

**bEQ Committee  
Atlanta Interim Meeting  
September 20-21, 2016**

**Members Present:** Hoy Bohanon (chair), Hugh Crowther (vice-chair), Esteban Baccini, Darryl Boyce, Nate Boyd, Hywel Davies, Charles Eley, Julia Keen (by phone), Kushagra Juneja (by phone)

**Not available:** Jaap Hogeling, Harry Misuriello, Dan Nall, Edward Tsui (coordinating officer)

**Staff:** Lilas Pratt (staff liaison), Claire Ramspeck, Vanita Gupta, Joslyn Ratcliff, Lauren Walters, Emily Sigman, Jim Scarborough (by phone)

**Guests:** Bruce Hunn (by phone)

**Principal Motions**

**Motion 1:** Hugh Crowther moved and Darryl Boyce seconded that the bEQ Committee approve the Business Plan as modified.

**Vote:** The motion passed 7,0,0 CV

**New and Open Action Items**

**September 20-21, 2016 Atlanta Interim Meeting:**

- ✓ **AI 1:** ASHRAE Marketing staff to provide feedback to Lilas Pratt on Godfrey Concept Guide and Branding Guide. (Note: Feedback received on September 26.)
- ✓ **AI 2:** Pratt to review changes on the FAQ document with Godfrey and request update version by Monday, September 26. (Note: Call with Godfrey on September 22.)
- **AI 3:** Boyd/Crowther to create a price list for Building EQ.
- **AI 4:** Eley/Bohanon to finalize the ventilation rate data for the COMNET website.
- ✓ **AI 5:** Pratt to respond to questions on occupancy rates and bEQ in Kuwait as indicated in the notes.
- ✓ **AI 6:** Pratt to set up meeting with Maria Karpman to walk her through the Energy Star methodology for the NYSERDA comparison exercise. (Note: Meeting set for October 3.)
- ✓ **AI 7:** Bohanon to send email to Juneja, Baccini, Chan (Hong Kong), and Davies regarding comparison of EPA's new international Target Finder numbers. (Note: email sent on September 21)
- **AI 8:** Pratt to send Boyd a copy of the workbooks for the first full IO/AD awarded to city of Orlando buildings for use in determining web portal outputs.
- **AI 9:** Crowther to put the marketing MBO's into the proper format and email work statements to the subgroup team leads for those MBO's.
- ✓ **AI 10:** Crowther to update Business Plan with discussed changes for delivery to the BOD in Bangkok (Note: Reported updated on September 26.)

- ✓ **AI 11:** Bohanon/Pratt to draft a report to the BOD for the Bangkok Meeting (Note: Report submitted on September 26)
- **AI 12:** Davies to send Pratt name of CIBSE contact for Q&A.
- ✓ **AI 13:** ASHRAE Marketing staff to modify the talking points as discussed by the committee and create one slide for communicating the program. (Note: Slide emailed on September 26.)
- **AI 14:** Bohanon to write email to Brendan Owens on Building EQ as alternative compliance path for LEED EBOM.

#### June 26, 2016 St Louis Annual Meeting:

- **AI 1:** Bohanon to coordinate efforts within the committee for presentations at the Region XIII/RAL CRC in Bangkok this fall.
- **AI 3:** Pratt to document all changes to workbook for errata listing on website and announcement to downloaders on update.
- **AI 4:** bEQ ExCom to restructure the subcommittee meetings for SY 16-17.

#### May 6-7, 2016 Atlanta Interim Meeting:

- **AI 2:** Pratt to make a list of all fields in each rating workbook (IO and AD), noting mandatory and optional fields as well as all pull down menus, help, & validation information already identified. (Ongoing)
- **AI 9:** Methodology Subcommittee to review of the target finder inputs developed by Dennis Knight for update as needed.

#### January 24, 2016 Orlando Winter Meeting:

- **AI 3:** Methodology Subcommittee to explore the DOE Asset Score and report back to the full committee.

#### June 29, 2014 Seattle Annual Meeting

- **AI 1:** Eley/Pratt to lead an effort to document the bEQ In Operation process and methodology. (On Hold) (Note: Pratt will start this and then have Charles edit and modify.)

### Meeting Minutes

1. Call to Order – Meeting convened at 9:00am EDT on Tuesday, September 20, 2016
  - a. ASHRAE Code of Ethics ([www.ashrae.org/codeofethics](http://www.ashrae.org/codeofethics))
  - b. [Committee Structure & Roster](#) – Information Item
  - c. [Committee Purpose and Scope](#) – Information Item
2. Opening Remarks
  - a. Introductions
    - The attendees introduced themselves around the table and on the phone.
  - b. Review of Agenda – Add Canadian Translation.

