

**bEQ Committee
Atlanta Interim Meeting
December 4-5, 2015**

Members Present: Michael Brandemuehl, Hoy Bohanon, Nate Boyd, Hugh Crowther, Hywel Davies, Charles Eley, Jaap Hogeling, Larry Markel, Tim McGinn, Harry Misuriello, Dan Nall, Ben Skelton

Not available: Jim Vallort (coordinating officer)

Staff: Lilas Pratt (staff liaison), Claire Ramspeck, Jodi Scott, Lauren Walters

Principal Motions

Motion #1b: Larry Markel moved that the current no fee submission program be extended through July 1, 2017 and that the 12 submission limit be removed (but the ASHRAE membership be retained)

Vote: Passed by unanimous voice vote, 7-0-0, CNV

New and Open Action Items

Dec 4-5, 2015 Atlanta Interim Meeting:

- **AI 2: Brandemuehl, Bohanon, and Crowther** to develop a draft business/strategic plan for review by the **bEQ Committee**.
- **AI 4: Pratt** to send committee responses to questioners on green power, Malaysia, and outdoor lighting
- **AI 5: Brandemuehl and Pratt** to contact Godfrey about the committee's current plans and how that affects their work.
- **AI 7: Pratt** to set up Basecamp account for bEQ committee

May 21-22, 2015 Atlanta meeting:

- **AI 8: Marketing subcommittee** to develop a recognition program for submitters.
- **AI 12: Methodology subcommittee** to look at mapping ENERGY STAR Portfolio Manager against bEQ scores.

January 25, 2015 Chicago Winter Meeting:

- **AI 3: Michael Brandemuehl** to have **Methodology Subcommittee** evaluate the submission review process for further automation and speed.
- **AI 8: Brandemuehl** to work with **Krishnan Gowri** on his request to incorporate bEQ into the rapid capture for energy modeling project.

June 29, 2014 Seattle Annual Meeting

- **AI 1: Eley** to lead an effort to document the bEQ In Operation process and methodology. (On Hold)

Meeting Minutes

Friday, December 4, 2015 – 8:00am-5:00pm

1. Call to Order - Meeting Convened at 8:12am
 - a. ASHRAE Code of Ethics (www.ashrae.org/codeofethics)
 - b. Committee Structure & Roster ([Attachment A](#)) – Information Item
 - c. Committee Purpose and Scope ([Attachment B](#)) – Information Item
2. Opening Remarks (Brandemuehl)
 - a. Introductions – round the table, background and connection to bEQ
 - b. Review of Agenda –
 - c.
3. Old Business
 - a. Approval of meeting minutes (none pending)
 - b. Review of Action Items ([Attachment C](#))
4. Update on External Activities
 - a. USGBC ([Attachment D](#))
 - There have been several calls with USGBC to discuss the integration of bEQ and LEED. While they are not interested in having two competing rating systems for earning EA credits (ENERGY STAR and bEQ), they would be amenable to looking at bEQ for building types not covered by ENERGY STAR scoring.
 - Michael Brandemuehl has created a first draft proposal on using bEQ to earn EBOM credits. The committee needs to review this for discussion in Orlando.
 - There are other credits within LEED that could also be addressed by bEQ, so it may make sense to expand the proposal to include those other areas. One possible area of interest in the Dynamic Plaque. USGBC's current focus is heavily centered on the Dynamic Plaque.
 - In Europe there is growing realization that asset ratings tell you how good the building's design is on paper, but tell you nothing about how the building performs when there are people in it.
 - The UK has a performance gap between the design claims and the construction realities. This is putting a lot of pressure on ratings programs based on design.
 - b. EPA ([Attachment E](#))
 - The current plan is to improve bEQ's relationship with EPA by better aligning the bEQ program with ENERGY STAR.
 - c. NYSERDA (See separate files sent on 10/30/2015)

- Their mission statement is *“to design, develop and implement a nationally recognized building energy label”*.
 - Questions that come to mind: Why are all these cities involved? What are they looking for that isn't in the nationally recognized programs that are already there (ENERGY STAR, LEED)?
 - They are approaching this effort from a real estate transaction and mandatory labeling perspective. They want to use existing rating systems for a label that resembles a nutritional label by gathering up information from existing programs. The final product be methodology agnostic, but would align the existing rating programs without confusing the marketplace.
- d. Canadian Green Energy Act, 2009 ([Attachment F](#))
- This is primarily an informational issue. The amendment would allow reporting and benchmarking
- e. Other state and municipal reporting requirements
- IMT does a good job keeping track of issues and developments.
 - There has been a request from cities for technical standard towards a net zero energy standard. ASHRAE is involved in the collaborative effort to address this.
- f. bEQ and ISO ([Attachment G](#))
- This is also primarily informational at this time. One question to consider is how important is bEQ compliance with standards?
5. General Update
- Hugh Crowther reported on the perceptions of the bEQ program among ASHRAE leadership and Finance Committee.
 - Within finance committee large high visibility investments/programs are when they are in the red. Programs currently in this category include HPB, bEQ, and Certification. The BOD is provided with a line item showing the expense of these programs every year. The programs don't have to make money, but they do need to show positive progress and achievement.
 - The current perception is that success for bEQ is measured by the number of buildings that have been awarded labels. If that is not an accurate measure of success, the committee needs to communicate that.
 - The committee needs to communicate the value of the bEQ program, the goals of the program are, and what is going to be done differently moving forward.
 - Mr. Crowther also provided some feedback on how bEQ may fit into presidential themes over the next couple of years
6. Strategic Discussions (Basic Properties of bEQ)
- a. What is bEQ?
- bEQ is a compilation of other ASHRAE products.
 - The process should be part of Standard 211P.
- b. Targeted Audience

- Building Owners vs. Engineers
 - Hoy Bohanon presented the case for building owners and Michael Brandemuehl presented the case for Engineers.
 - Building owners are about managing risk and investment – they want a good score. Engineers have to market to the buildings and that is not possible right now because they don't understand the value of the program.
 - Discussion points included how to get buildings interested in the program, how to help engineers market the program, what value the program brings to a building.
 - The value of bEQ is that it provides uniformity to the audit process, provides information that will help a building become more energy efficient, more energy efficient buildings are more valuable in the marketplace, improving building performance increases occupancy and demonstrates corporate responsibility.

