

AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS, INC.
1791 Tullie Circle, N.E./Atlanta, GA 30329
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TC/TG/TRG MINUTES COVER SHEET

(Minutes of all TC/TG/TRG Meetings are to be distributed to all persons listed below within 60 days following the meeting.)

TC/TG/TRG NO.: TC 4.1 DATE: July 2013

TC/TG/TRG TITLE: LOAD CALCULATION DATA AND PROCEDURES

DATE OF MEETING: June 30, 2014 LOCATION: Seattle, WA

MEMBERS PRESENT	YEAR APPT D	MEMBERS ABSENT	YEAR APPTD	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE
Voting Rolando Legarreta Chip Barnaby Steve Bruning Larry Sun Suzanne LeViseur Som Shrestha Bob Doeffinger Dan Fisher Doug Hittle Non-Voting Stephen Roth Jeff Spitler Chris Wilkins Jim Pegues Glenn Friedman Juan Hincapie Russell Taylor	2012 2010 2013 2013 2011 2012 2012 2011 2011	Non Voting Lucy Armankwah David Ariyo Andrew Braum Jui-Chen Roger Chang Charlie Curcija Joe Ferdleman Ken-Ichi Kimura Brian Rock Branislav Todorovic Gary Wingfield Gabrielle Powell Ahmad Sleiti Kevin Wood Elyse Malherek Fred Bauman Stephen Kavanaugh		Visitors Rachel Spitler Matt Mitchel Jingjing Wang Justin Way Todd Gottshall

DISTRIBUTION:

All Members of TC/TG/TRG

ADDITIONAL DISTRIBUTION:

TAC Chairman: Walter Grondzik
TAC Section Head: Michael R. Bilderbeck
Chapter Tech Transfer: Harris M. Sheinman
Research Liaison: Xudong Yang
ALI/PDC: Hugh McMillan
Special Publications: Francis A. Mills
2013 HB Fundamentals: David Yuill
Standard Liaison: James Aswegan
Staff Liaison: Michael R. Vaughn

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

June 30, 2014
Committee Meeting Minutes
TC 4.1 Load Calculations Data and Procedures
Seattle, WA

1. Meeting called to order by Rolando Legarreta.
2. Roll Call – Secretary Doeffinger
 - a. 8 of 9 voting members present.
 - b. Quorum present.
3. Introductions
4. Liaison Report – David P. Yuill, Handbook Liaison appeared and discussed what options are available to members when reviewing handbooks, i.e. hardcopy or on-line copy. Handbook chapters are encouraged to include practical examples and a sustainable example. Handbook chapter authors are encouraged to seek input from international members.
5. NYC Meeting Minutes Action
 - a. Motion to approve NYC minutes as submitted: Larry Sun.
 - Second: Suzanne LeViseur.
 - Vote 7-0-0, 1 absent, CNV.
6. Research Subcommittee – Chris Wilkins
 - a. RP-1616 – Jim Pegues reported on updating Load Manual.
 - Jeff Spitler – update the PMS.
The goal is to have the publication ready for sale at Chicago.
 - See attached Minutes of PMSC Meeting.
 - b. RP-1618 – Low Energy Lighting
 - Out for bids, bids received, PES met and arrived at a decision and recommendation for vote at Executive Session at end of this meeting.
 - c. RP-1699 - Update Weather Data
 - Sponsored by TC 4.2, Steve Bruning is TC 4.1's representative.
 - The project is just starting, the Contractor from Canada is Klimaat, Michael Roth.
 - d. RP-1631 – Countertop Commercial Appliance Emissions
 - Rolando Legarreta is TC 4.1 liaison.
 - 50% of equipment tested by Chicago, and complete testing by summer 2015.
 - e. RTAR 1729 – Non-uniform surface cooling loads.
 - Chris Wilkins reports RTAR was approved with comments. RTAR to be reviewed based on comments.
 - TC free to prepare Work Statement.
 - Email ballot on WS by October if not at Chicago meeting.

- Som Shrestha to help Chris with WS.
 - f. Research Subcommittee to go straight to WS to update Handbook Tables 8,9,10 plug loads. WS must, be approved by Committee vote.
 - g. Steve Bruning stated emphasis has been placed on separating plug loads from other building loads. Low priority now to update Tables 11 and 12 diversity factors. Steve suggested doing a literature search first. Chris Wilkins volunteered to spearhead the effort.
7. Handbook Subcommittee – Steve Bruning
- a. See attached Minutes of the Handbook Subcommittee Meeting with reviewer comments and tables that need updating for 2017.
 - b. Updating tables is most critical and useful to members. Tables 8, 9, and 10 heat gains from computer printer and office equipment are of particular need of updating. They were updated last in 2008 by Mo Hosni.
 - c. Rolando Legarreta noted Table 5A Unvented Kitchen Appliances is being updated, other kitchen appliances were updated in 2008.
 - d. Bob Doeffinger to follow-up with medical and laboratory TC's. Larry Sun to follow-up with former employee known to have data on health care equipment load studies.
 - e. Tables 16-18 and 19-21 are based tabulated time series data from 1999. Steve Bruning to refresh the tables with new procedures also adding walls and roof with new higher insulation values.
 - f. Tables 22-24 on basement walls and floors are from 1969. Chip Barnaby to research available data for update.
8. Programs/Standards Subcommittee Report – Glenn Friedman
- a. See attached handout for Programs/Standards Subcommittee Meeting.
- Programs
- b. Motion for Workshop "Back to Basis": Glenn Friedman
 - Second: Doug Hittle
 - Vote 8-0-0, 0 absent, CNV.
- Standards
- c. Standards SPC-203 Method of Test for Determining Heat Gain of Office Equipment Used in Building submitted for publication.
 - d. Standard 183-2007 was reaffirmed to be RA-2014.
9. TC 4.1 Web Site
- a. Jim Pegus stated the web site is up-to-date.
10. Old Business – None.
11. New Business
- a. Suzanne LeViseur reported the new ASHRAE Strategic Plan concentrates on Residential. A copy of the Strategic Plan is attached.
 - b. Chairman Legarreta discussed items from the TC Chair Meeting.
 - c. Jim Pegues recognized and congratulated Chairman Legarreta for his service.

