AGENDA
TC 7.6 Building Energy Performance
Monitoring and Energy Performance Subcommittee
2020 ASHRAE Winter Conference, Orlando, FL
Monday, February 3, 2020, 2:15 – 4:15 pm

Purpose: TC 7.6 is concerned with the estimation, measurement, analysis, benchmarking, and management of whole building and building systems energy and water performance. This includes performance and resource management of new and existing buildings. This sub-committee implements this scope by monitoring the state of governmental policy, data, and tools addressing building energy and water performance (especially building benchmarking and energy auditing), and by developing ASHRAE programs and courses on these topics.

1. **Introductions**

2. **ASHRAE Standards and Guidelines**
   a. **Standard 100-2018**, *Energy Efficiency in Existing Buildings* – Update targets to 2012 CBECS data moving forward
   b. **Standard 105-2014**, *Expressing and Comparing Building Energy Performance and Greenhouse Gas Emissions* – Went out for public review; comments being addressed
   c. **Standard 211-2018**, *Standard for Commercial Building Energy Audits* – Published; Green Book currently being updated and rewritten as Best Practices
   d. **Standard 189.1**, *Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings*
   e. **Standard 228P**, *Standard Method of Evaluating Zero Energy Building Performance* – Committee formed and framework for standard developed
   f. **Guideline 14-2014**, *Measurement for Energy, Demand, and Water Savings* – Updates underway; progress expected by Annual Conference
   g. **Guideline 34-2019**, *Energy Guideline for Historic Buildings* – Published; proposal to move to continuous maintenance.
   h. **AEDG, Achieving Zero Energy series** – Two zero energy guides now published (K-12 Schools and Small to Medium Offices); guide for multifamily buildings is undergoing peer review.

3. **Project Announcements and Updates**
   a. Proposed ASHRAE Performance Measurement Protocol (PMP) Working Group – follow-up to RP-1702 (Kim) – Group met online and a proposal has been formalized; will meet as a working group of TC 7.6; this subcommittee will maintain this as an agenda item for updates and discussion in future meetings.
   b. Other

4. **Governmental Policy**
   a. Municipal
      i. In Nov 2019 Philadelphia became the second city (after Seattle) to pass a building tune-up law, requiring owners of commercial buildings greater than 50,000 sq. ft. to conduct a building tune-up and submit a report to the city every five years: https://www.imt.org/philadelphia-passes-new-buildings-tune-up-law-what-you-need-to-know/
      ii. Amendments passed to NYC LL97 in late June 2019. These are "technical clean-up" and include: possibility of revision to a different metric; carbon emission from electricity can be based on time of use; credits for GHG offsets

and energy storage extended to later compliance periods; previously exempt affordable housing must comply with prescriptive low-cost measures path: https://www.urbangreencouncil.org/content/projects/all-about-nycs-historic-building-emissions-law

iii. Starting in 2020, NYC buildings over 25,000 sq. ft. will be required to post their energy efficiency letter grade. The letter grade is based on ENERGY STAR SCORE (85 and up is an A, etc.). It will be interesting to see how this grade evolves, given LL97 focus on carbon (i.e., does it shift to a carbon grade?) https://www.nytimes.com/2019/11/21/nyregion/nyc-building-grades-letters.html
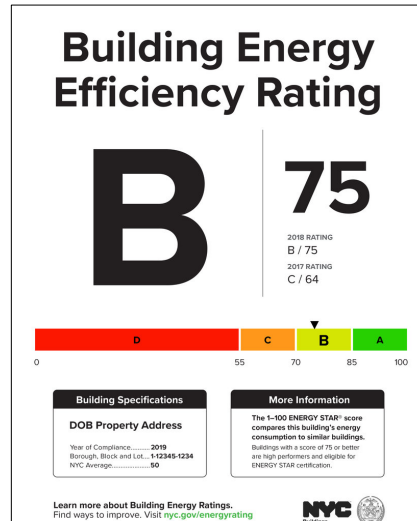
iv. NYC follows Chicago in requiring buildings to post their energy score. Chicago started using the Chicago Energy Rating System in 2019 (based on ENERGY STAR score and improvement over past 2 years): https://www.chicago.gov/city/en/progs/env/ChicagoEnergyRating.html