- Voluntary vs. Mandatory
 - Hoy Bohanon presented the case for a voluntary program and Michael Brandemuehl presented the case for a mandatory.
 - In terms of methodology, there is no difference between voluntary and mandatory; however, a voluntary program is marketed to the building owners while a mandatory program is marketed to governments.
 - The decision on voluntary or mandatory is a policy decision, not a bEQ decision. However, the certificate is designed to have all the information that is needed for compliance as an alternative compliance vehicle.
 - The current direction is for cities to mandate benchmarking and then require auditing or retro-commissioning for buildings below a certain threshold. The benchmarking tool of government is ENERGY STAR; bEQ is unlikely to displace that.
 - High performance buildings aren't performing highly. There is a need for a simplified metric to identify a good or bad building.
 - Potentially the most successful way to market this is as a volunteer product, with both an asset and operational rating as a way of assessing the whether or not the building is high performance and why or why not.
 - If there is a standard that requires an audit and if bEQ is compatible with that standard, it can become the tool to execute that standard/code.
 - Program seems tilted towards high performance buildings, but the market seems to be more about improving underperforming buildings.
 - bEQ bEQ is a tool to improve your building; it can help a building meet their goals for a mandatory rating program with or without an audit requirement.

- Pros and cons of multiple target markets
- Impact of target audience on program structure

c. Methodology

- Standard 100 vs. ENERGY STAR
 - Michael Brandemuehl presented the case for Standard 100 and Hoy Bohanon presented the case for ENERGY STAR.
 - Discussion points included neutral variables (climate, hours of operation, level of service).
 - It was noted that the real value proposition isn't getting the score, but rather how to get better.
 - The ENERGY STAR baseline could be translated into a bEQ score and then compared to the DOE Asset Score.
 - Against EPA: logistics, moving baseline, loss of transparency, hitching to a cumbersome process, percentile score that doesn't indicate how much improvement is needed.
 - bEQ may get more customers from buildings that have already done ENERGY STAR benchmarking than elsewhere

- Fixed Baseline vs. Moving baseline
 - Hoy Bohanon presented the case for a fixed baseline and Michael Brandemuehl presented the case for a moving baseline.
 - For a building, once you get a score, the only score you are interested in comparing to is your own score and how to improve that.

- Numerical Score Only vs. Letter Grades
 - Hoy Bohanon presented the case for a numerical score only and Michael Brandemuehl presented the case for letter grades.
 - One suggestion was a graphic that indicates multiple scores from multiple programs and translates those to bEQ.

7. Business Plan Strategy Discussion

- Mr. Crowther led a brainstorming discussion on strategy and business planning for the bEQ program.

- Discussion points included:
 - What would the business plan look like right now?
 - What is the value proposition for success?
 - Who can provide the service?
 - How does ASHRAE help the building get a quality person to do an assessment?
 - What does bEQ offer to a building?
 - How does bEQ help a building improve?
 - Is there a need in the marketplace for a tool that helps a building improve?

- Conclusions:
 - bEQ provides an opportunity to serve the market through someone who has to do some analysis on a building to determine how to improve either thru mandate or interest.

- The bEQ market is those who want to improve their building and those who want a quality assessment.
- ENERGY STAR is the defacto benchmarking tool in the marketplace.
- bEQ offers more accurate solutions by increasing types of buildings covered, offering a comparable asset and operational score, addressing mixed use buildings/campuses.
- bEQ is about helping buildings reach their potential and creating real world impact and improvements.
- The bEQ process improves the value of an energy audit.
- bEQ adds value to ASHRAE members.
- The committee needs to coordinate with Standard 100P

AI 1: Brandemuehl to draft a strategic position document (this is what we are trying to do and these are the metrics) for discussion by the bEQ Committee. (Note: PPT sent out 1/3/2016)

AI 2: Brandemuehl, Bohanon, and Crowther to develop a draft business/strategic plan for review by the bEQ Committee.

AI 3: Pratt to ask Mary Townsend to put bEQ on BOD meeting agenda for Sunday to present business/strategic plan.

8. Subcommittee Reports

a. Methodology (Eley)

Green Power (off site renewable) Request:

- The subcommittee agreed that green power cannot be counted as renewable energy. This decision is in keeping with site boundary considerations and the recently released DOE ZEB definition.
- The committee may wish to recognize this as RECs in the future, although there is not a procedure for doing that at this time.
- This issue may need to be addressed differently for campuses at some point.

Malaysia Green Building Index:

- Malaysia is developing a LEED-type system for which they seem to want to use bEQ in some capacity.
- More information is needed. The subcommittee will try to connect with them in Orlando.

Outdoor lighting (parking/sports field):

- The subcommittee agreed that sports fields lighting use must be included for buildings they would normally include them (such as schools).
- However, large outdoor parking areas could be culled out.

bEQ Lite ([Attachment I](#)):

- The subcommittee agreed that any discussion and/or decisions on this proposal need to wait until tactical discussions have been completed.
- They would like for the committee to come up with a better name for the concept. Suggestions included bEQ Estimator or bEQ Predictor.
- It was noted that the committee doesn't want to drive bEQ business away from the assessors, so a different approach may be needed with an on-line system.

AI 4: Pratt to send committee responses to questioners on green power, Malaysia, and outdoor lighting.

- b. Marketing (Markel)
- Larry Markel reported that the subcommittee discussed both the LEED Dynamic plaque, bEQ Lite, and a bEQ recognition program.
 - They agreed that any action on these items needs to be preceded by an integrated business plan strategy. The committee needs to be sure that the outreach efforts are targeting the right people.
 - The subcommittee agreed that the committee should not move forward with a marketing strategy until discussions on the programs direction, goals and target audience are finalized.
 - The subcommittee also recommended that the current no fee submission program should be extended through the end of the next Society Year as bEQ is expected to be a focus of Tim Wentz presidential theme.

Motion #1: Larry Markel moved that the current no fee submission program be extended through July 1, 2017.

Discussion: It was noted that the programs largest submitter is about to top out at the 12 submissions. So, it might make sense to remove the 12 submission limit as well.

Motion #1a: Larry Markel moved to amend the motion to remove the 12 submission limit (but maintain the ASHRAE membership requirement).

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

Motion #1b: Larry Markel moved that the current no fee submission program be extended through July 1, 2017 and that the 12 submission limit be removed (but the ASHRAE membership be retained)

Vote: Passed by unanimous voice vote, 7-0-0, CNV

AI 5: Brandemuehl and Pratt to contact Godfrey about the committee's current plans and how that affects their work.

