

**Building EQ Committee Web Meeting
June 14, 2021 Virtual Annual Meeting
Meeting Minutes**

Attendance

Participants: John Constantinide, Rob Risley, Chris Balbach, Trent Hunt, Michael Deru, Charles Eley, Mahroo Eftekhari, Anoop Peediyakkan, Daniel Redmond, Doug Cochrane, Hugh Crowther, Bill Dean (CO)

Not available: Bruce Hunn, Tim McGinn (incoming CO)

Guests: Stephen Roth, Megan McNulty

Staff: Lilas Pratt, Anne Wilson

Principal Motions¹

Motion #1: Chris Balbach moved, and Charles Eley seconded that the March 22, 2021 meeting minutes be approved as presented.

Vote: Motion passed by unanimous voice vote, 6-0-0, CNV.

Motion #2: Chris Balbach moved, and Danial Redmond seconded that the case study template Option #6a be approved as discussed and presented. (File: BPS Building EQ Case Study Option 6a.docx)

Vote: Motion passed by unanimous voice vote, 7-0-0, CNV.

New and Open Action Items

June 8, 2021 Business Development Subcommittee Virtual Annual Meeting

- **AI 2:** Building EQ Committee members to provide suggestions for ASHRAE committees for which liaisons should be requested or appointed. **On-going**
- **AI 5:** Building EQ Committee members to submit potential questions **by June 25** to use to stimulate discussion during the Roundtable. **On-going**
- **AI 6:** Chris Balbach to write up the initial draft for the roundtable and distribute to the committee **by June 18**.

May 18, 2021 ASHRAE-NYSERDA FlexTech Meeting

- **AI 1:** Chris Balbach to develop a case study for how Building EQ could be used by for presentation to the FlexTech consultants at their September meeting. **On-going**
- **AI 2:** Lilas Pratt to send out a Doodle Poll for an August planning meeting for the presentation to the FlexTech consultants in September. **On-going**

May 13, 2021 Technical Development Subcommittee Web Meeting

- **AI 1:** Chris Balbach to draft some text for Covid Guidance for review by the committee at July TDSC and subsequent inclusion on the Portal. **On-going**

¹ All votes are recorded as yes-no-abstain.

January 18, 2021 Building EQ Virtual Winter Meeting

- **AI 5:** Lilas Pratt to set up a meeting with ASHRAE IT and Stephen Roth regarding ASHRAE's single log-in (i.e., synchronized or unified log-in system) for Building EQ. (Include Chris Balbach, Charles Eley, John Constantinide, Rob Risley, Trent Hunt.) **On-going**

November 12, 2020 Technical Development Subcommittee Web Meeting

- **AI 3:** Technical Development SubC to determine what system level KPI information would be useful to Portal users and whether or not the database information is robust enough to be used to generate targets for those KPIs. **On-going**

September 14, 2020 Web Meeting

- **AI 3:** Trent Hunt and Lilas Pratt to put together an email regarding chapter presentations to send out to chapter program chairs and RVCs. **On-going**

February 2, 2020 Business Development Subcommittee Orlando Winter Meeting

- **AI 2:** Lilas Pratt to mine some data from the list of universities downloading course material and provide to the committee for follow-up by the committee. **On-hold**

January 13, 2019 Atlanta Winter Meeting

- **AI 1:** Lilas Pratt to contact Montana University regarding ASHRAE use of their one hour course. **On-hold**

January 12, 2019 Business Development Subcommittee Meeting

- **AI 3:** Lilas Pratt to develop French Portal examples (screens/reports/etc.) for use on sales calls to Hydro Quebec. **On-hold**

Meeting Minutes

1. Call to Order – Meeting convened at 11:03am EDT. Quorum was established.
2. Report from the Chair (John Constantinide)
 - John Constantinide noted that the subcommittees were very productive this Society Year on a limited budget. The focus was on outreach to new markets and organizations as well as prioritizing future development.
3. Report from the Coordinating Officer
 - Bill Dean reviewed the ASHRAE Leadership Presentation.
(File: [ASHRAE Leadership Preso_BEQ_2021 VAC_EXO_Final.pdf](#))
4. Report from Staff
 - Lilas Pratt noted that the work on the As Designed Rating ASHRAE HQ Building Update has been completed by the volunteers that were working on it. The rating assessment was done with the model as provided and will be reviewed by the Building EQ Committee and Building Ad hoc prior to release.
 - The additional qualified assessor criteria have been added to the Portal as approved at the March 22, 2021 committee meeting.

- The Portal User Survey will be sent out later this summer after the virtual annual meeting.
- Life to Date Portal Statistics as of June 5, 2021
 - Users: 1405 (1141 at beginning of SY) – 23% increase
 - Projects: 950 (736 at beginning of SY) – 29% increase
 - Submitted/Approved projects: 57/57 (51/51 at beginning of SY)
 - Reports purchased: 9 (\$1400) (7 at beginning of SY)
 - Paid credentials: 57 (35 at \$15 + 21 at \$25 = \$1050) (46 at beginning of SY) – 24% increase)

5. Approval of March 22, 2021 web meeting (committee vote)

(File: [bEQCommittee_22Mar2021__MtgMinutes_Draft1.pdf](#))

Motion #1: Chris Balbach moved, and Charles Eley seconded that the March 22, 2021 meeting minutes be approved as presented.

Vote: Motion passed by unanimous voice vote, 6-0-0, CNV.

