

Technical Committee Meeting Minutes  
TC 6.02 District Energy  
Winter Meeting, 2023-02-06, Hybrid Meeting (Atlanta, GA)

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TC 6.02 District Energy – Meeting  
Friday, 3:30 pm – 5:30 pm, Hybrid (Atlanta, GA)

Voting Committee Members:

| Name                       | Position                    | Voting Status | Present |
|----------------------------|-----------------------------|---------------|---------|
| Mr. Daniel Pyewell         | Chair                       | Voting        | Yes     |
| Ms. Jessica Mangler        |                             | Voting        | No      |
| Mr. Tim Anderson           | Vice Chair                  | Voting        | Yes     |
| Mr. Michael Calabrese      | Secretary                   | Voting        | Yes     |
| Mr. Geoff Bares            | Program Subcommittee Chair  | Voting        | Yes     |
| Ms. Elizabeth (Betsy) Goll | Handbook Subcommittee Chair | Non-Voting    | Yes     |
| Mr. Jayson Bursill         | TC Webmaster                | Non-Voting    | No      |
| Mr. Mohamed Alagraa        |                             | Voting        | No      |
|                            |                             |               |         |

8 Voting Members and 0 Non-Quorum Voting Members  
Need minimum 5 Voting Members Present to meet Quorum

Non-Voting Members and Guest:

| Name                  | Position                          | Voting Status | Present |
|-----------------------|-----------------------------------|---------------|---------|
| Mr. Jay Eldridge      | Research Subcommittee Chair       | Non-Voting    | No      |
| Mr. Wangda Zuo        | Research Subcommittee Co-Chair    | Non-Voting    | Yes     |
| Alan Neely            | Membership Subcommittee Chair     | Non-Voting    | Yes     |
| Mr. Richard Sweetser  | DOE Liaison                       | Non-Voting    | Yes     |
| Mr. John Andrepont    | IDEA Liaison                      | Non-Voting    | Yes     |
| Mr. Dustin Meredith   | TAC Chairperson                   | Non-Voting    | No      |
| Mr. Dawen Lu          | Section Head                      | Non-Voting    | No      |
| Ms. Elizabeth Zakelj  | Chapter Technology Transfer Chair | Non-Voting    | No      |
| Mr. Omar Abdelaziz    | Research Liaison                  | Non-Voting    | No      |
| Mr. Craig Wray        | Standard Liaison                  | Non-Voting    | No      |
| Mr. Steven Hammerling | Staff Liaison                     | Non-Voting    | No      |
| Gary Phetteplace      |                                   | Non-Voting    | Yes     |
| Eric Peterson         |                                   | Guest         | Yes     |
| Charles Bertuch       |                                   | Non-Voting    | Yes     |
| Thomas Olmsted        |                                   | Non-Voting    | Yes     |
| Brad Chen             |                                   | Non-Voting    | Yes     |
| Zhawwei He            |                                   | Non-Voting    | Yes     |
| Rajj Khoursi          |                                   | Non-Voting    | Yes     |
| Jamie Fine            |                                   | Non-Voting    | Yes     |
| Bouabboud Amhoime     |                                   | Non-Voting    | Yes     |
| Doug Reindl           | TAC Section Liaison               | Non-Voting    | Yes     |
| Mahabir Bhandan       |                                   | Non-Voting    | Yes     |
| Ardeshir Moftakham    |                                   | Guest         | Yes     |
| Jin Jin Huang         |                                   | Guest         | Yes     |
| Dragos Paraschiv      |                                   | Non-Voting    | Yes     |
| Julia Ho              |                                   | Guest         | Yes     |

|                 |  |            |     |
|-----------------|--|------------|-----|
| Michael Langton |  | Non-Voting | Yes |
|-----------------|--|------------|-----|

1. The Chair (Daniel Pyewell) Called to Order at 3:00 pm and discussed -

Technical Committee (TC) 6.02 is concerned with district energy technology and integrated systems that provide one or more forms of thermal energy or a combination of thermal energy and electric power from a central plant(s) to meet the heating, cooling, or combined thermal energy and power needs of end-users in two or more structures.

