

Cool Fixes for Hot Cities Part 1: San Antonio

Register for Cool Fixes for Hot Cities Part 2: Los Angeles on September 12, 2018

Thank you for joining. We will start in a few minutes.

NEW! Two audio options:

1. Listen via computer
2. Call in to 1-855-210-5748



Cool Fixes for Hot Cities

Part 1: San Antonio

August 1, 2018

Hosted by:

U.S. EPA Heat Island Reduction Program





Webcast Agenda



- 
- **Introduction**
 - Victoria Ludwig, U.S. EPA Heat Island Reduction Program
 - **Overview of Cool Roofs for Heat Island Reduction**
 - Jeff Steuben, Cool Roof Rating Council
 - **San Antonio's Under 1 Roof Program**
 - Roberto C. Treviño, San Antonio City Council District 1
 - Barbara Ankamah Burford, San Antonio Neighborhood & Housing Services
 - **Performance Assessment of High-Solar Reflectance Roofs in San Antonio**
 - Dr. Hazem Rashed-Ali, The University of Texas at San Antonio
 - **Question and Answer Session**
- 



Webcasts now use Adobe Connect



Troubleshooting Tips

- Try a different web browser (e.g., Firefox, Chrome)
 - Download the latest version of Adobe Flash Player
 - Check with your Information Technology (IT) department about your internet security settings
 - Find help [online](#)
 - Add epacallcenter@epa.gov to your email contact list
- 
- 



How to Participate



Audio



■ Computer

- Audio will begin when the Host signs on
- Tip! Unmute your speakers or headphones



■ Phone

- Call in to 1-855-210-5748
- Tip! Mute your computer speakers to avoid audio feedback

■ Participants are muted

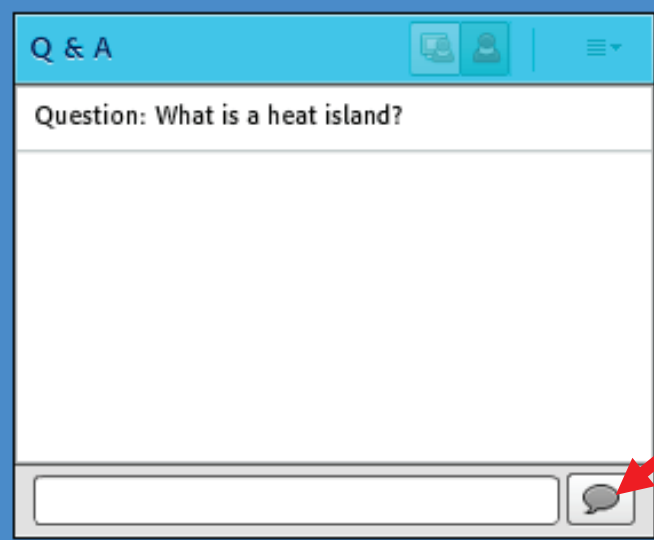
How to Participate

Question and Answer

- Enter your question in the Q&A box
- Questions will be moderated at the end
- EPA will post responses to unanswered questions on the [Heat Islands webpage](#)

Polling

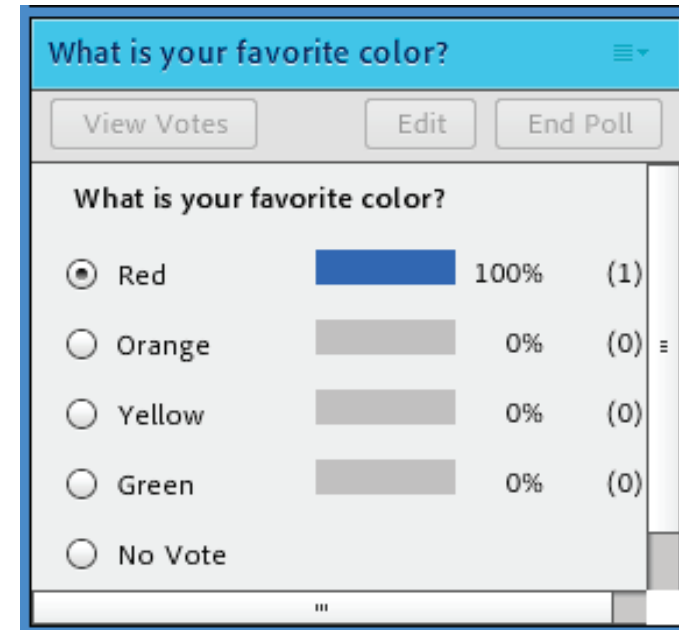
- We'll ask several poll questions during the webcast



Q & A

Question: What is a heat island?

Submit button (indicated by a red arrow)



Introduction

Victoria Ludwig
U.S. EPA Heat Island Reduction Program



EPA's Heat Island Reduction Program

■ Mission

Outreach and technical assistance program working with local officials, researchers, non-profits, and industry to identify opportunities to implement effective heat island reduction programs and policies.

