



# EDUCATION COMMITTEE

**Frank Klink**  
CRRC Education Committee Chair

Annual General Membership  
Virtual Meeting  
June 16, 2021

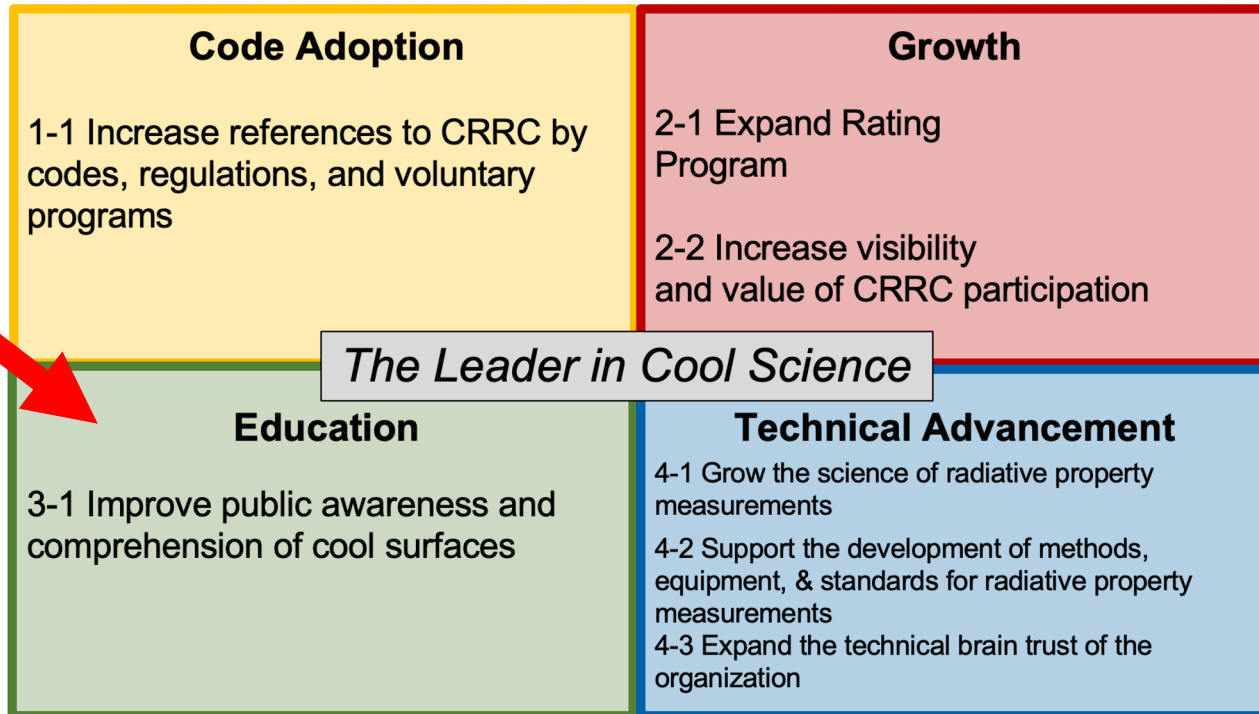


# EDUCATION COMMITTEE UPDATES



# EDUCATION COMMITTEE OVERVIEW

- Convened in January 2021 to help fulfill the CRRC's mission and Strategic Plan





# EDUCATION COMMITTEE OVERVIEW

- Purpose:
  - Provide guidance on the CRRC’s educational activities to improve public awareness and comprehension of cool surfaces
- Scope:
  - Create materials
  - Identify opportunities
  - Collaborate with other CRRC committees

# EDUCATION COMMITTEE OVERVIEW

- Diverse and balanced group currently composed of 11 members
- Meets as often as needed to fulfill duties
  - 6 meetings scheduled in 2021





# COMMITTEE ROSTER

VOTING MEMBER	COMPANY	CRRC MEMBER CLASS
Sid Dinwiddie	ARMA	A
Neetu Jain, <b>Vice Chair</b>	Global Cool Green City Foundation	B
Frank Klink, <b>Chair</b>	No affiliation	B
Dale McIntyre	Behr Paint Company	A
Sahar Minoo	American Standard Coatings	A
Dave Sailor	No affiliation	B
Wade Shepherd	Boral Roofing	A
Kurt Shickman	GCCA	B
Peter Turnbull	Turnbull & Associates	B
Steve Wadding	Polyglass USA	A
Howard Wiig	Hawaii State Energy Office	B



