

**TECHNICAL COMMITTEE 2.8 – Meeting Notes: Summer Conference – St. Louis**  
**MEETING MINUTES – June 2016**

**ASHRAE**  
 1791 Tullie Circle, NE / Atlanta, GA 30329  
 404-636-8400

**TC/TG/TRG MINUTES COVER SHEET**

TC/TG/TRG No. TC 2.8 DATE: June 26, 2016

TC/TG/TRG TITLE: Building's Environmental Impact and Sustainability

DATE OF MEETING: June 26, 2016 LOCATION: Marriott St. Louis Grand

<b>MEMBERS PRESENT</b>	<b>YEAR APPTD</b>	<b>MEMBERS ABSENT</b>	<b>YEAR APPTD</b>	<b>EX-OFFICIO MEMBERS &amp; ADDIT'L ATTENDANCE</b>
Mr. Dunstan L Macauley, III	2013	Mr. John Swift	2014	Dr. Lisa Ng
Mr. Stanton Stafford	2015	Mr. Douglas David Fick	2013	Mr. Kevin Brown
Ms. Joy Altwies	2012	Ms. Calina Ferraro	2015	Michael Deru
Dr. Paul Torcellini	2014	Dr. Thomas Lawrence	2015	Kevin Cross
Mr. Ashish Rakheja	2015	Mr. Tom Cappellin	2012	Janice Means
Mr. E. Mitchell Swann	2014	Mr. Frank Mills	2014	Nitan Skukla
Mr. Abdel Darwich	2012	Mr. David Ellis	2015	John Karakash
Mr. Ng Yong Kong	2014			Svein Morner
				James Sweeney
				Annie Smith
				Kinga Porst Hydras
				Charlie Upshaw
				Tom Kelly
				Enrica Galasso
				Jose Correa
				Dolaana Khoualyp
				Tania Ullah
				Joshua Rhodes
				Jane Opoien
				Costas Balaras

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**DISTRIBUTION**

**ALL MEMBERS OF THE TC/TG/TRG**

TAC CHAIR	Tom Lawrence
TAC SECTION HEAD	Elbert Phillips
STANDARDS LIAISON	Cyrus Nasser
HANDBOOK LIAISON	Larry Akers
RAC RESEARCH LIAISON	Pawel Wargocki
CTTC LIAISON	Chris Fudge
ALI LIAISON	Tom Lawrence
STAFF LIAISON (RESEARCH)	Michael Vaughn

**Note:** These draft minutes have not been approved and are not the official, approved record until approved by this committee.

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<b>TC/TG/TRG MEETING SCHEDULE</b>				
<b>LOCATION – past 12 months</b>		<b>DATE</b>	<b>LOCATION - planned next 12 months</b>	
Orlando, FL		January 2016	Long Beach, CA	
Atlanta, GA		June 2015	Las Vegas, NV	
June 2017		January 2017		
<b>TC/TG/TRG SUBCOMMITTEES</b>				
<b>Function</b>			<b>Chair</b>	
International Program Handbook Research			Ashish Rakheja, Frank Mills	
Green Guide Existing Buildings			Kevin Brown	
Energy+Water Nexus			Kevin Brown	
			Joy Altwies	
			Tom Lawrence	
			Dunstan Macauley	
			Calina Ferraro, Fred Betz	
<b>RESEARCH PROJECTS – Current</b>			<b>Monitoring</b>	<b>Report Mode</b>
<b>Project Title</b>	<b>Contractor</b>		<b>Comm. Chm.</b>	<b>At Meeting</b>
1627-RP An Evaluation of the Actual Energy Performance of Small Office and K-12 School Buildings Designed in Accordance with the 30% ASHRAE Advanced Energy Design Guide	Group 14		Altwies	
<b>LONG RANGE RESEARCH PLAN</b>				
Rank	Title	W/S Written	Approved	To R & T
<b>HANDBOOK RESPONSIBILITIES</b>				
<b>Year &amp; Volume</b>	Chapter Title	<b>No.</b>	Deadline	<b>Handbook Subcom. Chair/Liaison</b>
2017 Fundamentals	Energy Resources	34	TBD	Fick / Brundage / Akers
2017 Fundamentals	Sustainability	35	TBD	Fick / Akers