■ Program Audiences

- Local and state policymakers and program implementers
- Academia/researchers
- Other federal agencies
- Non-profit organizations
- Industry



Heat Island Program Resources

- **[Compendium of Strategies: Reducing Urban Heat Islands:](#)** Heat island science, detailed info on mitigation strategies, local examples, policy options
- **[Website:](#)** Basic information on heat island topics, calendar of events, newsroom, links to other resources
 - NEW: [Updated content on measuring heat islands](#)
- **[Examples:](#)** Database of more than 75 local and statewide initiatives to reduce heat islands
- **[Webcasts:](#)** Topics include case studies, public health connections, advances in mitigation policy
- **[Newsletter:](#)** Recent news on projects and policies, research, funding opportunities





Contact Information

[Victoria Ludwig](#)

U.S. Environmental Protection Agency

202-343-9291



[Website](#)

[EPA Heat Island Newsletter Sign-Up](#)



Overview of Cool Roofs for Heat Island Reduction

Jeff Steuben
Cool Roof Rating Council





AN INTRODUCTION TO COOL ROOFS WITH THE CRRC

Jeffrey Steuben
Executive Director
Cool Roof Rating Council

Environmental Protection Agency
Heat Island Reduction Program
Cool Fixes for Hot Cities, Part 1
August 1, 2018



CRRC OVERVIEW

- Established in 1998 as 501(c)(3) non-profit
- Third-party rating organization for the roofing industry
- ENERGY STAR® Certification Body
- American National Standards Institute (ANSI) Accredited Standards Developer
 - Currently maintaining ANSI/CRRC S100 (2016)
- International Organization for Standardization (ISO)17065 Accredited Organization





