

Enhancing Building Efficiency and Resilience with Solar-Reflective Cool Exterior Walls

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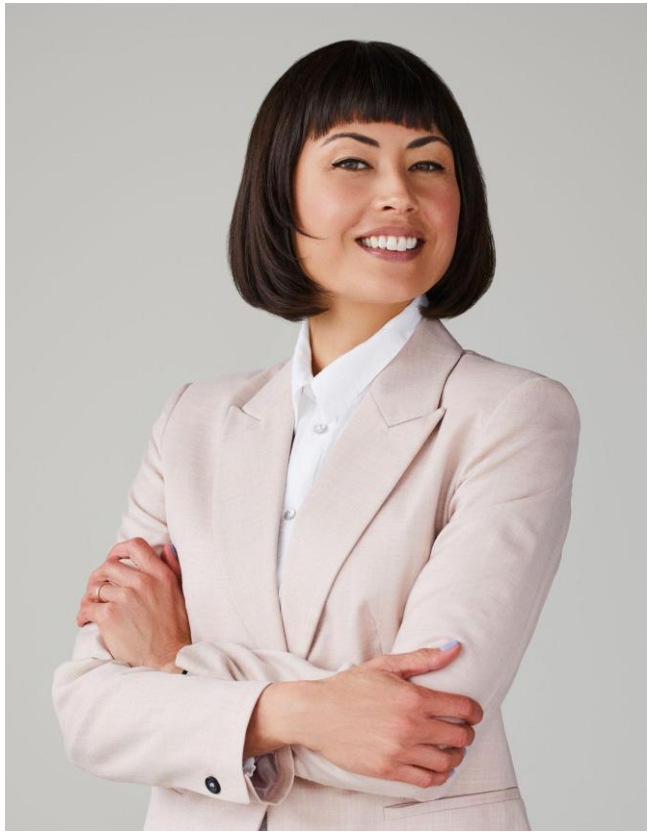
Today's Speakers



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Disclaimer

Some of today's presenters are currently employed by Tex-Cote LLC, which manufactures some of the technology referenced in this presentation.

Learning Objectives

1. Describe how cool exterior walls can reduce a building's solar heat gain and lower temperatures of buildings and surrounding communities.

2. Estimate building-specific cool exterior wall HVAC energy cost savings using Lawrence Berkeley National Laboratory's Cool Surface Savings Explorer and local electricity cost data.

3. Understand the makeup of a high-quality heat-reflective coating and how these user-friendly performance coatings can be applied by both coating professionals and facility personnel.

4. Explain and showcase projects of varying substrates that utilize cool exterior wall and roof coatings, highlighting the reduced heat buildup, fade resistance, and extended paint cycles.

Cool Exterior Wall Basics

Heat waves are a hot topic in the news

California Heat Wave Drives Temperatures Past 100 Degrees

A high-pressure system is bringing dangerous temperatures, record-shattering highs and heightened fire risks across the West Coast.

By Holliday Woodard | Oct. 5, 2026, at 2:47 p.m.

CNN Weather Video Climate Watch Listen Subscribe Sign in

WEATHER • 4 MIN READ

A record-challenging heat dome is about to bake the West with the summer's hottest temperatures so far

UPDATED JUL 31, 2026

By Meteorologist Tyler Ory and Andrew Freedman

AP WORLD U.S. POLITICS SPORTS ENTERTAINMENT BUSINESS SCIENCE NEWSLETTERS QUIZZES MORE

Trump administration Guilfoyle resigns Tupac Shakur murder trial Six Flags in Georgia Pope Leo lung cancer Greta Gerwig's 'Narnia'

CLIMATE

Heat wave brings record-breaking temps, heightened wildfire risk to parts of Western US

BY TAMMY WEBBER AND SARAH RAZA

Updated 7:58 PM PDT, August 1, 2026

Leer en español





Impacts of heart are exacerbated in urban areas

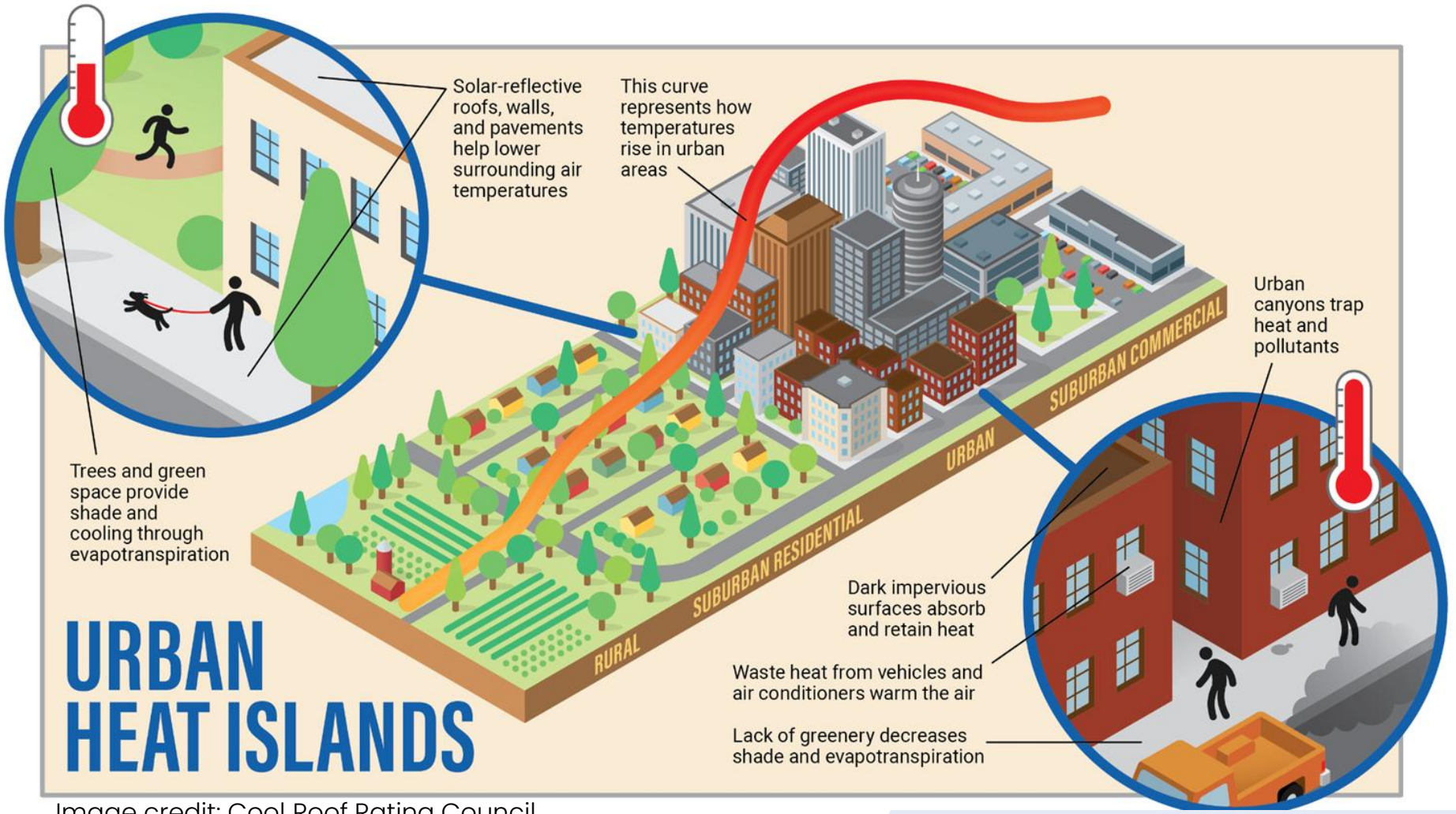


Image credit: Cool Roof Rating Council



When an exterior wall highly reflects solar radiation, it lowers the surface temperature of the wall material

Image Source: Cool Roof Rating Council

Two Properties Influence “coolness”

