**TC/G/GRG MINUTES COVER SHEET**

**TC/G/GRG No.**  TC 2.8  
**DATE:**  July 28, 2010

**TC/G/GRG TITLE:** Building’s Environmental Impact and Sustainability

**DATE OF MEETING:**  June 27, 2010  
**LOCATION:**  Hyatt Albuquerque, Albuquerque, NM

<table>
<thead>
<tr>
<th>MEMBERS PRESENT</th>
<th>YEAR APPTD</th>
<th>MEMBERS ABSENT</th>
<th>YEAR APPTD</th>
<th>EX-OFFICIO MEMBERS &amp; ADDIT'L ATTENDANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tom Lawrence (Chair)</td>
<td></td>
<td>Katherine Hammock</td>
<td></td>
<td>William Coad</td>
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<td>John Swift</td>
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<td>Paul Torcellini</td>
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<td>Dave Grumman</td>
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<td>Doug David Fick</td>
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<td>Mitchell Swan</td>
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<td>A. Kader Darwiche</td>
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<td>Don Brudage</td>
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<td>Janice Means</td>
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<td>Michael Deru</td>
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<td>Tom Cappellin</td>
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<td>Joy Altwies</td>
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<td>Andy Price</td>
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<td>Harvey Bryan</td>
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<td>H. Jay Enck</td>
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<td>Kevin Cross</td>
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<td>Vikas Patraik</td>
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<td>Malcolm Lewis</td>
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<td>Frank Mills</td>
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<td>David Okada</td>
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<td>Dunstan Macauley</td>
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<td>Jim Crawford</td>
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<tr>
<td>Ashish Rakheja</td>
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<td>Ng Kong</td>
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<td>Ray Man-Hung Yau</td>
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<td>Dick LeClaire</td>
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<td>Jessica Turner</td>
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<td>Jay Eldridge</td>
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</tbody>
</table>
DISTRIBUTION

ALL MEMBERS OF THE TC/TG/TRG

TAC CHAIR        Don Brundage
TAC SECTION HEAD  Brian Fricke
SPECIAL PUBLICATIONS LIAISON Stanley Mumma
STANDARDS LIAISON Hoy Bohanon
HANDBOOK LIAISON  Jeff Traylor
PROGRAM LIAISON   Joy Altwies
RAC RESEARCH LIAISON Iain Walker
CTTC LIAISON      Frederic Genest
ALI LIAISON       Florentino Mendez
STAFF LIAISON (RESEARCH) Michael Vaughn
STAFF LIAISON (STANDARDS) Stephanie Reinche

Note: These draft minutes have not been approved and are not the official, approved record until approved by this committee.
TC/TG/TRG MINUTES COVER SHEET

TC/TG/TRG No. TC 2.8
DATE: July 28, 2010

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

DATE OF MEETING: June 27, 2010
LOCATION: Hyatt Albuquerque, Albuquerque, NM

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### TC/TG/TRG MEETING SCHEDULE

<table>
<thead>
<tr>
<th>LOCATION – past 12 months</th>
<th>DATE</th>
<th>LOCATION - planned next 12 months</th>
<th>DATE</th>
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<tbody>
<tr>
<td>Orlando</td>
<td>Jan 2010</td>
<td>Las Vegas, NV</td>
<td>Jan 2011</td>
</tr>
<tr>
<td>Louisville</td>
<td>June 2009</td>
<td>Montreal, Can</td>
<td>June 2011</td>
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### TC/TG/TRG SUBCOMMITTEES

<table>
<thead>
<tr>
<th>Function</th>
<th>Chair</th>
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<tbody>
<tr>
<td>International Program</td>
<td>Ashish Rakheja, Frank Mills</td>
</tr>
<tr>
<td>Handbook</td>
<td>Kevin Brown</td>
</tr>
<tr>
<td>Research</td>
<td>Dave Grumman</td>
</tr>
<tr>
<td>Green Guide</td>
<td>Andy Price</td>
</tr>
<tr>
<td>Existing Buildings</td>
<td>John Swift</td>
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<tr>
<td></td>
<td>Dunstan Macauley</td>
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### RESEARCH PROJECTS – Current

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Contractor</th>
<th>Monitoring</th>
<th>Report Mode</th>
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</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td>At Meeting</td>
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</tbody>
</table>