- d. Steve Bruning welcomed back longtime member Doug Hittle.
12. Motion was made to go into Executive Session. Chairman directed the Committee to move into Executive Session.
- a. Purpose: To vote on bid for RP-1681. Low Energy LED Lighting Heat Gain Distribution in Buildings.
 - b. There were 5 bidders.
 - c. Member of the PES discussed the bids with the TC.
 - d. A vendor recommendation was made and vote conducted.
 - Motion Doug Hittle
 - Second: Suzanne LeViseur
 - Vote 7-0-1, 0 absent, 1 abstained, CNV.
 - A motion was made and Chairman Legarreta directed out of Executive Session.
13. Motion to Adjourn: Suzanne LeViseur
- Second: Larry Sun.
 - Vote: 8-0-0, 0 absent, CNV

Attachments:

- 1. PMS Report RP-1616
- 2. Handbook Subcommittee Report
- 3. Program/Standards Subcommittee Report
- 4. ASHRAE Strategic Plan
- 5. Seattle Agenda
- 6. Sign-In Sheet



ASHRAE Technical Committee 4.1

RP-1616 – Revise Load Calculation Applications Manual
Project Monitoring Subcommittee
Meeting Minutes

Monday, June 30, 2014
1:00-2:00 PM
Juniper 2 (Sheraton 2nd Floor)
Seattle, WA

PMSC Members Attending	PMSC Members Absent	Contractor (Oklahoma State)
Steve Bruning Bob Doeffinger Larry Sun Jim Pegues	(none)	Jeff Spitler
		Others Attending
		Chris Wilkins Justin Wong

1. Project Status Update (Jeff Spitler)
 - a. First draft of chapters and spreadsheets was delivered to the committee at the start of January.
 - b. Feedback comments from PMSC on first draft received by early March.
 - c. Two grad students have been working on assembling the example problems.
 - d. Jeff's goal is to complete second draft by end of July
2. Next Steps and Actions
 - a. Action: Jeff will ask ASHRAE Publications what their time line is for publishing the manual in time for sale at Chicago. Jeff and PMSC will work to schedule activities to support that publication time line.
Tentative schedule pending outcome of "a"
 - b. Jeff will provide reply to PMSC first draft comments (where reply is necessary).
 - c. Jeff will provide second draft of IP version (and possibly SI version) by third week of July.
 - d. PMSC members will complete review of second draft within 2-3 weeks.
 - e. If PMSC requests final revisions to second draft, Jeff will make those revisions.
 - f. If no further revisions needed, PMSC will recommend to full committee that IP and SI drafts be approved for publication. TC 4.1 full committee would vote by letter ballot.
 - g. A second vote would occur at a later date when the other deliverables (paper, final report) have been delivered. The split into two votes is being done to expedite publication of the manual so it can be offered for sale at Chicago in January.



American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc.

TC4.1 Load Calculation Data & Procedures

Seattle, Washington

June 28-July 2, 2014

Handbook Subcommittee Report

Sunday, June 29, 3:00 PM to 4:00 PM

Washington Convention Center, Room 607

1. **Handbook Committee Liaison Comments:** David Yuill, Liaison to TC4.1. – at Fundamentals coordination meeting Sunday morning David confirmed the below submittal dates for our chapters.
2. **Schedule for 2017 HoF Chapters:**
 - 2014 June – Complete Review of Chapters – Identify Improvements – Assign revisers
 - 2015 January – Revisers report progress – provide draft individual revisions
 - 2015 June – Rough draft overall chapters
 - 2016 January – Full draft overall chapters reviewed by Handbook subcommittee
 - 2016 April – Deadline for new research results to be incorporated in chapters
 - 2016 June – Final chapters approved by full TC**
 - 2016 July 12 – Chapter 17 submitted to Yuill/ASHRAE
 - 2016 July 19 – Chapter 18 submitted to Yuill/ASHRAE
 - 2017 June – HoF Published
3. **Chapter 17 Residential Loads:**
 - a. Review received from Jaya Mukhopadhyay. Commented overall felt chapter only required nominal review. Included several comments/questions on Tables. Chip Barnaby will review.
 - b. Discussed need for Chapter given residential contractor general usage of ACCA Manual J. Agreed should be retained since more consistent with and derived from ASHRAE methodologies and provides a tool for educational purposes.
4. **Chapter 18 Non-Residential Loads:**
 - a. Reviews received from Jim Pegues and David Hollman. Steve Bruning will review and incorporate items into master revision list.

- b. Reviewed list of Tables from Chapter and dates of data sources. Several need updating.
- c. Agreed most critical item is Tables 8, 9 and 10, recommended heat gain from typical computer, printer and office equipment, since technology has changed so much since 2008. Chris Wilkins will pursue expedited research project to obtain more up to date data.
- d. Heat gain from unhooded kitchen appliances (Table 5A) is currently being updated under RP-1631. TC4.1 is co-sponsor and Rolando Legarreta is serving on the PMS.
- e. Bob Doeffinger will follow up with cognizant TCs on Tables 6 and 7 for heat gain from medical and laboratory equipment to identify more up to date research/data availability.
- f. Tables 16-18 are tabulated CTS for representative walls and roofs. Originally prepared in 1999 using the HBfort program, those need to be updated based on more typical assemblies today. Steve Bruning will circulated first pass at identifying updated wall and roof constructions more consistent with 90.1 and current practice. Calculation tools from the Load Calculation Manual update can be used to prepare the actual CTS tables. Likewise typical zone RTS values in Tables 19-21 will be updated using the LCM spreadsheets.
- g. Chip Barnaby will review literature for updated data for Tables 22-24 on average U-factors and heat loss coefficients for basement walls and floors.
- h. Discussed availability of better plug load density (w/sf) and diversity data, Tables 11 and 12, given increased measurement and verification emphasis from LEED. Larry Sun indicated his new office segregated electrical plug loads and that measured data would be relatively easy to obtain. Also discussed ASHRAE HQ as another possible source. Steve Bruning to research literature for data sources.