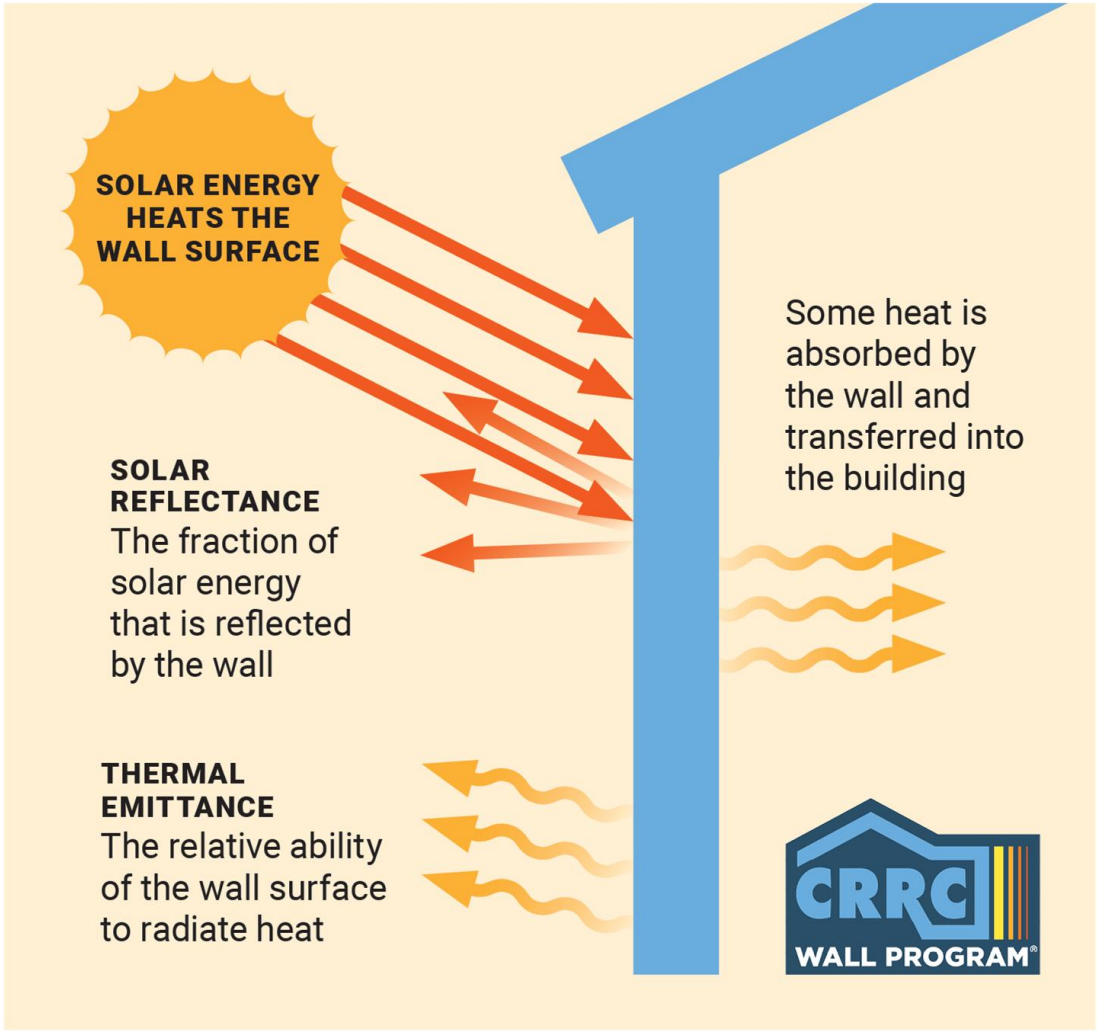
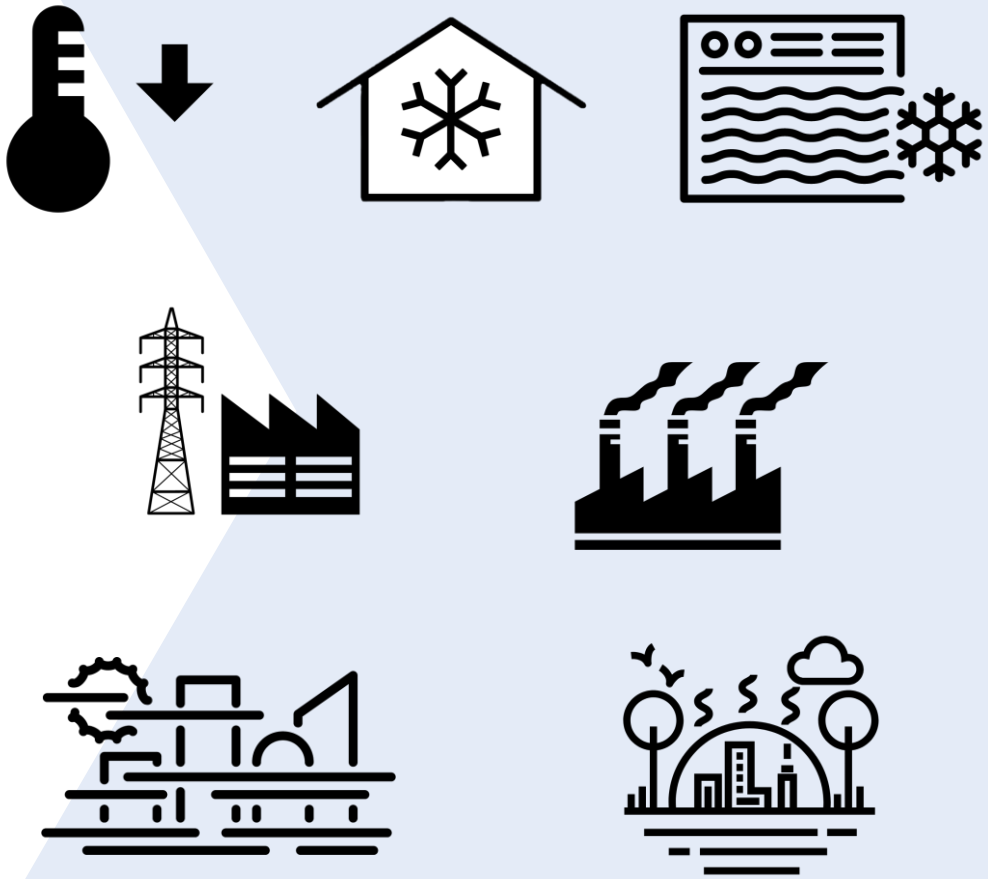


Image credit: Cool Roof Rating Council



Testing & Rating Standards

- Surface radiative properties are measured by accredited independent testing laboratories
- Materials weathered at accredited independent weathering farms
- Ratings based on measured
- SR & TE values
- Testing & rating requirements found in these three documents



Common Measurement Methods and Instruments

Solar Reflectance

Solar Spectrum Reflectometer (SSR)



Image credit: Cool Roof Rating Council

410-Solar Reflectometer



Image courtesy of Surface Optics Corp.

- ASTM C1549 (SSR)
- ASTM E903 (spectrophotometer)
- ASTM E1918 (albedometer or pyranometer)
- 410-Solar Test Method (410-Solar)

Thermal Emittance

Emissometer



Image credit: Cool Roof Rating Council

- ASTM C1371 (Emissometer)
- Slide Method (Emissometer)

