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| **TC 7.6 Building Energy Performance**[**www.tc76.org**](http://www.tc76.org)**Tuesday, June 28, 2016, 1:00-3:30 pm,** **St. Louis, MO**

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| MEMBERS PRESENT | EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE | EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE |
| **Bruce Hunn, VC** | **Dennis Landsberg, Secretary SecretarySecretaryNovosel, Standards** | **Jeff Haberl** |
| **David Eldridge, Research** | **Nate Boyd, Ener Audits, Handbook hhhhhHHandHandbook Mgmt,Handbook** | **Jim Kelsey** |
| **Adrienne Thomle** | **Davor Novosel, Standards****J. Patrick Carpenter****Randy Teed****Som Shresthos****Krishnan Gowri****Colin Umbach****Joe Hofstetter****Fred Goldner****Audrey Dupuis****Mini Malhotra****Anthony York****Nate Boyd****Christine Reinders****Thomas J. Kelly****Doug Tucker****Salvador Acha****Edmund Wong****Mark Moore** | **Alexander Zhivov, Federal Bldgs Buildings****ByBuildings****BuildingBuildings** |
| **Gary Andis** | **J. Patrick Carpenter** | **Carlo Ferrer** |
| **Stanton Stafford** | **Steven Carlson** | **Marvin Gui** |
| **Michael Deru** | **Dick Pearson, Energy Mgmt** | **Amanda Webb** |
| **Patrick Carpenter** | **Taylor Seabaugh** | **Don Winston** |
|  | **Annie Smith** | **Darin Nutter** |
|  | **Kimberly Pierson** | **Som Shrestha** |
|  | **Fred Goldner** | **Anthony York, Program** |
|  | **Christine Reinders, AEDG** | **Chonghui Liu** |
|  | **Liping Wang** | **Edmund Wong** |
|  | **David Handwork** | **Cindy Bittel** |
|  | **Scott Hackel** | **Glenn Friedman** |
|  | **Michael Conchilla** | **Dieter Bartell** |
| **MEMBERS ABSENT** | **Harriet Mediozo** |  |
| **Janice Peterson, Chair**  | **Daniel Choiwiere**  |  |
| **Xiufeng Pang** | **Andy Brophy** |  |
|  | **Joe Hofstetter** |  |

**DISTRIBUTION**

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| ***All Members of TC plus the following:*** |
| TAC Section Head: | Adrienne Thomle |
| TAC Chair: | Bill McQuade |
| Manager Of Standards Manager Of Research & Technical Services | Stephanie ReinicheMike Vaughn |

 |

1. **Call to Order** at 1:00 pm by interim chair Bruce Hunn followed by introductions. Janice Peterson, Chair, was unable to attend due to family matters.
2. **Roll call.** Quorum of **7** of 9 voting members present.
3. ***Motion:*** *to accept the agenda and approve the minutes of Orlando, January 2016 meeting.*

*Moved by Thomle, second Eldridge, passed 5-0-0 CV*

4**. Announcements** Hunn

* MTGs for which TC 7.6 is cognizant or co-sponsoring committee: see Item 7 below.
* RAC prioritizing research topics related to residential sector
* Conference and Exposition Committee seeking tracks and content development for future meetings
* Next meetings: Las Vegas January 2017 and Long Beach June 2017
* Seminar and Forum proposals for Las Vegas meeting due August 8, 2016
* Professional Development Committee seeking ideas for future courses
* TC 7.6 sponsored 1 of 9 technical programs, 1 of 8 workshops, and 3 of 64 seminars
1. **Membership** Hunn
* 9 voting members- plan to add 5 more. Janice Peterson and Stanton Stafford rolling off. One (Pierson) rolled off last year (but wishes to stay on since her new employer supports her attendance).
* New voting members: Dennis Landsberg, Kimberly Pierson, Chris Balbach, Hyojin Kim, Jim Kelsey after this meeting. Adding Christine Reinders and Fred Goldner.
* Contacting inactive corresponding members- updating list
1. **Standing Committee Liaison Reports (**TAC/RAC/StdCom/Program/SpecPub/ALI/bEQ**)**
* Incoming Section Head for Sec 7 TAC is Marija Todorovic Vea@eunet.rs; Tom Lawrence, incoming TAC Chair
* bEQ – Mike Brandemuehl reporting
* Re-branding as a framework for realizing energy improvements; marketing firm retained. Education and certification services to be emphasized.
* Board approved funds for a web portal – specification completed; beta site by Las Vegas meeting
* Collaboration with LEED, EPA and NYSERDA, and NJ Pay for Performance (P4P)
* Short course to be developed through student chapters
* International interest
* SSPC 90.1 has requested a TC 7.6 liaison to 90.1. Hunn is seeking a suitable volunteer for this position.