Ratings



Research

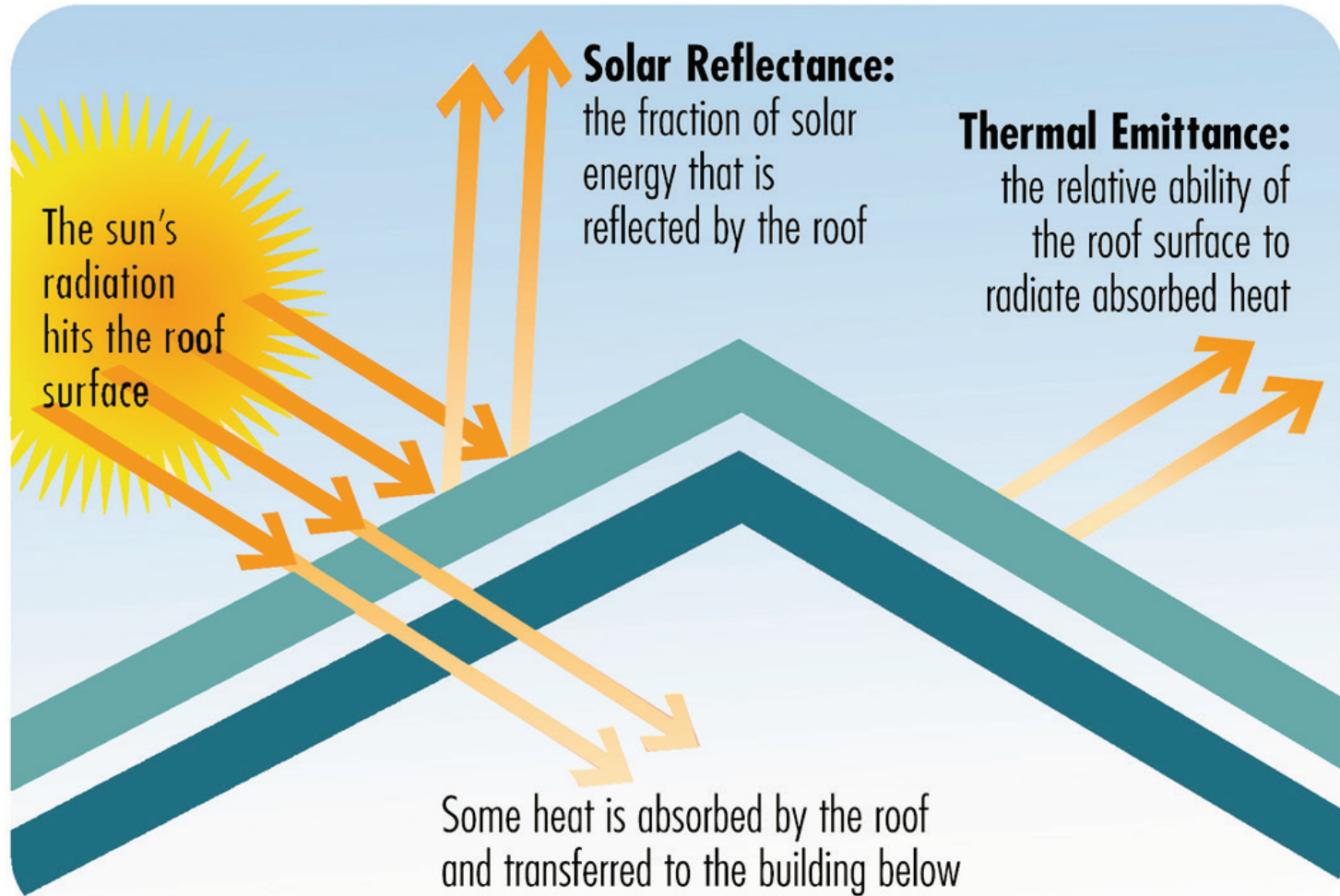


Education



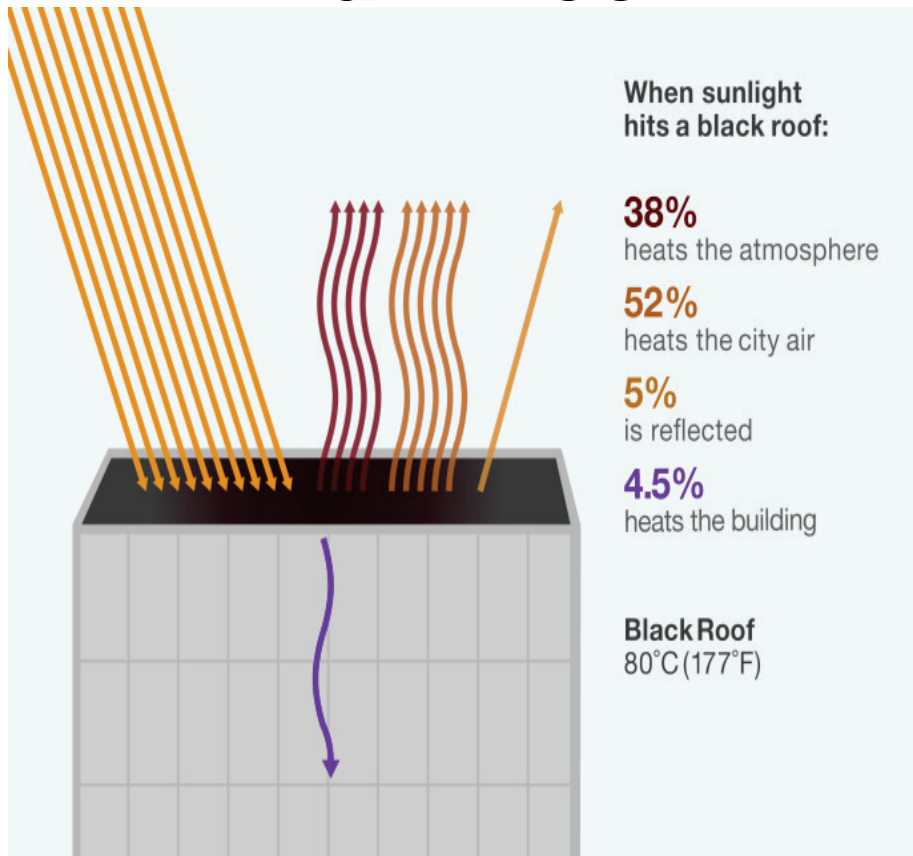
COOL ROOF BASICS

COOL ROOFS 101