Natural weathering is crucial for understanding radiative performance over time

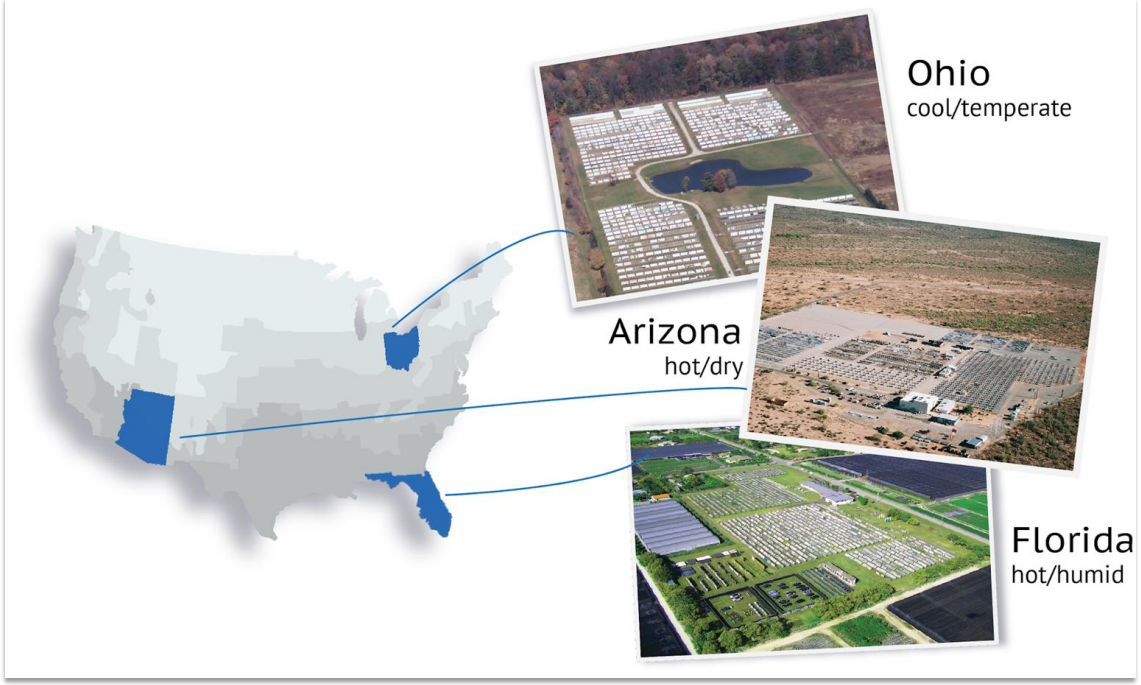


Image credit: Atlas Weathering Services



Image credit: Lawrence Berkeley National Laboratory

Cool exterior walls save energy in all 16 CA climate zones & U.S. climate zones 1–4