# COMMITTEE UPDATES

## *Since the 2020 Membership Meeting:*

- Committee members appointed
- Chair and Vice Chair appointed
- Projects
  - List developed and prioritized
  - Working groups formed
  - Six active projects in progress



# EDUCATION COMMITTEE PROJECTS





# COOL ROOF ENERGY SAVINGS BROCHURE

- **Scope:**
  - Create a brochure tailored to home and commercial building owners about factors that influence the energy savings potential of a cool roof
  - Based on content developed by the CRRC Technical Committee
- **Status: Completed and available on [coolroofs.org](http://coolroofs.org)**

# ENERGY SAVINGS OF COOL ROOFS BROCHURE

## HOW DOES A COOL ROOF SAVE ENERGY?

### A COOL ROOF IS . . .

a roof that reflects more solar energy away from its surface (solar reflectance) and more efficiently radiates absorbed heat away from the building (thermal emittance), which helps air-conditioned buildings use less energy.

You may want to install a cool roof to reduce building energy use, lower utility bills, improve the comfort inside the building, help reduce peak energy demand, and/or help combat the local Urban Heat Island.

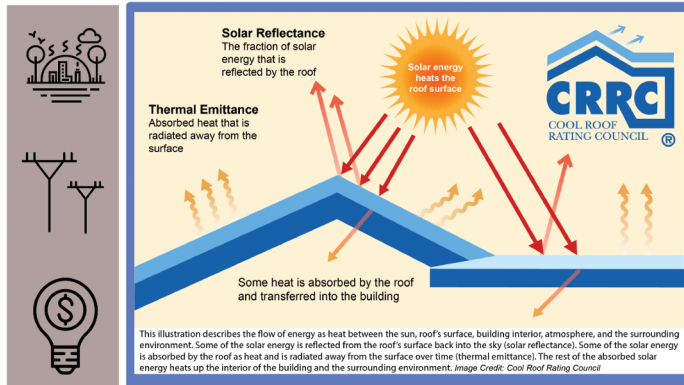
Visit [coolroofs.org](http://coolroofs.org) to learn more

For buildings without air-conditioning, a cool roof may help the inside of the building feel cooler during hot months.

### ENERGY COST SAVINGS

A cool roof can help lower energy bills. Cost savings depend on several factors, such as the energy efficiency of the HVAC system and energy prices.

Some cities and utilities offer incentives for the installation of a cool roof and/or reduced energy use.



Visit [coolroofs.org](http://coolroofs.org) for:

- A list of cool roof code requirements, ordinances, and incentive programs by city, county, and state
- A database of over 3,000 roofing products with solar reflectance and thermal emittance values



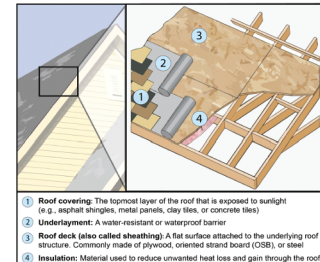
### Calculating Cool Roof Energy Savings

There are many factors to consider when calculating the energy and cost savings of a cool roof. Some key factors include:

**Solar reflectance.** The greater the solar reflectance, the more of the sun's energy will be reflected away from the building. A larger increase in solar reflectance between the existing and new roof coverings will yield greater savings.

**Type of roofing covering.** The capacity to store heat (thermal mass) varies by roof covering type and roof assembly. For example, concrete roof tiles have a high thermal mass, which means they absorb and release heat slowly. This can reduce air-conditioning demand in climates with warm days and cool nights.

**Climate.** Temperature and the amount of sunlight where the cool roof is installed will affect the potential energy savings. Cool roofs will yield greater energy savings when replacing less reflective roof coverings in hot climates more than in temperate climates. For conditioned buildings in colder climates where more energy is needed for heating, the "heating penalty" is usually small compared to the annual cooling savings because roofs in winter tend to receive much less sunlight. The long-term performance of the roofing product can also be affected by local environmental conditions. The solar reflectance of most products decreases over time, and this can be sped up in areas with high pollution, moss, or algae.



Graphic adapted from AIA's "Proper Installation of AIA-Rated Sheathing for Roof Applications." This figure represents one configuration of a residential steep-slope roof. There are many other residential and commercial roof configurations that contain similar components.

**Insulation.** Cool roof products and insulation work together to prevent heat transfer into a building. Like insulation, a cool roof reduces the amount of cooling needed by decreasing the heat transferred into the building and surrounding environment. However, it works in a very different way. Generally, the same cool roof product will yield greater energy savings in older buildings with little roof insulation than in newer buildings with highly insulated roofs.