6. Review of [Action Items](#)

7. Business Development Subcommittee Report ([Attachment A](#))

Trent Hunt provided an update of the activities of the Business Development Subcommittee (BDSC). Meeting notes from the Subcommittee Virtual Annual Meeting are shown in [Attachment A](#) and include additional details on all reported items.

a. Communication Initiatives

- A Building EQ Roundtable is being conducted by committee members on Monday, June 28, 2021 at 5pm. The title topic is *Enhancing Building EQ As Designed Rating with Standard 90.1*. This is intended to be an interactive discussion between the presenters and the attendees to the roundtable.
- Other initiatives include a Journal Article by John Constantinide on the Florida Institute of Technology (FIT) and Brevard Public Schools (BPS) projects, a Tech Hour recorded by Doug Cochrane, and a YEA sound bite recorded by John Constantinide that will also be available for posting on the Building EQ web pages.

b. Case Studies

- Lilas Pratt introduced the Case study template options for review by the committee.
- After some discussion, Option 6 (with some modifications) was agreed to be the most appealing option.
- It was noted, that once approved, several other case studies will be applied to this template. All will be made available for download on the Building EQ webpage.
- This template will also be applied to winners of the Energy Genius Award.

Motion #2: Chris Balbach moved, and Danial Redmond seconded that the case study template Option #6a be approved as discussed and presented. (File: BPS Building EQ Case Study Option 6a.docx)

Vote: Motion passed by unanimous voice vote, 7-0-0, CNV.

c. Organizational Outreach Initiatives

- The committee had developed four different Building EQ Standard Operating Procedures (SOPs). Two are ready to be posted to the Building EQ website. The government one is being reviewed by GAC and one for YEA is now in development.
- The Society MOU Priorities/[Value Talking Points](#) were noted. These will be used in organization outreach efforts moving forward.
- Other recent outreach includes discussions with [NYSERDA](#) on their Flextech Program and with the Green Building Initiative in regards to the use of Building EQ in their [Green Globes](#) Program.
- The committee is working to initiate outreach to ASHE.

8. Technical Development Subcommittee Report ([Attachment B](#))

Chris Balbach provided an update of the activities of the Technical Development Subcommittee (TDSC). Meeting notes from the Subcommittee Virtual Annual Meeting are shown in [Attachment B](#) and include additional details on all reported items. Michael Deru will be the chair of the TDSC for the upcoming SY.

a. New Developments

- Chris Balbach will be speaking with Harry Bergman (DOE) about the DOE / ORNL Model America Update ([10.13139/ORNLNCCS/1774134](#)) and how Building EQ might help disseminate that information.
- The committee discussed how the Model America models were created and populated.
- Another initiative that will be discussed with Harry Bergman and may work well with the Portal is the [DOE BETTER Source Engine](#) that generates automated recommendations based on five inputs all of which are available with in the Portal. This might allow for some more analytics on savings. The BETTER Source Engine also supports the inclusion of System Level KPIs in the Portal.

b. Organizational Use of Building EQ

- A meeting with the [NYSERDA FlexTech Program](#) suggested that they are looking for more analytics on savings calculations and the BETTER Source Engine may be way to provide those analytics.
- As a result of a meeting with GBI Green Globes, Building EQ compliance pathways have been submitted to GBI for their review and inclusion in the program.

c. Development Updates

- The TDSC has discussed the need for [Covid Impacts Guidance](#) to go with
- BEQ Portal API is being finalized. Documentation will be provided.
- An action plan will be developed on how Building EQ can work with the MTG.BIM on Digital Twins and they can build on previous existing work.
- The work to develop specific Data Center Methodology has been somewhat sidelined by the lack of data on data center performance. The subcommittee continues to look for a source of data.
- A number of factors have indicated that the Portal needs to switch the As Designed rating to the PRM Methodology which will further integrate with Standard 90.1

PRM. This should allow for scale up of the As Designed rating/assessment which is not possible with the current methodology.

d. Research Updates

- One outcome of the *CarmelSoft SBIR Phase I Project* is the addition of a Building EQ API to the Portal that allows data to be pushed into the Portal to generate a rating with the push of a button.
- 1836-RP *Developing a Standardized Categorization System for EEMs* is creating a taxonomy for generated EEMs that is more powerful than what currently exists. It will allow for more powerful characterization of EEMs and associated information such as cost. Once the final report is available, the TDSC will be looking at how to migrate the current EEMs into that taxonomy.
- 1771-RP *Energy Modeling of Typical Commercial Buildings in Support of ASHRAE Building Energy Quotient Energy Rating Program* is experiencing another delay which makes the final report due in March 2022. The committee will need to look at how to leverage the final information.

9. Other Business (John Constantinide)

a. Review of 20-21 SY MBOs (File: [Building EQ MBO Tracking 11June2021_R1.xlsx](#))

- John Constantinide reviewed the status of the 20-21 SY MBO's.
- He also noted that there is a commitment from a Government entity to generate a minimum of 14 projects for submission through the end of 2021.

b. Proposed Budget Update

- The proposed budget that is going to the BOD for approval will be similar to the committee's 2019-20 budget numbers.

10. Recognition of Member Service

- John Constantinide thanked everyone on the committee for their work this past year and made special note of the subcommittee members who give their time without official membership on the committee: Doug Cochrane, Bruce Hunn, and Hugh Crowther and to Chris Balbach and Trent Hunt who have served admirably as subcommittee chairs.
- He also noted that the committee composition will remain the same moving into the 2021-22 SY, although those positions served by various individuals will change: Rob Risley has been an outstanding vice-chair. Chris Balbach is moving to vice chair as Rob Risley moves up to chair. Trent Hunt will move to a voting member and remain as a subcommittee chair. Michael Deru moves to subcommittee chair. John Constantinide becomes a consultant.

11. Remarks from Outgoing Chair

- John Constantinide expressed his gratitude for his time on the committee. He noted that the committee has accomplished much despite the challenges posed by the Covid-19 pandemic.

12. Remarks from Incoming Chair

- Rob Risley recognized John Constantinide as a fantastic advocate for this program. He thanked John for his service and for the fantastic work as chair.
- The next leadership meeting will be on Friday, July 2.

13. Upcoming Meetings

- BEQ Business Development SubC, 2nd Tuesday at 11:30am starting August 10.
- BEQ Technical Dev (Method) SubC, 2nd Thursday at 11:00am starting August 12.
- BEQ Leadership – every other Friday starting July 2.