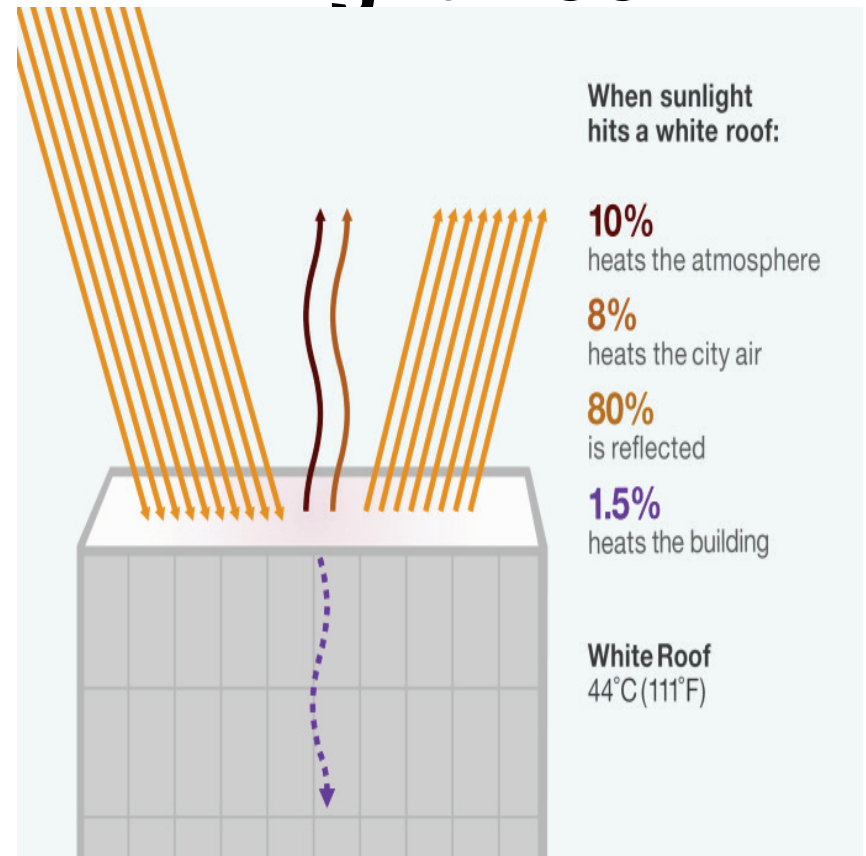


DARK VS. LIGHT ROOF

Dark Roof



Light Roof



BEFORE & AFTER

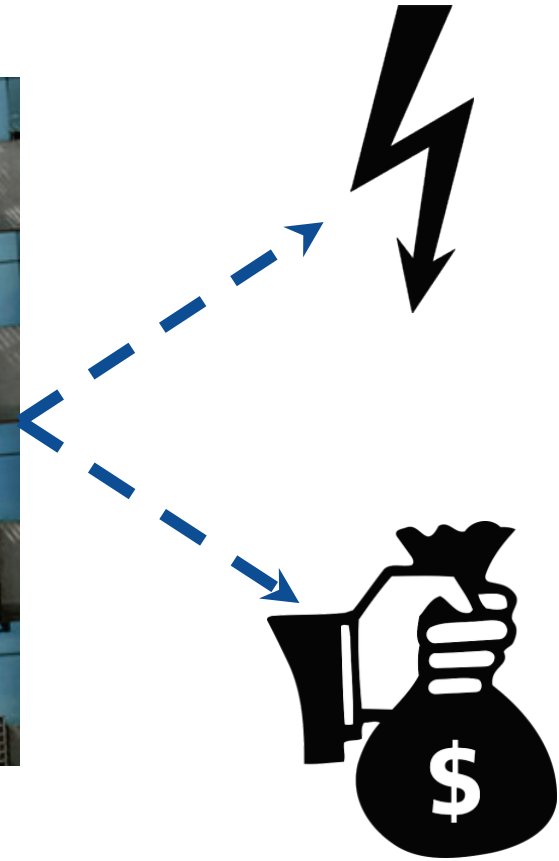


81°C

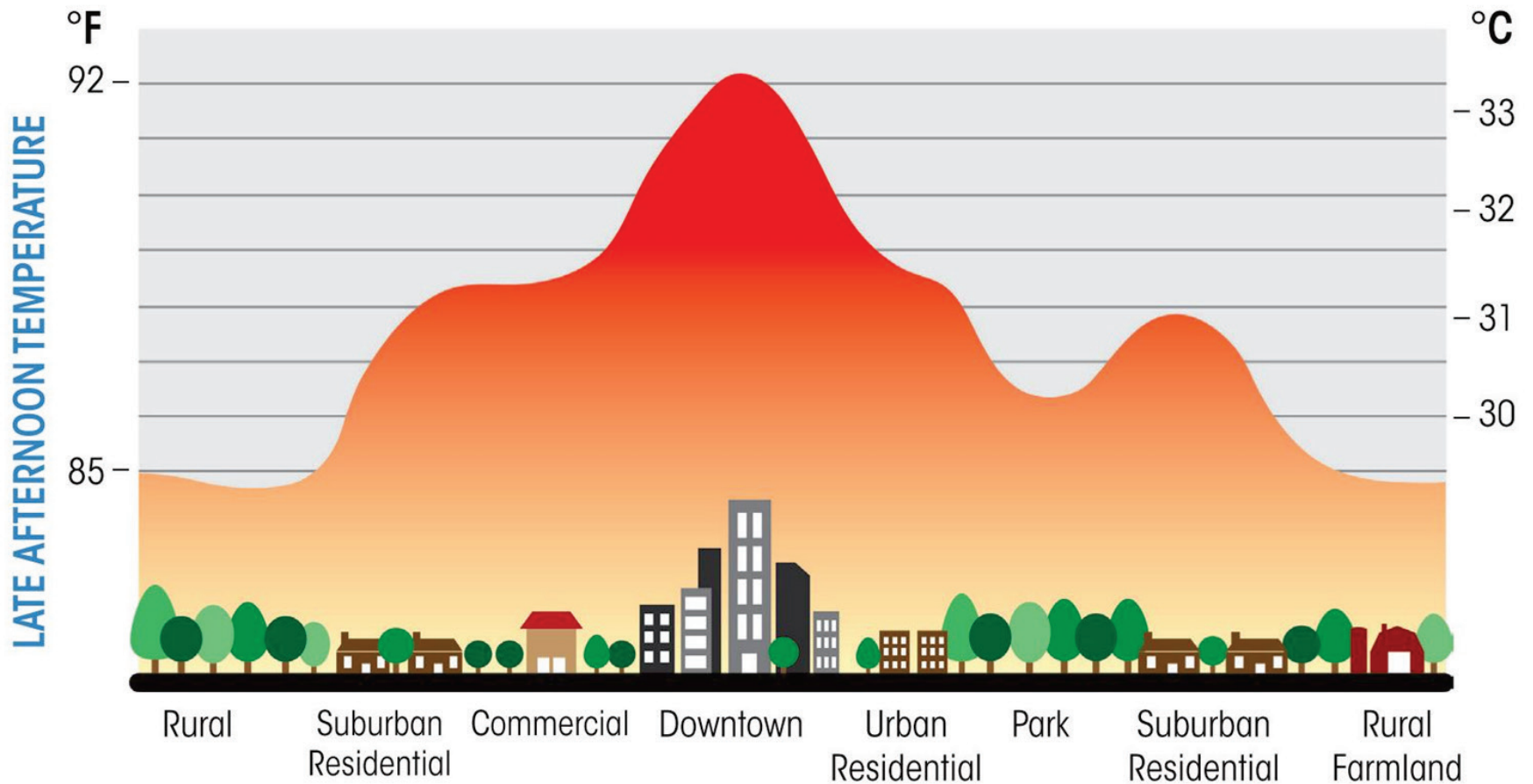