**7. Multi-Disciplinary Task Group Reports**

* MTG.ET - Energy Targets– (Hunn)
* MTG is sunsetting after this meeting and transferring to TC 7.6 input to Fundamentals Chapter 41 and agenda topics for Monitoring and Energy Performance subcommittee related to the results of completed project 1651-RP.
* MTG.IAST - Impact of ASHRAE Standards and Technologies on Energy Savings and Performance – (Adam Hinge and Nate Boyd)
	+ Cost effective dashboard reporting
	+ Program impacts
* MTG.ASEC - Avoided Source Energy Consumption Due to Waste Heat Recovery and Heat Pump Technologies – (David Eldridge)
	+ Work statement to RAC and TCs for comment
	+ Xiufeng Pang to replace David Eldridge as TC 7.6 liaison
* Non-Energy impacts of Energy Retrofits – Don Winston (no report)

**8. Subcommittee Reports**

**A. Standing (Functional) Subcommittees**

8.1 **Research** – Eldridge (report distributed) 10 in attendance

1. 1702-RP ***Case Studies to Test Performance Measurement Protocols*** –PMS met in St. Louis immediately prior to the research subcommittee meeting. Research team includes the University of Wyoming (PI is Liping Wang), with partners from University of Alabama and Iowa Energy Center. Two of the three partners and the full PMS were in attendance. Some new research assistants added.
* Currently updating the measurement plan. The scope is approved for scales of approach for the matrix of facilities and levels of measurement.
* Still implementing the occupant surveys.
* Current timeline is on schedule.
1. 1771-RP Co-sponsorship of bEQ’s WS “***Modeling of Typical Commercial Buildings in Support of the ASHRAE Building Energy Quotient Energy Rating Program***” – TC member Michael Deru is on the PMS. University of Miami was awarded the contract last month. A preliminary meeting took place to setup a kick-off in the next month.
	* + Question: what’s typical? That assessment is in the scope. This will be a difficult project to complete in budget and on time.
		+ 2-year timeframe
2. 1608-RP, ***Development of a Load-Based Method of Test for Light Commercial Unitary HVAC*** Sponsored by: TC 8.11 (Unitary and Room Air Conditioners and Heat Pumps), Co-sponsored by TC 7.6. Michael Deru from TC 7.6 is on PMSC. Oklahoma State is the contractor. Recommendations were made for the final report, which were incorporated. TC 6.8 will vote on the final report this meeting.
3. Projects in development:
* RTAR 1650: Training requirements for Sustainable, High-Performing Building Operation
* TC 7.6 is co-sponsor with TC 7.3 lead.
* Carpenter and Kim volunteered to be on PMS.
* RTAR TBD: Alternate Expressions of Building EUI as an Energy Performance Metric
* Landsberg developing draft RTAR with WG 5 of SSPC 100.
* RTAR 1697: Simultaneous Heating and Cooling
* TC 7.5 is lead. May be dropped.
* RTAR TBD: Testing Uncertainty Equations in Guideline 14

Draft RTAR being prepared by Jeff Haberl and Joshua New. In preparation for next revision of Gdl 14.

1. Recently completed research
* 1633-RP: ***Data and Interfaces for Advanced Building Maintenance and Operation***
* Presentation at prior meeting; final report available
* 1651-RP: ***Development of Maximum Technically Achievable Energy Targets***
* Final report available; presentations in Orlando and St. Louis (Seminar 2)
1. Research Proposals Presented to TC / New Business
	* Request for TC 7.6 participation on MTG.ASEC (Avoided Source Energy Consumption Due to Waste Heat Recovery and Heat Pump Technologies) initiated by TC 6.8. Xiufeng Pang will be TC 7.6 liaison.
* Purpose is to measure and quantify avoided source energy; needs to account for coincident and non-coincident waste heat recovery.
* Submitted WS to RAC this cycle, expecting comments.
	+ Is there a “comfort” TC for non-energy benefits? Janice Peterson looking for a BPA project to quantify benefit which resulted in an incentive adder.
		- Maybe TC 2.1, although their focus is commercial real estate. Benefits of increased productivity.
		- Productivity of CO2 from Harvard School of Medicine and Syracuse.
	+ Replacement Research Subcommittee chair is solicited.