14. Adjourn – **Meeting adjourned at 12:51pm EDT**

**Building EQ Business Development Subcommittee
Virtual Annual Meeting
June 8, 2021**

Business Development SubC: Trent Hunt (chair), Daniel Redmond, Anoop Peediayakkan, Hugh Crowther, Doug Cochrane

Other Committee: John Constantinide, Rob Risley, Chris Balbach, Mahroo Eftekhari, Bruce Hunn, Bill Dean

Guests: Stephen Roth,

Staff: Emily Porcari, Anne Wilson, Lilas Pratt

Meeting convened at 11:31pm. Quorum was established

1. Announcements

- Lilas Pratt reported that four new submissions in the Building EQ Portal have been received in the last week. It is expected that all submissions will buy at least one report.
- The committee noted that the Portal has seen good activity this year despite the world being in a pandemic.

2. New Business

a. [Building EQ Liaisons](#) to/from other ASHRAE Committees

- Trent Hunt reviewed the existing liaisons to/from other ASHRAE committees as shown [below](#). Building EQ will need to reach out to GAC and CTTC to see if the current liaisons will be continuing or if new liaisons will be appointed.
- The Decarbonization Task Force was suggested as a possible liaison need.
- The Training and Education Committee was suggested but collaboration is really only appropriate for specific training courses.
- With the BEAPs and BEMPs as part of the Portal credentials, it might be appropriate to have a liaison from Certification to Building EQ.

b. Building EQ SOP for YEA Outreach to Universities and Local Governments

- Trent Hunt and John Constantinide reported that YEA is reviewing the Building EQ SOPs and they are expected to provide feedback and selected changes.
- The committee needs to share the specific YEA SOP that was created for them to review, so that they can review that specific SOP.

3. Business Development Updates

a. NYSERDA Flexible Technical Assistance Program

- Building EQ members met with a representative from the [NYSERDA FlexTech](#) program on May 18. Notes from that meeting are shown below.
- Trent Hunt and John Constantinide provided a brief overview of the discussion and action items from that call.
- The main takeaway is that the FlexTech program is looking for an estimate of energy savings as part of their audit requirements and they do have specific measurements that are recommended. The TDSC will be looking into how Building EQ can best meet those requirements.

- b. Building EQ in [Green Globes Meeting Notes](#)
- Building EQ members met with representatives from the Green Building Initiative (GBI) on May 13, 2021. The meeting was requested by GBI through Ross Montgomery. Notes from that meeting are shown [below](#).
 - GBI is interested in using Building EQ as a pathway for compliance within their program.
 - The committee has created compliance pathways for the use of Building EQ for each version of existing building and new construction certification. These have been shared with Green Globes for their review.
 - GBI also met with the ASHRAE Colombia chapter to discuss the use of Green Globes internationally.
 - An update of the ASHRAE-GBI MOU has been initiated as a result of these meetings. Discussions between ExCom and GBI are underway. It is likely that Building EQ will be specifically mentioned in the MOU in some capacity.
- c. Case Studies
- The case studies are still in progress. The goal is to have the initial update ready for review and approval by the main committee meeting next week.
- d. Journal Article
- John Constantidine has submitted the Journal article on the Florida Institute of Technology (FIT) and Brevard Public Schools (BPS) projects. The article has been reviewed and the comments are being processed in preparation for publication.
- e. Society MOU Priorities / [Talking Points](#)
- The talking points shown [below](#) were previously approved by the Building EQ Committee and are now part of the committee's on-going work.
 - An email has been sent to Rick Hermans about connecting with ASHE through the MOU that ASHRAE has with them. No response has yet been received.
 - The Subcommittee will plan to reach out to the various liaisons to bring up these talking points with the priority targeted organizations. This will be discussed on the next BDSC web meeting call.
- f. YEA Sound Bite / Building EQ Tech Hour
- John Constantidine recorded a sound bite at YEA's request. That sound bite is now with ASHRAE Marketing for final production.
 - The recording work for the Building EQ Tech Hour has been completed by Doug Cochrane and John Constantidine. The recording is now in final production and is expected to be aired this summer.
 - SECRETARY'S NOTE: The Building EQ Tech Hour will be launched on June 16, 2021.
- g. Building EQ Roundtable at Virtual Annual Meeting
- Monday, June 28, 5pm
 - **Title/Topic:** *Enhancing Building EQ As Designed Rating with Standard 90.1*
 - **Description:** *As Building EQ evolves the As Designed rating, the Committee is seeking industry input on how to best enhance this rating with the incorporation of the ASHRAE Standard 90.1 PRM (Performance Rating Method). Take part in the discussion and help shape the evolution of this rating.*
 - Participants must be registered for conference to attend the Roundtable.
 - The Roundtable will be a 30 minute session with the first 10 minutes or so introduce the topic and the remaining time is used to discuss with the attendees.

- Having some questions created ahead of time would be helpful to stimulate conversation on the topic.
- SECRETARY'S NOTE: There is no limit to the number of participants attending the Roundtable sessions.

Meeting adjourned at 12:24pm EDT

Building EQ Liaisons to/from other Committees

- Bruno Martinez is the liaison from YEA to Building EQ
- Megan McNulty is the liaison from GAC to Building EQ
- John Constantinide is the liaison from Building EQ to GAC
- John Constantinide is the liaison from Building EQ to CTTC
- Mahroo Eftekhari is the liaison from Building EQ to MTG.BIM
- Mahroo Eftekhari is the liaison from Building EQ to Student Activities (SA)

**Building EQ Technical Development Subcommittee
Virtual Annual Meeting
June 10, 2021**

Technical Development SubC: Chris Balbach (chair), Michael Deru, Charles Eley, Mahroo Eftekhari, Bruce Hunn

Other Committee: John Constantinide, Rob Risley, Trent Hunt, Doug Cochrane, Anoop Peediyakkan, Tim McGinn (incoming CO)

Guests: Stephen Roth

Staff: Lilas Pratt

Meeting convened at 11:02pm. Quorum was established

1. Announcements

- Lilas Pratt reported that the As Designed Rating ASHRAE HQ Building was expected to be completed by June 15. She will be reaching out to Shanta Tucker to see if that work is still on schedule.
- Once the results are reviewed by the subcommittee, they will be forwarded to the ASHRAE HQ Building Adhoc which has asked to see the results before they are shared with the BOD or BOD ExCom.