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**STANDARDS ACTIVITIES - List and Describe Subjects**

**TECHNICAL PAPERS from Sponsored Research - Title, when presented (past 3 yrs. present & planned)**

**Appendix 3**

1627-RP An Evaluation of the Actual Energy Performance of Small Office and K-12 School Buildings Designed in Accordance with the 30% ASHRAE Advanced Energy Design Guide

**TC/TC/TRG Sponsored Conference Papers - Title, when presented (past 3 yrs. present & planned)**

**Appendix 4 TC/TG/TRG Sponsored Seminars**

2013-06 Denver Seminar 3 (Basic)  
Moving Buildings and the Grid to a Renewable Future

2013-06 Denver Seminar 6 (Intermediate)  
Field and Equipment Issues that Impact Economizer Control Performance

2013-06 Denver Seminar 11 (Intermediate)  
Performance Based Procurement Process Case Studies

2013-06 Denver Seminar 17 (Intermediate)  
Benchmarking and Improving Commercial Building Energy Performance

2013-06 Denver Seminar 28 (Intermediate)  
The Largest Zero-Energy Building: What is Under the Hood?

2014-01 New York Seminar 7 (Advanced)  
The Façade Odyssey: Solutions for Design of High Performance Buildings

2014-01 New York Seminar 29 (Intermediate)  
Advanced RTU Campaign: Accelerating Efficiency

2014-01 New York Seminar 35 (Intermediate)  
Sustainable Development in Africa

2014-01 New York Seminar 41 (Intermediate)  
Blue is the New Green: The Emerging Focus on Building Water Use Reduction

2014-01 New York Seminar 49 (Intermediate)  
Are Renewable Resources Renewable Energy? A Life Cycle Assessment Perspective

2015-01 Chicago Seminar 21 (Intermediate)  
Blue Is the New Green: The Emerging Focus on Integrated Water Management

2015-01 Chicago Seminar 61 (Intermediate)  
Biomass Combustion Strategies for Building Applications: Energy Efficiency with Low Emissions

2015-06 Atlanta SEMINAR 24 (Intermediate)  
What is a Zero Energy Building, and How Can We Get There?

2015-06 Atlanta SEMINAR 46 (ADVANCED)  
Energy Efficiency and Renewable Energy Sources for Cold Chain Energy Supply

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2015-06 Atlanta SEMINAR 56 (BASIC)  
Innovation for Food Retail: The 50% Advanced Energy Design Guide for Grocery Stores

2016-01 Orlando SEMINAR 5 (Intermediate)  
Commissioning: Closing the Loop

2016-01 Orlando SEMINAR 13 (Intermediate)  
Updates and Perspectives on the New Version of ICC 700,  
The Residential Green Building Standard

2016-01 Orlando SEMINAR 17 (Intermediate)  
Integrating ASHRAE Standard 189.1 and IgCC Compliance Requirements: Options and  
Issues

2016-01 Orlando SEMINAR 23 (Intermediate)  
Metrics Matter: How Should We Judge Energy Performance?

**Appendix 5**

**TC/TG/TRG Sponsored Forums**

2015-01 Chicago Forum 2 (Intermediate)  
AASA: A Dream Come True?