		TC4.1 Handbook Subcommittee 2013 HOF Chapter 18 Nonresidential Cooling and Heating Load Calculations
<u>Reviser:</u>		<u>Possible Improvements List</u>
		June 29, 2014
		Improve quality of existing Figures.
		Add more Figures – “picture is worth 1000 words”
		Provide better data on appropriate absorptivity and emissivity values for common construction materials, along with illustration of sensitivity of result to those inputs. Check with TC4.4 on data they plan to publish. Reference accordingly.
		Address impact inside convection coefficient assumptions has on load calculations. Use research results from 1416-RP.
		Add complete list of variables with definitions at end of chapter.
		Table on Medical Equipment – may be updated by RP-1343 (TC 9.6).
		Table on Laboratory Equipment – TC 9.10 had research project on plan to obtain heat gain data. Need to determine if work statement written and offer to participate in PMS to obtain
		Tables on Load Densities for Office – is updated data available? Research project needed to update measurements?
		Include both perimeter and interior spaces as single room examples.

RD
to
follow

HOF 2013 CHAPTER 18 TABLES NEEDING UPDATES FOR 2017			
Table			
1	2013	Representative Rates at Which Heat and Moisture Are Given Off by Human Beings in Different States of Activity	from Table 4 in Chapter 9
2	2010	Lighting Power Densities Using Space-by-Space Method	from 90.1-2010
3	2006	<u>Lighting Heat Gain Parameters for Typical Operating Conditions</u>	from RP 1282 - NEED LED ADDED
4	2010	Minimum Nominal Full-Load Efficiency for 60 HZ NEMA General Purpose Electric Motors (Subtype I) Rated 600 Volts or Less (Random Wound)*	from 90.1-2010
5A	2009	Recommended Rates of Radiant and Convective Heat Gain from Unhooded Electric Appliances During Idle (Ready-to-Cook) Conditions	from RP 1362 1631 RP
5B	2009	Recommended Rates of Radiant Heat Gain from Hooded Electric Appliances During Idle (Ready-to-Cook) Conditions	from RP 1362
5C	2009	Recommended Rates of Radiant Heat Gain from Hooded Gas Appliances During Idle (Ready-to-Cook) Conditions	from RP 1362
5D	2009	Recommended Rates of Radiant Heat Gain from Hooded Solid Fuel Appliances During Idle (Ready-to-Cook) Conditions	from RP 1362
5E	2009	Recommended Rates of Radiant and Convective Heat Gain from Warewashing Equipment During Idle (Standby) or Washing Conditions	from RP 1362
6	1999	<u>Recommended Heat Gain from Typical Medical Equipment</u>	from RP 1055
7	1999	<u>Recommended Heat Gain from Typical Laboratory Equipment</u>	from RP 1055
8	2008	<u>Recommended Heat Gain from Typical Computer Equipment</u>	from RP 1482
9	2008	<u>Recommended Heat Gain from Typical Laser Printers and Copiers</u>	from RP 1482
10	?	<u>Recommended Heat Gain from Miscellaneous Office Equipment</u>	?
11	2011	Recommended Load Factors for Various Types of Offices	Wilkins/Hosni Journal article
12	2011	Recommended Diversity Factors for Office Equipment	Wilkins/Hosni Journal article
13	2003	<u>Single-Layer Glazing Data Produced by WINDOW 5.2</u>	
14	2007	Recommended Radiative/Convective Splits for Internal Heat Gains	Nigusse 2007
15	2000	<u>Solar Absorptance Values of Various Surfaces</u>	
16	1999	<u>Wall Conduction Time Series (CTS)</u>	from RP 875, using Hbfort
17	1999	<u>Roof Conduction Time Series (CTS)</u>	from RP 875, using Hbfort
18	1999	<u>Thermal Properties and Code Numbers of Layers Used in Wall and Roof Descriptions for Tables 16 and 17</u>	from RP 875, using Hbfort
19	1999	<u>Representative Nonsolar RTS Values for Light to Heavy Construction</u>	from RP 875, using Hbfort
20	1999	<u>Representative Solar RTS Values for Light to Heavy Construction</u>	from RP 875, using Hbfort
21	1999	<u>RTS Representative Zone Construction for Tables 19 and 20</u>	from RP 875, using Hbfort
22	1969	<u>Average U-Factor for Basement Walls with Uniform Insulation</u>	}
23	1969	<u>Average U-Factor for Basement Floors</u>	
24	1969	<u>Heat Loss Coefficient F_p of Slab Floor Construction</u>	
25	2013	Common Sizing Calculations in Other Chapters	references other Handbook chapters equations
26	2013	Summary of RTS Load Calculation Procedures	
27	2013	Monthly/Hourly Design Temperatures (5% Conditions) for Atlanta, GA	part of updated Example
28	2013	Cooling Load Component: Lighting	part of updated Example
29A	2013	Wall Component of Solar Irradiance	part of updated Example
29B	2013	Wall Component of Sol-Air Temperatures, Heat Input, Heat Gain, Cooling Load	part of updated Example
30	2013	Window Component of Heat Gain (No Blinds or Overhang)	part of updated Example
31	2013	Window Component of Cooling Load (No Blinds or Overhang)	part of updated Example
32	2013	Window Component of Cooling Load (With Blinds, No Overhang)	part of updated Example
33	2013	Window Component of Cooling Load (With Blinds and Overhang)	part of updated Example
34	2013	Single-Room Example Cooling Load (July 3:00 pm) for ASHRAE Example Office Building, Atlanta, GA	part of updated Example
35	2013	Single-Room Example Peak Cooling Load (Sept. 5:00 pm) for ASHRAE Example Office Building, Atlanta, GA	part of updated Example
36	2013	Block Load Example: Envelope Area Summary	part of updated Example
37	2013	Block Load Example—First Floor Loads for ASHRAE Example Office Building, Atlanta, GA	part of updated Example
38	2013	Block Load Example—Second Floor Loads for ASHRAE Example Office Building, Atlanta, GA	part of updated Example
39	2013	Block Load Example—Overall Building Loads for ASHRAE Example Office Building, Atlanta, GA	part of updated Example