AI 6: Pratt to send out a meeting placeholder for 2nd Wednesday of the month as a recurring meeting. (Note: Placeholder sent on 12/7/15)

AI 7: Pratt to set up Basecamp account for bEQ committee

AI 8: Pratt to send out Doodle poll for a strategic meeting the week of January 4.

9. Full Committee Open Discussion

a. DOE Asset Score

- The committee discussed the DOE Asset Score and how it relates to the bEQ AS Designed rating. It was noted that the DOE asset score uses a lot of assumptions.
- Changes to bEQ should not replace the modeling done by members.
- It was noted that the committee may want to consider a name change since "As Designed" seems to be confusing people into thinking it is only for buildings still in the design phase.
- The Netherlands calls their asset rating the As Built rating.

- The committee needs to be aware of the disconnect between the design and what was actually built.
- b. EPA ENERGY STAR
- The committee revisited the discussion on whether the bEQ median EUI should come from ENERGY STAR or from Standard 100.
 - Since both processes primarily use the CBECS database, the current bEQ process is reasonably consistent with ENERGY STAR.
 - One suggestion is to provide an alternative to use the ENERGY STAR information that would use their energy ratio. That information is essentially what is done in bEQ and could be translated into a bEQ score.
 - The ENERGY STAR energy ratio is not published, but could be calculated using the ENERGY STAR Median/Baseline EUI and the Measured EUI.
 - The committee needs to finalize a proposed approach for integrating bEQ with ENERGY STAR.
 - Long term it would be helpful to also be able to use other building data bases beyond CBECS (especially for international applications).
 - Another suggestion is to include both the Standard 100 information and the ENERGY STAR information on a graph. The information and calculation methods could be approached through a filtering system: is the building inside or outside the US, ENERGY STAR eligible building or not, have your own building data base, etc.

AI 9: Pratt to calculate comparisons for several buildings of bEQ w/ Std 100, bEQ with EPA, and ES score so the committee can compare the impact.

- c. Business Model/Strategic Plan
- The committee will create a proposed business strategy for presentation to the BOD. The proposal should include how bEQ will work with other players (EPA, DOE, LEED) and/or utilize other existing products such as DOE Asset Score.
 - The brainstorming from this meeting provides the framework for the plan.
- d. Godfrey Concepts ([Attachment H](#))
- On hold until business plan is completed
- e. 2016-17 FY Budget
- Marketing implementation is being pushed off to 17-18
 - Data online entry is more pertinent for 16-17
 - On-line portal is pretty easy and not very costly
 - Will need to vote on standard budget in Orlando

10. Conclusions / Wrap-up Discussions

1:00pm

- a. Recommendations
- b. Review of Action Items to be assigned

11. Upcoming Meetings/Presentations

- a. Orlando Winter Meeting, January 2015
 - Methodology Subcommittee – Saturday, 1/23; 12:30pm-1:30pm
 - Marketing Subcommittee – Saturday, 1/23; 1:30pm-2:30pm
 - Full Committee – Sunday, 1/24; 8:30am-11:30am

12. Adjourn – **Meeting adjourned at 2:00pm EST**

Attachment A: bEQ Committee Structure – FY 2014-2015

bEQ Committee Members (voting): Michael Brandemuehl (Chair), Hoy Bohanon (Vice-chair), Hugh Crowther (Members Council Representative), Larry Markel (Tech Council Representative), Tim McGinn (Pub-Ed Council Representative), Nate Boyd (Member-at-Large), Harry Misuriello (Member-at-Large), Dan Nall (Member-at-Large)

bEQ Consultants/Others (non-voting): Hywel Davies, Charles Eley, Jaap Hogeling, Benjamin Skelton, Jim Vallort (Coordinating Officer)

Marketing Subcommittee: Larry Markel (chair), Nate Boyd, Hugh Crowther, Hywel Davies, Tim McGinn, Benjamin Skelton

Methodology subcommittee: Charles Eley (chair), Hoy Bohanon, Michael Brandemuehl, Jaap Hogeling, Harry Misuriello, Dan Nall

Attachment B: bEQ Scope, Purpose and Operation

This committee is responsible for the business planning, training and marketing of the programs of this enterprise. This committee has the overall responsibility to determine technical developments that are required to support these activities. This committee has the responsibility for directing the development of marketing programs to determined target audiences.

The committee shall report through ExCom to the Board of Directors.

This committee is responsible for the operation of the BEQ enterprise as determined by the Board and for coordinating the activities of all three councils regarding the ASHRAE Building Labeling program.

This committee shall review its Rules of the Board. Each change recommended by this committee shall be submitted to the Board for vote.

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Attachment C: Action Item List

Dec 4-5, 2015 Atlanta Interim Meeting:

- ✓ **AI 1:** Brandemuehl to draft a strategic position document (this is what we are trying to do and these are the metrics) for discussion by the **bEQ Committee**. (Note: PPT sent out 1/3/2016).
- **AI 2:** Brandemuehl, Bohanon, and Crowther to develop a draft business/strategic plan for review by the **bEQ Committee**.
- ✓ **AI 3:** Pratt to ask Mary Townsend to put bEQ on BOD meeting agenda for Sunday to present business/strategic plan.
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May 21-22, 2015 Atlanta meeting:

- **AI 8:** Marketing subcommittee to develop a recognition program for submitters.
- **AI 12:** Methodology subcommittee to look at mapping ENERGY STAR Portfolio Manager against bEQ scores.

January 25, 2015 Chicago Winter Meeting:

- **AI 3:** Michael Brandemuehl to have **Methodology Subcommittee** evaluate the submission review process for further automation and speed.
- ✓ **AI 7:** Pratt to send **Nate Boyd** information on previous bEQ Journal articles. **Closed**
- **AI 8:** Brandemuehl to work with **Krishnan Gowri** on his request to incorporate bEQ into the rapid capture for energy modeling project.

August 27 & 29, 2014 Methodology SubC Conference Calls

- ✓ **AI 6:** Pratt to modify As Designed procedure instructions, for review by the bEQ Committee, to reflect that fully designed buildings can get a preliminary label that would then be verified after construction is complete.