2015-06 Atlanta FORUM 4 (ADVANCED)  
Best Practices in Sustainable Design around the Globe Track: High Performance Buildings

**Appendix 6**

**JOURNAL PUBLICATIONS** - Title, when published (past 3 yrs. present & planned)

**ASHRAE TC 2.8 - Building's Environmental Impact and Sustainability**

**2016 SUMMER MEETING (St. Louis)**

**1. Roll call and Introductions** (Macauley)

- 1.1. Meeting called to Order at 5:10 PM
- 1.2. Roll Call / No Quorum – 7 Voting Members Present
- 1.3. Quorum achieved at 5:30 PM with 8 Voting Members Present
- 1.4. Introduction

**2. Accept Agenda/Approve Minutes of Previous Meeting** (Stafford)

- 2.1. Review Meeting Agenda
- 2.2. Approval of Atlanta Meeting Minutes:
  - 2.2.1. Motion by Rakheja
  - 2.2.2. Seconded by Torcellini
  - 2.2.3. Minutes approved unanimously with amendments (8-0-0, CV)

**3. Announcements/Membership/Listserv** (Macauley)

- 3.1. Review of ASHRAE Code of Ethics.

**4. Standing Committee Liaisons**

- 4.1. TAC
  - 4.1.1. N/A
- 4.2. RAC
  - 4.2.1. N/A
- 4.3. Handbook
  - 4.3.1. N/A
- 4.4. Standards
  - 4.4.1. N/A
- 4.5. Special Publications
  - 4.5.1. N/A
- 4.6. ALI
  - 4.6.1. N/A

**5. Subcommittee Reports**

5.1. Research (Altwies)

- 5.1.1. Progress Report on 1627-RP (by Group 14): An Evaluation of the Actual Energy Performance of Small Office and K-12 School Buildings Designed in Accordance with the *30% ASHRAE Advanced Energy Design Guide*
  - 5.1.1.1. Update on status of active research:
  - 5.1.1.2. Dennis gave a summary of the final results.
  - 5.1.1.3. Discussed giving a seminar in Las Vegas. Dennis is willing, plus info from NREL (Paul Torcellini) with more about upcoming AEDG net-zero guidance.
- 5.1.2. There was discussion of a potential research project on the cost dynamics of renewables, specifically PV, in comparison with efficiency technologies.

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- 5.1.3. Potential for looking at research into plug loads. (Including peak load and residential).
- 5.1.4. UPDATE after TC meeting: RAC has indicated that the full TC needs to vote on the draft final report. Will likely need to do this via email as this delays final payment to Group14.
- 5.1.5. UPDATE after TC meeting: RAC has also indicated that a conference paper will not satisfy the final contract requirement. According to RAC Section 2 liaison, this is what the contract states: “The paper(s) shall conform to the instructions posted in “Manuscript Central” for an ASHRAE Transactions Technical or Science and Technology for the Built Environment paper. The paper title shall contain the research project number (XXXX-RP) at the end of the title in parentheses, e.g., (XXXX-RP).” TC will need to vote to accept draft final report before Group14 is able to submit the final paper into Manuscript Central.
- 5.1.6. New searchable database of past research reports (research.ashrae.org).
- 5.1.7. MTG.ASEC – Avoided Source Energy Consumption Due to Waste Heat Recovery and Heat Pump Technologies. Kevin Brown is TC 2.8’s representative.
- 5.1.8. 15 people attended meeting.
- 5.1.9. List of research topics ideas:

<b>Past Research Topic Idea</b>	<b>Generated by</b>	<b>Update/Status</b>	<b>Next Step</b>
Training Requirements for Sustainable, High Performance Building Operations (TC 7.3, 1650-TRP)	TC 7.3, from Michael Bobker	TRP went to bid in spring 2016. TC 7.3 is in the process of selecting PMS members.	Kevin Brown (and Lisa Ng) volunteered to serve on the PMS once ready to form. Joy will put both Kevin and Lisa in touch with Michael Bobker for next steps.
Do buildings built to Standard 189.1 perform as expected?	Kevin Cross, Joy Altwies, Tom Lawrence	Kevin Cross and Brent Stephens developed an early stage RTAR	Kevin will follow up with Tom on whether he knows how many buildings have been built to 189 at this point. (or how many jurisdictions have adopted.). Or do we need to look at 90.1 itself instead of 189? Not sure if there would be support from ASHRAE.
Embodied energy of building systems & equipment – how much more efficient does it need to be to outweigh its embodied energy?	Kevin Cross & Dunstan, Jim Sweeney	Dunstan will set up a conference call with Jim to get more details on his similar study in the residential sector.	Will discuss potential of going forward with topic after conference call with Jim.
Comparing high-performance homes to code-built homes	Dunstan	This was posed as a way to provide some research/data in regard to potential rollback/delay of code update cycles (due to pushback from homebuilders on costs.)	Dunstan to follow up with Grassroots Government Activity committee

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RTARs – Tall Buildings	Luke Leung	TC 9.12	Both RTARs from TC 9.12 related to tall buildings were rejected by RAC. Will drop from our list and will re-add if revised and re-contacted by TC 9.12.
<b>New Research Topic Idea</b>	<b>Generated by</b>	<b>Update/Status</b>	<b>Next Step</b>
Geoexchange in hot climates – international	Ashish Rakheja	New topic idea	Added to the list for further discussion
Grid impacts – can buildings be an energy storage mechanism that shifts efficiency strategy?	Mark MacCracken	New topic idea	Added to the list for further discussion

5.2. Programs (Brown)

5.2.1. St. Louis Programs

5.2.1.1. WORKSHOP 8 (Basic)

How to Predict the Long Term Success of Your Green Design: The Five Characteristics that Determine Technology Adoption

Track: Professional Skills Beyond Engineering

Room: 227

Chair: Kevin Brown

Tuesday, Jun 28, 9:45 AM-10:45 AM

5.2.2. STANDING SEMINAR: Blue is the New Green (multiple in development)

5.2.2.1. Energy Water Nexus track may be offered in Las Vegas. Start identifying speakers/topics in Orlando. Energy Water Nexus is Track 3.

5.2.3. IN DEVELOPMENT: Comparing Green Building Rating systems As-Designed vs. Actual Performance – Frank Mills, Janice Means, NYK – probably needs a paper as foundation (Ashish, Costas, Means, Lawrence); 7.2 would co-sponsor (need timeline from Janice, maybe Chicago 2018)

5.2.4. IN DEVELOPMENT: Definitions of Renewable (Biomass – different versions of renewable energy - Wood, Landfill Gas, vs Wind and Solar, GSHP, Air Source now adding cooling); Neil Leslie, Chair - framed as a seminar with open debate co-sponsor with 6.7 Solar Energy Utilization

5.2.4.1. forum/workshop Las Vegas

5.2.4.2. Seminar /workshop by Long Beach

5.2.4.3. Additional workshop for Las Vegas...Brown, Chair; Mitchell Swann to coordinate legal SME and quantifying RECs. Paul T to open with definition from DOE.

5.2.5. IN DEVELOPMENT: Add output from Research Subcommittee on successful use of 30% AEDG. Look at Las Vegas for Programs – Joy Altwies.

5.2.6. IN DEVELOPMENT: Public Sessions related to Residential at Las Vegas (broadly defined) – presentations will be on the floor in the main convention center in Las Vegas; contact Neil L. – good way to target the EXPO

5.2.7. IN DEVELOPMENT: Paul T – What do ASHRAE members do in their own houses? Actual data, Case Studies on actual residences. Kevin Brown. TC 6.7 Net Plus house. Co w/ Residential Buildings Committee RBC– Standing Committee; Jim Sweeney, Chair. Target Long Beach.



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5.2.7.1. From Paul T. - "ASHRAE members make decisions professionally everyday related to clients purchasing decisions and energy efficiency. When given the opportunity, how do ASHRAE engineers make decisions for their own homes and offices?"