34°C

COOL ROOF BENEFITS

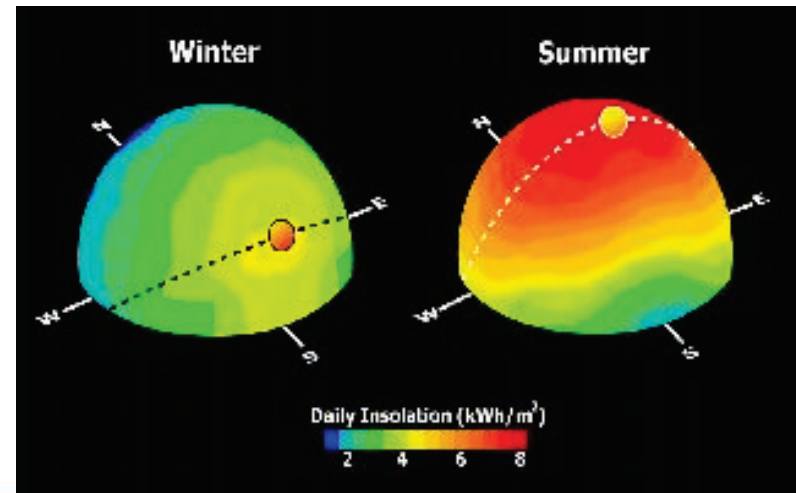


URBAN HEAT ISLAND

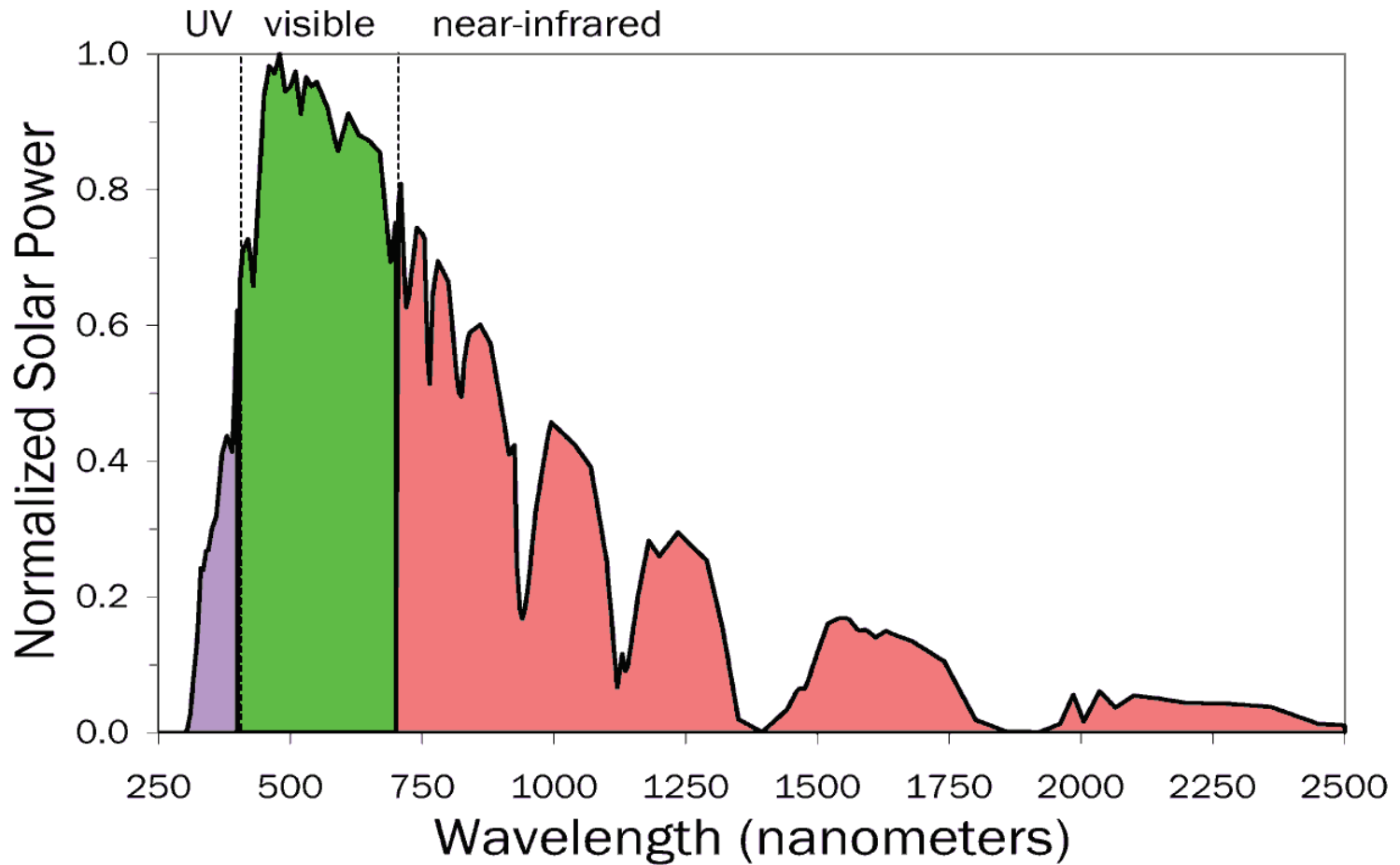


WINTER HEATING PENALTY?