June 29, 2014 Seattle Annual Meeting

- **AI 1:** Eley to lead an effort to document the bEQ In Operation process and methodology. (On Hold)

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Attachment D: ASHRAE-USGBC 9/24/15 Conference Call Meeting Notes

ASHRAE-USGBC Conference Call Thursday, September 24, 2015

Participants ASHRAE: Tim Wentz, Jim Vallort, Michael Brandemuehl, Hoy Bohanon, Lilas Pratt

Participants USGBC: Brendan Owens, Jeremy Poling, Gail Hampshire

ASHRAE objectives:

- Follow-up to June call
- Try to find a way to incorporate IO rating into LEED
- Make sure that USGBC have info they need

Recap from last call

- Several different inquiries and concerns about that
- Trying to link performance across different metrics
- Working on and growing Dynamic plaque
- Looking how programs can deliver info that can feed into dynamic plaque
- Need to have output from bEQ be able to dump into dynamic plaque

ASHRAE:

- Actionable results distinguish bEQ from other programs.

USGBC:

- Lots of compliance paths for energy coming down the chute.
- Pressure on TAG to evaluate these
- Is there a formal proposal on how this would fit in?
- Competition with Portfolio manager
- TAG will ask why we need this as an alternative

ASHRAE:

- See it as an extension of Portfolio manager
- Happy to create a formal proposal
- Looking at mapping between bEQ & PM scores
- Stronger focus on HP buildings and change agent for low performing buildings

USGBC:

- One example was one alternative that used a different metric and that allowed users decide what metric worked for them and provided a research avenue for those metrics
- Struggle with what bEQ adds in benefit

ASHRAE:

- Additional buildings
- Campus ratings
- More differentiation on high end of scale

USGBC:

- Actually trying to avoid campuses - deliberately
- Prerequisite is for individual bldg metering
- Want to be able to focus on individual buildings
- Non PM buildings can use historical data and other comparisons
- Paths that limit/eliminate gaming are most desirable

ASHRAE:

- Explanation of normalization provided
- Comparison to ES have been anecdotally evaluations, no formal reports
- There are more variables in ES

USGBC:

- Best next steps would be formal proposal for just non-ES building types
- Also provide summary of technical approach with reference to more detail
- Timetable: several months to get thru TAG, then pilot stage, then technical advisory committee
- TAGs meet once per month, plus breakout groups
- Examples of alternative compliance path can be shared

AI: USGBC to share example proposals with ASHRAE

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Attachment E: ASHRAE-EPA 9/25/15 Conference Call Meeting Notes

ASHRAE-EPA Conference Call Friday, September 25, 2015

Participants ASHRAE: Tim Wentz, Michael Brandemuehl, Hoy Bohanon, Lilas Pratt, Mark Ames

Participants EPA: Jean Lupinacci, Mike Zatz

Recap of previous meetings:

- Discussed how to better align bEQ and ENERGY STAR
- Goal that they are complementary and not competitive
- Should be powerful tools used in tandem.
- Need to figure out how to better align them

ASHRARE/bEQ perspective:

- Trying to look for a path forward and identify opportunities
- Get to working level of how to forward with the vision from the previous discussions
- Using bEQ process to help buildings that have already gone through Portfolio Manager and using the EEMs to improve their performance

Current State of bEQ:

- Continued program development
- As Designed went to a single model approach
- Expanded to campus ratings
- ASHRAE research to better align and reconcile the design and operations side of thing
- One workflow for doing design operations, LEED, bEQ, 189.1, 90.1.
- RP is also getting into comparisons of data vs. modeling and different data sets that are out there.
- On the market side, retained Godfrey (marketing firm) to help guide bEQ's marketing message
- Tim Wentz has introduced a University Course for University of Nebraska – focused on energy audits using bEQ as a framework
- Working with NYSERDA
- Seems to be opportunities to help people to not have to duplicate the work for ENERGY STAR and bEQ so as to better help people improve their buildings.
- Went from using Portfolio Manager/ Target Finder to an alignment with Standard 100

EPA:

- The assessment of whether a building is good or not can be done with Portfolio Manager
- bEQ then provides the information on how to improve a building.
- Local ordinances do this as well, requiring benchmarking/disclosure part followed by the audit part
- Always felt that that the disclosure in raising interest in wanting to know how your building is performing
- Problem fundamentally is that in an attempt to distinguish itself, it became very different
- Kind of hard to do ENERGY STAR and then bEQ because they are so different
- Different business models: bEQ takes 40-50 minutes to do the walk-through

- Always felt that bEQ is more aligned on the audit side
- Have you been working with USGBC to align? The bEQ approach seems to align with their approach to points.
- So, while conceptually there is alignment, in reality seems hard to see how they could work together.

ASHRAE:

- Call with USGBC yesterday.
- One of the discussions was that too many compliance paths can be confusing and create gaming.
- Don't want to see ourselves as a complete different path than ENERGY STAR.
- bEQ has quite a bit of international interest, so that would be a different market from ENERGY STAR. In those cases, couldn't only see ourselves as only a follow-on to ES.
- Where do serve the same market, would be helpful to align

EPA:

- We do participate in many ASHRAE things, and always seem to come out on the wrong side of that.
- Agree conceptually with alignment, but don't really see a path forward for that.
- EPA is interested in helping the environment; the consensus process at ASHRAE doesn't always align with that.
- ASHRAE's consensus process makes it difficult to know how to make a fundamental alignment – adding a link is easy, but overcoming fundamental differences in approach is much more difficult.

ASHRAE:

- Overcoming all the barriers between ASHRAE and EPA could be a long conversation.
- Just 3 years ago, bEQ was using Portfolio Manager and Target Finder to determine the median EUI.

EPA:

- Not a lot of opportunity right now, but we are ramping up to the update to the 2013 CBECS.
- As part of that process, there may be an opportunity for bEQ to comment on what EPA is doing

ASHRAE:

- In the short term, bEQ will probably not go away from a raw score to a percentile score
- If bEQ would go back to using PM/TF, would that be a welcome thing?

EPA:

- Our audience is the building owners themselves, not the engineers who understand the technical nuances
- When you have to explain that you use the underlying methodology – hard to understand.
- Better if you get your ES score and then use bEQ for the audit part, that is easier to understand.
- Would be better to say, get your ES score and then do bEQ to find out how to get better.

ASHRAE:

- Looking to do a mapping of the two scores
- Are their contacts or resources within EPA that ASHRAE can tap into for questions

- Finding that building owners are the real audience.

EPA:

- Need to be sure that the mapping is accurate as changes are made to the same building.
- Mike Zatz would be a good resource, can share his email address
- The scores might not align the way we think they align due to the differences in approach and calculation.
- Right now we are not integrated in a great way.
- For EPA, while we are not changing how we do the assessment, there will be new data and refinement to the methodology, there may be an opportunity for bEQ to track that and look for alignment.