2. New Business (Balbach)

a. DOE / ORNL Model America Update (Balbach)

- After the FlexTech meeting with NYESRDA, Chris Balbach began to look into sources for data that might be available. As a result of that search, he came across the DOE/ORNL Model America data repository at: [10.13139/ORNLNCCS/1774134](https://www.energy.gov/eere/buildings/10.13139/ORNLNCCS/1774134).
- This work has created an OpenStudio / EnergyPlus simulation model of 98+% of the buildings in the U.S. Single family residential buildings are not included.
- The information is open source and can be downloaded and used by anyone.
- This is information that Building EQ may be able to leverage for Level 1 ECM analysis.
- One question is whether or not the models could be used as a starting point for As Designed rating. It was noted that while the shape/footprint of the buildings is likely to be accurate, the zoning is rather generic and may not match the actual building interior so that modifications would be needed to use it for Building EQ.
- The PRM methodology would require a 2nd baseline building model for comparison. Open Studio already has this procedure for creating the baseline PRM model built into the modeling software.
- Just letting people know that these models exist might be of value. Users and assessors could then decide for themselves whether or not to use the data.
- Having Building EQ socialize the information may also be of value to DOE in order to help get this work into use in the marketplace.
- There may also be value in the In Operation rating in order to determine savings from the ECMs. It would be helpful to have a specific process for calculating these savings. This would help with the connection to the NYSEERDA FlexTech program (see below) even those these types of calculations would go beyond the Standard 211 requirements for a Level 1 Energy Audit.
- The data is available for download via the Globus web app. There is currently no API to facilitate connection.

- As a start, Building EQ could include the link to this site in the instructions and then work with DOE to develop an API for easier connection.
 - These are a starting point. It is worth having a conversation with DOE (Harry Bergman) in order to create an easier access. The potential for the data is huge.
- b. [DOE BETTER Source Engine](#)
- Chris Balbach also noted that during his search for resources, he uncovered the DOE Better Source Engine as noted [below](#).
 - Relevant Links:
 - https://github.com/LBNL-ETA/BETTER_analytical_engine
 - https://better.lbl.gov/media/template/BETTER_Handout_4.16.2021.pdf
 - https://better.lbl.gov/media/template/BETTER_Training_Slides_V.10.0.pdf
 - Chris explained that the overall workflow information (see slides at link above) shows the five data points needed for the engine and all those data points are already collected by Building EQ.
 - The Benchmark coefficients includes a number of system level KPIs and then analyses those benchmarks to develop a set of possible energy efficiency recommendations and then calculate potential energy and cost savings.
 - Because Building EQ is starting to look at system level KPIs and how to incorporate that into Building EQ, this tool might be a way to help integrate those metrics into the Portal. This could help the Portal provide more detailed recommendations and could provide a savings methodology to meet the FlexTech requirements.
 - The ECMS are automatically determined and automatically costed. Building EQ could then map its much more extensive and detailed list to the shorter list in BETTER.
 - There is a Graphical User Interface (GUI) and an API (RESTful API) for BETTER. BETTER can also be downloaded and installed in order to run it on an individual computer.
 - This appears to be a great resource for which Building EQ should look at how to collaborate with DOE. Being able to provide Portal users with more actionable information in a standardized format is a win-win.
 - This uses utility bills, so data from the last year will not be very useful due to Covid conditions over the last 12-14 months.
- c. Building EQ Roundtable at Virtual Annual Meeting
- Monday, June 28, 5pm
 - Title/Topic: *Enhancing Building EQ As Designed Rating with Standard 90.1*
 - Description: *As Building EQ evolves the As Designed rating, the Committee is seeking industry input on how to best enhance this rating with the incorporation of the ASHRAE Standard 90.1 PRM (Performance Rating Method). Take part in the discussion and help shape the evolution of this rating*
 - This will be a 30 minute interactive session. Chris Balbach will moderate and Lilas will host. Chris Balbach will provide a roughly 10 minute overview of the topic with Charles Eley available for additional expertise. The remaining time will be used for open discussion.
 - It is suggested that several starting questions be developed to have on hand

3. [Technical Questions](#) Received

- Lilas Pratt introduced a number of questions that have been received from Portal users. The specifics of these items are detailed [below](#).
 - Letter Grades (from Hong Kong)
 - GRESB Assessments (from Hong Kong)
 - IP Units on Disclosure Report (from Slovenia)
 - Air Velocity Limits Warning Values (from Slovenia)
 - Wood/biomass IP units (from Slovenia)

- John Constantine noted that these will need to be quoted and prioritized. Some of them may also need to be part of a customized conversation.
- In regard to the letter grades, there could be two separate label reports: one with and one without letter grades.
- The subcommittee agreed that the letter grade discussion should be referred to the Business Development Subcommittee for further discussion.

4. Development Updates

a. [Covid Impacts Guidance](#)

- As noted [below](#), Chris Balbach had previously raised the question about whether or not guidance was needed for Portal users on how to address building conditions due to the Covid pandemic. He reported that he is working on developing some guidance as was discussed.
- Further discussion was deferred to the next meeting.

b. BEQ Portal API Documentation

- Stephen Roth related that Carmel Software has continued to update the Building EQ Portal API which is one of the SBIR project deliverables. The documentation is still in development and would follow that deliverable by a couple of weeks.
- All of the information should be available this summer.
- Chris Balbach requested a meeting to go over the documentation when available.

c. Digital Twins / MTG.BIM

- Mahroo Eftekhari attended the MTG.BIM meeting at this conference and reported that the MTG is keen to work with Building EQ on this issue.
- She will be contacting existing digital twins so as not to have to create something from scratch and noted that the BETTER tool also ties into this effort.
- There are no actions at this time. An action plan will be developed moving forward.

