



Draft Agenda

7.5 Smart Grid Subcommittee (Virtual, via Zoom)

2:00-2:45 pm, January 18, 2021

Prepared by Kristen S. Cetin

Subcommittee Scope: This subcommittee will explore and develop ideas and research work statements to improve the building and utility interactions (and more specifically the electric grid). The research will focus on developing enabling technologies for seamless interaction of smart building components and utilities and other building services. An important aspect of this work is to identify the information that is necessary to support smart building technologies, and to identify the requirements of communication protocols to support the exchange of this information between different building services buildings and utilities, between multiple buildings, with outside service providers.

The importance of a stable and reliable electric power grid to life and the economy in the 21st century has been underscored by two major events over the last decade: a major black out on the east coast of North America and wildly varying electricity prices in California during an attempt at restructuring the electricity marketplace. In response to these events many organization (DOE, EPRI, and CEC) have started research activities to find ways to modernize the grid. However, there a significant gaps in the research activities, especially as they relate to buildings. Since buildings consume over 70% of the electric in the U.S., they have to part of the solution to modernize the grid. ASHRAE has traditionally developed technologies, standards, and guidelines for buildings. Therefore, this subcommittee can play a major role in continuing this effort.

Zoom Link: <https://ashrae-org.zoom.us/j/97064340065?pwd=OERJZ2pxVVJSc1VtVGN0VWpEZzlPdz09>

Minutes:

0:00	Call to Order	
5 min	Introductions, announce the subcommittee scope	
5 min	Relevant sessions at current ASHRAE conference	
	Schedule Link: https://events.rdmobile.com/Sessions/Index/13767	see link
15 min	Summer ASHRAE conference seminar ideas	
15 min	RTAR Ideas and Updates	
5 min	ASHRAE Design and Integration of PV in the Built Environment Guide	Costa Kapsis, Jim Liedel
Adjourn		

Detailed Minutes

Call to Order

- Read scope
- New members – name – affiliation, new member
- Sign In Sheet: [will be added]

Sessions at current ASHARE conference

- Sessions Link: <https://events.rdmobile.com/Sessions/Index/13767>

ASHRAE conference ideas

Summer 2021 – Chicago, IL

- Deadlines:
 - *Wednesday January 6, 2021: Website Opens for Seminar, Workshop, Forum, Debate, and Panel Proposals*
 - *Wednesday January 13, 2021: Revised Conference Papers/Final Technical Papers Due*
 - *Monday February 8, 2021: Program Submissions Due / Extended Abstracts Due*
- Tracks *(most relevant)*
 - **(7) Future Proofing – Renewable, Regenerative, Resilient**
 - **(5) Design, Control and Operation of Critical Environments**
 - **(3) Research Summit**
- Ideas
 - Load Forecasting Model *(part 2 of Seminar 46)* - **Jin** (has speakers); additional interest in this topic:
 - Helia Zandi – load forecasting and grid interaction or
 - Qun Zhou
 - Glenn – might be able to provide a point of contact for Nest program
 - Note: There are related seminars and papers - TC 1.5, 4.7, testing of the most accurate methods for automatically and semi-automatically predicting energy use in buildings using ML algorithms w/pre-processing for outlier detection
 - Grid Communications –**Chirag Parikh**
 - Dave (NIST) – OpenADR – Carol Lomonaco can help connect
 - Data-driven control/optimization - **Helia**
 - Helia Zandi
 - Jose Candanedo – Annex 81 (data-driven smart buildings) - <https://annex81.iea-ebc.org/>
 - Qun Zhou – MPC using data-driven methods
 - Donghun Kim – speaker/supporter
 - *Note: 4.7 subcommittee – data-driven models (potential collaboration)*
 - Future Smart Building Operations *(has 4 speakers)* - **Bing – (to resubmit)**
 - Building on debate related to grid-interactive buildings, what’s impact on efficiency – **Mike /Eric/ Glenn**
 - Cybersecurity & Smart Grid *(in development)*- **Carol Lomonaco, Glenn Remington** *(some discussion in other subcommittee meetings)*
 - potential collaboration with TC 1.5
 - integrate with IoT discussion from Enabling Technology subcommittee
 - *Other topics (not covered in discussions this time)*
 - *Renewables and the smart grid – (Kim)*
 - *How do we handle this*
 - *Smart products for residential and commercial buildings*
 - *talk with residential TC – net zero building committee*
 - *Panel discussion on grid interactive buildings*
 - *Smart grid and building envelope interaction (from 4.4) - as an energy storage feature –*
 - *How building envelope can impact or interplay with smart grid contributions from buildings*
 - *Dynamic facades*

- *Suggestion to follow up with NBI*
- *Utility Grid Battery Control Strategies and Impacts on O&M & LCA (From Atlanta 2019)*
 - *Large scale batteries*

Update/Discussion of RTARs/Work Statement ideas

- RTAR Idea: ASHRAE Design and Integration of PV in the Built Environment Guide - *Costa Kapsis, Jim Liedel- leidel@oakland.edu; costa.kapsis@uwaterloo.ca*
 - Draft is posted in Basecamp
 - Looking for people to review and provide comments
 - Comments:
 - careful with “guide vs guideline”, suggestion to talk to research liason for Section 7
 - Glenn – interested in reviewing
 - Session 62 – related to this
 - PTAR process created after
 - Li Song – seeking co-sponsorship? Yes

Other ideas – not covered but reviewed breifly but if others interested please follow up with Kristen

- *Development of models for better peak load predictions (some discussion at research subcommittee already)*
 - *City-scale model validation for predicting demand response - some models exist*
 - *Need an evaluation of the state of the art, perhaps useful for new city planning*
 - *Need some more research on demand response capacity prediction*
 - *Existing software – GridLabD – developed to designing rate cases*
- *Guidance on smart building equipment / IoT – (something that came up from forum discussion)*
 - *what are you getting, functionality, products*
 - *what program functions are necessary to work in different environments*
- *Instantaneous voltage and current load from buildings*
- *Energy demand prediction of multiple building scale*
- *Linking building modeling to grid modeling*
 - *Some existing efforts*
 - *End user of this work would be policy recommendations for ISOs*
 - *How to validate models?*