1. Solar angle is lower in winter
2. Shorter days = less total energy hitting roof
3. Ratio of cloudy to sunny days higher in winter
4. Snow on roof reflects sun's energy

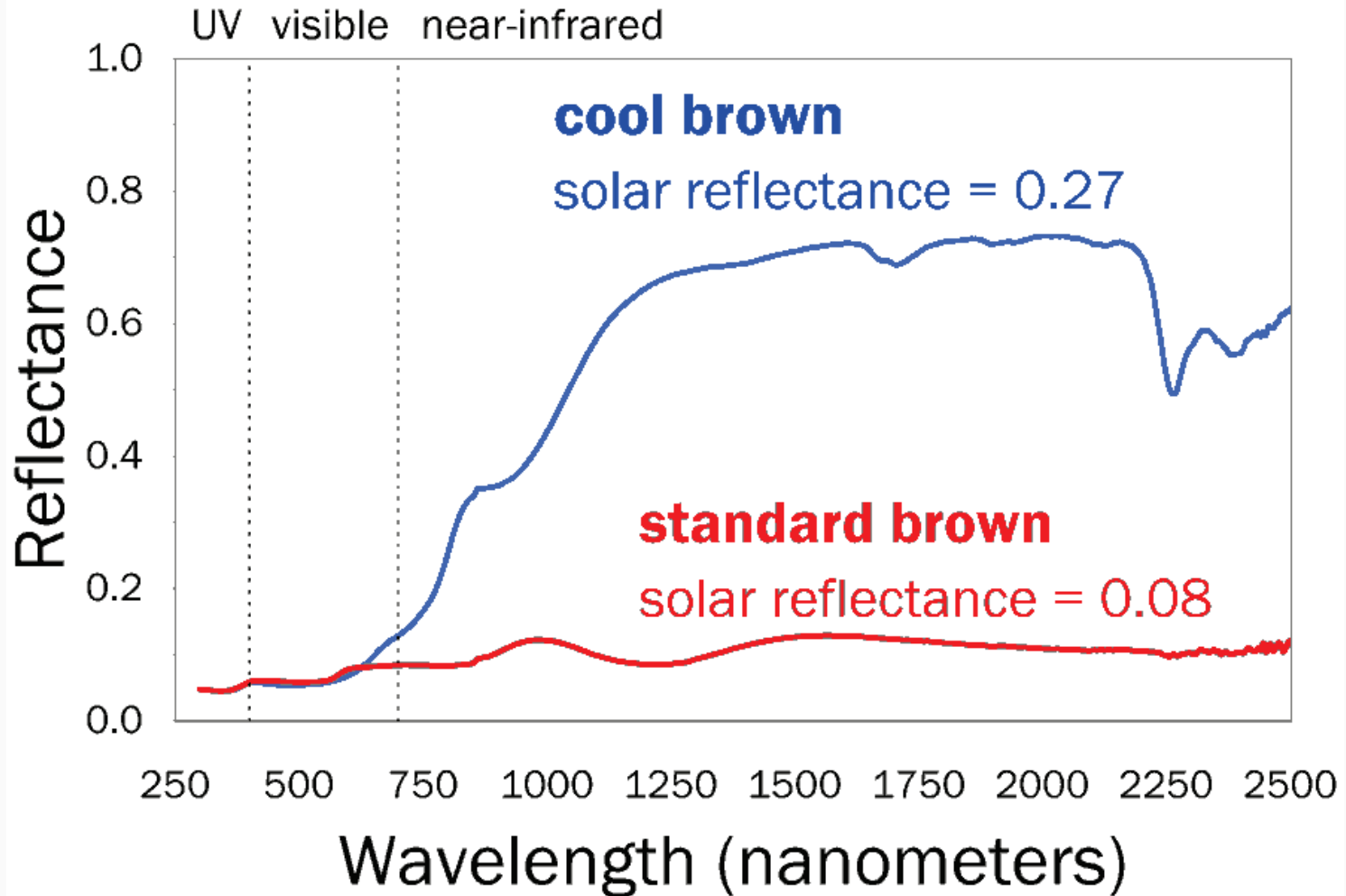


SOLAR RADIATION





SELECTIVELY REFLECTIVE PRODUCTS





COOL COLORS

R=0.41	R=0.44	R=0.44	R=0.48	R=0.46	R=0.41
<i>black</i>	<i>blue</i>	<i>gray</i>	<i>terracotta</i>	<i>green</i>	<i>chocolate</i>
R=0.04	R=0.18	R=0.21	R=0.33	R=0.17	R=0.12



CRRC PRODUCT RATING PROGRAM



RATING PROGRAM

HOME ABOUT CRRC RESOURCES MEMBERS PRODUCT RATING RATED PRODUCTS DIRECTORY

Search Manufacturer, Model, Brand, CRRC Product ID, or keywords

Product Type

- Asphalt Membrane
- Asphalt Shingle
- Coating
- Fluid-Applied Membrane
- Foam
- Metal
- Other
- Polymer/Composite
- Single-Ply
- Slate
- Stone/Rock
- Tile
- Wood

Color

- Red
- Orange
- Yellow
- Green
- Blue
- Purple
- Bright White
- Off-White
- Tan
- Grey
- Black
- Brown
- Metallic
- Multicolor

Minimum Radiative Properties

Solar reflectance (0.00, 1.00) Initial 1 0.00 3 Year 1 0.00

Thermal emittance (0.00, 1.00) 0.00 0

Solar Reflectance Index (SRI) (-10, 125) 0

Slope: All Product Market: All

Clear Filter

Ohio cool/temperate

Arizona hot/dry

Florida hot/humid

	Initial	Weathered
	Solar Reflectance Thermal Emittance	
Rated Product ID Number	----	
Licensed Seller ID Number	----	
Classification	Production Line	
<p>Cool Roof Rating Council ratings are determined for a fixed set of conditions, and may not be appropriate for determining seasonal energy performance. The actual effect of solar reflectance and thermal emittance on building performance may vary.</p> <p>Manufacturer of product stipulates that these ratings were determined in accordance with the applicable Cool Roof Rating Council procedures.</p>		

coolroofs.org/directory

Free, online resource

Find and compare roofing products

Determine compliance with building or energy codes

Receive credits for voluntary programs (e.g., LEED)

HOME ABOUT CRRC RESOURCES MEMBERS PRODUCT RATING RATED PRODUCTS DIRECTORY

SEARCH: Search Manufacturer, Model, Brand, CRRC Product ID, or keywords **SHOW FILTERS**

2996 SEARCH RESULTS

Please note that the CRRC does not set a minimum definition for "cool"; the CRRC simply lists the measured radiative property values on our Directory. A product's placement on the Directory does not mean that the product is "cool" as defined by any particular code body or program.