2. ASHRAE Code of Ethics Commitment – Announced by TC Chair (Daniel Pyewell)

In this and all other ASHRAE meetings, we will act with honesty, fairness, courtesy, competence, integrity and respect for others, and we shall avoid all real or perceived conflicts of interest. (see full code of ethics: <https://www.ashrae.org/about-ashrae/ashrae-code-of-ethics>.)

3. Introductions / Attendees

- A. Name, company/location, & position on committee.
- B. Attendance was taken
- C. Review of Current Voting Members and TC officers, Quorum was met with 5 VMs present.
  - i. Ref. Manual of Procedures – 3.3.2 through 3.2.7
- D. Recruiting of new members and officers for this technical committee (TC 6.02) were discussed.

4. Meeting Minutes

- A. June 26, 2023, Toronto Annual meeting notes were just received
  - i. We will review as a committee and vote on meeting minutes at the Annual meeting in Tampa for Toronto 2022 and Atlanta Winter 2023.
  - ii. Charles Bertuch volunteered to fill the Secretary position (post-meeting).

5. Chair's Overview and Report

- A. TC Breakfast Report – Presentation was attended.
- B. The membership roster has been updated. Please review your information for accuracy.
- C. Other comments
  - i. Jason Bursill to be the Webmaster?
  - ii. The TC is actively seeking chairs to fill out the secretary position. For any interest, please reach out to Daniel Pyewell. Post-meeting note: Charles Bertuch volunteered to fill position.

6. Sub-Committee Reports:

- A. Handbook: Betsy Goll (Subcommittee Chair)
  - i. Updates for the handbook Chapter 12 and 15 will be reviewed and voted on in the Tampa 2023 Annual meeting.
  - ii. District Cooling Guide is coming up.
- B. Membership: Alan Neely (Membership Subcommittee Chair)

- i. The Chair discussed the current roster status.
  - ii. Vice chair position will be open after summer meeting. Daniel will fill position in meantime until a potential candidate agrees.
- C. Programs: Geoff Bares (Subcommittee Chair)
- i. Submitted forum "Options to Get to Carbon Utilizing District Thermal Systems" (32841). The forum didn't make the cut.
  - ii. Seminar 21/23/41/25 and 63 all made the cut for the Atlanta Winter Conference and include good content for the District Energy Industry.
  - iii. Topics for future seminars include Resilience, Net Zero paths to decarbonization. Possible format to be a panel or forum?
  - iv. The subcommittee chair is looking for presenters for the Annual conference in Tampa. If interested reach out to Geoff.
  - v. We may need to push a submission to the Chicago 2024 Winter meeting.
- D. Standards: (No Subcommittee Chair)
- i. No active standards are associated with this TC 6.2.
- E. Webmaster: Jayson Bursill (Subcommittee Chair)
- i. Jayson did not attend meeting. Daniel reported on his behalf.
  - ii. Website is up to date.
  - iii. Meeting minutes need to be approved before loading on the website.
- F. Research: Jay Eldridge (Subcommittee Chair)
- i. None, Chair not present
  - 1. Research Ideas brought up in the meeting – Precooling on district systems as a demand offset strategy, Thomas Lawrence- UG is happy to support and be a co-chair. Jamie Fine is chairing this effort to develop the RTAR.
  - 2. Research proposals out for bid (Phetteplace Gary)
    - a. Pipe size adequate flush velocities needed for district systems.
    - b. Proposals coming back in from bids.
7. Visitors and Liaison Reports/Information from other Committee Representatives
- A. DOE: Richard Sweetser
- i. The current political administration will be funding projects focusing on TES/CHP and others. The Inflation Reduction Act of 2022 includes up to 30-40% tax cuts for qualifying projects. Prevailing wage job are an additional 10% tax cut add in.
  - ii. There is potential that Non-Profit entities will be able to tap into these tax credits.
  - iii. It appears that Department of Defense (DOD) does not apply.
  - iv. DOE has a carbon capture program.
- B. IDEA: John Andrepont
- i. The upcoming IDEA Campus Energy Conference is scheduled for February 27<sup>th</sup> through March 2<sup>nd</sup> 2023 at the Gaylord Resort in Grapevine, TX.
  - ii. The annual IDEA Annual Conference will be held in Chicago, IL – June 5<sup>th</sup> through the 8<sup>th</sup>.
- C. Decarb Task Force Report – 6 working groups will be established. Which groups should TC6.2 participate in (Alan Neely is liaison)?
- i. Building Decarbonization
  - ii. Heat Pump – TC6.2 liaison needed to understand how district energy can interact with a water source heat pump building.
  - iii. Building high Performance
  - iv. Whole life working group – TC6.2 as a second option for a liaison.
  - v. Grid Interactive Buildings for Decarbonization
  - vi. Building Decarbonization Whole Life