- The Canadian translation of bEQ documents was added to the full committee discussion on Wednesday morning.
3. Subcommittee Break outs
    - The Marketing and Methodology subcommittees met as separate groups. The report on those discussions is shown below.
  4. Godfrey Branding Information Review
    - The committee considers the Branding and Concept guides to be internal documents that will guide ASHRAE Marketing staff on how to market the Building EQ program.
    - The Marketing staff team will review the Branding and Concept guides and provide feedback to be given to Godfrey.
    - The committee focused their review on the FAQ document provided by Godfrey.
    - A number of changes in content, phrasing, and format were discussed and noted directly onto the FAQ document.
    - The committee is unclear as to what the long term use will be for this document, but they would like an updated version to include with the report to the BOD for the Bangkok meeting.
    - A copy of the refreshed logo will also be included in the report to the BOD.

**AI 1: ASHRAE Marketing staff to provide feedback to Lilas Pratt on Godfrey Concept Guide and Branding Guide.** (Note: Feedback received on September 26.)

**AI 2: Lilas Pratt to review changes on the FAQ document with Godfrey and request update version by Monday, September 26.** (Note: Call with Godfrey on September 22.)

5. Business Plan Draft
  - a. Definition of Products
  - b. Pricing
    - The web portal set up will include the occasional user, registered users, credentialed users, subscribers.
    - A fee for participation would start at the subscriber level. Need to define what is included at that level. The initial plan was to have the registered user get standard reports, and the subscriber get custom reports.
    - The subscriber fee should provide for reporting/analytics.
    - The program needs a very good one page summary report on the building with a score number that fits on one page and says "Powered by ASHRAE."
    - There should be a charge for the reports -- input would be free, but output costs money. The fee would provide a branded report, data quality, ASHRAE quality.
    - The fee is for that reporting needs to be determined. One suggestion is for a sliding scale on the basis of what information is being provided or how many buildings are being rated.
    - As a comparison, some other on-line tools fees are:
      - The mobile construction management software program, Plan Grid, allows 10 users to retain some number of files in the cloud for \$500 per year.
      - Users on the project management tool, CX Alloy, pay a per project amount for access into that tool, where everyone on the team is included in that project fee. In general, that fee is \$100 per month per project.

- The cloud based analytic program, Analytics, charges on a per point payment structure of \$2 per point.
  - Would an assessor pay \$250 to \$500 per report for good, high quality reports that can be edited? The committee agreed that a \$250 per report fee is appropriate. Volume discounts for multiple buildings would also make sense.
  - Another expected benefit of the subscriber level would be access to the database; however, it is not clear that there is an immediate revenue stream from that until there is more data in the database and/or additional analytics.
  - Should there be a onetime charge (\$50) for ASHRAE to check and verify the credentials of a credential user? Perhaps a higher fee for non-ASHRAE members (\$100).
  - BEAPs and BEMPs could be free as the system can link to ASHRAE records to verify whether or not they are certified.
  - There would be additional revenue from licensees, but that needs to be better defined and costs would need to be quoted based on the specific needs of the licensees.
  - Credentialed users would still need to get, at minimum, a printout of their score and a verification of what was entered, but not much more.
- c. Timing of Portfolio Manager/Target Finder roll-out
  - The committee discussed the timing to roll out the change back to Portfolio Manager and Target Finder for determining median EUIs for ENERGY STAR qualified buildings.
  - It was agreed that the change would be made with the roll out of the new web portal. That will be the next generation of the program and no major changes will be made until then.
- d. Data Centers
  - Building EQ will be able to rate data centers after the switch to ENERGY STAR as this building type is covered in Portfolio Manager.

**AI 3: Nate Boyd/Hugh Crowther to create a price list for Building EQ.**

6. Building Label Update

- a. What are the appropriate rating categories that are consistent with the new Building EQ?
  - In recognition of the fact that building owners don't like giving buildings a grade, the committee had previously voted to remove the letter grades from the label/plaque.
  - The table below is from one of the recent Building EQ presentations and can be used as in conversation with the customer. Once the building's score is determined, the assessor can calculate the % energy savings over median.
  - If they have a score you can give them, then you can put the % energy savings over median. The label or plaque should be able to note that the building is % savings better than the median building of that type.
  - The suggestion is to start recognition at the "Efficient" level and change from a label to an award for the buildings score level. This change will be implemented as part of the web portal roll-out.