v. Several cities with benchmarking programs seem to be developing free service centers, e.g., NYC's Retrofit Accelerator (https://retrofitaccelerator.cityofnewyork.us/); Cambridge "concierge" service (https://energynews.us/2019/11/12/northeast/in-cambridge-efficiency-concierge-will-help-large-buildings-cut-energy-use/; Washington D.C. High-Performance Building Hub (https://www.imt.org/high-performance-building-hub-to-help-district-of-columbia-real-estate-and-building-professionals-achieve-ambitious-climate-goals/)

vi. Berkeley, CA became first city in U.S. to ban new natural gas connections: https://www.theguardian.com/environment/2019/jul/23/berkeley-natural-gas-ban-environment

b. State

i. State of New Mexico passed Energy Transition Act in Mar 2019 committing state to zero-carbon electricity from public utilities by 2045: https://www.greentechmedia.com/articles/read/new-mexico-sends-100-carbon-free-bill-to-governor

ii. NY vs. CA: "New York is kicking California's butt in building electrification": https://www.greenbiz.com/article/new-york-kicking-californias-butt-building-electrification

        iii. 25 governors have joining in the U.S. Climate Alliance: https://static1.squarespace.com/static/5a4cfbfe18b27d4da21c9361/t/5db99b0347f95045e051d262/1572444936157/USCA_2019+State+Factsheets_20191011_compressed.pdf

   c. U.S. Federal
        i. FERC order on PJM's "capacity market" may impact renewable energy on the grid: https://www.sierraclub.org/articles/2019/08/ferc-order-could-cost-pjm-consumers-billions-and-set-back-state-clean-energy

   d. International

5. Data and Databases

   a. CBECS
        i. 2018 CBECS data collection is complete. Estimates for some variables expected as early as this summer.
        ii. ASHRAE Handbook Applications Chapter 36 Energy Management tables on energy and water metrics being updated to CBECS 2012 data (Terry Sharp)

   b. RECS
        i. 2020 RECS in preparation. Key features:
            1. Largest sample ever (15,000 – 18,000 responses); Goal to provide state-level estimates for more than 20 states; larger sample means greater precision in estimates for subpopulation (e.g., rural households, newer homes) and emerging populations (e.g., solar PV, electric vehicles);
            2. Also: Exploring a multifamily and mixed-use building study to reduce data gaps; Looking at data from smart meters and in-home load disaggregation devices.
            3. For more: https://www.eia.gov/consumption/residential/status/pdf/2020_RECS_Outreach_Presentation.pdf

   c. DOE Building Performance Database (BPD)
        i. New user interface; 60 API licenses; datasets continually being added

6. Benchmarking Tools

   a. ENERGY STAR
        i. EPA concluded the ENERGY STAR score update and review period in July 2019 and certification resumed. A reference table with each model and the corresponding score update date and technical reference info is provided here: https://www.energystar.gov/buildings/facility-owners-managers/existing-buildings/use-portfolio-manager/update-energy-star-scores-cbecs
        ii. Municipal benchmarking reports rely fairly heavily on ENERGY STAR score; some cities have incorporated the ENERGY STAR score changes into their latest reports. For example, from page 10 of Philadelphia's *Philadelphia Energy Benchmarking 2019 Report:*