Overall I think Chapter 18 is in good shape. There is a good progression from high level concepts to lower level procedures, equations and data. Basic principles and concepts are explained well.

My suggestions for revisions deal with minor updates and corrections

1. Table 2, Page 18.5 – Check and update this table using requirements from ASHRAE 90.1-2013 if data has changed. By 2017, 90.1-2013 will be widely referenced in codes making the 2013 requirements most relevant for design.
2. Table 4, Page 18.6 – Check and update this table using requirements from ASHRAE 90.2013 if data has changed.
3. Table 10, Page 18.12 – There is a minor formatting problem with this table. There are headings and subheadings that, due to formatting, are hard to separate. For example, a heading for “Mail-processing equipment” and then 4 sub items for individual equipment types. For better readability either the headings should be bolded, or the sub items indented.
4. Page 18.14 – In two places for “ $IAC(\theta, \Omega)$ ” the period should be a comma, e.g., “ $IAC(\theta, \Omega)$ ”
5. Page 18.14 – In the Exterior Shading paragraph, in the phrase “...with the indoor shading SHGC still used to account for any internal shading devices.”, “SHGC” should be replaced with “IAC”.
6. Page 18.19 – In the equation box in the right-hand column, the reference “Evaluat Equations (34) and (35)” is using the wrong equation numbers. I think the reference should be to equations (25) and (26) but this needs to be checked.
7. Page 18.26 – In the left column there is a reference to “*Cooling and Heating Load Calculation Principles (Pedersen et al 1998)*”. Should this be revised to reference the new Load Calculation Principles book that RP-1616 is producing?
8. Page 18.27 – For the thermal properties table, double-check the footnotes to make sure the references are still accurate.
9. Page 18.31 and 18.32 – The equations in the Infiltration section use different nomenclature than equations in the cooling sections of the chapter (18.13). Adjust equations 44 thru 47 to use consistent nomenclature.
10. Page 18.32 – Other Heating Considerations – Double check the references to ASHRAE Handbooks and to Chapter 17 to make sure these are still valid. The references to ASHRAE Handbooks may need to be updated for 2017.

ASHRAE HANDBOOK OF FUNDAMENTALS – COMMENTS ON CHAPTER 18

Comments provided by David Hollman of Carrier Corporation

- Contact details:
 - 315-432-3086
 - David.A.Hollman@Carrier.UTC.com

Note – this is the first time I have submitted comments on ASHRAE materials, and I hope they are helpful. I would be glad to answer any questions or provide follow-up information if required. Thank you for the opportunity to contribute.

Introductory paragraph –

- It is implied that methods of finding heating and cooling loads are dealt with separately in the chapter, but this would be clearer if stated more explicitly.
- A summary rationale as to why there are different standards for estimating loads for heating and cooling would be useful background in the introduction.

Cooling Load Calculation Principles (section)

- Introductory paragraph – omits “mass transfer” (or exchange, or advection) as an explicit type of heat transfer mechanism, although the infiltration examples given in the bullet points seem to fit into this category. I don't think bulk airborne heat movement such as from infiltration necessarily falls into “convection” which can be narrowly construed (e.g., as only Newton's Law of Cooling). That bulk transfer mechanism could be called out, or alternatively a definition of “convection” in its broader sense which includes advection could be added.

Terminology (section)

- The first paragraph does not clearly relate to the topic of “terminology” although it is a very good explanation of the out-of-phase cyclic variations in load components. Perhaps this paragraph deserves its own subheading such as “Cooling Load Component Breakdown” or similar.
- “Design day” is referred to without being defined. Does this have a definition somewhere else in the handbook? (Such a definition is not evident in the index.)

Heat Flow Rates (section)

- Entry modes:
 - Exterior floors seem to be left out but would fit within point (2) e.g., slab floors or a floor over a crawlspace or other airspace, etc.
 - In point (5) the meaning of “direct-with-space” is not clear
 - In point (5) perhaps infiltration should be separated into its own mode from ventilation, since it is uncontrolled and unintended.
- Figure 1 seems intended to correspond to the four heat flow rates, but uses slightly different wording and omits “Cooling Coil Loads”. If it were more consistent with the text it would be clearer.

- Cooling Coil Load – uses the expression “plus any system loads” but I think “which includes any system loads” may be more accurate, because it seems that the system loads are already included in the heat gain upon which the cooling load and heat extraction rate are based.
- Figure 2 –
 - Seems like the chart should have a cyclic nature – meaning, the amount of heat stored at time 0 should equal the same amount at the rightmost end of the chart.
 - Within the rectangle – isn’t the stored heat the area under the curve? (Because it would increase over time). The shading within the rectangle and the shading outside seem to be used in opposite ways?

Cooling Load Calculations in Practice (Section)

- Para 2 – uses the term “heat transmission coefficients”. But no such coefficients are yet defined. Perhaps a more general “heat transmission properties” would better capture what is meant here.
- Para 4 - I can’t determine what “heat extraction lighting systems” means; wording should be improved.
- Data Assembly (section)
 - Mentions shading from other buildings, reflected solar radiation, and wind speeds as things to consider - but without any real guidance on how to do that.