d. System Level KPIs

- Chris Balbach noted that this topic will be part of the discussion with DOE next week and will be tied into discussion the BETTER tool which is a good starting point. There are a lot of pieces and parts that could go beyond the BETTER tool.
- The system level KPIs are a natural progression for Level 1 audits to move.
- TC 7.6 will also be taking a look at this subject as well.

e. [Data Center Methodology](#)

- Michael Deru reported that he is still trying to connect with Steve Greenburg at LBNL about sources of performance data. He asked the subcommittee how they wish to proceed with data centers. ASHRAE definitions of data centers are noted [below](#).
- Data Centers have a different way of expressing energy usage so that some performance data is needed in order to be able to categorize and address data centers. Modeled/simulated data would be of limited value.
- Incorporating data centers into the Portal is a fairly heavy lift and will be more difficult than laboratories were to address. The effort needed to address this needs to be weighed against the value received to include them in the portal.
- The committee agrees that this is still something that needs to be addressed, but may be of lower priority than some other initiatives.

f. [NYSERDA Flexible Technical Assistance](#) Program

- Building EQ members met with a representative from the NYSERDA FlexTech program on May 18. Chris Balbach provided a brief overview of the discussion and action items from that call. Notes from that meeting are shown [below](#).
- The main takeaway is that the FlexTech program is looking for an estimate of energy savings as part of their audit requirements and they do have specific measurements that are recommended. Chris Balbach is working on his action item to map the FlexTech requirements against Building EQ In Operation assessment.

- Further discussion was deferred to the next meeting.
- g. Building EQ in [Green Globes](#)
- John Constantinide reported that the Green Building Initiative (GBI) requested a meeting with Building EQ members to investigate how to include Building EQ in their current Green Globes new construction and existing buildings rating.
 - Building EQ members met with representatives from the Green Building Initiative (GBI) on May 13, 2021. Notes from that meeting are shown [below](#).
 - John Constantinide used the alternative compliance pathways that were originally developed for LEED and modified those for Green Globes. Several versions were utilized and developed. These proposals were reviewed by Building EQ Committee members and now have been sent to GBI for review and comment. The documentation for compliance would be the Energy Audit Reports.
 - The Green Globes Existing Building rating is currently out for public review, so the TDSC may need to address questions or clarify ambiguity.
5. Research and Other Project Updates:
- a. CarmelSoft SBIR Phase 1 Project (Roth)
- Deliverable due date is next week.
 - Installed their own version of DOE Asset Score Audit template and included a button to interface with Building EQ.
 - This could be demonstrated to the subcommittee later this summer.
- b. RP-1836 Developing a Standardized Categorization System for EEMs (Balbach)
- Project in Phase 3.
 - Draft final report is due in July 2021.
 - Approved final report will be completed in September 2021.
 - A final presentation from the PI is expected.
- c. 1771-RP Energy Modeling of Typical Commercial Buildings in Support of ASHRAE Building Energy Quotient Energy Rating Program
- Michael Deru reported that another extension was approved for the project so that the project will now run through March 2022.
 - Permission was granted to share the building models and those are now available.
 - This data would be most useful if the existing AD methodology is continued. If the PRM methodology is implemented, the usefulness of the data to Building EQ is less clear.
6. Proposed Portal Changes Updates – Placeholders / Discussions deferred
- a. PRM Methodology – Integration with Standard 90.1 PRM
- b. Incorporating site-source change in ZeroTool methodology
- c. Std 62.1 Tables for ventilation quantities and measurements (COMNET)
7. Review of AD/IO Spreadsheet Methodologies – Placeholders / Discussions deferred
8. Closing Thoughts
- Chris Balbach introduced Michael Deru as the incoming Subcommittee Chair for the 2021-22 Society Year.
 - The Subcommittee recognized and thanked Chris Balbach for his time as Subcommittee Chair and for all that has been accomplished under this leadership.

Meeting Adjourned at 12:33pm EDT

Existing Definitions for Data Centers

Standard 90.1 does not have a specific definition for data centers in the standard. It does reference Standard 90.4 in multiple locations in the standard. However, it has this definition:

- **computer room:** a room whose primary function is to house equipment for the processing and storage of electronic data and that has a design electronic data equipment power density exceeding 20 W/ft² of conditioned floor area.

Standard 90.4 uses this definition:

- **data center:** a room or building, or portions thereof, including computer rooms being served by the data center systems, serving a total ITE load greater than 10 kW and 20 W/ft² (215 W/m²) of conditioned floor area.
- **computer room:** a room or portions of a building serving an ITE load less than or equal to 10 kW or 20 W/ft² (215 W/m²) or less of conditioned floor area.

TC 9.9 uses this definition:

- **data center:** a room or building, or portions thereof, with one or more ITE enclosures greater than 2 KW.
- **information technology equipment (ITE):** computers, data storage, servers and network / communication equipment.
- **ITE Enclosure:** a rack, cabinet, or chassis that is designed to mount ITE.

ASHRAE Value Proposition Talking Points

General Bullet Points on Benefits of Building EQ

- Building EQ helps building owners/operators understand their building's current energy usages and more importantly how they can improve their building's energy performance, either through physical renovation or changes in operating practice.
- Building EQ builds upon and goes beyond ENERGY STAR Portfolio Manager benchmarking by offering actionable recommendations and concrete energy conservation measures as part of the Level 1 Energy Audit.
- Building EQ helps ASHRAE members offer valuable services to their clientele through benchmarking and energy auditing
- Through the projects entered, the Building EQ Portal is developing a database that can support ASHRAE committees and ASHRAE research with the use of aggregated/anonymized data on building energy performance.
- Access to the aggregated/anonymized data on building energy performance will also provide valuable information to policy makers, building developers, and equipment manufacturers.