5.2.7.2. This series of papers looks at case studies of ASHRAE member's homes and the measured energy performance of these homes. Papers are requested that describes the technologies used, how the decisions were made to use certain technologies, and the measured energy performance of the homes."

5.2.8. IN DEVELOPMENT: Conference Paper from Research Project 16-27. Joy Altwies to Chair.

5.2.9. IN DEVELOPMENT: How can ASHRAE help provide affordable high performance residential buildings in countries with developing economies? Ashish to Chair; Neil to assist.

5.2.10. 12 people attended meeting.

#### 5.3. Handbook (Brown)

5.3.1. On-line editing / submission tool introduced by ASHRAE at meeting.

5.3.2. CH34 / Energy Resources

5.3.2.1. Don's changes to Chapter 34

5.3.2.2. Proposed new language from Janice.

5.3.2.3. Final DRAFT to ASHRAE at end on July 2016.

5.3.3. CH35 / Sustainability

5.3.3.1. Web meeting to review updates to be scheduled.

5.3.3.2. Final DRAFT to ASHRAE at end on July 2016.

5.3.4. Met with Section 2 liaison and informed him of our delivery schedule.

5.3.5. Chapter 35 is behind schedule; Chapter 34 is on schedule.

5.3.6. Both should be submitted to ASHRAE before the end of July.

5.3.7. 12 people attended meeting.

#### 5.4. Green Guide (Lawrence)

5.4.1. January 2017 will have "final draft" for use in committee edit/review.

5.4.2. June 2017 approval by TC 2.8 for publication "Hard Point Date".

5.4.3. Release in late 2017, push sales at winter 2018 meeting.

5.4.4. Reviewed chapter-by-chapter progress, responsibilities and path forward.

5.4.5. Goal is to keep length of book similar to V4.

5.4.6. Asked for people to let the Chair know if they want to be added to the Dropbox.

5.4.7. International Committee will write a "digger deeper" section for the Green Guide IEQ chapter concerning differences on how ventilation and thermal comfort are handled in regions where the ambient air quality is bad.

5.4.8. 18 people attended meeting.

#### 5.5. International (Rakheja / Mills)

5.5.1. Seminars planned in future on following:

5.5.1.1. Voluntary efforts for Green Rating and Sustainable Practices around the world.

5.5.1.2. Learnings from Past.

5.5.1.3. Engineer's role in designing Sustainable master-planning of projects.

5.5.1.4. Case Studies of Zero Energy Building around the world.

5.5.2. Seminars/Forums planned for January 2017 Las Vegas Meeting:

5.5.2.1. Energy Water Nexus from Ashish Rakheja.

5.5.2.2. Forum in association with AASA.

5.5.3. Sub-committee looking at article in future for ASHRAE Journal on following topics

5.5.3.1. Article on Sustainability Practices in Australasia.

5.5.3.2. Net Zero Energy Buildings in world

5.5.3.3. Green Building Ratings

5.5.3.4. Comparison of Commissioning Practices Across World (Authors: Mitchell Swan, Tom Lawrence, Yong Kong, Ashish Rakheja)

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- 5.5.4. Sub Committee will target an article on Air Quality & Thermal Comfort perspective in Developing Countries by January 2017. Asian experts to be identified by Ashish Rakheja. For South America, approach Roberto and Ross Montgomery.
- 5.5.5. Due to its International stature, the sub-committee to look at participating in ASHRAE Specialty Conferences across Globe
- 5.5.6. 13 people attended meeting.

#### 5.6. Standards (Lawrence)

- 5.6.1. SPC 189.1 Standard for the Design of High-Performance Green Buildings except Low-Rise Residential Buildings
  - 5.6.1.1. N/A
- 5.6.2. SPC 189.3P Design, Construction and Operation of High Performance Green Healthcare Facilities
  - 5.6.2.1. N/A
- 5.6.3. SPC 191P Standard for the Efficiency Use of Water in Building, Site and Mechanical Systems
  - 5.6.3.1. N/A

#### 5.7. Existing and Future Building Challenges (Macauley)

- 5.7.1. No meeting was held.