*CRRC Rapid Ratings: These are interim laboratory-aged values that simulate weathered values. These values will be replaced with the measured three-year aged values upon completion of the weathering process. SRI values calculated using Rapid Ratings may change once the aged rating replaces the interim rating.

PRINT EXPORT ALL PRODUCTS

Showing 1-25 of 2996 results **1** 2 3 4 5 »

CRRC PROD. ID	MANUFACTURER	BRAND AND MODEL	PRODUCT TYPE	COLOR	SOLAR RELECTANCE		THERMAL EMITTANCE		SRI		MORE INFO
					INITIAL	3 YEAR	INITIAL	3 YEAR	INITIAL	3 YEAR	
1302-0001	Instacoat Premium Products	Instacoat Premium Products 250 HS Silicone	Coating	Bright White	0.89	0.73	0.90	0.88	113	90	+
1300-0001	LJ RoofTile	Concrete roof tile LJRT-001-02-01	Tile	Green	0.25	Pending	0.88	Pending	24	Pending	+
1298-0002	Caplon Systems, Inc.	Cap-Sil 820	Coating	Bright White	0.87	0.73	0.90	0.90	110	90	+
1298-0001	Caplon Systems, Inc.	Cap-Sil Pro 930	Coating	Bright White	0.89	0.73	0.90	0.88	113	90	+
1296-0001	Curacreto, SA de CV	Technoply Technoply SBS FR SP 400 Aluminum Flake	Asphaltic M membrane	Metallic	0.75	Pending	0.19	Pending	74	Pending	+
1294-0001	NovaTuff Coatings	NovaTuff RC-100 Flexible Epoxy Roof Coating White	Coating	Bright White	0.83	Pending	0.89	Pending	104	Pending	+



DIRECTORY FILTERS



HOME

ABOUT CRRC

RESOURCES

MEMBERS

PRODUCT RATING

RATED PRODUCTS DIRECTORY



Search Manufacturer, Model, Brand, CRRC Product ID, or keywords

HIDE FILTERS

Product Type

- Asphaltic Membrane
- Asphalt Shingle
- Coating
- Fluid-Applied Membrane
- Foam
- Metal
- Other
- Polymer/Composite
- Single-Ply
- Slate
- Stone/Rock
- Tile
- Wood

Color

- Red
- Orange
- Yellow
- Green
- Blue
- Purple
- Bright White
- Off-White
- Tan
- Grey
- Black
- Brown
- Metallic
- Multicolor

Minimum Radiative Properties

	Initial i	3 Year i
Solar reflectance (0.00, 1.00)	<input type="text" value="0.00"/>	<input type="text" value="0.00"/>
Thermal emittance (0.00, 1.00)	<input type="text" value="0.00"/>	<input type="text" value="0.00"/>
Solar Reflectance Index (SRI) (-10, 125)	<input type="text" value="0"/>	<input type="text" value="0"/>

Slope:

Product Market:





FOR MORE INFORMATION

Go to coolroofs.org

**Home and Building Owners,
Architects, and Contractors**

Learn About Cool Roofs and the Cool Roof Rating Council

**The Cool Roof Rating Council
Membership and Product Ratings**



POLICY MAKERS AND CODE OFFICIALS
*Learn About **Cool Roofs***





QUESTIONS?

