• Advisory committee to the Board
  – Charged with understanding and resolving scientific and technical issues
  – Makes non-binding recommendations

• Comprised of 32 members (16 voting)
• Meets 3-4 times per year
<table>
<thead>
<tr>
<th>Voting Member</th>
<th>Company</th>
<th>Alternate</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tim McQuillen</td>
<td>Roof Coatings Manufacturers Association</td>
<td>Steve Heinje</td>
<td>GAF</td>
</tr>
<tr>
<td>Ronnen Levinson</td>
<td>Lawrence Berkeley National Laboratory</td>
<td>Hashem Akbari</td>
<td>Concordia University</td>
</tr>
<tr>
<td>Andre Desjarlais</td>
<td>Oak Ridge National Laboratory</td>
<td>Chad Fisher</td>
<td>UL</td>
</tr>
<tr>
<td>Gary Whittemore</td>
<td>Sika Sarnafil, Inc.</td>
<td>Mike Ennis</td>
<td>Single-Ply Roofing Industry (SPRI)</td>
</tr>
<tr>
<td>Bill Morgan</td>
<td>Malarkey Roofing</td>
<td>Marcin Pazera</td>
<td>Owens Corning Roofing and Asphalt, LLC</td>
</tr>
<tr>
<td>Scott Kriner</td>
<td>Metal Construction Association</td>
<td>Dan Walker</td>
<td>Metal Building Manufacturers Association</td>
</tr>
<tr>
<td>Richard Slomko, Chair</td>
<td>Atlas Material Testing Solutions</td>
<td>Michael Crewdson</td>
<td>Q-Lab Weather Research Service</td>
</tr>
<tr>
<td>Ted Best</td>
<td>Valspar</td>
<td>Mark Thimons</td>
<td>American Iron &amp; Steel Institute</td>
</tr>
<tr>
<td>Wade Shepherd</td>
<td>Boral Roofing</td>
<td>Rick Olson</td>
<td>Tile Roofing Institute</td>
</tr>
<tr>
<td>Kurt Shickman</td>
<td>Global Cool Cities Alliance</td>
<td>Payam Bozorgchami</td>
<td>California Energy Commission</td>
</tr>
<tr>
<td>Cindy Campbell</td>
<td>RCMA Americas</td>
<td>Stacey Weister</td>
<td>RCMA Americas</td>
</tr>
<tr>
<td>Dan Rardon</td>
<td>Specialty Granules, Inc.</td>
<td>Diana Fisler</td>
<td>Johns Manville</td>
</tr>
<tr>
<td>Kurt Sosinski</td>
<td>Tremco, Inc.</td>
<td>Paul Riesebieter</td>
<td>Tremco, Inc.</td>
</tr>
<tr>
<td>Annette Sindar, Vice Chair</td>
<td>Eagle Roofing Products</td>
<td>Yoshi Suzuki</td>
<td>MCA Clay Tile</td>
</tr>
<tr>
<td>Hal Leland</td>
<td>Western Colloid</td>
<td>Frank Klink</td>
<td>3M</td>
</tr>
<tr>
<td>Dave Yarbrough</td>
<td>R&amp;D Services, Inc.</td>
<td>Tyler Westerling</td>
<td>Architectural Testing, Inc.</td>
</tr>
</tbody>
</table>
Board approved the proposed changes to the Technical Committee (TC) Policy to include:

- Five permanent positions for:
  - Lawrence Berkeley National Lab
  - Oak Ridge National Lab
  - Two AITLs
  - One test farm

- Increased minimum members to seven
TEST METHODS AND STANDARD PRACTICES
<table>
<thead>
<tr>
<th>Year</th>
<th>Events</th>
</tr>
</thead>
</table>
| 2013 | • CRRC helped fund study on measuring solar reflectance of DRM  
     • Board adopted product rating method in November based on study  
     • DRM incorporated rating method into CRRC-1 Program Manual |
| 2014 | • TC working group developed test method for measuring solar reflectance of DRM |
| 2015 | • Round robin study of draft test method completed  
     • TC approved the test method in October  
     • Board approved adoption of test method in November  
     • CRRC-1 Program Manual updated to include test method |
| 2016 | • CRRC pursues a standalone ASTM standard for DRM test method  
     • Proposal submitted to ASTM C16 subcommittee  
     • One negative vote received |
• C16 subcommittee met in Toronto (April)
• Negative vote found as non-persuasive
  – Subcommittee voted to override negative vote
• Proposed test method will move to full committee ballot (May/June 2017)
TC approved requiring photos in product rating process
  - Pending adoption by Board

Benefits
  - Verifying test specimen requirements
  - Verifying Test Farm Notification notes
  - Investigating problems
  - Integrity of CRRC procedures for testing, aging, rating
  - Added value for manufacturers

Photos currently required in some cases
COMMITTEE WORKING GROUPS
• Methods & Instruments (M&I) subcommittee established in October 2014

• Standing subcommittee comprised of 5 TC members

• Subcommittee Scope:
  − Discuss and undertake the technical evaluation of new or modified methods or instruments for radiative measurement
  − Report results of discussions and evaluations to the Technical Committee

• Current topics:
  − Dual Ratings for Coatings Specification
  − Aggregate Test Method
Aggregate Test Method A
Box of Rocks

Aggregate Test Method C
Faux Shingle
2012
• RRCI and RCMA studies find lower solar reflectance for coatings on rough substrates

2013
• TC recommendation for dual ratings for coatings
• Developed draft test procedure

2015
• Working group designed round robin procedure
• CRRC worked with RCMA to identify manufacturer participants

2016
• Round robin conducted
• TC reviewed results in August – *reproducible & repeatable*
• Board approved dual ratings for coatings

Exhibit 5 – CRRRC Annual Membership Meeting – June 14, 2017
• M&I subcommittee developing specification for dual ratings for coatings (smooth & rough substrates)
• Exploring applicable thermal emittance test method
• RCMA identifying additional coating types to include in weathering
• Will start three-year weathering of rough substrate specimens later in year
2014
• Analyzed data from C1371 and Slide Method round robin to develop statistical approach to adopt for other proposed test method changes

2015
• ARMA completed analysis and proposal – findings presented to TC in August
• WG developed guide for evaluating new test methods that has been approved by TC

2016
• ARMA presented to TC in October and discussed statistical and practical significance
• WG tasked with exploring modeling as proof-of-concept for practical methodology
• WG conducted whole building analysis using two modeling software programs (CBECC and EnergyPlus)

• WG will also explore using ASTM E1980 (establishes SRI calculation) as simplified approach to whole building analysis
Impact of Aging Beyond 3 Years

Rapid Ratings Data Validation

Comparison of Solar Reflectance Test Methods
UPCOMING MEETINGS

• August 17, 2017 (In-person meeting)
  – Columbus, Ohio
  – All day

• October 26, 2017 (Conference Call)
  – 2 hours

• Contact
  – For Technical Committee
    sarah@coolroofs.org
  – For working groups and research projects
    vanessa@coolroofs.org