MOU/Organization Specific Bullet Points

For State/Local Municipalities in General:

- Building EQ provides a rigorous and effective process to implement building energy disclosure and energy efficiency regulations in a systematic and coordinated way.
- Building EQ builds upon and goes beyond ENERGY STAR Portfolio Manager benchmarking by offering actionable recommendations and concrete energy conservation measures as part of the Level 1 Energy Audit.
- With a customizable platform licensed from Building EQ. the processes and reports can be further customized to meet the municipalities specific energy regulations and mandates.
- A customized platform allows Building EQ to be integrated more seamlessly into existing state platforms and requirements.

For NASEO:

- Building EQ supports state sustainability mandates and goals to reduce energy and carbon use and ordinances by providing a consistent approach and standardized reports for an ASHRAE Level 1 Energy Audit as defined in ASHRAE Standard 211 Standard for Commercial Building Energy Audits.
- Building EQ builds upon and goes beyond ENERGY STAR Portfolio Manager benchmarking by offering actionable recommendations and concrete energy conservation measures as part of the Level 1 Energy Audit.
- When used in conjunction with Standard 211, Building EQ will empower municipalities to understand the energy performance and efficiency of the building assets in their jurisdiction and, more importantly, how to improve those buildings' performance, reduce costs, and comply with any energy regulations and mandates in force, either through renovation or changes in operational processes.
- With a customizable platform licensed from Building EQ. the processes and reports can be further customized to meet a state's specific energy regulations and mandates.

- A customized platform allows Building EQ to be integrated more seamlessly into existing state platforms and requirements.

For NYSERDA:

- Building EQ supports New York State energy benchmarking and auditing requirements by providing a consistent approach to an ASHRAE Level 1 Energy Audit as defined in ASHRAE Standard 211 Standard for Commercial Building Energy Audits.
- Building EQ connections to the DOE Asset Score Audit Tool via BuildingSync allow information from the Audit tool to be pulled into the Building EQ Portal to and to utilize standardized reports that meet the Standard 211 reporting requirements for a Level 1 Energy Audit.
- Because additional information beyond a Level 1 audit is collected as part of the Building EQ In Operation assessment, those fully editable reports can easily be augmented to meet additional NY state requirements.
- Building EQ builds upon and goes beyond ENERGY STAR Portfolio Manager by offering actionable recommendations as part of the Level 1 Energy Audit.
- When used in conjunction with Standard 211, Building EQ will empower New York building owners to understand the value and efficiency of their building assets and, more importantly, how they can improve their buildings' performance, reduce costs, and comply with the state's energy regulations with concrete building solutions.
- *NOTE: Specific bullets on the Flexible Technician (FlexTech) Program can also be added here.*

For ASHE:

- Building EQ supports the ASHE Energy to Care program as it builds upon and goes beyond ENERGY STAR Portfolio Manager by offering actionable recommendations as part of the Level 1 Energy Audit.
- Building EQ supports ASHE goals to improve energy performance while optimizing health care by providing a consistent approach and standardized reports for an ASHRAE Level 1 Energy Audit as defined in ASHRAE Standard 211 Standard for Commercial Building Energy Audits
- Building EQ helps health care facility owners and users to better understand their building's energy performance and how they can reduce consumption without sacrificing quality of patient care.
- The Building EQ Portal provides concrete energy conservation measures that can be adapted to any health care facility environment.
- Building EQ allows building projects to be grouped by campus and/or portfolio to better track information between buildings and over time.

For Higher Education Organizations:

- The Building EQ Portal is a tool to engage young members and to connect with students and colleges/universities by providing the following benefits:
 - Education –colleges and universities can expand their course offerings in building energy auditing/assessment, while engaging local ASHRAE chapters. This is of great value to students, faculty, and local ASHRAE members.

- Hands on experience– students can study and evaluate the buildings on their campuses (both to apply what they have learned and to gain valuable networking experience in the industry...right at their front door)
 - Improved operation – campus building operators can reduce school operating costs and enhance the credibility and visibility of the school as "green" organizations
- Building EQ allows building projects to be grouped by campus and/or portfolio to better track information between buildings and over time.

For Multi-building owners, Commercial property managers, and developers:

- Building EQ helps building owners and users to better understand their building's energy performance and how they can reduce consumption without sacrificing operation or occupant satisfaction.
- Building EQ builds upon and goes beyond ENERGY STAR Portfolio Manager benchmarking by offering actionable recommendations and concrete energy conservation measures as part of the Level 1 Energy Audit.
- Building EQ supports sustainability, carbon reduction goals, and "green" credibility through the conducting of an ASHRAE Level 1 Energy Audit as defined in ASHRAE Standard 211 Standard for Commercial Building Energy Audits.
- Building EQ allows building projects to be grouped by campus and/or portfolio to better track information between buildings and over time.
- They can more effectively promote their Building EQ scores across their management portfolio while customizing their display/presentation of these energy efficiency credentials.

For Utilities:

- Building EQ supports state sustainability mandates and goals to reduce energy and carbon use and provides a consistent approach and standardized reports for an ASHRAE Level 1 Energy Audit as defined in ASHRAE Standard 211 Standard for Commercial Building Energy Audits.
- Building EQ builds upon and goes beyond ENERGY STAR Portfolio Manager benchmarking by offering actionable recommendations and concrete energy conservation measures as part of the Level 1 Energy Audit.
- When used in conjunction with Standard 211, Building EQ helps utilities understand the energy performance and efficiency of the building assets in their territory and provides information on how to improve those buildings' performance, reduce costs, and comply with any energy regulations and mandates in force, either through renovation or changes in operational processes.
- The information collected in the Building EQ Portal can be used in conjunction with utility sponsored incentives to help further energy and carbon reduction goals.
- With a customizable platform licensed from Building EQ. the processes and reports can be further customized to meet a utility's specific energy reporting requirements.
- A customized platform allows Building EQ to be integrated more seamlessly into existing utility platforms and requirements.

Meeting Notes from Tuesday, May 18, 2021

ASHRAE Building EQ Committee: John Constantinide, Rob Risley, Chris Balbach, Trent Hunt,

ASHRAE Staff: Emily Porcari, Lilas Pratt

NYSERDA: Joanna Moore

Discussion Notes:

The Building EQ Committee provided a high level overview of the Building EQ program.