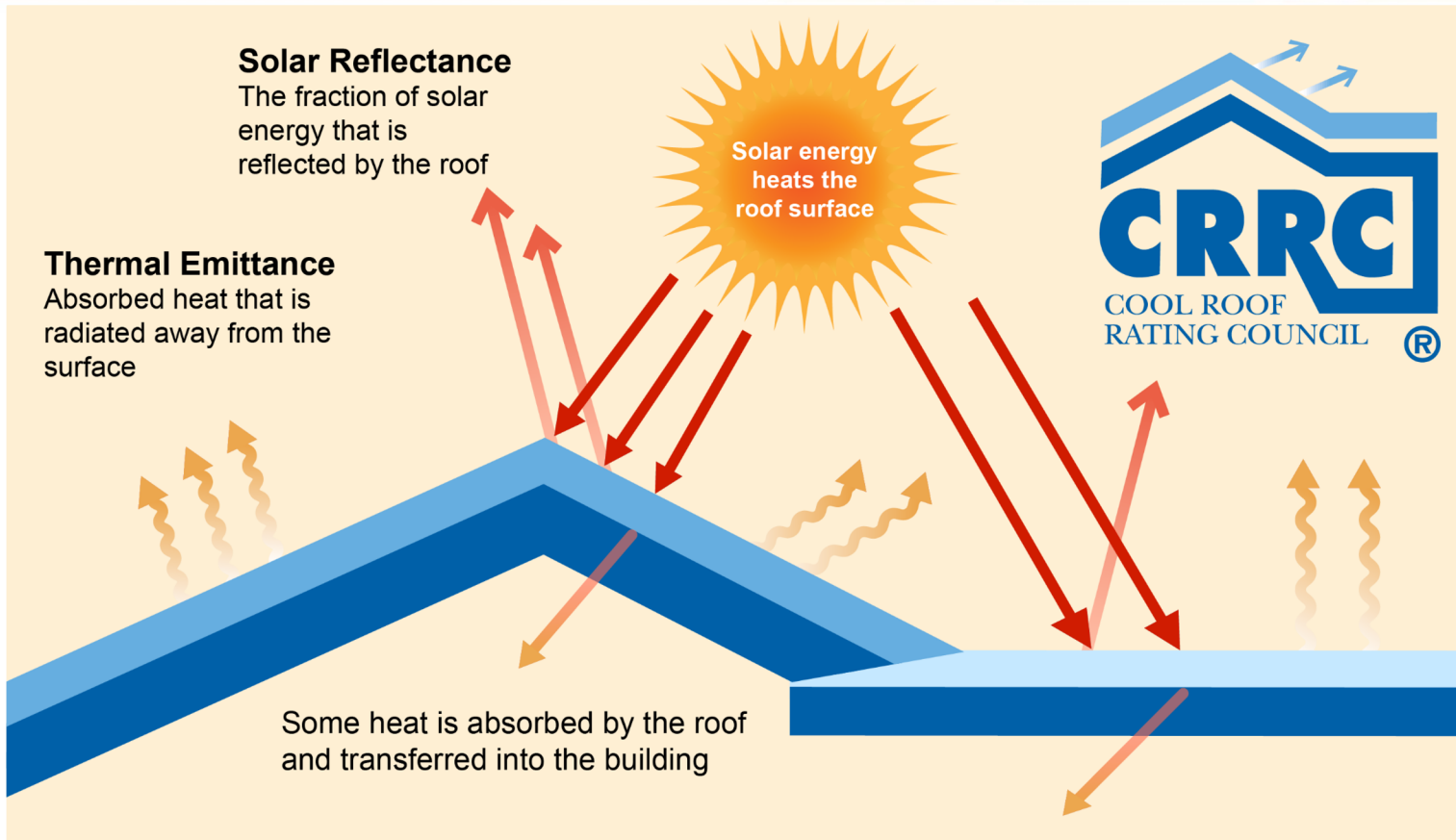


# SOLAR REFLECTANCE & THERMAL EMITTANCE DIAGRAM

- **Scope:** Revise the existing CRRC diagram to simplify the content while retaining accuracy
- **Status:** Completed



# REVISED SOLAR REFLECTANCE & THERMAL EMITTANCE DIAGRAM



This illustration describes the flow of energy as heat between the sun, roof's surface, building interior, atmosphere, and the surrounding environment. Some of the solar energy is reflected from the roof's surface back into the sky (solar reflectance). Some of the solar energy is absorbed by the roof as heat and is radiated away from the surface over time (thermal emittance). The rest of the absorbed solar energy heats up the interior of the building and the surrounding environment. *Image Credit: Cool Roof Rating Council*



