

## Sustainable MEP Leaders July 2019 Summit: Executive Summary

The first Sustainable MEP Leaders Summit took place in Chicago, July 9-10, 2019. We got to candor quickly and covered a lot of useful topics. There is a lot we can do together to advance the industry.

Huge thanks to SmithGroup for hosting the daytime meetings, and to SOM for hosting the evening Show & Tell (and feeding us)! Thanks to Kim Shinn for sharing his in-house write-up, which helped with this report, to those who took notes in the break-outs, and thanks to everyone who came and shared and asked hard questions!

### Action Items/Next Steps:

1. Coordinated request to the HVAC/AHRI manufacturing community to provide equipment to help meet decarbonization goals, e.g. extended-range heat pumps for both space heating and service water heating. Draft memo **by Aug 7. Jeff Rios** leading.
2. Work with AIA to draft language for including Standard 209 in the appropriate Architect-Owner and/or Architect-Consultant Agreement family (such as C401 and/or C401SP). Update **by Aug 7. Kim Shinn** leading.
3. Need for better building science, thermodynamics, and fluid dynamics education of architectural engineers: Letter, direct outreach to AE educators, coordination with AEI. (See Luke's July 16 post on [this thread](#).) **Everyone** to [post a message](#) about what inspired them to enter the field (thanks, Brian, Kim, and Sachin!) Update **by Aug 7. Sachin Anand** leading.
4. Indoor CO2: seeking better data on IAQ targets and thresholds. Post to Green Gurus forum to solicit architecture allies; coordinate an ask to the research community (e.g. UC Berkeley CBE); See [this forum thread](#) for responses from Andy Persily at NIST. Draft memo describing what we're after **by Aug 7. Don Posson with Luke Leung and Brian Turner**
5. Sharing plug load assumptions for load sizing and energy modeling; see NEC mandates, Mazetti's medical equipment study, SmithGroup lab equipment data. Convene a call **by Aug 7**, establish a process. **Jacob Knowles with Shannon Bunsen and Brian Turner**
6. Future Summit: Suggested in conjunction with AEI so we can engage with them on education. But they only meet biannually, so for 2020 that won't work. **BuildingGreen** will coordinate planning for a time and place; targeting Spring 2020.
7. Monthly calls: Group agreed that this would be a good way to keep in touch and check in on the progress of our initiatives. We'll aim to focus on one initiative (or other topic) on each call. **BuildingGreen** will schedule and host these.
8. Forums on BuildingGreen.com: **Everyone** to add photo and bio to their user profile.
9. Regional groups (A&D groups active in Boston, NYC, San Fran): **BuildingGreen** to encourage them to invite MEPs.
10. Expanding the network: **Everyone** to add suggested candidates and reach out to people on [our recruiting list](#). Use the comments function; include your name in your comment.
11. Report: Participants are not interested in a pretty deck like we do for Sustainable Design Leaders. Concise report is preferred. You're reading it now.

## Key Topics:

### **Carbon emissions: metrics and decarbonization strategies**

Lots of questions about the optimal metric that would provide the right market signals. Is based on regional or national carbon intensity of electricity? Average or marginal carbon intensity? NYC Local Law 97, despite its many flaws, is driving carbon reduction in buildings.

We need a dollar price on carbon—see the [Carbon Fee and Dividend campaign](#) in Congress and elsewhere.

Gasification as a bridge to renewables is a myth. With gas leaks, gas may be no better than coal. Buildings are increasingly going all electric, but some end uses are challenging, especially space heating, water heating, cooking. Technologies exist elsewhere to help with this, but availability in U.S. is limited. Advocacy opportunity.

Electric capacity issue? Also adding EVs! But the more electric stuff we have, the more opportunity for load management. This is an issue for individual projects and for the grid as a whole, with increasing supply from intermittent renewables. A unified international grid would help (also with Canada).