ASHRAE:

- Discussion so far has been on the alignment of technical side of things.
- Also looking for marketing opportunities: pilot studies, case studies, ways to promote the benchmarking opportunities out there, demonstration approaches
- Are there opportunities for EPA and ASHRAE to collaborate on some of those efforts?

EPA:

- With any of our partners, really working at a portfolio level and not really getting down into the details, so not sure how that would work
- Very difficult to talk about collaboration when not really very well aligned on a fundamental level.
- If there is someone who has done both an ENERGY STAR and a bEQ that might be a good story, that might make a good case study. But, that is usually initiated by the building owner.

ASHRAE:

- Looking at it that bEQ would be an extension of the benchmarking exercise as a way to document improvement opportunities and providing actionable recommendations

EPA:

- Currently on the website, the only mention of Portfolio Manager is how bEQ is different from it.
- We can't really be in a position as a government agency of endorsing one private program when there are several different options of what they can do.
- Also problematic when there is a significant cost involved with those alternatives. There is a line there. Can inform people of other opportunities that align with ENERGY STAR, but that is not a marketing effort. That information could be as part of a list or a mention in an article one time.
- Can highlight those organizations that are doing more, but can't exclude anyone. Do this through our awards and recognition programs for partners and benchmarking efforts.
- LEED for example, requires a specific ENERGY STAR score as a prerequisite, so they are fully aligned, but we never tell people to use one or another. Instead, we point out that these programs are leveraging ENERGY STAR as part of their program.

ASHRAE:

- That suggests that even if fully aligned, there would be significant barriers as a government agency, in recommending bEQ as a follow on program.

- Hypothetically, if the alignment was well understood and a one-one to mapping, EPA is really constrained as to what could do in terms of joint marketing.
- If bEQ were using ENERGY STAR as a way to get an bEQ score, wouldn't that be the same thing?

EPA:

- A lot of these building labeling approaches, because there hasn't been much market uptake on those, we haven't really done much to highlight other building labeling programs.
- If you ended up as fully aligned, then it would be in the same vein, but still can't recommend it. Would be saying that all of these programs leverage the ENERGY STAR score and use it in their programs.

ASHRAE:

- Sounds like unless we are aligned with ENERGY STAR, there are really very few opportunities for collaborations?
- If we are aligned, are there opportunities to enter data into ES and then download that for other activities for bEQ.

EPA:

- Thing about ES is that is supposed to be a simple communication of what they can do. From a marketing perspective, it can be hard to explain differences.
- Fine checking in with you guys and getting feedback.
- Like to provide a platform for people. For awhile, LEED was looking at an automated way to get their information, but ultimately didn't go there.
- EPA's platform provides a lot of way to tap into it, try to work through that with you. Have created reporting templates for various cities without ENERGY STAR really being involved other than providing an electronic platform that allows that.
- In order to do their bEQ work, there is ENERGY STAR data that is needed. There is a way to get that data out of ENERGY STAR, those links exist and can be used without help from EPA, but EPA can also provide help if needed.
- Many people build off of ENERGY STAR, some just take the score, others are taking the raw data and doing other things with it.
- Other organizations initiate the connection to tap into ENERGY STAR on their website.
- EPA highlights successful partners on their website.

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Attachment F: Canadian Green Energy Act, 2009

From: David Underwood

Date: October 30, 2015 at 9:56:58 AM MDT

To: Cochrane, Doug CCS, Glenn Kilmer

Cc: Michael J. Brandemuehl, Benjamin Skelton, Bjarne W. Olesen, "Chuck Gullledge, David Underwood, Jim Vallort, Littleton, Jeff, Pat Graef, Tim Wentz, Townsend, Mary, Walid Chakroun

Subject: FW: Large Building Energy and Water Reporting and Benchmarking Update

All,

This looks like our opportunity to press forward with proposing bEQ as a compliance path and recommending the BEEP and BEMP qualifications we have to offer

From: Feedback to CEE (ENERGY)

Sent: Friday, October 30, 2015 10:30 AM

Subject: Large Building Energy and Water Reporting and Benchmarking Update

On October 28, 2015 the government introduced amendments to the *Green Energy Act, 2009* that, if passed, would enable the implementation of the Ministry of Energy's proposed large building energy and water reporting and benchmarking initiative, which will help Ontario's large building owners manage their energy and water consumption and save money on their utility bills.

The proposed amendments would **enable** the government to:

- Require large building/property owners, which would be specified in a subsequent regulation, to:
 - Report their energy and water consumption, as well as other building information such as greenhouse gas emissions and square footage to the Ministry of Energy
 - Verify reported data through a licenced professional to ensure accuracy and fairness
 - Develop and publish Energy Conservation and Demand Management Plans
- Publicly disclose reported energy and water consumption information, as well as other building characteristics
- Require electricity, natural gas and water utilities to make energy and water consumption data available to building owners so they are able to comply with the requirement
- Deem for the purposes of section 17 of the *Freedom of Information and Protection of Privacy Act* that information that is not made publicly available by the Ministry of Energy will be considered to have been supplied to the Ministry of Energy in confidence

The Ministry of Energy is planning to post a revised policy proposal, incorporating stakeholder feedback obtained during consultations held from January 2015 to June 2015, to the Environmental Registry and Regulatory Registry in late Fall 2015 to provide stakeholders with another opportunity to provide feedback. This feedback would be considered in the development of a subsequent regulation, pending passage of the proposed legislation.

The Ministry of Energy is considering phasing in the requirement, with Ontario's largest buildings potentially being required to report for the first time in Fall 2016/Winter 2017.

- Please send any questions to Feedback.to.CEE@ontario.ca.
- Background Information: [Large Building Energy and Water Reporting and Benchmarking Initiative](#)
- Proposed Legislative Amendments: [Energy Statute Law Amendment Act \(Conservation and Long-Term Energy Planning\), 2015](#)

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Attachment G: bEQ and ISO

From: Reiniche, Stephanie
Sent: Friday, November 06, 2015 11:04 AM
To: Jones, Nicole; Pratt, Lilas
Subject: RE: bEQ and ISO

There might be some others that we're tracking through the ISO/TC 163 and 205 JWG4 as well.