Internal Heat Gains (section)

- Lighting (section)
 - Pictures explaining the various types of luminaire details could be useful – e.g., to better understand what a “side slot return” is versus a “compartment return” etc. Or a reference.
- Electric motors / Overloading or Underloading (section)
 - This section states that the motor load factor can be generally assumed to be unity. But even assuming a motor with high current draw at no-load, the load factor in that condition would be significantly below full load amps for most motors. And most machines I am familiar with are designed to operate with their motors usually below maximum power consumption, because they would engage thermal cutoffs or circuit breakers otherwise.
 - Radiation vs. convection – 50/50 split seems a very rough estimate. Comparison to kitchen appliances (table 5A) shows a wide variation. I would think a differentiation could at least be made between fan-cooled and open-type motors.
- Office equipment (section)
 - Data on mobile phones + chargers would be useful, or if heat gain is insignificant, a statement to that effect. I would expect a large number of devices (e.g. nearly 1 per person) though with possibly very high reduction in actual heat gain due to diversity of use.

Infiltration and Moisture Migration Heat Gains (section)

- Infiltration – para 2 – there is a typo – “including some infiltration for spaces such *AS* entry areas or loading docks” – missing word “as” where indicated.
- Heat Gain Calculations
 - I take it that delta-h is specific enthalpy? This is not stated and units for delta-h are not provided for equation (8)
 - The use of “q” for heat and “Q” for flow rate is not ideal, particularly since this contradicts the standard conventions for indicating “specific” quantities in lower case (q is not specific in this usage as far as I can tell). Perhaps “V” for flow rate would allow “Q” to be used for the non-specific heat gain quantity.

Fenestration Heat Gain (section)

- The variable or function $IAC(\theta, \Omega)$ is also written as $IAC(\theta, \Omega)$ – sometimes with a comma, and sometimes with a period; which is correct? Either way, the argument(s) to this function are not clearly defined in the text – omega is not explained. If a period was meant, the notation seems very unusual and should be reconsidered.

Page 18.19 – Overall HB Iterative Solution

- Step 7 refers to equations 34, 35, 36 but I think actually 24, 25, and 26 are meant.
- The procedure is described as typically requiring 4-6 iterations to converge. But no mention was made of any best practice guidance for how to initialize the variables before the first iteration, and if this has significant impact on the rate of convergence. (An initial guess is needed as a starting point...)

Page 18-20 – RTS Method

- The expression “air-sol” is used in a few places (in Overview paragraph, and in Fig. 8), before being defined later on 18-22. This was initially confusing.

TC 4.1 Meeting, Programs/Standards Committee Meeting Notes
Seattle, Monday, June 30, 2014

Glenn Friedman, Program Chair

PROGRAMS

1. Current Programs
 - a. Seattle – Co-Sponsors to the BIM Workshop
2. Future Programs
 - a. Chicago Conference Tracks
 - Systems and Equipment
 - Fundamentals and Applications
 - Industrial Facilities
 - Large Buildings: Mission Critical Facilities and Applications
 - Energy Efficiency
 - Life Safety
 - Design of Energy and Water efficient Systems
 - Hospital Design and Codes
 - b. Chicago, January 24-28, 2015: Submissions Due by August 11, 2014, www.ashrae.org/Chicago
 - c. Suggest the workshop below follows the Back to Basics seminar. #1 below moved by Glenn with second by Doug and is voted and approved 8-0-0 CNV.
 - i. #1 – What's Important in Load Calculations: A Hands-On Demonstration of What Is Important Using the New ASHRAE Handbook Method. 1.5 hour slot. Start with three speakers.
 1. Science: New ASHRAE Load Calculations User's Manual and the current overview of load calculations, by Jeff Spitler
 2. Application: Zoning and load calculation basics, what do you do early in design when you don't have all the answers, by Larry Sun
 3. Art: Case studies, horror stories, what to watch for, and odd-ball cases, by Steve BruningThe workshop reviews load calculations using the new ASHRAE spreadsheet method. Compare questions, outcomes and assumptions. Do breakout sessions. Allow the users to participate. Speaker Leaders: Stephen Roth, Steve Bruning, Chris Wilkins. Applicable to young engineers. Track 2: Fundamentals and Applications Track. A single workshop with the speakers limited to 10 minutes. Cover:
 - a. Insulation
 - b. Windows
 - c. Orientation
 - d. Internal Gains
 - e. Ventilation
 - ii. Push this out one cycle or one year: BIM and Load Calculations Seminar Update, *Roth, Bruning, Wilkins*. This will take time and work so maybe for Seattle or beyond. Work with MTG- BIM (MTG=Multidisciplinary Task Group). John Kennedy alleges there are improvements. Discuss what value it has in BIM to Load. Is it working? Should this "BIM in Practice" be an MTG BIM seminar rather than a TC4.1 seminar (Chris Wilkins).
 - d. Atlanta, June 27-July 1, 2015
3. Future Program Ideas
 - a. Seminar Session Proposals

TC 4.1 Meeting, Programs/Standards Committee Meeting Notes
Seattle, Monday, June 30, 2014

- i. Atrium load calculations, empirical case studies
- ii. Ventilation and infiltration
- iii. How Load Calculations Interact with Other ASHRAE Chapters
 - Weather
 - Infiltration
 - Building skin color
 - Ventilation
 - Fenestration, dynamic windows
- iv. Business Practices Risks of Loads Calc Codes Being so Hidden, *TC1.7 Legal*
- v. Forum on what is the Standard of Care for load calculations. Mitchell Swan.

STANDARDS

1. Standard SPC-203 Method of Test for Determining Heat Gain of Office Equipment Used In Buildings submitted for publication.
2. Standard 183-2007 was reaffirmed to be RA-2014.