While Philadelphia's benchmarked buildings are still outperforming the national average of 50, this new metric demonstrates that there is significant opportunity to continue to improve the efficiency of our buildings.
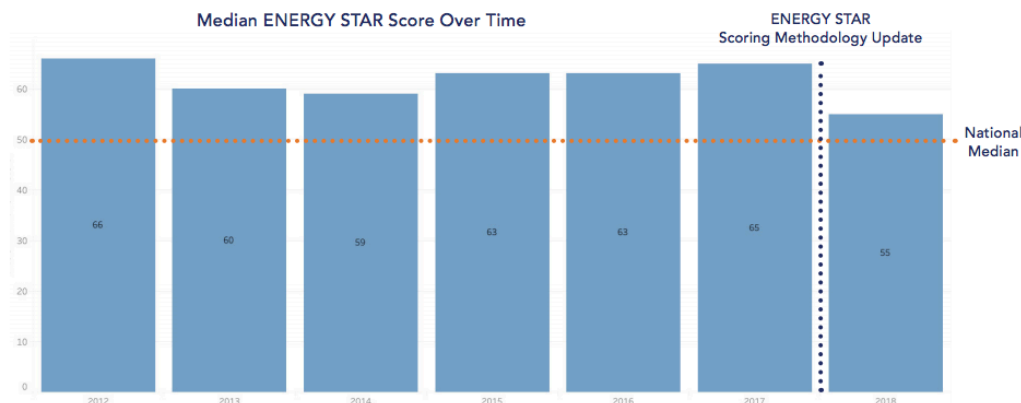
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      iii. Paper from Orlando Winter Conference Paper Session 12 provides a comparison of ENERGY STAR and Standard 100 for energy benchmarking.
- b. Other tools
  - i. Building EQ
    1. New portal demonstration at Orlando Winter Conference; several hundred projects currently in the database.
  - ii. DOE Asset Score
    1. Introduced new high performance building module, which adjusted the scoring; 10 in Asset Score is now a zero-energy ready building
    2. Currently working to link Asset Score with Audit Template Tool
    3. Ongoing push to streamline the geometry creation
  - iii. Efficiency Valuation Organization (EVO) recently released a whitepaper on advanced measurement and verification (M&V). The paper characterizes advanced M&V by: "use of energy meter data at finer time scales with near real-time access; and processing large volumes of data via advanced analytics"; a table of utilities using advanced M&V is included: https://evo-world.org/en/news-media/evo-news/1175-evo-releases-a-white-paper-on-advanced-measurement-verification
  - iv. New laboratory building energy benchmarking tool I2SL: https://lbt.i2sl.org/; builds on Labs21.

7. ASHRAE Sessions of Interest

Sunday, February 2, 8:00 AM – 9:00 AM Seminar 3
Keeping up with the Mouse: Orlando International Airport Expansion Commissioning and Energy Management

Sunday, February 2, 9:45 AM – 10:45 AM Debate 1
Does Building Energy Efficiency Matter in a 100% Renewable Grid?

Sunday, February 2, 11:00 AM – 12:30 PM Seminar 16
Watch Out for the Unforeseen When Designing Green

Sunday, February 2, 1:30 PM – 3:00 PM Seminar 18

Brilliant Execution of Smart Labs: How to Employ Smart Labs to Improve Safety, Reduce Energy and Make Labs Sustainable

Sunday, February 2, 3:15 PM – 4:45 PM Seminar 23
The Great Energy Predictor Shootout III

Monday, February 3, 8:00 AM – 9:30 AM Seminar 26
ASHRAE/REHVA Guidebook Towards Zero Energy Hospital Buildings

Monday, February 3, 9:45 AM – 10:45 AM Paper Session 12
Assessing Window Designs, Building Energy Benchmarking and Loads

Monday, February 3, 11:00 AM – 12:30 PM AHR Expo Session 2
Topics for Multifamily Building Performance

Tuesday, February 4, 8:00 AM – 9:30 AM Seminar 42
The Rise of Building EQ: Educational Facility Case Studies in Central Florida

Tuesday, February 4, 9:45 AM – 10:45 AM Seminar 49
Linking Standard 100 with Latest Standard 90.1: Energy Efficiency in Existing and New Buildings

Wednesday, February 5, 8:00 AM – 9:30 AM Paper Session 22
Energy Master Planning Concept and Case Studies

Wednesday, February 5, 11:00 AM – 12:30 PM Seminar 71
Nexus of Resilience and Energy Efficiency in Buildings