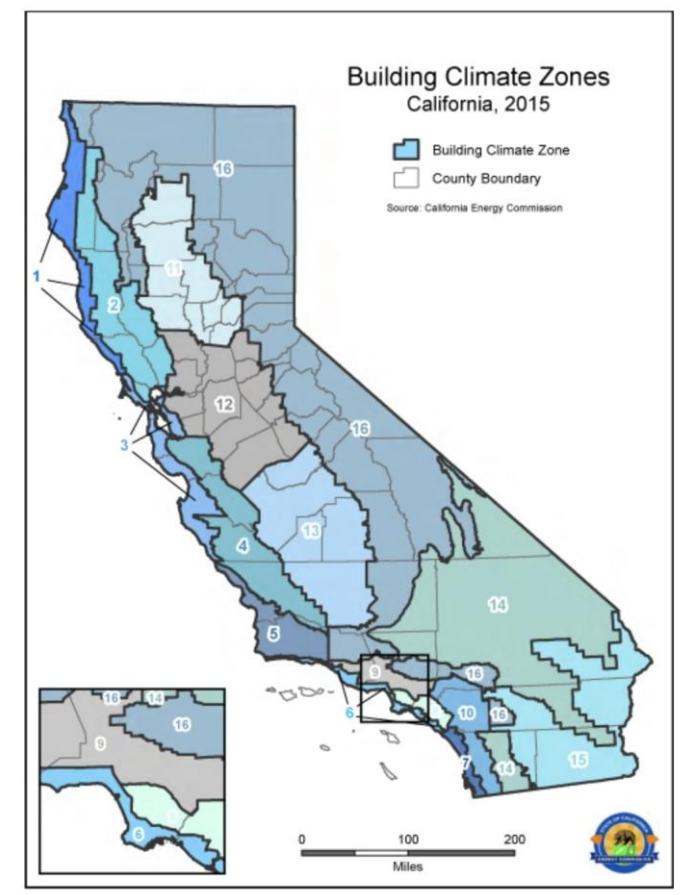


Image Source: CEC

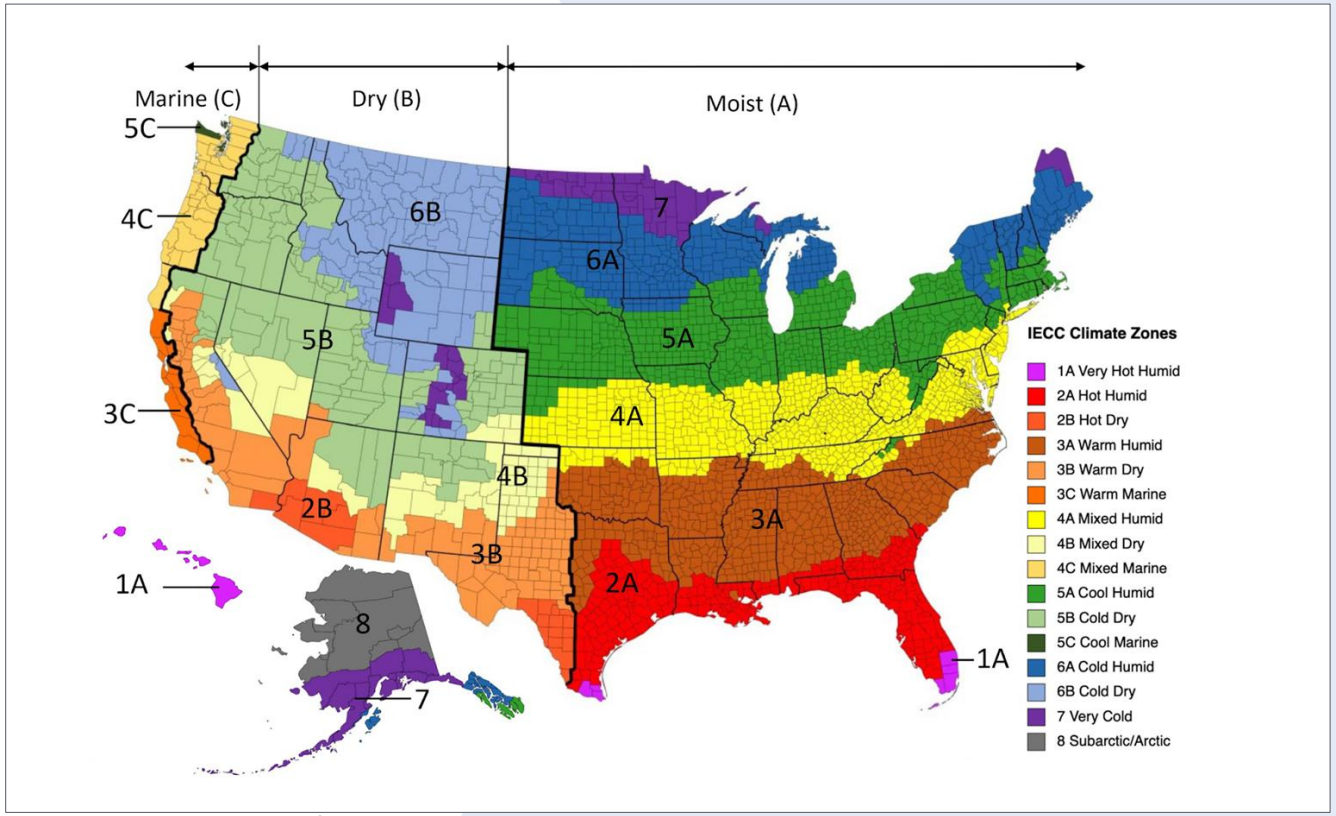
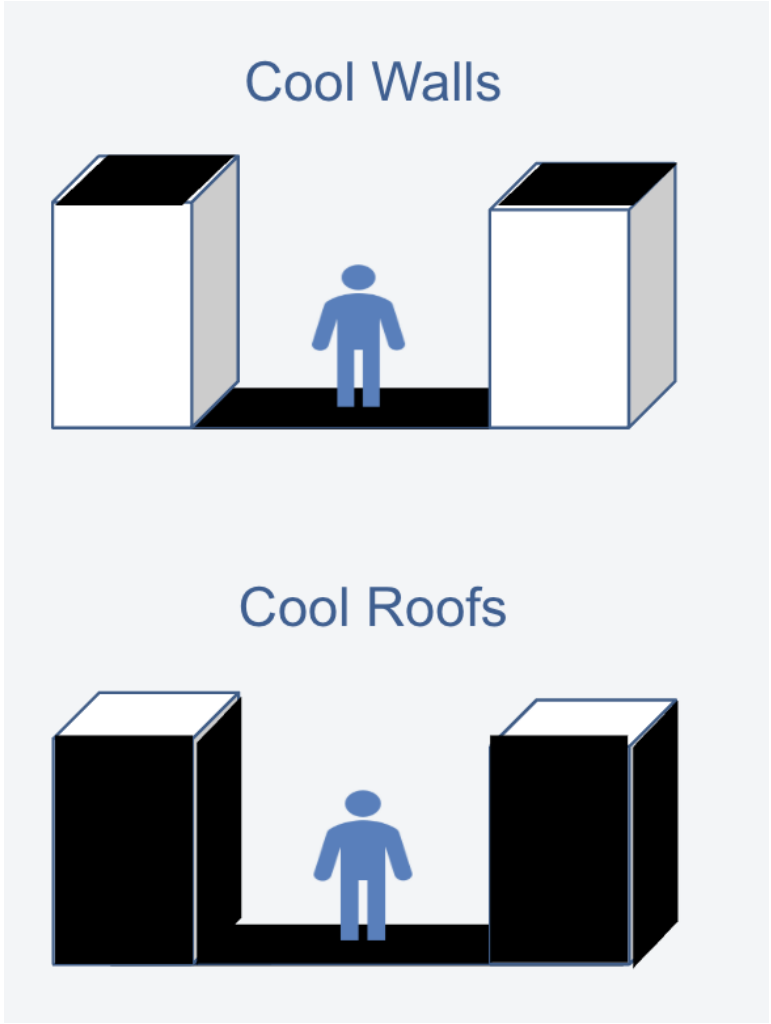
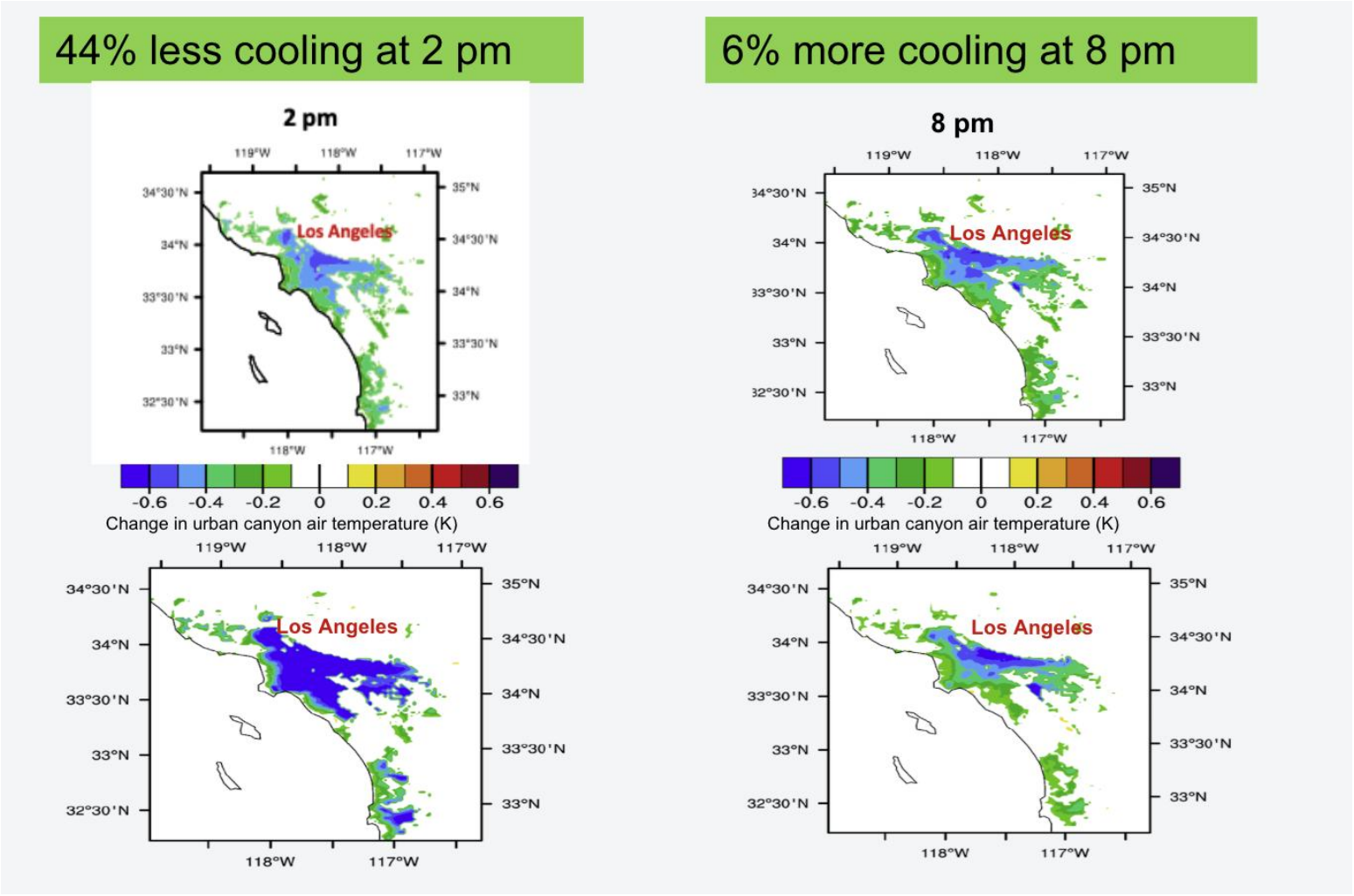