Score Range	Description		Energy Performance
≤ 0	Zero Net Energy		Net zero or energy producer
1-25	High Performance		75-99% energy savings over median
26-55	Very Good		45-74% energy savings over median
56-85	Efficient		15-44% energy savings over median
86-115	Average		Within 15% of median energy use
116-145	Inefficient		16-45% more energy than median
>145	Unsatisfactory		>45% more energy than median

## 7. Methodology Update

- a. Ventilation Rates (P4P)
- b. Occupancy for Sports Arena ([Attachment A](#))
  - Ventilation rates recommended in COMNET.
  - Occupancy rate recommended for sports arena is zero (which is from 90.1).
  - Standard 62.1 has recently had a PPR a set of ventilation and occupancy rates, the COMNET value will be updated to be consistent with that data.
  - This has also been called to the attention of 90.1. Want to publish something on what we are doing to help lead 90.1 to the same answer.
  - This will also address the issue from Maria Karpman. Hoy needs to do a little work to get everything finalized.
  - Another problem with sports arena. They are not addressed by ENERGY STAR. Sports arenas are included in entertainment or culture in CBECS.
  - The EUIs are in the 60s-70s which is pretty low.
  - The correct category in CBECS is Public Assembly, Entertainment or Culture.
  - There will be several numbers for sports arena that will be in the COMNET table when completed by space type.
  - The answer is for space types not currently called out in COMNET use the default rates from 62.1. Values will be added to COMNET soon.
- c. bEQ in Kuwait Questions ([Attachment B](#))
  - Need to use CZ 1, need to do a model, need to use all energy consumption.

**AI 4:** Charles Eley/Hoy Bohanon to finalize the ventilation rate data for the COMNET website.

**AI 5:** Lilas Pratt to respond to questions on occupancy rates and bEQ in Kuwait as indicated in the notes.

- d. NYSERDA Comparative Testing of Rating Systems ([Attachment C](#))
  - Maria Karpman is undertaking a comparing of rating systems for NYSERDA and would like to compare what Building EQ is changing it to rather than to what it is right now.
  - The committee agreed that this makes more sense, so Ms Karpman will need to be brought up to speed on how those changes will be implemented since the change won't be implement until 2017 Q2.

**AI 6:** Lilas Pratt to set up meeting with Maria Karpman to walk her through the Energy Star methodology for the NYSERDA comparison exercise. (Note: Meeting set for October 3.)

- e. Target Finder for International
  - Look at EPA Target Finder numbers now for all countries
  - Kushagra and Esteban are being requested to compare some known buildings to see if the numbers are accurate.
  - Does this mean that we will allow Target Finder outside of NA.
  - Want to compare to Lawrence Berkley Livermore numbers?

**AI 7: Hoy Bohanon to send email to Kushagra Juneja, Esteban Baccini, Kelvin Chan (Hong Kong), and Hywel Davies regarding comparison of EPA's new international Target Finder numbers.**

(Note: email sent on September 21)

## 8. Marketing Update

- a. General
  - The marketing committee reviewed what needs to be done for the next year. The Marketing Subcommittee identified four main MBO's, each with a subteam and team team lead. They will look to work through the fall and report back in Las Vegas.
- b. Roll out of the new Building EQ (Julia Keen-lead, Hywel Davies, Esteban Baccini)
  - This objective involves the roll out of the web portal and the associated changes to the Building EQ program, specifically: who needs to be told and how should they be told.
  - It was noted that the global message may differ from the domestic message
  - The subcommittee identified seven groups to address: ASHRAE practitioners, Non-ASHRAE practitioners, LEED practitioners, Building Owners, Governments/Utilities, Energy focused Organizations, and Students.
  - The initial focus will be on practitioners (ASHRAE members/non-ASHRAE members), Government/Utilities, and Institutional organizations (Universities), with some path to students.
- c. Web Portal output (Kushagra Juneja-lead, Esteban Baccini, Nate Boyd)
  - This objective involves the reporting aspect of the web application. This group will need to work with Charles Eley and staff to define what the output/reports look like.
  - Different levels of reporting are expected in the web application: individual buildings access to their own building data, subscribers access to aggregate data, licensee access to their own data.
  - There will need to be a pretty good definition of the reporting requirements fairly soon in order to keep the web portal project on track.
  - Once defined, methodology can then look if that desired output can be executed

**AI 8: Lilas Pratt to send Nate Boyd a copy of the workbooks for the first full IO/AD awarded to city of Orlando buildings for use in determining web portal outputs.**

- d. Drive the sales plan (Darryl Boyce-lead, Nate Boyd)

- This objective involves talking to customers and users. The intent is to focus on a few customers first.
  - At the top of the list are institutional customers including APPA and the targeted audience of the Adapt bEQ efforts – this will be the main focus for Round 1.
  - Second on the list is government entities and utilities. This group is probably most interested in the licensee program and that is Round 2. Work done now would be seeding the opportunities that will be available in 2018.
  - The third is the ASHRAE member. The committee needs to get to them and talk to them.
- e. Build the business case for the Licensee program (Hugh Crowther-lead, Nate Boyd)
- The objective involves identifying and building a business case for the licensee program. The committee needs to know what will and won't work.
  - It was noted that the committee may wish to link Building EQ to the SEED database in the future. Need to consider how to handle permissions to share data with other databases from user's that are entering data.

