
Performance Pilot – Lighting System Performance

Tool: Lighting System Evaluator



- Excel based tool developed by PNNL
- Allows tradeoffs between lighting power and lighting controls
- Proposed design is compared to a Reference case with default lighting power and controls based on each space type.
- Allows lighting designers greater flexibility to trade lighting power for lighting controls
- Uses kWh as the compliance metric

Performance Pilot – HVAC System Performance



- Allows trade-offs within HVAC System design
- NYC Pilot Reference Systems utilize air or water source heat pump systems.
- NYC Pilot will report site energy, cost and carbon emission compliance metrics
- TSPR tool uses the same Asset Score platform as Audit Template



Performance Pilot Phase 1 Logistics

The first phase of the pilot will evaluate the System Performance Pathways

Schedule:

Submit Application to participate: **Due August 31st, 2021 :**

Notification of Pilot Participation: **Week of Sep 6th.**

HVAC TSPR Training: **Fri. Sep 17th – 2 hours**

Envelope Training: **Wed. Sep 22th – 1 hour**

Lighting Training: **Wed Sep 22th – 1 hour**

Complete Building Evaluations: **Due no later than October 15th**

NYC Performance Pilot Target Building Types

Retail Building Types – Group M:

Office Building Types – Group B:

Educational Building Types – Group E:

Residential Building Types – Group R2:

Will select up to 5 projects of each target building type to participate in Phase 1.



Performance Pilot Phase 1 Logistics

Phase 1 Pilot Participation requirements

1. Submit Application describing proposed building and project team.
2. Attend Tool Trainings on Sep 17th and Sep 22nd.
3. Model the proposed project using the System Performance Tools and submit required pilot documentation.
Anticipated time commitment – 4 -8 hours for each system performance pathway
4. Share project documentation with PNNL and NYC DOB
5. Participate in a de-brief meeting with DOB and PNNL after submitting project materials

Participation in the pilot is voluntary and independent of any current energy code compliance requirements and will not impact the review process of a project.

All data will be received and reviewed solely by PNNL and DOB pilot project team and will only be used only for the purpose of identifying how to improve performance-based compliance pathways and tools.



Performance Pilot Phase 2 Logistics

The second phase of the pilot will focus on Whole Building Simulation compliance options

1. Simplified Whole Building Modeling Approach S-PRM
2. Testing of alternate compliance approach and metrics for Appendix G (site energy and carbon)
3. Open evaluation of HVAC TSPR System Performance Tool

Schedule:

Phase 2 Q&A Workshop: Early October

S-PRM training: Mid October

Building Evaluations: Completed by Mid November

The Phase 1 Pilot application will ask if you are interested in participating in Phase 2 activities.



Questions and Answers





Pilot Q and A

Pilot Logistics

1. I have a 3-family house, do I qualify to participate?
2. I don't have the projects that have 25,000 sf. So can I participate in testing?
3. How will this pilot address be retrofitting existing multifamily dwellings from 1968 and prior?
4. We have buildings where we have performed insulation projects, some of our clients would be willing to participate, is this OK?
5. Are you seeking licensed professionals for this project?

Pilot Tools & Software

1. Is it possible to test the software in an academic setting?
2. Understanding the reporting format, understanding the nature of compliance tools that may be developed
3. What exports will be available after inputting data into the various platforms, and are these compatible with BuildingSync?
4. Does the new ComCheck-like tool result in reporting of EUI that can be used for the AIA 2030 challenge? If not, that would be very useful functionality to add.
5. Current Comcheck is the 'way out' of certain energy efficiency requirements. Is the intention that this improved ComCheck will set minimum component performance thresholds and limit tradeoffs enough to actually result in high performance buildings?



Pilot Q and A

Design of building

1. What technics or practices do you recommend to put in place during the design process to insure compliance upon completion?
2. What are the efficiencies for MEP systems that can be shared across bldg types? ex: energy source & HVAC for PA spaces.
3. How will this potentially impact commercial food equipment-both refrigeration and cooking equipment
4. How close would our building be to Passive House. Will our building exceed the NYC requirements by 20%
5. Has DOB established data/guidance for public assembly spaces and energy efficient sys operations? Comm kit vs private kit - all electric or hybrid gas? Gym/assembly HVAC - solid walls w/operable windows or glazed daylight walls? Wall ratio efficiency?



Thank you