Image Source: ICC/ ASHRAE

Rosado, P. J., et al. (2019). https://doi.org/10.1016/j.enbuild.2019.02.028

Urban Heat Island Mitigation

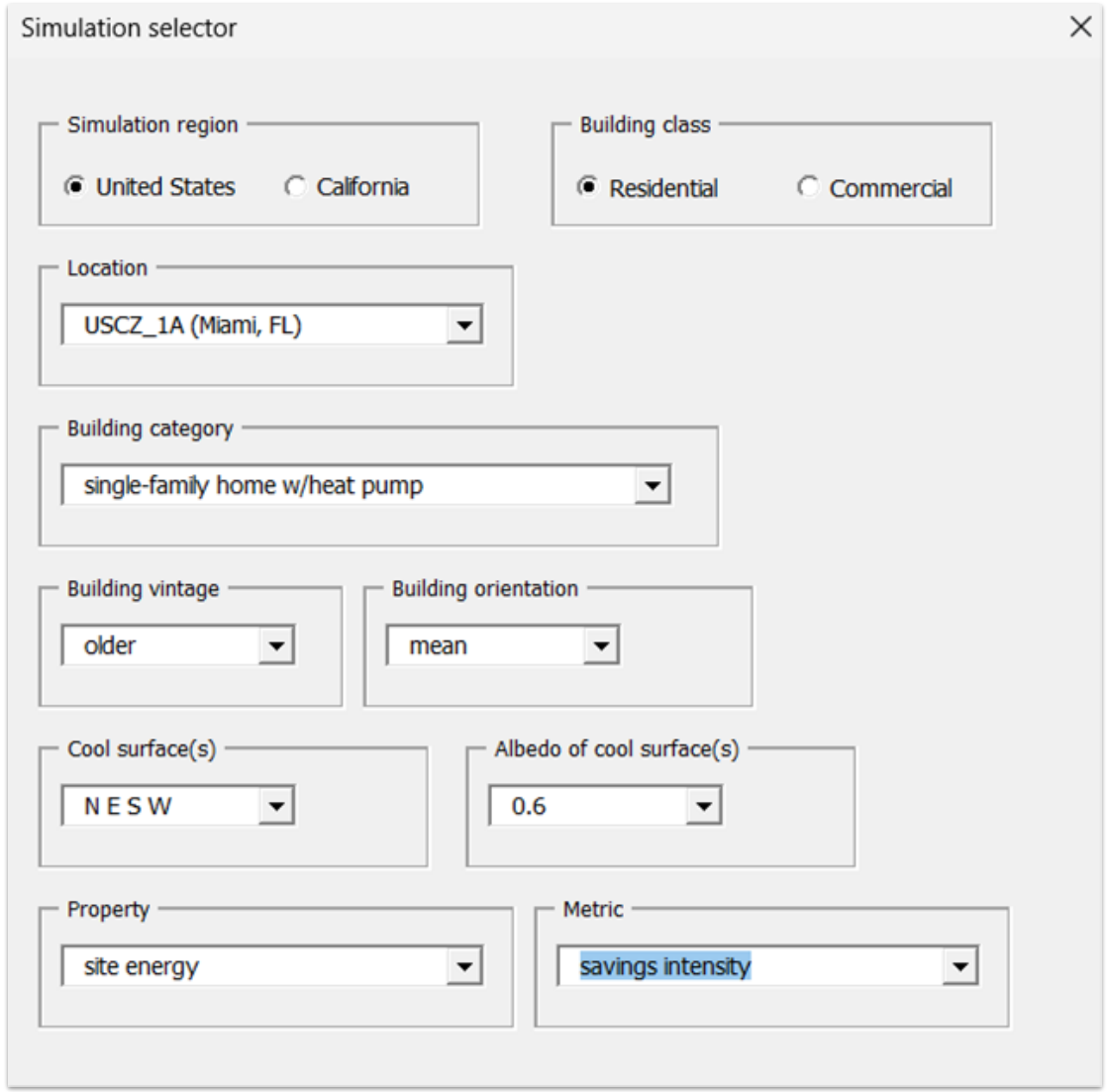




Zhang, J., et al. (2018). https://doi.org/10.1021/acs.est.8b00732

Image Source: Ronnen Levinson, Lawrence Berkeley National Laboratory

Estimating energy & cost savings



Parameters	
Climate zone	USCZ_1A
City	Miami
State	Florida
Vintage year	1989
Vintage group	older
Building category	single-family home
Building orientation	mean
Modified surface(s)	N E S W
Base wall albedo	0.25
Albedo of modified wall(s)	0.6
Base roof albedo	0.1
Albedo of modified roof	NA

Results	
Annual cooling site energy absolute savings intensity [kWh/m2]	4.117
Annual gas heating site energy absolute savings intensity [therms/m2]	0
Annual electric heating site energy absolute savings intensity [kWh/m2]	-0.079
Annual fan site energy absolute savings intensity [kWh/m2]	0.788

Using the Cool Surfaces Savings Explorer

Cool Surfaces Savings Explorer

CEC Report Appendix P

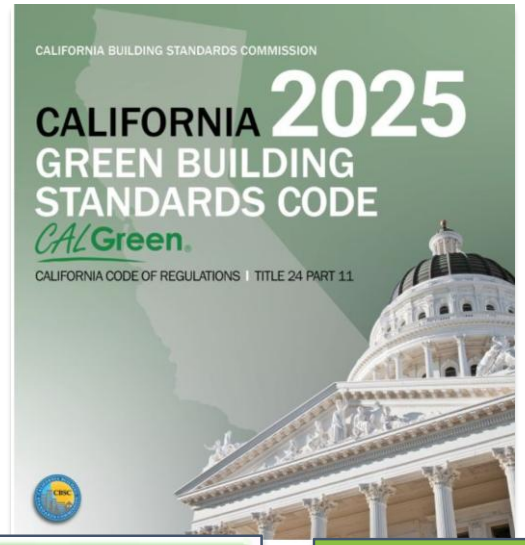
Local Energy Cost Calculation Instructions