**AI 9: Hugh Crowther to put the marketing MBO's into the proper format and email work statements to the subgroup team leads for those MBO's.**

#### 9. Full Committee Discussion

- a. Wrap up on Godfrey Branding Package
- Logo Refresh has been approved.
  - The FAQ's did not go where the committee was hoping it would go, but it may still be a useful document.
  - The real key is talking points that can be put on a single slide and added to the Business Plan.
- b. Business Plan
- The business plan is a living, breathing document that will change as the committee moves forward. It doesn't need to be perfect, but it needs to cover what is known now and be updated when more information is available and more decisions are made.
  - The business plan will be included with the report to the BOD for the Bangkok meeting. Copies of the FAQs and refreshed Logo should also be included.

**Motion 1:** Hugh Crowther moved and Darryl Boyce seconded that the bEQ Committee approve the Business Plan as modified.

#### **Discussion:**

- Note that in the plan, FY 17 is this year ending in June 2017.
- As per today's discussion, there will be changes to the numbers including increasing the number of reports (\$250) and lowering the number of subscribers (\$50).
- The levels in the plan will be: Registered (free), credentialed (one time fee, \$50/\$100), Rating (free), Reporting (\$250 fee).
- The licensing is basically a derivative product of the main product. ASHRAE would typically keep the ability to also use any enhancements.
- At risk is the money to create the web application which has already been approved.

- Three years is pretty much the industry standard for refresh on website updates so some additional depreciation will be added to address that after three years.

**Vote:** The motion passed 7,0,0 CV

**AI 10: Hugh Crowther to update Business Plan with discussed changes for delivery to the BOD in Bangkok** (Note: Reported updated on September 26.)

**AI 11: Hoy Bohanon/Lilas Pratt to draft a report to the BOD for the Bangkok Meeting** (Note: Report submitted on September 26)

**AI 12: Hywel Davies to send Lilas Pratt name of CIBSE contact for Q&A.**

c. Online portal Update

- Six proposals were received in response to the RFP. These will be sent to the Project Evaluation Subcommittee (PES) with the schedule and procedures immediately following this meeting.
- The committee may wish to narrow down the field and then request some references in order to make a final decision.
- It was suggested that the PES needs to select the best bidder for the project regardless of the price bid. Once selected, the committee may need to negotiate out some of the options in order to bring the price within the approved budget. Invite Hoy and Hugh.
- The schedule for the bid review process is as follows:
  - 9/21 – Bids sent to the PES
  - 10/5 – Deadline for scores returned to Lilas Pratt
  - 10/11 – PES meeting to discuss proposals
  - 11/4 – Full Committee vote to approved recommended contractor
  - 11/15 – Contractor to start work

d. bEQ submission update

- The target has been set to be caught up with all submission by Thanksgiving (11/24).
- A decision will need to be made on how to best handle submissions post portal.

e. Talking points

- Talking points are shown on page 13 of the Business plan. This is essentially the elevator speech that explains what Building EQ is/does. Although, each main bullet could be an elevator pitch on its own.
- The wording needs to be tweaked by ASHRAE marketing staff, but the committee needs to be sure that the themes for each bucket are correct.
- Simplifying the message is important. Suggested changes include:
  - The first two bullets could be: Identify your building's performance and Improve your building's performance.
  - The first bullet should include the ASHRAE award rather than the label.
  - The talking points need to include something about the being able to query the energy conservation measures.
  - Report generation should be moved to the Make your Building Better bullet.
  - Remove the reference to ASHRAE's PCBEA.



- The last bullet is not correct and gives wrong impression. It is really about the licensee program.
- Once the changes are completed, the new talking points need to be put onto a single slide and incorporated back into the Business Plan.