- In summary, the program is wrapped around a number of ASHRAE standards and primarily aligned with ASHRAE Standard 211 Standard for Commercial Building Energy Audits and provides a standardization and quality assurance around a Level 1 Energy Audit (In Operation assessment).
- Free offering for anyone to register on the Portal and get a Building Energy Performance Score.
- The reports are available to credentialed users for submitted and approved projects.
- Building EQ connects to Portfolio Manager by allowing the import of metered energy data from Portfolio Manager to the Building EQ Portal.
- While ENERGY STAR is a percentile score, Building EQ benchmarks on a scale moving towards net zero energy which makes it easy to track and compare a building's performance and improvement over time.

Joanna Moore provided a quick overview of the FlexTech program as it relates to Level 1 audits (<https://www.nyserdera.ny.gov/All-Programs/Programs/FlexTech-Program/FlexTech-Documents-and-Resources>).

- FlexTech is a cost sharing program that does provide a 50% cost share for a Level 1 plus audit (up to \$10,000). There are some eligibility requirements that must be met.
- The program has a list of pre-vetted providers, but the buildings can also use their own providers. The pre-vetted providers need to verify that they have a PE on staff.
- There is a check list of requirements – they don't verify that a full ASHRAE Standard Level 1 energy audit is performed. FlexTech has been around a long time, but Standard 211 is only about 18 months in the marketplace, so the Level 1 audit is relatively new offering.
- They are required to report back impacts both on customers served and energy savings – so that an engineering analysis based on some of the calculations provided by NYSERDA would need to be included.
- NYSERDA meets quarterly with the FlexTech consultants and could use one of those meetings to provide an overview of Building EQ to see if they could leverage the program for the customers that they are working with. The next meeting is schedule for September.
- Participation in the FlexTech program does not mandate statutory requirements on audits, but rather only mandate adherence with the FlexTech program requirements for cost sharing.

Next Steps to investigate alignment between Building EQ Portal and FlexTech requirements.

- First thing would be to see how Building EQ Portal outputs align with the FlexTech Level 1+ Report Guidelines. Specifically, item #3 Methodology would need to be met including the

use of New York State Technical Resource Manual (TRM). The TRM is really the base analysis requirements – trying to get away from best practices, rule of thumb to ensure that there is some level of thought behind the analysis.

- Building EQ does not dictate the methodology to be used in the analysis for the EEMs and their impacts, so it would be totally compatible with the use of TRM as a minimum level of analysis.
- Chris Balbach has volunteered to develop a case study to demonstrate how Building EQ works for the FlexTech consultants at their next scheduled meeting in September. A planning meeting in early August has been suggested to facilitate this overview.
- Lilas Pratt will do a Doodle Poll for that August meeting.

Green Globes Meeting Notes

Meeting Notes from May 13, 2020

- GBI is about 10 years into the development of their New Construction product. NC 2013 is currently approved. Current update (NC 2021) is completing redline, and public review version will be made available to us. Expected publication will be in late 2021 to early 2022.
- Existing Building version has been more recently developed and is not yet in circulation.
- NC 2021 will be established as first ANSI approved building performance assessment product.
- Keen interest in compliance interpretations and synergies offered by Building EQ with support for ASHRAE standards, in particular ASHRAE Standard 211.
- GBI reach is primarily based in the US market. Very interested in ASHRAE member reach in and outside of N America.
- Keen interest in refreshing an MOU with focus on collaboration in development, marketing, and education associated with building assessment.
- Consider prioritizing PRM methodology discussions with regard to use of available budgets for SY 21-22
- Place GBI interest and developments front and center in next Board report and presentation

Initial actions:

- John and Chris: Take a look at compliance interpretation strategies in light of Building EQ's As Designed and In Operation ratings and how best to align ratings with Green Globes point structure
- John will build off of a proposed compliance mechanism submitted to USGBC for incorporating Building EQ into LEED O+M.
- Lilas, following up on you circulating prior MOU to GBI, determine process by which we can support discussion for drafting update. Work with Bill on appropriate ExCom inclusion.
- John, Rob, and Bill, leverage this opportunity as we look to summer meeting agenda discussions, BOD reporting, and budget considerations.

DOE BETTER Open-Source Engine

From: Chris Balbach
Sent: Monday, June 7, 2021 3:14 PM
To: Pratt, Lilas
Subject: RE: TDSC Agenda - DOE Better open-source engine

No Problems – can we also add an item to discuss the BETTER open-source engine?

Notice that Harry is the DOE contact – adopting this open source engine could be a first step towards developing the structure needed for comparison kpi's. We already have all of the information needed to generate a 'better' report – either by calling their API or just re-using the open source code available from github (licensing needs to be looked at)

As a talking point with Harry, I want to see what other people feel about the 'value' of integrating analysis from 'BETTER' – it's recommendations are based on measured (not modeled) data and the cost savings breakdowns it generates may be enough to meet the needs of NYSERDA, etc.

If nothing else, Better's analytics can help an auditor prevent over-prediction of savings if they end up assigning savings to individual measures, even if just a ratio of the % of the category *(heating, cooling, etc). Many years ago, NOESIS Energy (they were merged with a company called LeaseQ who took them a different direction) had an approach for ECM savings that worked like this – users had to 'allocate' percentages of the annual heating / cooling and baseload energy to each ECM with a freeform description of how they justified the allocation. In other words, if you claimed 50% of heating energy saved with an individual ECM, that ECM better have been 'state of the art' as well as the existing condition (heating slope) very bad.

I'm looking for a low cost yet accurate enough method to move the "In Operations" Rating (with/without improvements) and customizable 211 Reports to something useful for ASHRAE membership and that does not attempt to replace what many firms already have.