Voting members assigned Heat Pump Application by vote for Alan Neely to pursue

D. Other TCs

- i. 6.1 – Hydronic & Steam Heating Equipment and Systems  
(1) No Update
- ii. 6.5 – Radiant Heating & Cooling  
(a) No Update
- iii. 6.6 – Service Water Heating  
(1) No Update
- iv. 6.7 – Solar and Other Renewable Energies  
(1) No Update
- v. 6.8 - Geothermal Heat Pump & Energy Recovery Applications  
(1) No Update.
- vi. 6.10 – Fuels and Combustion  
(1) No Update

E. Others

- i. No comments made during the meeting
- ii. TAC Section Head - Not Present
- iii. Staff - Not Present
- iv. Publications  
(1) Publications Committee respectfully requests your input on possible topics, authors and reviewers for future ASHRAE Journal articles. It is our goal to enhance ASHRAE Journal's reputation as the preeminent publication in our industry. Each of you are most in tune with what our members are looking for to further their knowledge base. With this in mind, if you could respond with a topic or two with suggested authors and reviewers it would be greatly appreciated.  
(2) Adeeba Mehboob, ASHRAE Publications Committee Vice Chair 2020-2021  
[adeeba.mehboob@icloud.com](mailto:adeeba.mehboob@icloud.com)

8. Old Business-

- A. Get in touch with Dan Pyewell – to join the paper technical review opportunity within ASHRAE.

9. New Business

- A. Keep TC6.2 as a functional group ? – the consensus was to continue as a functional group.
- B. Steve Tredinnick –World Bank project in District Cooling in Emerging Markets -Deloitte. Sounds like no update. Gary provided an update as Steve did not attend:
  - i. An agreement with ASHRAE could not be made, so ASHRAE backed out of supporting the opportunity

10. Meeting Adjourned at 5:30 pm.

- A. Announcement by TC Chair (Daniel Pyewell) to close this session.

Submitted by, Tim  
Anderson  
TC 6.02 Secretary  
2023-02-05

Subcommittee Meetings - Day, Date, Times, & Location Prior to TC 6.02 Meeting:

TC 6.02 Handbook – Thursday January 26, 3:00 pm – 4:00 pm, Remote Teams  
TC 6.02 Program - Thursday January 26, 3:00 pm – 4:00 pm, Remote Teams  
TC 6.02 Research - Thursday January 26, 3:00 pm – 4:00 pm, Remote Teams

**Agenda: TC 6.2 District Energy  
Hybrid Winter Conference (February 5th, 2023)**

<https://tc0602.ashraetcs.org/>

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**TC 6.2 Main Committee Meeting**

Sunday, February 5<sup>th</sup>

2023 3:30 pm – 5:30 pm EDT

Team Meeting Information:

- [Click here to join the meeting](#)
- Join by phone – +1-321-430-3266 United States of America. Phone Conference ID – 128 421 733#