**AI 13: ASHRAE Marketing staff to modify the talking points as discussed by the committee and create one slide for communicating the program.** (Note: Slide emailed on September 26.)

f. Canadian Translation ([Appendix D](#))

- Steve Comstock is now working with Ron Gagnon to get a licensing agreement signed for this translation activity. It is important to have the licensing agreement (even if at \$0) so as to maintain copyright.
- Once the translation is completed, it can be used to incorporate a French version into the web portal.

g. Interested groups

- Lilas Pratt has been maintaining files on the correspondence from all the interested parties that have inquired about Building EQ. This will continue and committee members should be sure to copy Lilas Pratt on all correspondence so those files can be kept up to date.
- Information from government groups should be channeled back to GGAC when that information has not come from GGAC.
- These files are essentially “leads” to follow up with to sell the product
- Moving forward the Marketing Subcommittee will become Business Development and be charged with constantly growing the business.

10. Update on External Activities

a. USGBC Alternative Compliance Path

- Hoy Bohanon will write Brendan Owens at USGBC an email noting their approval of Building EQ as an alternative compliance path for LEED EBOM and that ASHRAE will be announcing that fact moving forward.

**AI 14: Hoy BOhonon to write email to Brendan Owens on Building EQ as alternative compliance path for LEED EBOM.**

b. GGAC opportunities

- GGAC is just waiting for the green light to start “selling” the program.

11. Conclusions / Wrap-up Discussions

a. Review of [Action Items](#)

12. Adjourn – **Meeting adjourned at 1:32pm EDT on Wednesday, September 21, 2016**

## **bEQ Committee Structure – FY 2016-2017**

**bEQ Committee Members (voting):** Hoy Bohanon (Chair), Hugh Crowther (Vice-chair), Julia Keen (Tech Council Representative), Darryl Boyce (Pub-Ed Council Representative), Charles Eley (Member-at-Large), Nate Boyd (Member-at-Large), Harry Misuriello (Member-at-Large), Hywel Davies (Member-at-Large),

**bEQ Consultants/Others (non-voting):** Esteban Baccini, Jaap Hogeling, Kushagra Juneja, Dan Nall, Edward Tsui (Coordinating Officer)

Marketing Subcommittee: Hugh Crowther (chair), Darryl Boyce, Julie Keen, Nate Boyd, Hywel Davies, Jaap Hogeling, Kushagra Juneja, Edward Tsui

Methodology subcommittee: Charles Eley (chair), Hoy Bohanon, Harry Misuriello, Dan Nall

## **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 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.

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## Attachment A – Occupancy for Sports Arenas

**From:** Charles Eley  
**Sent:** Friday, September 09, 2016 1:37 PM  
**To:** Pratt, Lilas  
**Cc:** Rosenberg, Michael I  
**Subject:** Re: Occupancy for sports arenas and warehouses

We should check in with Hoy on this since he is chair of 62.1. I looked at 62.1-2010 Table 6-1 and it recommends 150 persons per 1,000 ft<sup>2</sup> for the spectator area and 30 persons per 1,000 ft<sup>2</sup> for the gym area. There is also a value for "stages, studios" of 70 persons/1,000 ft<sup>2</sup>, in case the arena is used like a theater. The schedules are another matter. COMNET and 90.1 have a schedule for assembly, but it looks more appropriate for a hotel function room. Hoy provided some "new" default values that were approved by 62.1 for publication/public review. When approved (or possibly earlier), I would like to update the COMNET occupancy and ventilation values to be consistent.

Sports arenas are one of those weird (but common) buildings that would work much better with a dual model approach like 90.1 Appendix G. The modeler makes their best guess on schedules, occupancy, etc. and the same assumptions are used for the baseline building. Finding a "standard" set of operating conditions is a challenge.

----- Original message -----

**From:** Rosenberg, Michael I [mailto:[Michael.Rosenberg@pnnl.gov](mailto:Michael.Rosenberg@pnnl.gov)]  
**Sent:** Friday, September 09, 2016 12:36 PM  
**To:** Pratt, Lilas; Charles Eley

I was going to run it by the envelope subcommittee of 90.1 since they will need to approve any number. That is not a very quick process. I am not sure how bEQ uses this value, but if you need something quickly, I see the California ACM uses a value of 143 people/1,000 ft<sup>2</sup>, which seems like it is in line with 62.1 which uses 150 people/1,000 ft<sup>2</sup> for just the spectator area.

----- Original message -----

**From:** Rosenberg, Michael I  
**Sent:** Friday, September 09, 2016 12:21 PM  
**To:** Charles Eley  
**Cc:** Pratt, Lilas

Seems like a mistake to me. I think it happened because there is no default for the sports arena playing field in 62.1-2010, which is where many of these values came from. There is a default for the seating area. We probably need to come up with a hybrid for the building for Appendix C and maybe two entries for COMnet.