### LONG RANGE RESEARCH PLAN

<table>
<thead>
<tr>
<th>Rank</th>
<th>Title</th>
<th>W/S Written</th>
<th>Approved</th>
<th>To R &amp; T</th>
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</table>

### HANDBOOK RESPONSIBILITIES

<table>
<thead>
<tr>
<th>Year &amp; Volume</th>
<th>Chapter Title</th>
<th>No.</th>
<th>Deadline</th>
<th>Handbook Subcom. Chair/Liaison</th>
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<tbody>
<tr>
<td>2009 Fundamentals</td>
<td>Energy Resources</td>
<td>34</td>
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<td>Brundage/Bansal</td>
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<tr>
<td></td>
<td>Sustainability</td>
<td>35</td>
<td></td>
<td>Grumman/Bansal</td>
</tr>
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</table>

### STANDARDS ACTIVITIES - List and Describe Subjects

### TECHNICAL PAPERS from Sponsored Research - Title, when presented (past 3 yrs. present & planned)
<table>
<thead>
<tr>
<th>Appendix 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TC/TC/TRG Sponsored Symposia - Title, when presented (past 3 yrs. present &amp; planned)</strong></td>
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<table>
<thead>
<tr>
<th>Appendix 4</th>
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<tbody>
<tr>
<td><strong>TC/TG/TRG Sponsored Seminars - Title, when presented (past 3 yrs. present &amp; planned)</strong></td>
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<table>
<thead>
<tr>
<th>Appendix 5</th>
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<tbody>
<tr>
<td><strong>TC/TG/TRG Sponsored Forums - Title, when presented (past 3 yrs. present &amp; planned)</strong></td>
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<table>
<thead>
<tr>
<th>Appendix 6</th>
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<tbody>
<tr>
<td><strong>JOURNAL PUBLICATIONS - Title, when published (past 3 yrs. present &amp; planned)</strong></td>
</tr>
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</table>


Appendix 1

RESEARCH PROJECTS

TC 2.8 Research Projects Status

No active projects at this time, several RTARs in process.

Active projects

<table>
<thead>
<tr>
<th>#</th>
<th>Title</th>
<th>Joint TC</th>
<th>Cognizant Subcommittee/ Contractor</th>
<th>PMSC</th>
<th>Dates / status</th>
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<tbody>
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**Appendix 2**

**RESEARCH PLAN**

**Technical Committee 2.8**

**Research Plan**

The following outlines the current status in the development of our research objectives and plan.

<table>
<thead>
<tr>
<th>Title</th>
<th>TC Priority</th>
<th>Prior TC priority</th>
<th>Society status</th>
<th>TC Status</th>
<th>Sub-com</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>See Research Plan and summary at end of these meeting minutes</em></td>
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</tr>
<tr>
<td>One RTAR voted out by the committee at the Albuquerque meeting (Originally approved in Orlando. The RTAR was misplaced and therefore has to be re-submitted) “Measurement of Energy Performance of ASHRAE Energy Design Guides (AEDG)”</td>
<td>1</td>
<td></td>
<td></td>
<td>Voted for submission</td>
<td></td>
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</tbody>
</table>
Appendix 3

TECHNICAL PAPERS FROM SPONSORED RESEARCH

No projects completed at this time

<table>
<thead>
<tr>
<th>RP</th>
<th>Title</th>
<th>Contractor</th>
<th>Approved</th>
<th>Paper</th>
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</table>
Appendix 4

TC/TG/TRG SPONSORED Programs

**PRESENT:**

**Albuquerque 2010**

<table>
<thead>
<tr>
<th>Forum 1</th>
<th>How International is Sustainability? What is Being Done around the Globe? What Should be Done? (Frank Mills)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conference Paper Session 11</td>
<td>Evaluating the Performance of Existing Buildings (J. Kevin Cross)</td>
</tr>
<tr>
<td>Seminar 57</td>
<td>Designing and Building a Large Scale Net-Zero Energy Building (Shanti Pless)</td>
</tr>
</tbody>
</table>

**PLANNED:**

**Las Vegas, 2011**

- See TC 2.8 Program Plan attached to minutes
ASHRAE TC 2.8 - Building’s Environmental Impact and Sustainability

ANNUAL 2010 MEETING (Albuquerque)

ACTION ITEMS

1. **Roll call and Introductions** Lawrence
   - Meeting called to Order w/ Quorum at 5:04
   - Roll Call
   - Introduction

2. **Accept agenda/approve minutes of Louisville meeting** Lawrence
   - Approval of Minutes:
     - Motion by Andy Price
     - Seconded by Dave Grumman
     - Minutes approved unanimously with no amendments.