### **Actual vs. predicted performance:**

Tracking performance after occupancy is essential. There are two scopes to making this work:

1. Setting up the building to make data available (direct, remote access is ideal); and
2. Analyzing and using the data.

Important to get ahead of public disclosure & benchmarking (where it's not already mandated). Where data is public, MEP firms should be tracking what's being reported on their projects! The data has marketing value, and tracking to troubleshoot projects is a good way to maintain relationships with clients.

Set standards for designing for actual performance. What information is needed (such as operating schedules)? What needs to be measured during design, beyond focusing on peak load? We need codes and standards to work from actual data, not predicted.

Consider guaranteed performance as a contractual requirement (keeping the penalty small; it's mostly symbolic but just having it will drive attention). At a minimum, include metering and tracking in contracts.

Resource from the UK designing for and tracking actual performance for three years after occupancy: [Soft Landings](#). (Referenced in BREEAM, much better than LEED's M&V credit.)

### **Energy modeling integration with ME system design:**

Energy modeling is important if it's used to answer relevant questions. But it's not predictive; factors like hours and intensity of occupancy are too variable for that. Historical data is often a better reference for functions like PV system sizing.

Design/production staff are different from performance simulation staff. We agreed that both need to know some of what the other does and what drives their process (designing versus simulation) and that they need to work together during design, including cross-training. It is useful to embed simulation staff with design teams for production management, but they are distinct disciplines. It's not easy for people to learn and maintain expertise in both, but at least one firm is intentionally having people do just that.

Energy modeling gives engineers a voice in early design. To add value, however, they need broad and deep understanding of buildings and systems so they can advise not just mechanical design, but also envelope and lighting system development. This means that simulation staff aren't necessarily mechanical engineers, but more like building scientists. They also need strong soft skills for team collaboration; this takes finding people with aptitude and helping them cultivate those skills.

### **Health & Wellness: CO2 as an indoor pollutant or IAQ indicator**

We can't really measure outcomes, but we can do a better job measuring indoor conditions (air quality, air movement, temps). Standards 55/62 are based on old research. LEED/Arc/WELL also not great. Partner with public health experts for better targets? Is CO2 still a good indicator of air quality?

User control is important. Variable thermal conditions are better than static (see [Gail Brager's presentation to our Peer Networks.](#))

Brian Turner showed data illustrating how energy-intensive it would be to target the low indoor CO2 levels suggested by Harvard's CogFX study. There are questions about the strength of that study, and a need for more research. Studies use constant CO2 levels, actual levels vary. Current trend is to target 800-900 ppm, 1100 might be more reasonable, with a range for temporary spikes. We have an action item to follow up on that.

We need more reliable and robust (and affordable) sensors; they're getting better all the time.

Connect with Giga's RESET certification as a resource.

### **Solving the challenge of existing buildings**

- Owners need easy access to capital to fund upgrades (PACE opportunity?).
- Regulations are likely part of the solution, but they need an on-ramp like the NYC approach:  
Disclosure->Audits->Reductions
- Codes need to be activated and enforced for retrofits and upgrades; with submetering.
- Operators need better training and certification (see BITbuilding.org)

- Tenants have to be part of the solution; (see IMT's [Green Leasing resources](#))

## Resources

Flip chart notes, slide decks, and other resources from the Summit and its aftermath are posted in [this forum thread](#) and in the Shared Files tab on the forum.

## Future Topic

Racial and gender diversity in engineering firms.

## Participants

- Sachin Anand – **dbHMS** (Chicago)
- Shannon Bunsen – **Mazzetti** (Seattle)
- Christopher Colasanti – **Jaros, Baum & Bolles** (NYC)
- Jacob Knowles – **BR+A** (Boston)
- Donald Posson – **SmithGroup** (DC/San Diego)
- Jeff Rios – **AKF** (NYC)
- Sergio Sadaba – **Stantec** (Seattle)
- Cindy Cogil – **SmithGroup** (Chicago)
- Peter DeMercurio – **Integral Group** (NYC)
- Luke Leung - **SOM** (Chicago)
- Brian Turner – **CMTA** (Louisville)
- Josh Radoff – **WSP** (Denver)
- Erik Ring – **LPA** (Irvine, CA)
- Kim Shinn – **TLC** (Nashville)