From: Jones, Nicole
Sent: Friday, November 06, 2015 10:56 AM
To: Pratt, Lilas; Reiniche, Stephanie
Subject: RE: bEQ and ISO

These standards that Mike is mentioning belong to ISO/TC 242 Energy Management. The secretariat is Jason Knopes. Here is his e-mail address: jknopes@ansi.org
Hope this helps.

From: Pratt, Lilas
Sent: Wednesday, November 04, 2015 3:05 PM
To: Reiniche, Stephanie, Jones, Nicole
Subject: FW: bEQ and ISO

Please see the email stack below and Hoy's question on how the ISO activity reported below relates to the ISO TC's that ASHRAE is involved with ...

Your thoughts would be most appreciated.

From: Hoy Bohanon
Sent: Tuesday, November 03, 2015 2:35 PM
To: Pratt, Lilas
Cc: Michael J Brandemuehl
Subject: Re: bEQ and ISO

Yes, I think we need to discuss it. Could you check with Nichole Jones to see how all the activity Mike is discussing relates to the TC's that ASHRAE is involved in. For example, ASHRAE serves as secretariat for TC 205.

Also, bEQ is not a standard, and I don't know if we want it to be. But one of its strengths could be basing actions and bEQ methods on standards.

On Nov 3, 2015, at 2:14 PM, Pratt, Lilas wrote:

Michael and Hoy,

Please see the email chain below. Is this (the ISO issue) something the committee needs to discuss?

From: Mike Barker
Sent: Wednesday, October 28, 2015 11:36 PM
To: Pratt, Lilas
Subject: Re: Fwd: bEQ and ISO

Thanks for the prompt reply.

1) ISO 50001 seems to be making headway - I assume that bEQ will want to tie in with movement toward ISO at some point. ISO seems to be breaking out with a slew of focused standards

ISO 50004:2014

Energy management systems -- Guidance for the implementation, maintenance and improvement of an energy management system

ISO 50002:2014

Energy audits -- Requirements with guidance for use

ISO 50006:2014

Energy management systems -- Measuring energy performance using energy baselines (EnB) and energy performance indicators (EnPI) -- General principles and guidance

ISO/AWI 50008

Commercial building energy data management for energy performance -- Guidance for a systemic data exchange approach

ISO 50015:2014

Energy management systems -- Measurement and verification of energy performance of organizations -- General principles and guidance

2) Metric version - Can we help build the metric version ? Or maybe test the beta for you

On Wed, Oct 28, 2015 at 11:44 PM, Pratt, Lilas wrote:

Mike,

Thank you for your interest in bEQ. Many of the items that you are asking about are on the radar of the bEQ Committee but have not yet been completed.

1. There is no further news on ISO compliance. I believe that the committee may be waiting on the work of SPC 214 before tackling that subject.
2. The bEQ workbook is not yet available in metric, but the committee is hoping to put the workbook data entry online in the not too distant future and including both IP and SI versions will definitely be part of that work.
3. I'm not sure which pull down menus you mean. If you mean in the workbook, we do not currently have a list of those, but could probably develop it if needed.
4. Good luck with the BEAP! I look forward to hearing that you have become the first auditor in Africa!

Please let me know if this answers your questions.

From: Mike Barker
Sent: Tuesday, October 27, 2015 8:00 AM
To: Pratt, Lilas
Subject: Re: Fwd: bEQ and ISO

Greetings once again

1. Just curious - any further news on ISO compliance ? Maybe ISO 50001 ?
2. Is the bEQ Workbook available in metric ?
3. Is there a list of all the options in the pull-down menus - this would help speed up the learning process.
4. I am signing up for the BEAP, and hope to become the first Auditor in Africa

On Thu, Jul 25, 2013 at 5:17 PM, Pratt, Lilas wrote:

Mike,

I have been reviewing the ISO standards that would seem to be relevant to bEQ including ISO 12655, 16343, 16344, and 16346. I don't really have a conclusive answer for you and am going to suggest that this question go to the bEQ International Subcommittee for them to mull over and make appropriate recommendations to the full committee. ASHRAE has also approved the development of a new standard on building energy rating systems (SPC 214P) and these documents will be a good resource for them.

A couple of general thoughts:

ISO 12655 appears to focus on how the energy performance of building subsystems is expressed. As far as I can tell, there is nothing in bEQ that contradicts this information as the building assessor is free to express the subsystem information however they feel is most appropriate.

I will need to spend some more time reviewing the three related standards (16343, 16344, 16346) to understand how bEQ fits in or complies. They do seem to be written to guide national bodies that are creating mandatory ratings and assessment programs (16346 defines what must be decided by a national body) and bEQ is a voluntary program, so I'm not sure how that fits in. Standard 16343 may be the most relevant as its focus is on energy certification.

I have copied the bEQ committee leadership and the International subcommittee chair on this email to bring them into the loop and to get this issue onto the committee's radar.

Thank you for pointing it out and we'll keep you apprised of the ongoing progress.

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Attachment H: Godfrey Concepts

Notes from Godfrey:

When reviewing the concepts, start with the descriptive paragraphs, as the execution of the concept can be handled in many different fashions.

- For example, we could easily replace the word “Science” because it is not a key element in the concept, just a word from one execution.
- So, the word “Science” could easily be swapped out for a less controversial or more emotional word.
- We had many different headlines; we can easily provide you with a new option or two.

It is really important that we don’t merge the concepts. We do get that request quite often, and while it does appease the masses it makes for truly unremarkable communications.

- That said, there are elements that can float from one concept to the other if they are well-liked.
- Reasonable feedback might be “We chose concept A, but we really latched onto XYZ element from concept B. Could that fit into the concept?”
- In such cases, we will review to make sure that the request would not hurt the marketing. If it does confuse the effort, we will tell you, if not, then we will make the change and provide you with an updated overview for the chosen concept.

Concept 0: Information Design

Examine how bEQ findings and recommendations are conveyed in light of your position as the most actionable program.

- Current graphics are focused on the static present status.
- Is there a way to speak more to future potential?
- Where do future potential numbers come from?
- What ENERGY STAR Portfolio Manager does for a building group in the past, bEQ can do for an individual building in the future.

Concept 1: Empower

Leverage a sophisticated, high-tech aesthetic to introduce the program as a powerful way to take charge of energy use in the built environment.

Art work ideas

- Embrace complex imagery
- Use the graphic equalizer as a symbol for actionable diagnostics
- Impose silhouettes over building photography to represent the individual’s mastery over the building

Copy ideas:

- Strike a confident expert tone
- Reinforce the notion of empowerment by using terms like power, control, and science.
- Position the customer as the true change-agent

Concept 2: Advance

Take on a bright, optimistic tone and a friendly visual presence to introduce a program that actively helps people get better performance from the spaces they manage.