**TABLE 6-1 MINIMUM VENTILATION RATES IN BREATHING ZONE (Continued)**  
 (This table is not valid in isolation; it must be used in conjunction with the accompanying notes.)

Occupancy Category	People Outdoor Air Rate		Area Outdoor Air Rate		Notes	Default Values			Air Class
	$R_p$		$R_a$			Occupant Density (see Note 4)	Combined Outdoor Air Rate (see Note 5)		
	cfm/person	L/s-person	cfm/ft <sup>2</sup>	L/s-m <sup>2</sup>		#/1000 ft <sup>2</sup> or #/100 m <sup>2</sup>	cfm/person	L/s-person	
Beauty and nail salons	20	10	0.12	0.6		25	25	12.4	2
Pet shops (animal areas)	7.5	3.8	0.18	0.9		10	26	12.8	2
Supermarket	7.5	3.8	0.06	0.3		8	15	7.6	1
Coin-operated laundries	7.5	3.8	0.12	0.6		20	14	7.0	2
<b>Sports and Entertainment</b>									
Sports arena (play area)	–	–	0.30	1.5	E	–			1
Gym, stadium (play area)	–	–	0.30	1.5		30			2
Spectator areas	7.5	3.8	0.06	0.3		150	8	4.0	1
Swimming (pool & deck)	–	–	0.48	2.4	C	–			2
Disco/dance floors	20	10	0.06	0.3		100	21	10.3	2
Health club/aerobics room	20	10	0.06	0.3		40	22	10.8	2
Health club/weight rooms	20	10	0.06	0.3		10	26	13.0	2
Bowling alley (seating)	10	5	0.12	0.6		40	13	6.5	1

----- Original message -----

**From:** Charles Eley

**Sent:** Friday, September 09, 2016 6:40 AM

**To:** Rosenberg, Michael I

**Cc:** Lilas Pratt

**Subject:** Occupancy for sports arenas and warehouses

The COMNET defaults that I put together use the occupancy data from [http://sspc901.ashraeps.org/pdf/Addendum\\_an\\_Sched\\_and\\_Load.pdf](http://sspc901.ashraeps.org/pdf/Addendum_an_Sched_and_Load.pdf).

The occupancy values are zero for parking garages, sports arenas and warehouses. Does this mean that there is no default? Clearly sports arenas would have a lot of occupants, although intermittent.

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## Attachment B – bEQ Questions Kuwait

**From:** Amer H. Najjar

**Sent:** Saturday, August 06, 2016 1:54 PM

**To:** Pratt, Lilas; Michael Brandemuehl; Hoy Bohanon

**Cc:** Tim Wentz; Walid Chakroun

**Subject:** Re: Certification and Labeling of Building Performance - Inquiries for ASHRAE

As Dr. Walid mentioned below, we are trying to apply BEQ in Kuwait, which would also be part of my Master's Degree thesis, and i have some inquiries to start with.

at the beginning i am going to study 1 building to be our sample, then as I gain a deeper understanding of the BEQ program, our work will be expanded to multiple buildings of different building types in both directions (In-Operation and As-Designed).

The sample building in study is an educational building (school) and it is still in construction phase which is expected to be completed by the end of 2017. The total construction campus area is 9500 m<sup>2</sup> , it has 1 building within the campus of 4900 m<sup>2</sup> and the air conditioned area is also 4900 m<sup>2</sup>.

The HVAC system of this building consists mainly of the following:

- 3 Air-cooled chillers
  - Cooling capacity = 148.41 TR each
  - Unit Power = 227.8 KW each
  - CW flow Rate = 355.4 GPM each
  - 2 Operational and 1 Standby
- 14 Air-Handling Units
  - Total Cooling capacity = 297.70 TR
  - Total Power = 86.7 KW
- 4 Fan Coil Units
  - Total Cooling capacity = 6.46 TR
  - Total Power = 0.32 KW
- 3 Chilled Water Pumps
  - CW Flow Rate = 356 GPM each
  - Head = 69 ft each
  - Motor Power = 7.5 KW wach
  - 2 Operational and 1 Standby
- System Diversity = 0.97586

As a start, I have the following inquiries:

1. I need to know if any other data is required to determine the power consumption of the HVAC system
2. I was unable to find an average EUI for Kuwait, however there is a maximum power consumption allowed for each HVAC system type (Regulated by Kuwait ministry of electricity and water) which is in the case of a school using an Air-cooled Chilled water system 113 KW/m<sup>2</sup> Is it possible to base the study on that number to be our benchmark ?
3. can we apply BEQ based on HVAC system power consumption alone (without Natural Gas, Steam, Steam ....) ? (at least as a start)

I have arranged 4 more buildings to study which are in the design and construction phase that are to be considered after the previous building, in addition to 2 more operational buildings (but still discussing access to data with the owners).