ASHRAE

Strategic Plan

STARTING

2014



STRATEGIC PLAN DOCUMENTS

STRATEGIC PLAN:
(PUBLIC DOCUMENT)

TOOL KIT:



Detail, Initiatives &
Assignments

IMPLEMENTATION PLAN:

Detailed Reporting
Process



STRATEGIC PLAN

Strategic Map



INITIATIVES (ASSIGNMENTS FOR COUNCILS/AD-HOCS/EXCOM)

GOALS

OBJECTIVE OF EACH GOAL

		Initiative 1	Initiative 2	Initiative 3	Initiative 4	Initiative 5
		Market Prioritization	ASHRAE Efficiency	Applied Product Development	ASHRAE's Role in the Global Community	ASHRAE's Role in the Residential Sector
GOALS	OBJECTIVES					
CONNECT: Foster vibrant, informed and engaged ASHRAE and industry communities.	Develop, implement and assess methods to strengthen the member value proposition.					
	Maximize opportunities for member involvement in Society activities.					
EDUCATE: Create learning experiences that enhance the knowledge and effectiveness of individuals that apply building sciences.	Prototype and experiment with new resources that integrate ASHRAE's science and technology into building performance and knowledge systems.					
	Develop programming and promotions that enable ASHRAE chapters to educate a wider range of audiences.					
	Expand educational topics and enhance delivery methods to address the needs of priority audiences including employers, owners and operators.					
EXTEND: Develop, refine and optimize methods to increase awareness, adoption and application of ASHRAE's offerings.	Augment ASHRAE's marketing and promotional capabilities to drive higher levels of awareness and uptake of offerings.					
	Foster collaborations in the building industry to augment the positive impact of ASHRAE's offerings on building performance.					
ADAPT: Work collaboratively within the global community to increase the value, usefulness and accessibility of building sciences and technology.	Identify and launch pilot programs in select international markets to customize and adapt offerings to address local demand.					
	Work to translate ASHRAE's science into practical tools and resources that drive effective building design, operations and management.					
	Ensure that ASHRAE's products, programs and services are well aligned to meet the needs of its membership.					

STRATEGIC PLAN

Technology Council



ASSIGNED INITIATIVE INFORMATION:

INITIATIVE	COMMITTEE	PLC LIAISON FOR 2014-2015	BOARD CHAMPION
1B MEASURING AND BROADCASTING ASHRAE'S IMPACT AND KEY LEADERSHIP OUTREACH (CONSTITUENCY LEADERSHIP OUTREACH)	RAC PRESIDENTIAL AD- HOC	EDWARD TSUI	PRESIDENT ELECT
3C PERFORMANCE BASED STANDARDS	TECH. COUNCIL		TREASURER
3D DEVELOP A TECH. COURSE PROGRAM THAT CAN BE DISTRIBUTED THRU ASHRAE CHAPTERS	TECH COUNCIL MEMBERS COUNCIL PUB. ED. COUNCIL		TREASURER

EACH MAJOR INITIATIVE REPORT SHOULD INDICATE ANTICIPATED FUNDING NEEDS

STRATEGIC PLAN

Technology Council



OBJECTIVES AFFECTED BY ASSIGNED INITIATIVES:

ONE	Develop, Implement and assess methods to strengthen the member value propositions.
TWO	Prototype and experiment with new resources that integrate ASHRAE's science and technology into building performance and knowledge systems
THREE	Develop programming and promotions that enable ASHRAE chapters to educate a wider range of audiences
FOUR	Foster collaborations in the building industry to augment the positive impact of ASHRAE's offerings on building performance.
FIVE	Ensure that ASHRAE's products, programs and services are well aligned to meet the needs of its membership.

Strategic Plan Monitoring Milestones

Year 1 (2014-2015)

4 REPORTING PERIODS!!

**June, 2014
Plan approved
by BOD**

Annual Meeting

Fall Board Mtg/C.C.:

- Planning Committee to report on progress of assigned initiatives and planned MBO actions to address them.
- BOD to provide feedback/direction that will be communicated by liaisons to assigned group

Winter Meeting

Spring Board Mtg./C.C.:

- Planning Committee to report to the BOD on progress of assigned initiatives and MBO actions to address them.
- BOD to provide feedback/direction that will be communicated by liaisons to assigned group.

Planning Committee:

- Report to the Board on Wednesday BOD meeting at Annual Meeting 2014

Planning Committee:

- Report to the Board at Winter Meeting 2015 on status of items and additional actions required to address initiatives.
- BOD to provide feedback to planning committee on directions taken

Planning Committee:

- Establish Strategic Plan Monitoring Sub-committee
- Assign SP Initiatives to appropriate Councils/Committees/Ad-hoc
- Assign Liaisons from sub-committee to champion each Initiative
- Distribute Assigned Initiatives to assigned group
- Review MBO's/Action plans from assigned group

Councils/Committees/Ad-hocs:

- **Establish MBO's/Action plans for assigned initiatives for 14-15 year**

Assigned Councils/Committees/Ad-hocs:

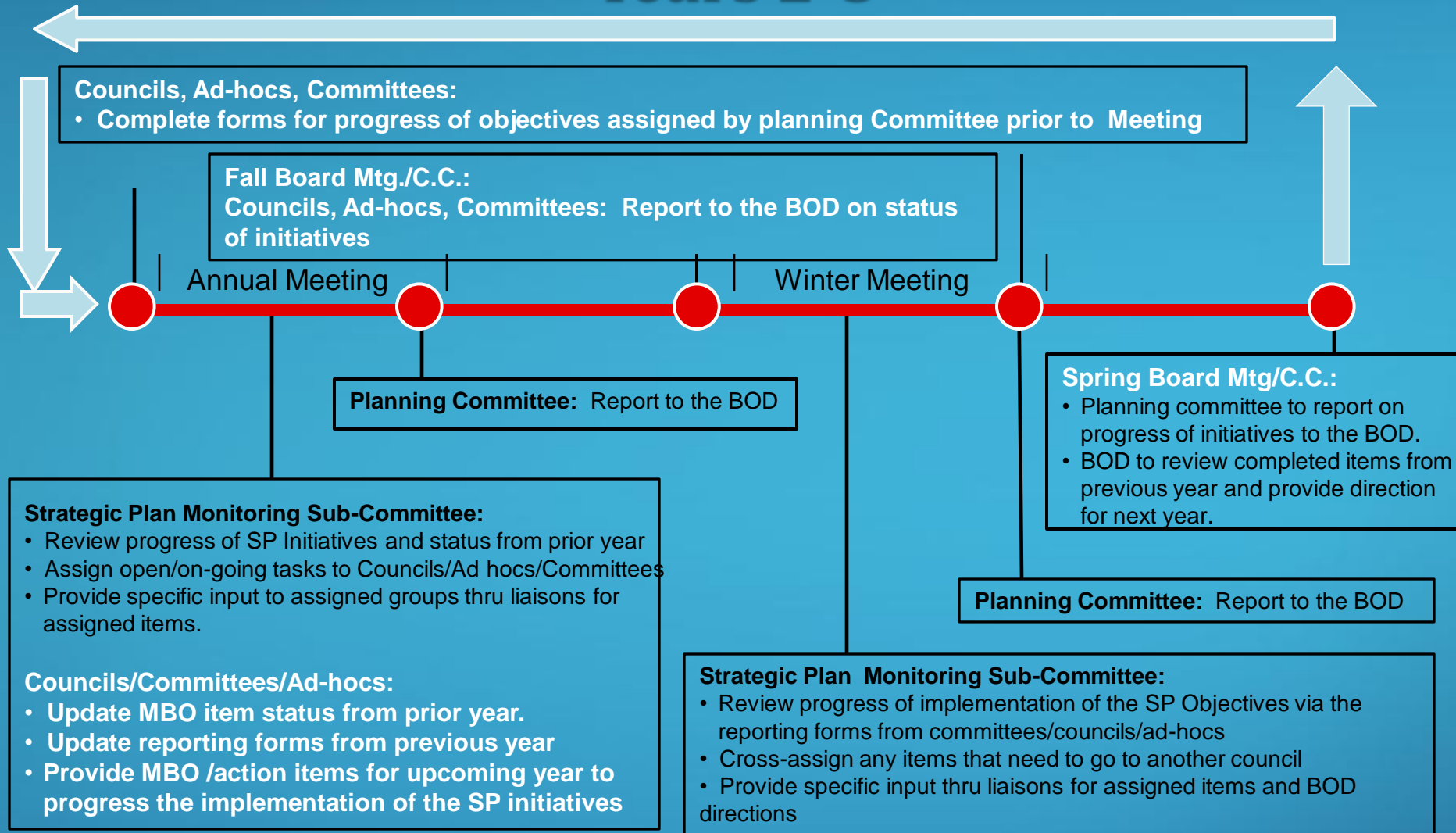
- **Complete the reporting forms with MBO items and actions identified (prior to Winter meeting)**

Strategic Plan Monitoring Sub-Committee:

- Review reporting forms and status of MBO items provided by assigned group.
- Cross-assign any items that need to go to another council
- Provide specific input thru liaisons for assigned items with BOD responses

Strategic Plan Monitoring Milestones

Years 2-5



STRATEGIC PLAN REPORTING FORM



SAMPLE REPORTING TEMPLATE

Strategic Initiative Reporting Template

Date:	
Referred Group:	
Monitoring Committee Liaison:	

Objectives Impacted: (Note: list all of the objectives that the assigned Initiatives are designed to impact)

One	
Two	
Three	
Four	

Current Year Action Plan

Initiative	Planned Action	Completion Date	Progress

Budget Needs (Note: each major initiative should have initial funding for a year or two at which point the progress is reviewed and assessed prior to additional funding allocation.)

Initiative	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18

TECH. COUNCIL LIAISON TO PLC FOR 2014-15: EDWARD TSUI

STRATEGIC PLAN INFORMATION

DOCUMENTS AVAILABLE AT:

In SEATTLE @ REGISTRATION

OR

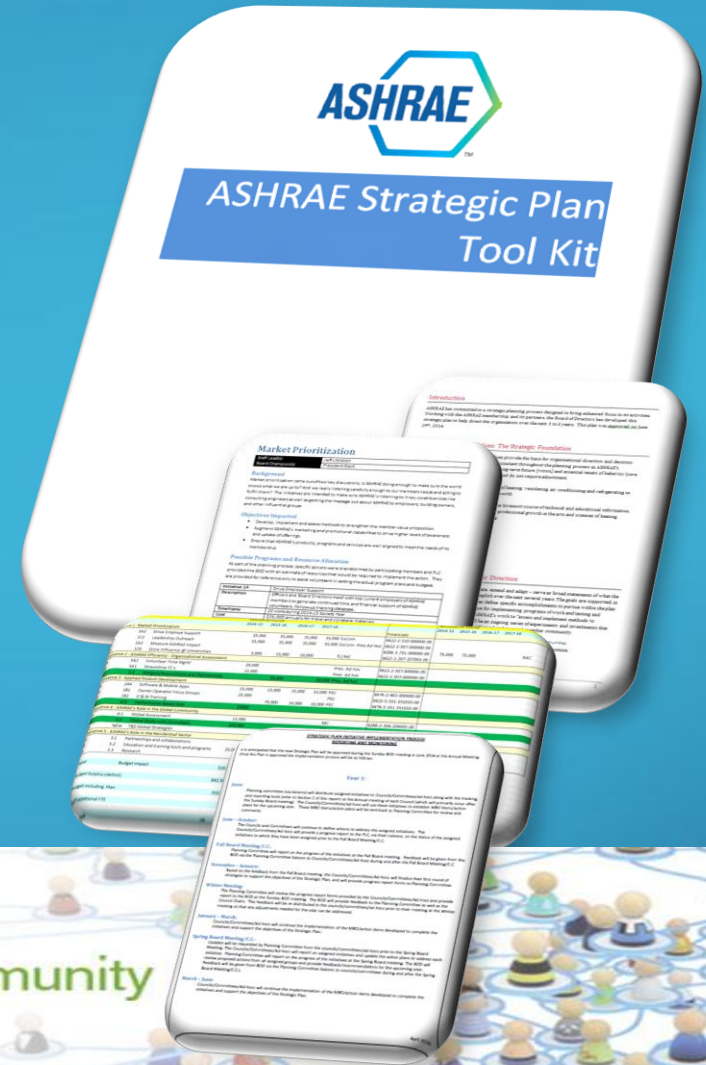
Online:

<https://www.ashrae.org/about-ashrae/strategic-planning-documents>

JOIN THE CONVERSATION

Provide FEEDBACK on *ASHRAExchange*!!

<https://www.ashraexchange.org>



The Built Environment Community

Thank You





ASHRAE Technical Committee 4.1

Agenda for - TC4.1 Load Calculation Data & Procedures

Seattle, WA

June 2014

TC4.1 Load Calculation Data and Procedures

Monday, June 30, 2014, 2:15 PM to 4:15 PM

Juniper (2, Sheraton)

- | | |
|--|--------------------|
| 1. Call to Order | Rolando Legarreta |
| 2. Roll Call | Robert Doeffinger |
| 3. Introduction of Visitors | Rolando Legarreta |
| 4. Approval and/or Corrections to Denver Meeting Minutes | Rolando Legarreta |
| 5. Liaison Comments | |
| TAC Chair | Walter Grondzik |
| Section Head | Michael Bilderbeck |
| Chapter Technology Transfer | Harris Sheinman |
| Research | Xudong Yang |
| Handbook | David Yuill |
| ALI/PDC | Hugh McMillon |
| Standards Liaison (Action on Standard 183-2007) | James Aswegan |
| Staff Liaison | Michael R. Vaughn |
| 6. Research Subcommittee Report | Chris Wilkins |
| 7. Programs Subcommittee Report | Glenn Friedman |
| 8. Standards Subcommittee Report (Approval of SPC-203) | Glenn Friedman |
| 9. Handbook Subcommittee Report | |
| Residential Chap 17 | Chip Barnaby |
| Non-Residential Chap 18 | Steve Bruning |
| 10. ASHRAE Website for TC 4.1 | Jim Pegues |
| 11. Old Business | Rolando Legarreta |
| 12. New Business | Rolando Legarreta |
| 13. Adjournment | Rolando Legarreta |



ASHRAE Technical Committee 4.1

Meetings – Seattle, WA, June 2014

TC 4.1 Load Calculation Data and Procedures

Monday 2:15-4:15p, Juniper (2, Sheraton)

TC 4.1 Handbook

Sunday 3:00-4:00p, Room 607 (6, WSCC)

TC 4.1 Research

Sunday 4:00-5:00p, Room 607 (6, WSCC)

TC 4.1 Programs & Standards

Sunday 5:00-7:00p, Room 607 (6, WSCC)

SPC-203, Saturday, 1:00-3:00p, Kirkland Room, 3rd Floor, Sheraton

Officers and voting members through June 2014

Rolando Legarreta	Chair	Voting
James Pegues	Vice Chair	Non-Voting
Robert Doeffinger	Secretary	Voting
Steven Bruning	Handbook Subc Chair	Voting
Chris Wilkins	Research Subc Chair	Non-Voting
Glenn Friedman	Stds/Prog Subc Chair	Non-Voting
Chip Barnaby		Voting
Dan Fisher		Voting
Doug Hittle		Voting
Suzanne LeViseur		Voting
Som Shrestha		Voting
Larry Sun		Voting

TC 4.1 Sign-In Sheet - Seattle June 2014

YEA	Name	Status	Affiliation	E-mail
1	No Bob Decker	VM	Zuun, Inc	red@zuun.com
2	Chris Wilkins	CM	CRB Engineers	chris.wilkins@crbusa.com
3	Todd Gottshall	Guest	Western Allied Mech	Tgottshall@westernallied.com
4	Jim Peques	CM	CARRIER	James.F.Peques@carrier.utc.com
5	N Rolando Lagareta	VM-Chair	Alvaro Engineering	rlagareta@alvaro-engineering.com
6	No Justin Wong	Guest	Team Catalyst	jwtm@teamcatalyst.com.au
7	NO Suzanne LeVasseur	VM	HADDAD ENGINEERING, INC	slevasseur@haddadeng.com
8	No Jeff Spiller	CM	OSU	spiller@okstate.edu
9	NO Dan Fisher	VM	OSU	dfisher@okstate.edu
10	NO Sam Shrestha	VM	ORNL	shrestha@ornl.gov
11	NO Stephen Roth	VM	Carmel Software	srath@carmelsoft.com
12	No Chris Barbary	VM	WhiskerSoft	chbarbary@whiskersoft.com
13	NO Steve Brunning	VM	Newcomb & Boyd	sbrunning@newcomb-boyd.com
14	NO Larry Sun	VM	tl-lsc	larry@tl-lsc.com
15	No Russell Taylor	CM	United Technologies	taylor@utrc.utc.com
16	No Jingjing Wang	Guest	Syracuse University	jjwang53@syr.edu
17	Student Rachel Spitzer	Visitor	Oklahoma State University	rachel.spitzer@okstate.edu
18	Man Hincapie	CM	Advantix Systems	juan.hincapie@advantixsystems.com
19	Watt M. H. Will	Visitor	DSU	watt.smithwill@okstate.edu
20	No Glenn Friedman	VM	Taylor Engineering	gfriedman@taylor-engineering.com
21	NO Dave Hilde	VM	HTTE LLC	hilde.dave@gmail.com
22				
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