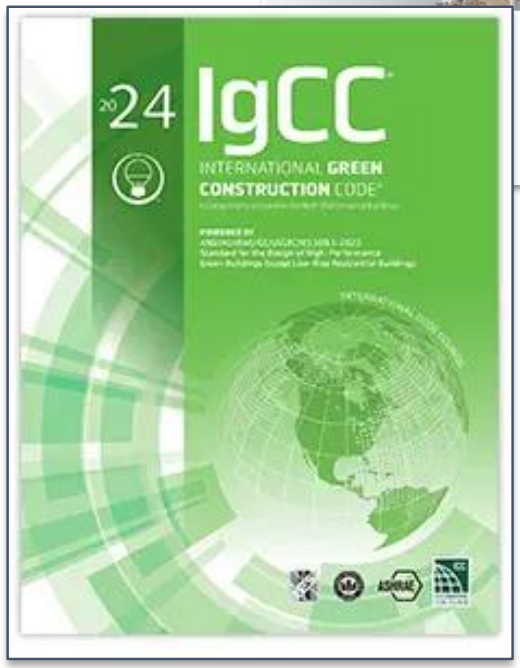
Beyond the Base Code

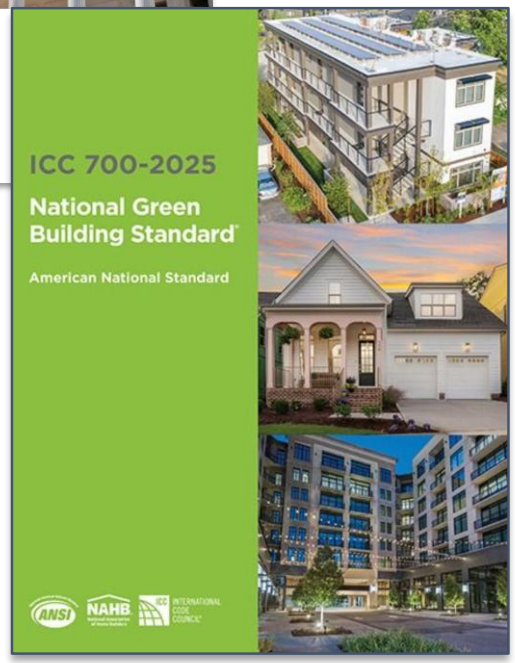
LEED®

THE Sustainable SITES Initiative®

GREEN GLOBES™ BUILDING CERTIFICATION







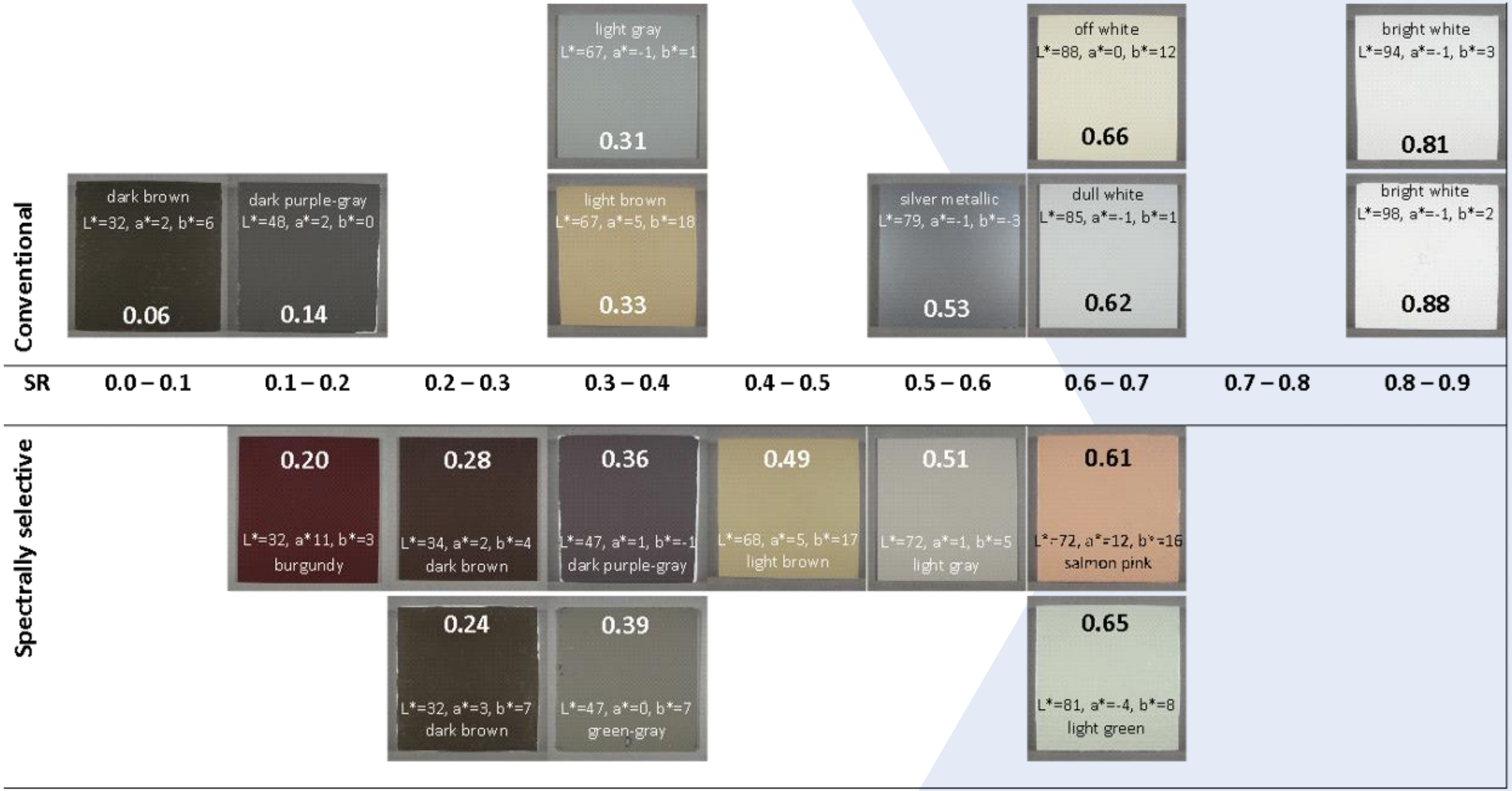


Image Source: Heat Island Group, Lawrence Berkeley National Laboratory

Role of Third-Party Product Ratings

1. Transparency

Provides clear product performance data

2. Informed Choices

Allows apples-to-apples comparisons for buyers

3. Market Trust

Builds buyer confidence with verifiable data

4. Code Compliance

Assists in meeting building regulations and energy codes

Search for Product Ratings

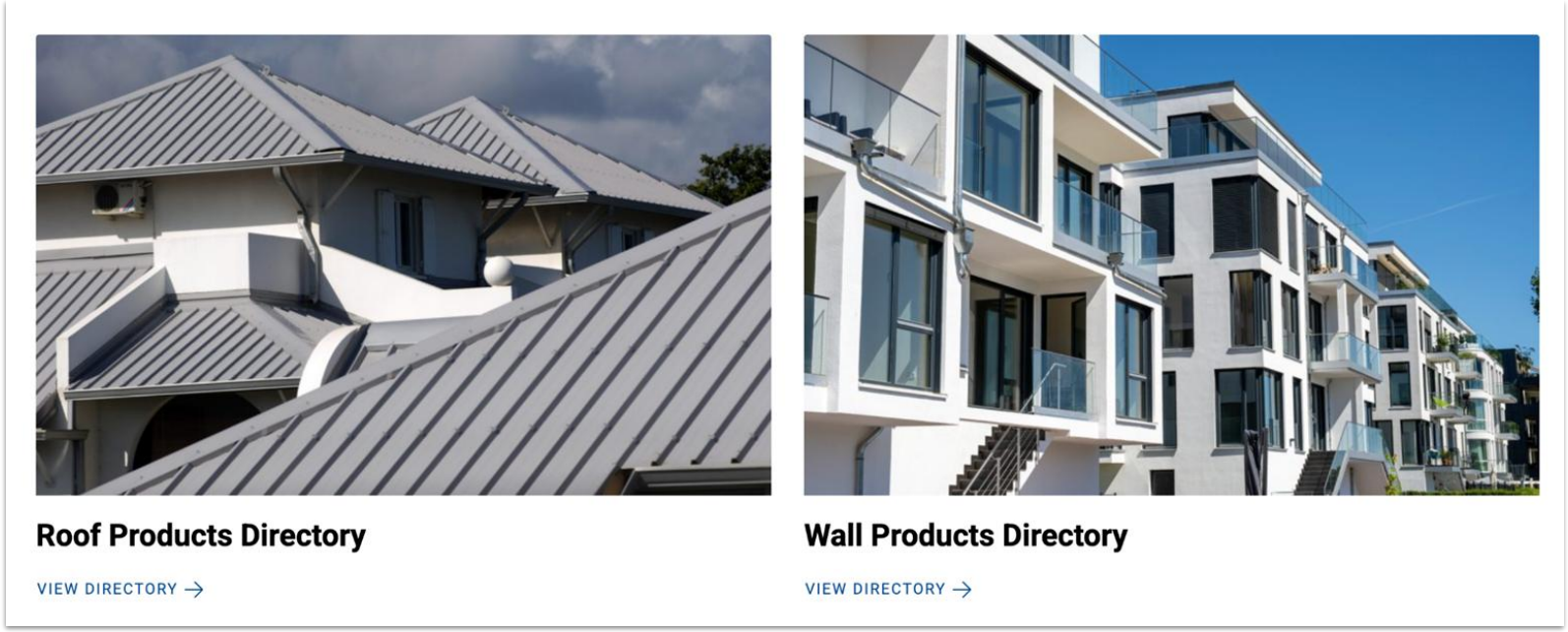
Two directories

Free to access

Updated in real time

Various product types

CRRC Labels



COOL ROOF RATING COUNCIL

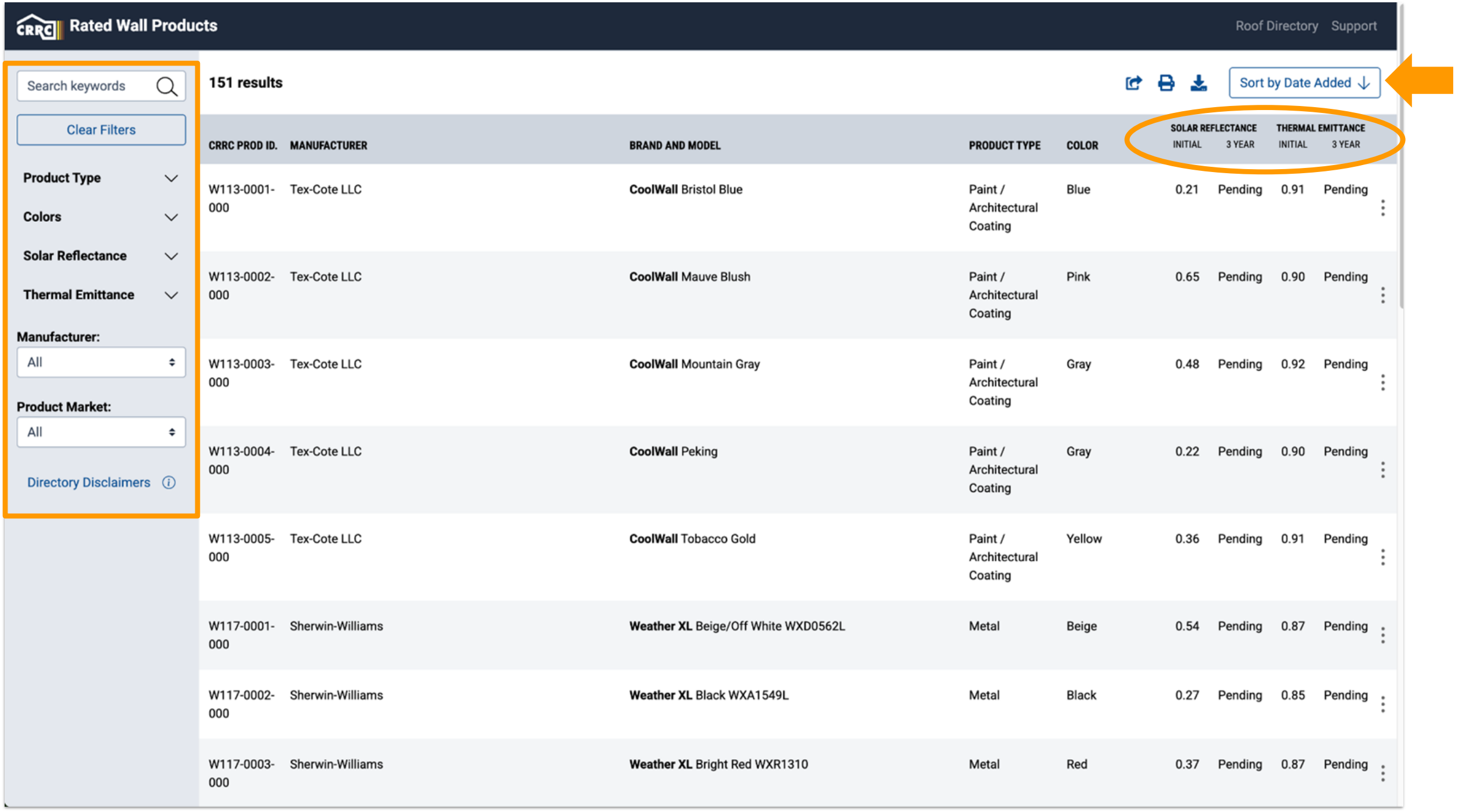
Rated Product ID #: 0000-0000	Initial	Aged
Solar Reflectance	0.00	0.00
Thermal Emittance	0.00	0.00