Art work ideas

- Use bright colors and info-graphic-style illustrations
- Represent the service as comprehensive yet approachable
- Adopt a visual sensibility that's readily associated with energy savings and sustainability

Copy ideas:

- Take on a voice of optimism and encouragement
- Use terms of personal advancement like smart, genius, and better
- Communicate complex ideas with simple terms

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Attachment I: bEQ Lite Strawman

“bEQ Lite” – Concept Exploration

Under this concept “bEQ Lite” would:

- Apply to the In Operation rating
- Require an on-line data entry system for the bEQ In Operation rating
- Not require a PE or certified assessor
- Use metered data entered into Portfolio Manager (portal link) or use data entered directly into bEQ system
- Provide feedback to the building owner for additional options
- Present limited documentation back to the user (as compared with a full bEQ rating)

The bEQ Lite product is envisioned as a precursor to a full bEQ In Operation assessment. It would allow a building owner to enter data directly without the expense of hiring a PE or certified assessor. The product would provide feedback on a building’s energy use only and would not cover the IEQ survey or the suggestions for energy efficient measures. Energy end use breakdown and water use information could be included as optional inputs.

The required information would be from current Form 1 (building characteristics) and Form 2 (metered energy use). Information from Form 5 (end use breakdown) and Form 6 (metered water use) could be included as optional inputs.

Ideally, a portal link with ENERGY STAR would allow buildings that already participate in Portfolio Manager to download their metered energy data into the bEQ Lite system. Buildings that do not participate with Portfolio Manager would be required to enter the metered data into the online system. A link back to Portfolio Manager would be provided for those buildings that are not participating with ENERGY STAR (to encourage use of Portfolio Manager).

The system would be designed to provide feedback to the building owner once their data has been entered or downloaded from Portfolio Manager.

The building owner would first receive an “unofficial” or “unverified” rating score. Specific feedback would be automatically generated based on the rating score received. Feedback examples are:

- For all buildings that did not use a Portfolio Manager portal link, a suggestion to use ENERGY STAR as a benchmarking tool for their building with a link to that site
- For ratings above a certain threshold (perhaps a B or above), a suggestion to pursue a full bEQ rating with a PE or certified assessor in order to receive a plaque for display
- For buildings below a certain threshold (perhaps a C or below), a suggestion to pursue a full bEQ rating with a PE or certified assessor in order to receive an energy audit that would help them increase energy efficiency and save money with actionable suggestions

Documentation presented to the building owner would be limited to information on their energy use only (and possibly the optional water use). They would receive an abbreviated workbook report (documenting the information entered) and a modified Dashboard that is specifically designed for bEQ Lite in order to distinguish it from the documentation for a full bEQ rating. The documentation would NOT include the press release template or the plaque artwork that are included with a full bEQ rating award.

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Attachment J: Green Power Policy

From: Pratt, Lilas
Sent: Monday, July 13, 2015 2:28 PM
To: 'Acker, Brad
Subject: RE: bEQ Issues

Brad,
I did speak with the committee and they do understand that it is true geothermal water rather than a heat pump. However, the bEQ rules for a qualified renewable system require that the renewable system be located on the building or site and that it meet one of three other criteria regarding ownership (see definition below from General Instructions Tab of Workbook). As the system in question is a district heating system, it would not meet any of these criteria.

The good news is that the committee agrees that this is a green energy source that probably needs some additional rules and/or consideration, which they will look into moving forward. The bad news is that it does not fit the rules for a qualified renewable energy system under the bEQ rules.

Please let me know what other questions I can answer.
Thanks.
-Lilas

qualified renewable energy system(s): System(s) located on the building or site AND meeting one or more of the following criteria: 1) the building and system have the same owner, 2) the building and system have the same utility account holder; 3) the building is owned by a public or non-profit entity that has a lease or power purchase arrangement with the owner of the renewable energy system.

Campus owned ground-mounted renewable energy may be allocated to buildings on campus using an appropriate and disclosed methodology, provided that double counting does not occur.

From: Acker, Brad
Sent: Monday, July 13, 2015 2:19 PM
To: Pratt, Lilas
Subject: RE: bEQ issues

Thank you Lilas,

I would just like to make sure that you convey that is true geothermal water, not a geothermal heat pump as most people assume. I did get my paperwork submitted, so will wait to see the results.

Brad Acker, PE
Research Scientist

From: Pratt, Lilas
Sent: Wednesday, July 08, 2015 9:17 AM
To: Acker, Brad
Subject: RE: bEQ issues

My apologies for taking so long to get back to you on this. My email blew up right before the ASHRAE meeting and between that, attending the meeting (which was June 26 thru July 1), the holiday weekend, and

trying to dig my way out of what is now a mess of an inbox ... well, a number of things have fallen thru the cracks.

The bEQ free submission offer for ASHRAE members has been extended through January 2016 – so plenty of time for you to complete your work.

I'm not sure if geothermal is considered renewable or not. Let me forward that question to the committee and get a ruling for you. I will get an answer as quickly as possible.

From: Acker, Brad
Sent: Monday, June 29, 2015 11:55 AM
To: Pratt, Lilas
Subject: RE: bEQ issues

I have a couple questions,

I'm working to get a free certification done for our city hall, they were interested in the process and so was I. What is the date you need the information?

The City of Boise has a geothermal hot water district of which this building gets its heat. This is 170 F water pumped out of the ground, not heat pump geo thermal and not a typical district hot water as is modeled in the Energy Star system. In Energy Star we enter this as "other", but have not been able to have a good conversation with the EPA folks about this. I'm wondering if this should be considered renewable?

Thanks,
Brad Acker, PE
Research Scientist

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Attachment K: bEQ Malaysia

From: Comstock, Steve
Sent: Monday, August 31, 2015 9:34 AM
To: michael.brandemuehl@colorado.edu; bohanoneng@gmail.com; Pratt, Lilas
Cc: Ramspeck, Claire; Gupta, Vanita; Scott, Jodi
Subject: RE: bEQ for Malaysia Green Buildings

Lilas, I think you are right, it could be a licensing opportunity.

I will be pleased to follow up on that if the committee leadership so desires. I know Ng very well since he organizes the HVAC training in Malaysia.