The 'a chicken in every pot, a model of every building in America' stuff that I shared on Friday just is not all that useful without a great deal of information refinement. Not likely to happen with a "level 1" audit. But, the 5 data points required by Better are a slam dunk (we already have them)

Covid Impacts Guidance

From: Chris Balbach
Sent: Tuesday, May 11, 2021 10:15 AM
To: Charles Eley; Pratt, Lilas
Cc: Stephen Roth; Deru, Michael; Pratt, Lilas
Subject: Upcoming Technical Methodology Subcommittee - COVID 19 impacts: Topic of Discussion

I am planning to add a topic of "Covid Impacts" as a discussion point for our May 13th Technical Methodology Subcommittee meeting.

I'm doing this because EPA Portfolio Manager (a somewhat similar to BEQ as it is an operational rating, but yes different in a few key ways) released/updated some guidance for their "Operational Rating" users, as to how buildings receiving an EPA Score shall handle "COVID Impacts".

See https://www.energystar.gov/buildings/benchmark/covid_19_guidance

Especially an FAQ page, here: <https://energystar-mesa.force.com/PortfolioManager/s/article/Which-use-details-should-be-updated-to-reflect-changes-in-operations-due-to-COVID-19-1600088523718>

I'm interested in discussing the questions of "Should we make similar guidance documents available to our users (particularly the Operational Ratings users)?" Specifically, I'm interested in Charles' opinion as to if our current input for occupancy hours is sufficient to capture changes in a rating, due to "Covid Impacts". A few points of interest.

- 1) EPA's guidance on COVID data entry for EPA PM is specifically for US buildings (not for Canada!) – which I find interesting. I am not sure why, other than I guess one country's government can or should not speak for another's, and maybe there are MOU's etc. about this.

NOTE: This information applies **only to commercial buildings in the U.S.** Natural Resources Canada will be issuing separate guidance for Canadian stakeholders. In addition, no changes have been made to ENERGY STAR certification for industrial plants.

Technical Questions Received

From: Kelvin Chan
Sent: Monday, May 31, 2021 4:21 AM
Subject: RE: Building EQ Report Options - new suggestion

Some other suggestions while promoting bEQ in China for your considerations:

- 1) Some clients always requesting to reuse "Grade", such as A, A-, B, C... instead of score only, maybe we can also add the Grade together with the score?
- 2) Will ASHRAE consider to apply bEQ for the recognition under "GRESB" assessments, it is most common sustainable real assets assessment tools and recognized in global real estate asset investment industry. *The relevant linkage:* [About GRESB and ESG benchmarking](#)

I think bEQ can apply for their energy ratings (Appendix 5b) since Energy Star Certified and Energy Star Portfolio had been already recognized. *The relevant linkage:* [GRESB Documents](#)

And their evaluation form seems not difficult to be completed but shall be submitted by 1 Jun 2021 this year. See whether ASHRAE HQ will consider to apply for it or I can discuss with HK chapter to follow on this issue. [GRESB Building Certification Evaluation Form 2021.pdf \(gresb-prd-public.s3.amazonaws.com\)](#)

From: Mitja Lenassi
Sent: Monday, May 17, 2021 1:12 PM
Subject: RE: Building EQ Project 1461: Gerbiceva-SSRS

If I may, I would like to make a suggestion for bEQ Disclosure Certificate future change. Would it be possible to insert another row for ENERGY USE INTENSITY below IP units with SI units (kWh/m²-yr)? Although with smaller fonts. This would make for sure this energy certification program more "international".

Design Potential		ENERGY USE INTENSITY (kBtu/sf-yr)	Actual Metered	
Site	Source		Site	Source
232	622			

From: Mitja Lenassi
Sent: Saturday, May 22, 2021 9:44 AM
Subject: bEQ

Entirely with good intentions I am informing you about two issues I found during filling out the BEQ forms IO (In Operation):

First one is regarding unreasonable Validation Warnings. Air velocity should for sure not be normally higher than 0.8 m/s (2.62 ft/s = 157.5 fpm). Also, others two data I entered are within the requirements anyway.

- Validation Warnings -
- The air temperature is normally between 70 F (21 C) and 80 F (27 C) degrees
 - The temperature (T FUR) is normally between 60 F (16 C) and 80 F (28 C) degrees
 - The velocity of air is normally greater than 107.5 fpm (5.0 m/s)

Space by Space Measurement and Building Spaces (representative spot measurements required)

Required space measurements				Optional space measurements						
Location	Space Type	Air Temp (C)	RH	T FLR (C)	Vert dT	dBA	M S Air	CO2	ASH kPa	
Unit A10	Living room	21.8	38	27.4	0.8	42	0.25	843	101.4	X
Unit B4	Living room	22.2	35	28.4	0.9	45	0.28	786	101.3	X
Unit C8	Master bedroom	21.5	39	27.1	0.8	39	0.25	623	101.4	X
Unit D12	Living room	22.3	35	28.1	0.9	44	0.27	845	101.5	X

Instrument(s) last calibration date: 2020-04-15 Outdoor CO2: 413 Add Row

See ASHRAE Standard 55-2020 for air velocity limits:

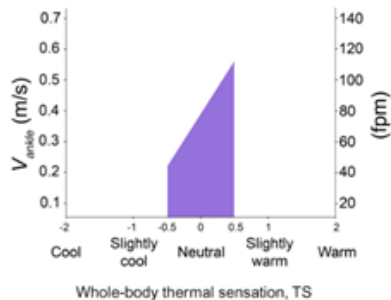


Figure 5-7 Air speed limits at 0.1 m (4 in.) above the floor as a function of whole body thermal sensation.

Another issue I found is concerning using wood / biomass metered data. The question is, why is there no possibility of entering data also in kWh, Weight (mass tons) or volume (m3)? I mean, when you are using SI units. But it seems this option it is not working well also using IP units!

WOOD / BIOMASS METERED DATA
 Use 12 consecutive months of billing data starting at least 6 months after the building is fully occupied

Start Date	End Date	Days	kBTU	Euro	Energy Use/Day
			0.0	0.0	
Additional Data					
			0.0	0.0	

Wood/Biomass Notes