The ratings above are subject to CRRC rating program conditions, requirements, and limitations. Visit coolroofs.org for important information and disclaimers about CRRC rating conditions, requirements, and limitations.

WALL PROGRAM

Wall Rated Product ID #: W000-0000	Initial	Aged
Solar Reflectance	0.00	Pending
Thermal Emittance	0.00	Pending

The ratings above are subject to CRRC rating program conditions, requirements, and limitations. Visit coolroofs.org for important information and disclaimers about CRRC rating conditions, requirements, and limitations.


Rated Wall Products
Roof Directory
Support
Search keywords
Clear Filters
Product Type
Colors
Solar Reflectance
Thermal Emittance
Manufacturer:
All
Product Market:
All
Directory Disclaimers
151 results
Sort by Date Added
CRRC PROD ID.
MANUFACTURER
BRAND AND MODEL
PRODUCT TYPE
COLOR
SOLAR REFLECTANCE
INITIAL
3 YEAR
THERMAL EMITTANCE
INITIAL
3 YEAR
W113-0001-000 Tex-Cote LLC CoolWall Bristol Blue Paint / Architectural Coating Blue 0.21 Pending 0.91 Pending
W113-0002-000 Tex-Cote LLC CoolWall Mauve Blush Paint / Architectural Coating Pink 0.65 Pending 0.90 Pending
W113-0003-000 Tex-Cote LLC CoolWall Mountain Gray Paint / Architectural Coating Gray 0.48 Pending 0.92 Pending
W113-0004-000 Tex-Cote LLC CoolWall Peking Paint / Architectural Coating Gray 0.22 Pending 0.90 Pending
W113-0005-000 Tex-Cote LLC CoolWall Tobacco Gold Paint / Architectural Coating Yellow 0.36 Pending 0.91 Pending
W117-0001-000 Sherwin-Williams Weather XL Beige/Off White WXD0562L Metal Beige 0.54 Pending 0.87 Pending
W117-0002-000 Sherwin-Williams Weather XL Black WXA1549L Metal Black 0.27 Pending 0.85 Pending
W117-0003-000 Sherwin-Williams Weather XL Bright Red WXR1310 Metal Red 0.37 Pending 0.87 Pending

Coating Product Performance, Practical Applications, & Case Histories

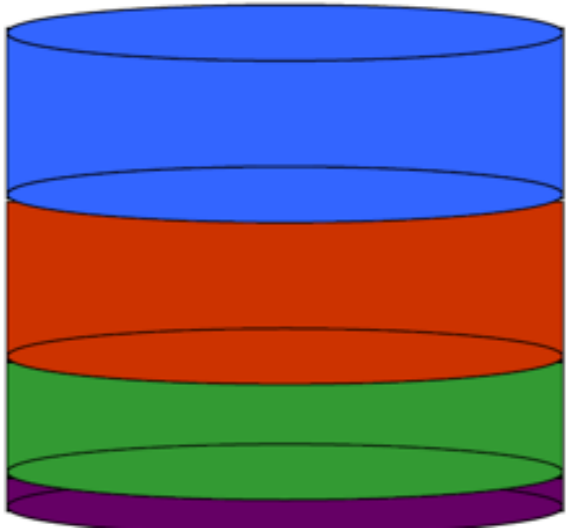
Protect and Cool the Wall. Extend the Repaint Cycle

A facility-owner business case for high-performance, heat-reflective exterior coatings

Key Aspects

- Durability
  - Weather Resistance
  - Color Fade
- Lower Disruption
- Cost Per Year
  - Passive Cooling
  - Energy Savings
- Environmental Impact
  - Extended Repaint Cycles
  - Workers Safety
    - “Cool Rooms”

Coating Components



Pigment
Binder
Solvent
Additives

Volume Solids
Vehicle

Formulation Matters

Manufactures have a wide variety of material choices and cost considerations :

- Resin selection
  - Acrylic
  - PVDF
- Additives
  - UV Inhibitors
  - Flow Aids
- Pigments
- Application
  - Spray, Brush Roll- Pro or In-House

These decisions can have a major impact on coating lifespan.

Pigment Types

- **Inorganic**
- Mixed metal oxide pigments - known as complex inorganic color pigments
- Representatives of the blue, green, yellow, brown, and black pigments
- Inherently fade-resistant.
- Reflects infrared heat causing rays

- **Organic**
- Carbon-based pigments from animals, vegetables, or synthetic organic chemistry.
- Majority of modern pigments are created through synthetic organic chemistry.
- Prone to fading.

- **Ceramic microspheres**
- Made of materials like silica, alumina, or other ceramics.
- Hollow spherical structure with a thin ceramic wall.
- Reduce heat transfer by reflecting and refracting heat radiation, minimizing paths for heat flow.
- Prone to breakage

Color Matters



Built Around a More Durable Coating System

Resin Package

- PVDF & Acrylic
  - Contributes to UV, Chalking, Fade, & Dirt Resistance

Pigment Technology

- IR-Reflective Pigments
  - Specialty inorganic / mixed-metal oxide pigment options reflect more near-infrared energy.

System Approach

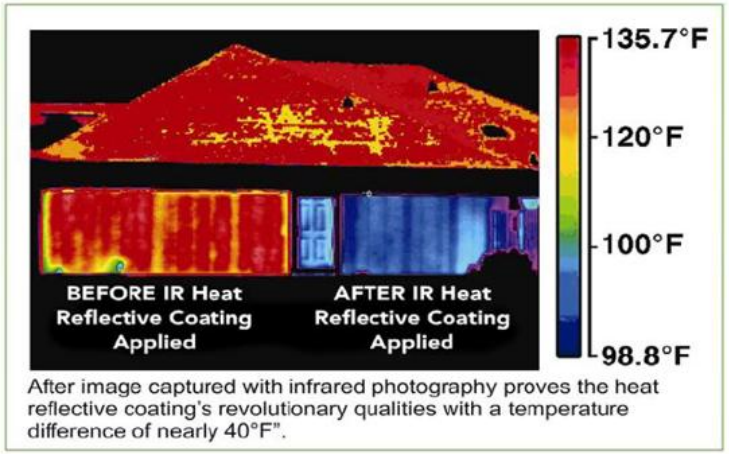
- Primer + Finish
  - Substrate prep, compatible primer and specified film build matter as much as the finish.

Spectrially Specific Pigments



A Cooler Wall is a less Stressed Wall





After image captured with infrared photography proves the heat reflective coating's revolutionary qualities with a temperature difference of nearly 40°F".