3. **Announcements/Membership/Listserv** Lawrence
   - The procedures for signing up with the listserv were discussed.
   - All new incoming provisional members and guests were reminded that the bulk of the TC work is conducted in the subcommittees, which meet on Sunday afternoon.

4. **Standing Committee Liaisons (TAC/RAC/StdCom/Program/SpecPub/ALI)**
   - No Liaisons present.

5. **Subcommittee Reports**

5.1 **Research** Andy Price
   - Proposed RTAR approved in Orlando, “Measurement of Energy Performance of ASHRAE AEDG” was misplaced and has to be resubmitted.
   - Proposed RTAR, “Towards new indoor air quality criteria by understanding the perception and sensation of occupants”, by Diotima von Kempski requires editing to conform to the submittal requirements. Janice Means will assist.
   - Proposed RTAR, “Documenting performance of high performance buildings by applying the ASHRAE Performance Metrics Protocol (PMP) and the ASHRAE Building Energy Quotient (BEQ)”, will be written by Michael Deru, Mitchell Swann, and Dunstan Macauley.

5.2 **Programs** Kevin Brown.

   - Seminar: 189.2 (Still needs title), 189.2 will sponsor, TC2.8 will co-sponsor
   - Seminar: Low Carbon Cities 3: Needs a Speaker – Mitch Swann following up with Frank Mills to find local Las Vegas speaker
     - In Asia – Raymond Yau
     - In UK – Frank Mills
     - In India – Ashish Rakheja
   - Forum: Embedded Energy – Build or Renovate (Dunstan Macauley)
   - Seminar: Introducing the Proposed Standard 191 on Water Conservation, John Swift, 191 will sponsor, TC2.8 will co-sponsor
5.3 **Hand Book** - Dave Grumman

- TC is responsible for two handbook chapters: “Energy Resource” and “Sustainability”
- College of Fellows reviewed new Sustainability Chapter with one comment
- Energy Resources chapter is due in spring of 2012. Due to the publishing date of the Energy Outlook data by the Energy Information Administration, the final version of the chapter is allowed to be turned in late so that the data is not more than three years outdated when the handbook is published.

5.4 **Green Guide** - John Swift

- 3rd Edition of the Green Guide to be released at Green Build – Chicago
  Will host a forum in Las Vegas for the 4th edition. The purpose of the forum will be to generate recommendations for the 4th edition.

5.5 **International** – Ashish Rakheja / Frank Mills

- International subcommittee would like to review Green Guide and Standard 189.12 and make recommendations from an international perspective. The exact procedure for how this would happen, particularly in regard to Standard 189.1, will need to be worked out.

5.6 **Standards** –

- SSPC 189.1 and Standard 189.1 Design, Construction and Operation of High Performance Green Buildings (was Hammack)
  Katherine Hammack has been appointed as Assistant Secretary of the Army in charge of facilities and thus can no longer serve on SSPC 189.1 nor TC 2.8. We will need a new liaison, and for the near-term Tom Lawrence will provide that role.

- SPC 189.2P Design, Construction and Operation of High Performance Green Healthcare Facilities (Fick)
  They are just getting started in reviewing the recently released Standard 189.1 for changes that would be required for healthcare facilities.

- SPC 191P Standard for the Efficiency Use of Water in Building, Site and Mechanical Systems (J. Swift).
  - Hope to have a draft for public review in fall 2010.
  - Will hold public session in Las Vegas for Standard 191P

5.7 **Web Site** - Dunstan Macauley

- Please provide recommendations on improving the Website

5.8 **Existing Buildings** – Dunstan Macauley

- The sub-committee to host forum in Las Vegas on Embodied Energy; the embodied energy savings of an existing building vs. the replacement cost.
- Tom Lawrence and Dunstan Macauley will also write a Journal article on the topic.