# CRRC EDUCATOR POLICY & PROCEDURE

- **Scope:**
  - Develop a policy & procedure for the authorization of CRRC members to conduct outreach and education on behalf of the CRRC as CRRC Educators
- **Status:**
  - Committee recommended policy & procedure for CRRC Board approval
  - Committee recommended the first CRRC Educator for CRRC Board approval





# GENERAL EDUCATION SLIDE DECK

- **Scope:**
  - Detailed yet easy to understand slide deck about the CRRC, cool roofs, and solar reflective walls in general for use by CRRC Educators
  - Can be tailored to different audiences with CRRC approval
- **Status:** Committee recommended slide deck for CRRC Board approval

# GENERAL EDUCATION SLIDE DECK

## SOLAR REFLECTANCE TEST EQUIPMENT

- Portable Reflectometer (Devices & Services Solar Spectrum Reflectometer)
- Directional-Hemispherical Portable Reflectometer (Surface Optics 410-S)



CRRC General Education Slide Deck - May 27, 2021

## COOL COLORS

Cool colored roofing products look like conventional colors but reflect more infrared light.

R=0.41	R=0.44	R=0.44	R=0.48	R=0.46	R=0.41
black	blue	gray	terracotta	green	chocolate

photo courtesy of [unreadable] May 27, 2021

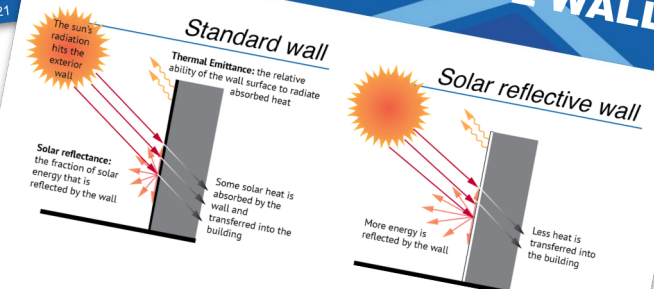
## CRRC MISSION

- To implement and communicate fair, accurate, and credible radiative energy performance rating systems for roof or wall surfaces
- To support research into energy related radiative properties of roof or wall surfaces, including durability of those properties
- To provide education and objective support to parties interested in understanding and comparing various product options



CRRC General Education Slide Deck - May 27, 2021

## SOLAR-REFLECTIVE WALLS



**Standard wall**  
Thermal Emissance: the relative ability of the wall surface to radiate absorbed heat

**Solar reflective wall**

Solar reflective walls aren't necessarily white-- "cool color" products use darker-colored pigments but are highly reflective in the near infrared (non-visible) portion of the solar spectrum.

CRRC General Education Slide Deck - May 27, 2021



# HIGH PERFORMANCE ROOFS BROCHURE

- **Scope:**
  - Visually-appealing brochure for contractors, builders, architects, and local government officials that describes the mutually-beneficial relationship between reflective roofs and insulation
  - Collaboration between the CRRC, Polyisocyanurate Insulation Manufacturers Association and Global Cool Cities Alliance
- **Status: In Progress**





- **Scope:**
  - Website Working Group is providing input on content and layout of new CRRC website
  - Objective is to make the website more modern and easier to navigate
- **Status: In Progress**





# UPCOMING POTENTIAL PROJECTS

POTENTIAL PROJECTS
Urban Heat Island Mitigation Brochure
Solar Reflective Index Brochure
Update existing CRRC brochures
Propose language for ASHRAE Handbook of Fundamentals Chapters 17 & 18
Develop continuing education courses
Articles for submission to industry publications and the media
Identify educational events for CRRC participation
Translate CRRC materials into different languages
Create course for professional installers
Collaborate with solar associations to produce educational materials
Educational materials on the effect of cool roofing on affordable housing



# UPCOMING 2021 VIRTUAL MEETINGS

- Wednesday, August 4
- Tuesday, October 5
- Wednesday, October 6



Interested in attending?  
Contact: Sarah Schneider  
[sarah@coolroofs.org](mailto:sarah@coolroofs.org)

# SEEKING MEMBERS

- Committee seats still available
- Desire for balanced representation
- Class B members will have annual member dues waived
- Board will appoint candidates
- Submit summary of qualifications to [sarah@coolroofs.org](mailto:sarah@coolroofs.org)





# QUESTIONS?