Thanks in advance

----- Original message -----

**From:** Walid Chakroun

**Sent:** Tuesday, August 2, 2016 10:54 PM

**To:** Amer H. Najjar

**Cc:** Hoy Bohanon; Michael Brandemuehl; Tim Wentz; Pratt, Lilas

**Subject:** Re: Certification and Labeling of Building Performance - Inquiries for ASHRAE

Please see below and feel free to contact the mentioned names for any help and guidance on BEQ. They have experience in applying ASHRAE BEQ and I am sure they will be happy to answer your questions. I sure hope to apply the ASHRAE BEQ in Kuwait soon.

Hoy Bohanan [Hoy is the current chair of Building EQ]

Michael Brandemuehl [Mike is immediate past chair of Building EQ]

Lilas Pratt [Lilas is the staff liaison to Building EQ]

----- Forwarded message -----

From: Amer H. Najjar

Date: Tue, Aug 2, 2016 at 1:25 AM

Subject: Certification and Labeling of Building Performance - Inquiries for ASHRAE

Dear Dr. Walid Chakroun,

As part of our research in creating a new buildings energy performance labeling system for Kuwait for my Master's degree thesis requirement, and after considering ASHRAE's BeQ as a benchmark to our research and limiting the research on the power consumption of HVAC system, i have listed below some of the inquiries i have in the same regards.

1. Can the power consumption average be built solely on HVAC system power consumption ?
2. Since this study is about Kuwait, up to which extent can the US National Median Source Energy be considered ? (Knowing that using the power consumption of HVAC system alone has given an extreme unsatisfactory results when comparing the EUI
3. Is the annual power consumption calculated as the summation of the percentages of peak consumption of an HVAC system components for each month separately (Chillers, AHU, FCU, Pumps)?
4. Can we consider the maximum allowable power consumption for HVAC systems (Ministry of Electricity and Water regulations) to use as a local EUI ? (considering an average monthly operation percentage to convert from watt/m<sup>2</sup> into annual KWH/m<sup>2</sup>/year) - since the MEW regulations consider the server weather conditions of Kuwait .
5. What would be the appropriate number of specimens to create a reliable average ?

A specimen building has been studied; all details as follows :

- building type - educational - kindergarten
- total area - 4900 m<sup>2</sup> = 52743.16 ft<sup>2</sup>
- HVAC system - Air cooled chilled water system
- Power consumption:
  - Chillers: 2x227.8 = 455.6 KW
  - AHU+FCU = 87.02 KW
  - Chilled water pumps = 2x7.5 = 15 KW
  - Total = 557.62 KW (Maximum Power Consumption)
  - annual power consumption = 557.62x8760 = 4884751.2 KWH -> 16671656 KBTU (Site Energy)
  - Annual Power Consumption = 316.1 KBTU/ft<sup>2</sup>
- Compared to 141 KBTU/ft<sup>2</sup> (US EUI)

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## Attachment C – NYSERDA Rating Comparison

**From:** Maria Karpman  
**Sent:** Wednesday, August 31, 2016 10:54 AM  
**To:** Pratt, Lilas  
**Cc:** Charles Eley; Hoy Bohanon; Hugh Crowther; Ramspeck, Claire; Michael J Brandemuehl  
**Subject:** Re: Comparative testing of rating systems funded by NYSERDA

My research is focused on US. It is funded by NYSERDA, and is done in the framework of the National Labeling Group (NLG). The goal is to investigate the general alignment of various rating systems, which among other things may help inform technical requirements of the benchmarking laws. The NLG includes many decision-makers representing states and municipalities, so it is an important opportunity for all rating system developers (including ASHRAE) to make marketplace aware of their product.

On the asset rating side, the sample will likely be limited to various permutations of theoretical building based on PNNL prototype and reference models for office and multifamily. The tested ratings systems will include bEQ As Designed, 90.1 2016 App G, and DOE Asset Tool. The testing must be completed by the end of the year, but I would like to use the new bEQ As-Designed scoring algorithm that will be in place next year, as opposed to the one that is on its way out. Will the new algorithm be the same as in the previous version of bEQ that was based on EPA PM?

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**On Wed, Aug 31, 2016 at 10:22 AM, Pratt, Lilas wrote:**

The new version of bEQ based on EPA PM is not likely to roll out until we have the on-line data entry. Things have started to get too complicated to be able to make all the changes in a simple spreadsheet. We need a more sophisticated platform to be able to distinguish if the submitted building is in the US (then they use EPA PM for covered buildings) or outside the US (then they use Standard 100 for all buildings). We are looking at a spring 2017 roll-out of the on-line data entry.