6. **Related Activities**
6.1 LEED for Homes (no official liaison)

6.2 Advanced Energy Design Guides– (Paul Torcellini)

6.3 Green Globes/GBI (Harvey J. Bryan)

6.4 DASH (Michael Deru)

6.7.1 Design towards NZEB Short Course (Frank Mills / Dunstan Macauley)
   - Course was given in Orlando, very successful
   - The course has to be shortened; the presentation ran a little long.
   - Recommended to ALI that the course title be revised from Designing Towards Net Zero Energy Commercial Buildings to Designing Towards Net Zero Energy Buildings to detail the advances in NZEB in other market sectors.

INPUT FROM OTHER TCS
   - Basic discussions of the work done within a couple of other TCs were briefly discussed.

Old Business- no other reports

New Business

8.1 Short Course on Designing Towards Net Zero Energy Commercial Buildings- Dunstan Macauley
   - scheduled for Orlando.

Adjourn

- Andy Price – move to adjourn
- 2nd by Dave Grumman
- Unanimous- motion passed- meeting adjourned
TC 2.8 Web Site

www.tc28.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-I-onebuilding.org

To send a message to all subscribers to the list, address your message to:
tc28-I@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*

*Thanks to Jason and GARD Analytics for hosting this list!*
RESEARCH PLAN (See Research Report above)
January 2010

RESEARCH TOPICS (not listed in order of priority)

   Author: E Mitchell Swann, Kevin Cross, Paul Bertram
   Possible co-sponsors: TRG4, TC 7.1, TC 7.6, TC 7.8, TC 7.9
   Submitted to ASHRAE, waiting for comments.

2. Control practices present in buildings and trade-offs with defined “green” practices or goals (possible
   precursor to guidelines).
   Author: Vikas Patnaik, Andrew Price
   Possible co-sponsors: TC 1.4

3. Documenting performance of high performance buildings using Standard 189.1-2009 by applying the
   ASHRAE Performance Metrics Protocol (PMP) and the ASHRAE building labeling method.
   Author: Mitchell Swann, Michael Duru, Dunstan Macauley
   Possible co-sponsors: TC 7.6

4. Towards new indoor air quality criteria by understanding the perception and sensation of occupants.
   Author: Diotima von Kempski, Janice Means
   Possible co-sponsors: TC 2.1

5. Integrated sensors in buildings for continuous monitoring.
   Author: Janice Means, Jay Enck
   Possible co-sponsors:

6. Condensate collection and use.
   Author: Tom Lawrence, Andrew Price
   Possible co-sponsors: TC 6.1

CO-SPONSORED

1. Comparative study of energy and water usage for HVAC systems using evaporative, dry or hybrid
   cooling equipment.
   Author: Tom Bugler
   Possible co-sponsors: TC 8.6 (lead), TC 3.6, TC 2.8, SPC 191

2. Energy use for air conditioning and its effects on office productivity in hot-humid tropical regions.
   Authors: Eric Adams, Pawel L Wargocki, David Wyon
   Possible co-sponsors: TC 2.1 (lead), TC 2.5, TC 2.8, TC 5.12, TC 7.6

ADDITIONAL IDEAS

- Impact of tenant behavior on building performance.
- Documenting persistence of high performance buildings.
- What information do building operators need to maintain and operate a green building?
- Sustainability Assessment of Absorption, Adsorption, and Vapor Compression Chillers.
• Utility management practices (smartgrid, etc.) and impact on HVAC performance, reliability and “green” practices (will smartgrid achieve its desired result at the expense of HVAC equipment/customers?)

• What are best “green” maintenance practices and what building management, control or system functions are necessary to support them?

• **Strategy 1.1** Develop design guidance to integrate indoor environmental quality (IEQ), energy efficiency and other aspects of sustainable building performance.

• **Strategy 1.2** Lead the drive toward the design, construction and operation of net-zero-energy buildings through research, publications and education.

• **Strategy 1.3** Develop performance metrics and rating systems to certify operational performance of buildings for energy efficiency and IEQ.

• **Strategy 1.4** Provide training, guidance and tools for building operators.

• **Strategy 1.5** Conduct research and develop guidance to enhance the effectiveness of maintenance procedures.

• **Strategy 1.6** Promote the use of life-cycle-cost analysis to building owners that will encourage sustainable building construction, operation, and renewal.

• **Strategy 1.7** Collaborate with other organizations to integrate HVAC&R systems with other building systems to enhance the effectiveness of Total Building Design and Integrated Practice.

• **Strategy 1.8** Promote research leading to the development of equipment & systems that support sustainable buildings.