**Technical Committee Members**

8 Voting Members and 0 Non-Quorum Voting Members

Need minimum 5 Voting Members Present to meet Quorum

| Name                       | Position                          | Voting Status |
|----------------------------|-----------------------------------|---------------|
| Mr. Daniel Pyewell         | Chair                             | Voting        |
| Ms. Jessica Mangler        |                                   | Voting        |
| Mr. Michael Calabrese      | Secretary                         | Voting        |
| Mr. Timothy Anderson       | Vice Chair                        | Voting        |
| Geoff Bares                | Programs Subcommittee Chair       | Non-Voting    |
| Mr. Jayson Bursill         | Webmaster                         | Non-Voting    |
| Mr. Jay Eldridge           | Research Subcommittee Chair       | Non-Voting    |
| Mr. Wangda Zuo             | Research Subcommittee Co-Chair    | Non-Voting    |
| Mr. Steven Tredinnick      |                                   | Non-Voting    |
| Mr. Mohamed Alagraa        |                                   | Voting        |
| Ms. Elizabeth (Betsy) Goll | Handbook Subcommittee Chair       | Voting        |
| Mr. Scott Murray           |                                   | Non-Voting    |
| Mr. Richard Sweetser       | DOE Liaison                       | Non-Voting    |
| Mr. John Andrepont         | IDEA Liaison                      | Non-Voting    |
| Mr. Dustin Meredith        | TAC Chairperson                   | Non-Voting    |
| Mr. Dawen Lu               | Section Head                      | Non-Voting    |
| Ms. Elizabeth Zakelj       | Chapter Technology Transfer Chair | Non-Voting    |
| Mr. Omar Abdelaziz         | Research Liaison                  | Non-Voting    |
| Mr. Craig Wray             | Standard Liaison                  | Non-Voting    |
| Mr. Steven Hammerling      | Staff Liaison                     | Non-Voting    |
| Gary Phetteplace           |                                   | Voting        |
| Bill Ryan                  |                                   | Voting        |
| Alan Neely                 | Membership Chair                  | Non-Voting    |

1. Call to Order: (TC Chair- Daniel Pyewell)

- a. **Technical Committee 6.2** is concerned with district energy technology and integrated systems that provide one or more forms of thermal energy or a combination of thermal energy and electric power from a central plant(s) to meet the heating, cooling, or combined thermal energy and power needs of end-users in two or more structures. The TC collects and disseminates information on regional resource planning including the design, performance, economic analysis, operation and maintenance of central plants, distribution networks, and consumer limited to materials, construction methods, heat transfer, fluid flow,

and measurement. The scope of the TC includes the development and assessment of associated technologies for energy use sections.

2. ASHRAE Code of Ethics Commitment – (TC Chair – Daniel Pyewell)

- a. In this and all other ASHRAE meetings, we will act with honesty, fairness, courtesy, competence, integrity and respect for others, and we shall avoid all real or perceived conflicts of interests. (See full Code of Ethics: <https://www.ashrae.org/about-ashrae/ashrae-code-of-ethics>.)

3. Introduction / Attendance - (TC Chair – Daniel Pyewell)

- a. Please state your name, company/location, & position on committee.
- b. Secretary for the meeting (Michael Calabrese) to take attendance, via the membership roster and attendance sheets.
- c. Members & Guests Introductions and Sign In
- d. Establish a Quorum, Review of Current Voting Members and TC 6.2 Officers (Ref. Manual of Procedures – 3.2.2, 2.13, 2.14 & 2.15)
- e. Discuss recruiting new members and officers for this Technical Committee (TC 6.02). To become PCM, access “Join TC 6.2” under Membership on T.C. webpage

4. Approval of Minutes from June 26<sup>th</sup> 2022 hybrid meeting (TC 6.02 Secretary – Michael Calabrese)

5. Chair’s Report (Daniel R. Pyewell)

- a. TC Breakfast Report (to attend on Sunday morning)

6. Sub-Committee Reports:

a. Handbook: Elizabeth Goll (Chair)

- i. Chapter 12
- ii. Chapter 15
- iii. District Cooling Guide
- iv. Bill Lotz’s book with Chapter on Underground Pipe Insulation – add to Ch. 12 Bibliography?
- v. Issue with link to climatic constants (for Undisturbed Soil Temp) in Ch. 12

b. Membership: Alan Neely (Chair)

- i. New Members?
- ii. Voting Members. Dan, Betsy, and Mohamed with expire after summer meeting, but are willing to extend for a year. Alan Neely and Geoff Bares volunteered to become voting members by summer. Tim and Mike will drop off during summer.
- iii. Open positions – Programs, Standards (needed?)

c. Program: Geoff Bares (Chair)

- i. *No programs from T.C. approved for Atlanta*
- ii. *Relevant seminars of interest to T.C. being presented in Atlanta.*
- iii. *Future program submission may include:*

- 1. *Chris Fraughton offered to conduct seminar on heat pumps with district energy and decarbonization*
- 2. *Ibrahim Hesham mentioned that he is willing to present on TES based on data he has collected from systems in Dubai/ Middle East.*
- 3. *There's another campus turned over to a heat pump system in south Minnesota. Another steam plant retired. If there is another example to add, this could make a good seminar.*
- 4. *Open to other suggestions. Solar farms and district energy; is there a place for this combination?*
- 5. *Steam Training Workshop – for Phoenix?*