If so, I would suggest first step would be for someone (Lilas?) to respond to him regarding what is being done in other countries with GBI or GBC and to advise Ng that I will follow up re licensing. We can see where that goes.

From: Pratt, Lilas
Sent: Monday, August 31, 2015 9:11 AM
To: michael.brandemuehl@colorado.edu; bohanoneng@gmail.com; Comstock, Steve <comstock@ashrae.org>
Cc: Ramspeck, Claire <CRamspeck@ashrae.org>; Gupta, Vanita <VGupta@ashrae.org>; Scott, Jodi <jscott@ashrae.org>
Subject: FW: bEQ for Malaysia Green Buildings

Michael, Hoy, and Steve;

Here is a request for bEQ in Malaysia ... in sounds a little bit like it might be a "licensing" opportunity like what we have discussed occasionally in the past.

Please see the email below.

From: Ng Yong Kong
Sent: Monday, August 31, 2015 8:38 AM
To: Thomas Phoenix; Ross Montgomery; Pratt, Lilas
Cc: Thiam Leong Chen; Lam Kim Seong
Subject: bEQ for Malaysia Green Buildings

Dear Tom, Ross and Lilas,

Tom, hope you can remember me, I went to Japan and S.Korea Chapter Charter together with you and Edward Tsui in April this year. For Ross, I think we met in Taiwan CRC.

Last Friday, the Technical Committee on Green Buildings had a meeting to talk on rating our Green Buildings (besides certifying Platinum, Gold, Silver and Certified level) on the energy portion. There was a suggestion to give 1 – 5 Star Energy ratings for buildings running efficiently. And I suggest to the committee to consider using ASHRAE bEQ

I write to enquire on how we can use our Malaysia Green Building Rating tools to incorporate

the ASHRAE bEQ on the EE part. Our rating tool is called the Green Building Index (GBI).

Points to note:

1. We have 14 rating tools including NRNC (Non-Residential New Construction), Hotels with different Stars or Resort, Retails, Hospitals, Industrial (Factories), Data Center, Township, Interiors (what you called Core and Shell).
2. We calculate the energy used based on 52 hours per week or 2,700 hours for NRNC (office) and of course 24/7 for hospitals or hotels.....
3. I attached here some slides to show our tools. We use the term Building Energy Intensity (BEI), Energy Use Intensity (EUI) for factories and PUE for Data Centre.

The main difference we have over other rating tools like LEED are:

1. A Certifier (usually a qualified Professional Architect or Engineer) is assigned to go to the building to check, inspect and verified all installation are done as per in design and verified the energy use. Owner need to show proof of energy use over a period of time. (at least 50% occupancy over 6 – 12 months)
2. Our Certification has a validity period of 3 years only and need to re certified and we stressed sustainable maintenance team.
3. For LEED, you have CxA but here we have CxS (Commissioning Specialist)
4. We conduct a 3 day GBIF Course (Green Building Index Facilitator or what you called LEED AP) and they have to pass a Group Project Presentation and Multiple Choice Questions in order to practice as a GBIF or “ LEED AP”

We will need to address the following issues:

1. Minimal or no extra cost to the owner if bEQ is incorporated. How can we address bEQ professional and ASHRAE trademark?
2. Will ASHRAE accept GBI's benchmark on BEI, EUI and PUE? And not insist on separate research, simulation etc.
3. How does ASHRAE works with other Green Buildings Council in other countries? Edward Tsui told me currently you guys are talking to HKGBC.
4. How long will the process take?

I also cc this email to TL Chen who is also in the committee and is our ASHRAE DL in Malaysia and also to KS Lam who is our MASHRAE Past President and in the TC.

Yours Faithfully,

Ng Yong Kong P.E., GBIF.

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Attachment L: Parking/Outdoor Lighting

Parking Lighting:

From: Kelvin Chang
Sent: Friday, November 06, 2015 7:52 AM
To: Pratt, Lilas
Subject: Questions

I had two questions for you

We are following the definition of gross floor area used in many ASHRAE publications:

"the sum of the floor areas of all the spaces within the building with no deductions for floor penetrations other than atria. It is measured from the exterior faces of exterior walls or from the center line of walls separating buildings but it excludes covered walkways, open roofed-over areas, porches and similar spaces, pipe trenches, exterior terraces or steps, roof overhangs, parking garages, surface parking, and similar features."

Therefore, a screened covered patio would not be included; right?

My other question pertains to a garage that I'm modeling. It's an attached fire station garage with unit heaters. The way I interpret the guidelines, I would also need to cool this space, though there are no established cooling systems for the garage.

Is this correct?

Dr. Kelvin Chang | Project Engineer
Milan Engineering
925 S.Semorán Blvd | Suite 100 | Winter Park, FL 32792

Other Outdoor Lighting:

From: Pratt, Lilas
Sent: Tuesday, October 20, 2015 10:31 AM
To: 'Kelvin Chang'
Subject: RE: BEq Question

Kelvin,

For the demand question, this is part of the energy audit information for the assessment so it does not affect the rating, per se. But, they are trying to get at the peak demand for the building as a whole, so the bEQ committee leadership has recommended combining all the meters and going with the peak of that.

On the sports field lighting, you are correct that in order to exclude the sports field lighting, 12 months of metered data would be needed. While lighting would probably be easier to calculate than some other energy uses, sports fields still have a variable use, so any calculation would be an estimate at best. And, the committee is pretty firm on the need for metered data rather than estimates. Sorry about that.

On your original question (on the solar energy) – based on that bill, the aggregation meter would appear to be the solar kWh.

Please let me know what other information we can help with.

From: Kelvin Chang [mailto:kelvin.chang@rtmassociates.com]

Sent: Monday, October 05, 2015 4:03 PM

To: Pratt, Lilas

Subject: Re: BEq Question

I also had two other questions:

In the case that there are two meters for a site, how should the max demand be determined? For energy consumption (kWh), I just combined the two. For demand (kW), the max might be in different months, also combining the two meters' demand might not be a fair assessment since the demand might occur at different times in the month.

In the case of the building with large external lighting consumption (to light sports fields), I have suggested that

they sub-meter that consumption. Do we have to wait for a year of bills from this meter to be able to file this?

Is there any way I could calculate the consumption of the field lights (from an accurate schedule), and remove this from the meter reading? I know it's unlikely, but I thought that I'd ask just in case.

Sorry for all the questions

I really appreciate you helping me find the answers!

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Attachment M:

(On hold for use if needed)

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