----- Original message -----

**From:** Maria Karpman  
**Sent:** Wednesday, August 31, 2016 10:19 AM  
**To:** Pratt, Lilas  
**Cc:** Charles Eley; Hoy Bohanon; Hugh Crowther; Ramspeck, Claire; Michael J Brandemuehl  
**Subject:** Re: Comparative testing of rating systems funded by NYSERDA

This thread is unrelated to using bEQ in P4P. I am working on a separate research project to compare several rating systems including bEQ. From what I understand, the version of bEQ that is about to be posted will still have EUImedian based on Standard 100. The previous version of bEQ, from about a year ago, had EUImedian based on EPA PM, and Mike told me that the decision has been made to go back to EPA PM method in the next version. I would like to use the new, EPA PM-based version of bEQ, for the research project. When will the next version (or the beta) be available? Or will the EUImedian calculation methodology be the same as in the last EPA PM-based version? We can discuss over the phone if it is easier.

----- Original message -----

**From:** Maria Karpman  
**Sent:** Monday, August 29, 2016 8:52 AM  
**To:** Charles Eley  
**Cc:** Hoy Bohanon; Hugh Crowther; Ramspeck, Claire; Michael J Brandemuehl; Pratt, Lilas  
**Subject:** Re: Comparative testing of rating systems funded by NYSERDA

I am following up on my inquiry below. We will be starting the comparative testing of the rating systems in early September, and since bEQ as-Designed is going through changes related to rating-calculation



methodology, it makes sense to use the updated version in our tests. If it is not yet finalized, we could use the beta-version. The testing may also inform your work on finalizing the public release.

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**On Thu, Aug 4, 2016 at 7:26 PM, Maria Karpman wrote:**

I am working on a project that involves comparative testing of the selected rating systems including bEQ. The scope of work is attached FYI, and was largely developed by the Technical Committee (TC) of the National Labeling Group organized by NYSERDA. Mike Brandemuehl, who also participates on TC, mentioned that bEQ would be switching to EPA PM as the basis of EUI median in the near future. I assume that the modeling rules will remain largely the same, and the change will only affect the rating score, correct? When will the new version be available?

Thanks in advance for your help,

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## Attachment D – Canadian Translation of Building EQ documents

**From:** Ronald Gagnon ]  
**Sent:** Monday, September 19, 2016 11:01 AM  
**To:** David Underwood; Comstock, Steve; Littleton, Jeff  
**Cc:** Scarborough, Jim; James Wolf; Thomas Phoenix ; Pratt, Lilas  
**Subject:** RE: bEQ

To speed on the Building EQ project:

Hydro Quebec (state owned public utilities) is seeking market changing tools as a way to influence the building industry. They are trying to move away from subsidies, grants, incentive, etc., in an effort to modify the mindset to act instead of react.

I presented Building EQ in a trade show a year ago and got Hydro Quebec's attention. They saw immediately the quality and applicability of Building EQ.

The main hurdle for a nationwide acceptance is the requirement (by law) to have the program in both English and French languages. As other ASHRAE standards and guidelines are widely used in Canada and Quebec, they are referenced documents by our building codes which are bilingual. Building EQ is a totally different approach as is a working process, not a reference.

I am working closely with André Labonté who is our Hydro Quebec liaison (he is also BOG member in Montreal and Quebec chapters). We filed in MOU from the Montreal chapter, Quebec Chapter and region II DRC. Region XI is also supportive of this endeavour  
André got a budget approved by HQ, there is a communication / translation supplier that as been selected and will be appointed and paid by HQ. a review board will be nominated in the Quebec and Montreal chapter to overlook and approve the translation.

HQ does not want any ownership whatsoever of this process. Documents and processes are to remain ASHRAE's sole property. HQ will not claim any rights and /or fees at any point in time.  
HQ as also committed to conduct Building EQ audits in two of its buildings; one in Quebec City and one in Montreal, by the end of the year. And would look at getting the whole portfolio done afterwards.

Steve for your question; the agreement document would be prepared between society and the Montreal and Quebec City chapters who will be ultimately the translator, HQ being a logistic purveyor. Does this change the nature of the agreement document to be signed? If not I will get it completed and signed by the two chapter president.

At this point we need to identify the communication channels to put the translation team in contact with the relevant staff at society.

The next step will be to organize training this fall to get certified professionals locally.

Thanks for your help

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