Surface-temperature and energy performance depend on climate, color, orientation and substrate

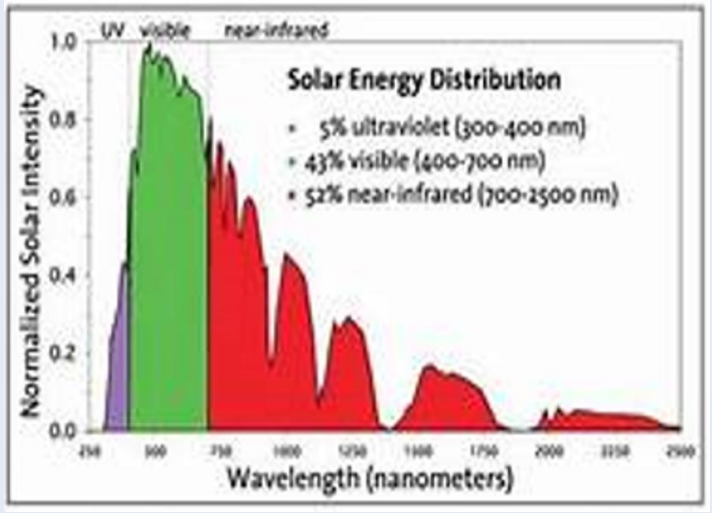
Conventional Finish

- More Absorbed Heat
- Higher surface temperatures can amplify thermal cycling and coating stress.

Cool Wall Finish

- More Reflective of Infrared Heat
- Lower wall temperature, alongside fade and UV resistance.

Paint(Coating) is a Maintenance Cycle- not just a Finish



Environment (Sun-UV & IR)

- UV breaks down binders; color and gloss can decline.

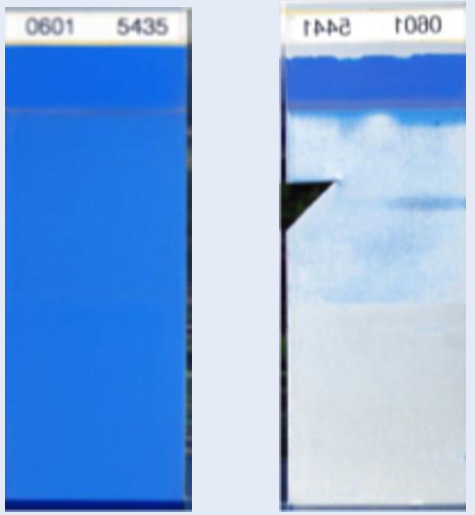
Weathering (Heat, Movement, & Vapor Drive)

- Daily expansion/contraction can stress coating films.

Symptoms (Chalking, Fading & Film Erosion)

- Powdering, embrittlement, color loss and earlier intervention

The cost is not only paint(coating). It is access, mobilization, downtime environmental impact and repeat labor.



8.5 years of Florida exposure

The number owners care about:
$ / ft² / year.

15-YEAR ILLUSTRATIVE MODEL | Installed dollars per coated wall square foot

SCENARIO	COST / EVENT	EVENTS / 15 YR	ANNUALIZED COST
Conventional / 5 yr	$2.00	3	**$0.40**
Conventional / 8 yr	$2.00	2	**$0.27**
COOLWALL / 15 yr	**$3.50**	**1**	**$0.23**

Example: 100,000 ft² × $0.17 annualized difference (5-yr case) ≈ $17,000 per year

With a 10-Year Fade Warranty-Some Owners are capitalizing repaints over 10 years

Excluded Items

- Interim repairs
- Inflation
- Discounting money value
- Access costs
- Downtime costs
- Energy benefits
- Environmental Impact
  - Raw Material Extraction
  - Processing costs
  - Shipping costs
  - Additional VOC's

Case Histories

Cool Reflective, Long Lasting Coatings on Walls and Roofs

Simon Properties

Metal or Clay Roof Tiles



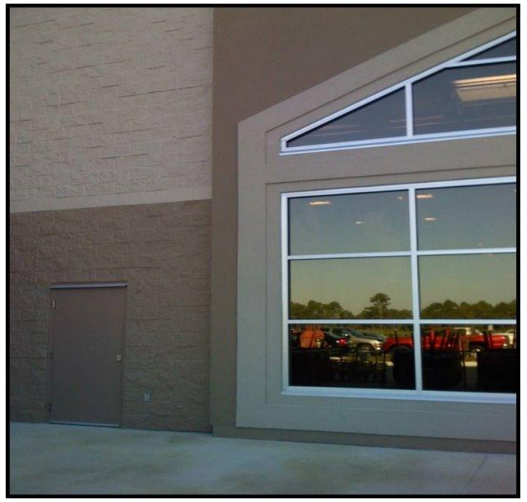






Lowe’s Panama City Beach









7-Year Color Change Readings

- Lowe’s Light Beige DE=1.56
- Lowe’s Medium Beige DE=1.42
- Lowe’s Dark Beige DE=0.50
- Conventional Paint DE=9.99
  - (South Door)

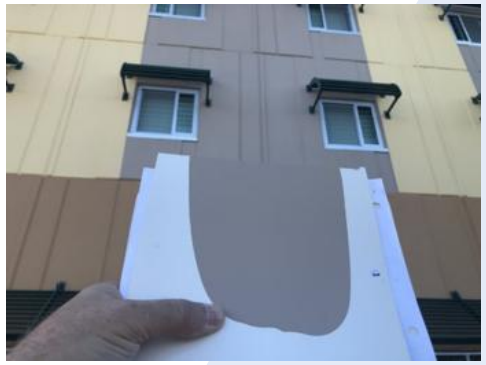
USF Tampa FL.-Poplar Hall
Over 4 years of Exposure



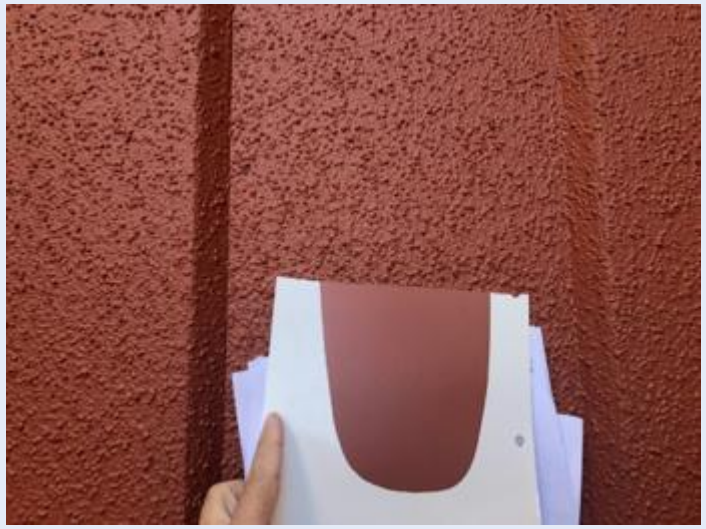








An Energy Audit has shown a average of 15% kilowatt savings



Google Building
Playa Vista, CA

Former Home to the Spruce Goose









Reflectivity increased from .05 to .21.

A 320% increase



10 year sampling

HAAS Automation
Henderson, NV



Cool Reflective Wall Coating

- 2.4M sq. ft.
- Textured Reflective Primer
- Heat Gain Concern
  - Thermal Mass
- Fade Concerns
  - Film Errostion
- Customer Visits
  - The face of the Company
- Repaint Cycles
  - Maintenance Budget Strain

Concrete Tilt-up



Uncoated Concrete



Textured Primer and Heat Reflecting Topcoat



2.4 Million Square Feet





Reflective Textured Primer, Cool Wall Coating, Brite Fade Resistant Accent Striping

Easy to Deploy with the Right Specification



Single Component Finish-
No mixing separate components. Brush, Rolled, or Sprayed

Buildings can be Occupied during Coating



Owner Team or Pro-Trained on-site personnel or Professional Contractors

Low VOC-
Water- based, low odor, meets all Air Districts Requirements

Vibrant Colors. Cooler Buildings. Lasting Protection



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