 8.2 **Handbook** – Boyd (report distributed) 10 in attendance

* Electronic copies of Chapters 36 & 41, which were revised in 2014 but did not get into the revised 2015 Applications Handbook, are available on the ASHRAE website.
* Volunteers are solicited for revised chapters for 2019 edition
* Tables in Chapter 36 need to be updated for 2012 CBECS

8.3 **Standards** - Novosel 4 in attendance

* SSPC 90.1 – Ricson Chude volunteered for 90.1liason.
* SSPC 90.2 – New chair is Philip Fairey. Need liason volunteer.
* SSPC 100 – (Energy Conservation in Existing Buildings) – Under continuous maintenance. Two edits voted out for review: change to Purpose and alternate compliance path using source targets.
* Std 211 – (Commercial Building Energy Audits) – voted out for public review.
* SPC 214P – (Measuring and Expressing Building Energy Performance in a Rating Program) – Voting on public review.
* Gdl 34P – (Energy Guideline for Historic Buildings and Structures) – Sheila Hayter is chair and SPC met at this meeting. Reviewing comments from second public review.

8.4 **Program** - Anthony York (no meeting)

* For Las Vegas- 3 potential tracks
* Water Energy Nexus – seminar – 3-4 speakers - Annie Smith
* Deep Energy Retrofits – 4 technical papers - Alexander Zhivov
* Operation and Performance, including paper on CBECS – Amanda Webb

8.5 **Web Site** – David Heizerling

* Migrated over to new ASHRAE website.
* Request more committee members send agendas in advance.
* List serve is on website

**B. Topical Subcommittees**

8.6 **Monitoring & Energy Performance** –Landsberg (report distributed) 25 in attendance.

* The status of several relevant standards was reported
* The status of the bEQ labeling program was discussed.
* Updates presented on municipal benchmarking programs
* Changes in US initiatives discussed
* Changes in world initiatives discussed
* TC 7.6 EUI Task Group – discussions continue under Std. 100, WG5
* Discussion of future of Standard 90.1

8.7 **Energy Management**. Pearson (report distributed) 16 members, 5 guests

* Collaboration with TC 7.3 and TC 6.6
* Collaboration on a presentation with APPA
* Increase collaboration with ISMA and SAME
* Long-term plan for sub-committee by John Constantinide
	+ - Review of resources
		- Annie Smith reported on energy-water nexus program for Las Vegas.
		- Dennis Landsberg script for green guide.

8.8 **Commercial Building Audits** – Boyd (report distributed) 22 in attendance

* Next publication: Best Practices for Commercial Building Energy Audits – The Greener Book; written for practitioners
* Base Camp set up for subcommittee communications
* Level 1, 2, and 3 audits plus targeted and virtual energy audits
* 3 year publication timeline
* Sample filled out forms from Std 211 and sample calculations
* Hierarchy and interaction of EEMs
* BEQ

8.9 **Federal Buildings Subcommittee** – Zhivov (report distributed) 15 in attendance.

* Finished 26 case studies on Deep Energy Retrofits; looking to publish.
* A Prescriptive Guide to Produce Deep Energy Retrofits – how-to applications.
* The website of IEA Annex 61 has been finalized and can be viewed on: [www.iea-annex61.org](http://www.iea-annex61.org). Looking at packages of measures and non-energy benefits
* Forum on Deep Energy Retrofits in Washington, D.C. September 15-16, 2016.

**9.** **AEDG** Reinders

* Project Committee being selected for the next AEDG Publication: K-12 Schools Zero Energy Building Guide

**Publication Schedule:**

Document Development Fall 2016

Peer Review January 2017

Publication summer 2017

**10. Old Business**

* Technical FAQs will be assigned by the chair for review and revision
* Reviewer volunteers for technical papers and publications are solicited: contact Tiffany Cox at ASHRAE HQs: tfox@ashrae.org

**10.** **New business**

* Review roster changes Hunn
* Thanks and appreciation to retiring chair Hunn
* Incoming chair remarks Hunn

**11. Adjourn**

NEXT MEETING: Tuesday, January 31, 2017, in Las Vegas.

**TC 7.6 email Listserv**

We have switched to a new listserv at tc76-l@lists.onebuilding.org. Subscribe by sending a blank email to tc76-l-subscribe@onebuilding.org and unsubscribe by sending a blank email to

tc76-l-unsubscribe@onebuilding.org.

**ASHRAE Conferences**

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|  **Conference**  | **Hotel/Web Site**  |
| **2017 Winter, Las Vegas** **January 28-February 1, 2017**  | **TBD****www.ashrae.org/LasVegas** |
| **2017 Annual Meeting, Long Beach** **June 28-February 1, 2017**  | **TBD**[**www.ashrae.org/LongBeach**](http://www.ashrae.org/LongBeach) |