- d. Standards: Open
- e. Webmaster: Jayson Bursill (Chair)
- f. Research: Jay Eldridge (Chair) and Wangda Zuo (Co-Chair)

- i. Banking of Cold in CHW Loop – RTAR chaired by Jamie Fine
  - 1. Thomas Lawrence – University of Georgia – happy to support and be Co-Chair
- ii. Co-sponsored RP (RP 1890?) on adequate flushing velocities in hydronic systems (Gary to provide details)

## 7. Visitors & Liaison Reports/Information from other Committee Representatives

- a. DOE- Richard Sweetser
- b. IDEA- John Andrepont
- c. Building Decarbonization Task Force – Alan Neely

- i. Discuss potential working groups with T.C. for Alan to focus on:
  - 1. Building Decarbonization Retrofit Guide Working Group
  - 2. Heat Pump Application & Operation Guide Working Group
  - 3. Healthcare Decarbonization Guide Working Group
  - 4. Building Performance Standard Technical Guide Working Group
  - 5. Grid Interactive Buildings for Decarbonization Guide Working Group
  - 6. Building Decarbonization Whole Life Working Group

- d. ANSI/CSA/IGSHPA C448 Standard (Jessica Mangler, Lisa Meline, Steve Tredinnick, Gary Phetteplace)

- i. Serving on committee for updated standard of ANSI/CSA C448.1-16 (Design and installation of ground source heat pump systems for commercial and institutional buildings)
- ii. Adding District Energy Section.
- iii. Meeting about once a month.
- iv. Let us know if you're interested in reviewing drafts copies of the standard and providing comments.



e. Other TCs

- i. 6.1 – Hydronic & Steam Heating Equipment and Systems
- ii. 6.5 – Radiant Heating & Cooling
- iii. 6.6 – Service Water Heating
- iv. 6.7 – Solar and Other Renewable Energies
- v. 6.8 - Geothermal Heat Pump & Energy Recovery Applications
  - 1. NYSERDA & ASHRAE
- vi. 6.10 – Fuels and Combustion

f. Handbook

- g. Research (Stefan Elbel)
- h. TAC Chairman (Dustin Meredith)
- i. TAC Section Liaison (Doug Reindl)
- j. Staff (Steven Hammerling)
- k. Publications

- i. Publications Committee respectfully requests your input on possible topics, authors and reviewers for future ASHRAE Journal articles. It is our goal to enhance ASHRAE Journal's reputation as the preeminent publication in our industry. Each of you are most in tune with what our members are looking for to further their knowledge base. With this in mind, if you could respond with a topic or two with suggested authors and reviewers it would be greatly appreciated.

ii. Stephen Kavanaugh

- 1. ASHRAE Publications Liaison
- 2. Stephen is looking for any considerations in publications, or articles for journal. If any interest, please let the chair know and he will get them in touch with Stephen.

8. Old Business

- a. ISO TC205 Working Group – looking for Radiant Heating and Cooling Expert to serve on International Standards Interaction Task Force
- b. Decarbonization push (per discussion with Doug Reindl). What technology currently available to implement? Any efforts that can be made for R&D?

9. New Business

- a. Contact Daniel & Tim Anderson if you're interested in serving any positions on this TC
- b. Annual review and vote on status of T.C. 6.2:
  - i. Continue as a FG
  - ii. Merge with a FG and submit a revised scope for the merged FG
  - iii. Dissolve the FG

- iv. In an FG votes to disband, it must establish whether any current responsibilities should be continued
- c. Deliotte – World Bank project in District Cooling in Emerging Markets – Gary or Steve to provide an update? Anything that can be shared with committee?
- d. Reviewers of ISO 52001 – Charles Bertuch, Ibrahim Hesham Hassanien, and Nan Chen. No update yet per Charles in subcommittee meeting.
- e. Mahmoud Sabry's questions on modeling software(s) for chiller staging in District Cooling Plants. Any further input from Steve?

10. Thank you serving on TC 6.02 and volunteering for ASHRAE!

11. Adjourn