#### 5.8. Water-Energy Nexus Subcommittee (Ferraro, Betz)

- 5.8.1. Reviewed Water-Energy Nexus Program Proposals
  - 5.8.1.1. Proposal in development with TC 7.6 for Las Vegas. Seeking speaker(s).
  - 5.8.1.2. ASHRAE Takes the Plunge into Water Use
  - 5.8.1.3. What is the Water:Energy Nexus?
  - 5.8.1.4. The Murky State of US Water Infrastructure, Codes, & Trends
  - 5.8.1.5. The Water:Energy “Next is”?
  - 5.8.1.6. Accounting for Every Drop
  - 5.8.1.7. Connect with Las Vegas Energy+Water Nexus track chair, Leon Shapiro, to coordinate sessions for Las Vegas and determine number of available slots.
- 5.8.2. Blue is the New Green program(s).
- 5.8.3. 12 people attended meeting.

#### 5.9. Website (Ng)

- 5.9.1. No updates.

### **6. Related Activities Reports**

- 6.1. Advanced Energy Design Guides (AEDG): N/A.
- 6.2. ASHRAE bEQ: N/A.
- 6.3. Hot Climate Design Guide is seeking input from TC 2.8.

### **7. Old Business**

- 7.1. TC 2.8 Proposed Scope Revisions (Macauley)
  - 7.1.1. Language to undergo a third modification for redistribution to the Voting Members.
  - 7.1.2. E-mail vote to be taken by end of July 2016.
  - 7.1.3. St. Louis version of proposed scope revision:

***Technical Committee 2.8 is concerned with the environmental, social and economic impacts of buildings, including effects on ecosystem sustainability and the well-being of building occupants. The committee works to enhance awareness of these issues and the resiliency needed to adapt to a changing climate. Building impacts of concern include, but are not limited to, environmental impacts of energy and water production, conversion, delivery***

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*and use; availability of energy and other resources; pollution of air, water, and soil; and encroachment on sensitive habitats and ecosystems.*

**8. New Business**

- 8.1. MTG.OBB: Occupant Behavior in Buildings
- 8.2. MTG.IAST: Impact of ASHRAE Standards and Technology on Energy Savings/Performance
- 8.3. Smart Building Systems Roadmap Discussion Group
  - 8.3.1. Monday (6/27)      5:15 pm - 7:15 pm      in Room 223 (2)
- 8.4. Attempt Electronic Subcommittee Meetings / transition away from face-to-face.

**9. Adjourn**

- 9.1. Chair parting words (Macauley).
- 9.2. Incoming Chair (Rakheja) – Thank you, Dunstan, for your 3 years as Chair!
- 9.3. Motion by Torcellini.
- 9.4. Seconded by Altwies.
- 9.5. Motion approved unanimously (8-0-0, CV)
- 9.6. Meeting adjourned at 6:30 PM.

## **TC 2.8 Web Site**

<https://tc0208.ashraetcs.org/>

## **TC 2.8 E-mail List**

This list is only for communications related to ASHRAE TC 2.8 Building Environmental Impacts and Sustainability. Do not distribute messages of any commercial nature.

To subscribe or unsubscribe to the list, you can go to the TC 2.8 list web site:  
<http://lists.onebuilding.org/listinfo.cg/tc28-l-onebuilding.org>

To send a message to all subscribers to the list, address your message to:

[tc28-l@lists.onebuilding.org](mailto:tc28-l@lists.onebuilding.org)

*Note: ASHRAE does not operate this list. Please do not ask them for help. If you have any questions, please contact: Jason Glazer [JGlazer@gard.com](mailto:JGlazer@gard.com)*

*Thanks to Jason and GARD Analytics for hosting this list!*