Jeff Steuben

CRRC Executive Director

jeff@coolroofs.org

(503) 606-8448 x501

Poll 1



San Antonio's Under 1 Roof Program

Roberto C. Treviño

San Antonio City Council District 1

Barbara Ankamah Burford

San Antonio Neighborhood & Housing Services



San Antonio Under 1 Roof

Residential Roof Repair Program

**EPA's Heat Island Webcast Series
Cool Fixes for Hot Cities
Part 1: San Antonio**

August 1, 2018



**District 1
Councilman Roberto Treviño**



**Barbara Ankamah Burford
Neighborhood Engagement
Administrator**

Program Objectives



Maintain home integrity by addressing roofing needs



Improve energy efficiency and reduce utility bills

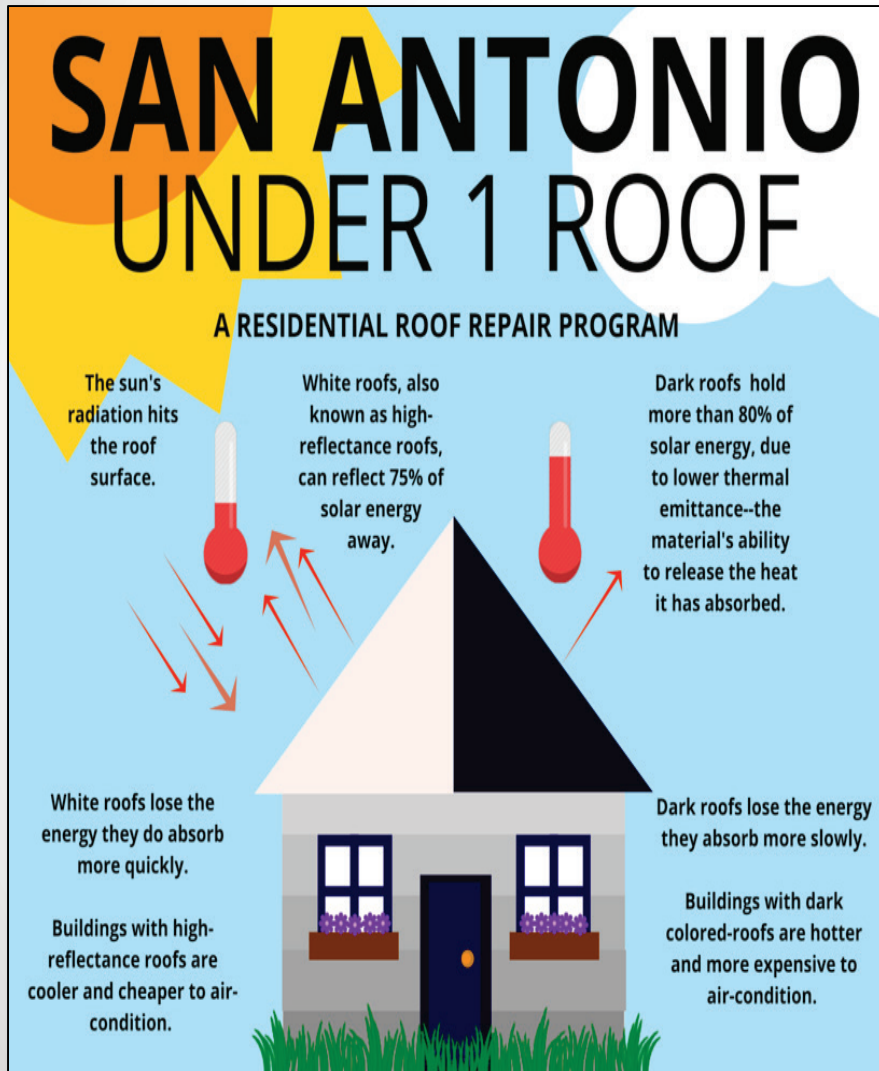


Demonstrate benefits of cool roofs to builders and residents



\$2.25 Million budgeted for Fiscal Year (FY) 2018 for the Program

Program Benefits



- **Maintain home structure and stability**
- **Improve Indoor Comfort**
- **Reduce Overall Attic Temperature**
- **Decrease Roof Maintenance**
- **Energy Savings**

Program Application



CITY OF SAN ANTONIO
Neighborhood and Housing Services Department
1400 S. Flores, San Antonio TX 78204
210-207-6459 or 207-5403

PROGRAM ELIGIBILITY REQUIREMENTS

- Property located in District 1, 2, 3, 4, 5
- Property taxes must be current
- Provide valid picture identification and/or driver's license
- Be a US citizen or Legal Resident
- Must not have filed an insurance claim in the last 5 years for roof
- Must meet HUD 2017 Income Limits established income guidelines which cannot exceed 80% of the Area Median Income (AMI) as follows:

Family Size	1	2	3	4	5	6	7	8
Annual Income	35,600	40,650	45,750	50,800	54,900	58,950	63,000	67,100

PROPERTY GUIDELINES

- Property must be owner occupied (No Rental Units)
- Structure must be less than 1500 sq. ft. (No Metal Roofs)
- Home must be designated a Homestead with the Bexar Co. Appraisal District
- Project Scope: Roof repair or replacement to include roof flashing and minor repairs related to the roof will be addressed.

APPLICATION CHECKLIST

Complete applications **MUST** contain the following information:

- Complete & sign "Under 1 Roof Program" application
- Copy of Warranty Deed
- Copy of Property Insurance if available
- Current Picture ID or Driver's License
- Pay stubs for the last (3) months for all occupants in household
 - o If self-employed: copy of Income Tax Return for past two years
- Award Letter from Social Security, Retirement Benefits, Child Support or any other public assistance, provide documentation from the supportive agency stating the current amount being received or awarded

"Under 1 Roof" Residential Roof Repair Program Application
 Program funds available for Districts 1 through 5 only



Roofing Materials

- Solarhide Underlayment
- Shasta White Shingle



Roof Demolition and Construction



FY 2018 Timeline

1st & 2nd Quarters

Qualify
Applicants

3rd Quarter

Roof
Replacement (85
roofs completed)

Roof
Replacement (42
roofs completed)

4th Quarter

Roof Replacement
(5 roofs completed
to date)

***University of Texas at San Antonio will perform before/after monitoring to gauge success.**

Program Challenges



Initial disbelief from residents that the program would provide a cool roof free of charge



Residents were uncertain if they would see a reduction in their energy bills



The program being restricted to certain City Council Districts due to funding allocations



Administratively adjusting to the increased amount of funding allocated to the program

Program Results



To date, 175 energy efficient roofs have been installed



A total of \$2.95 Million has been allocated to the program since October 2015



The average reduction in Energy Use Intensity (EUI) is 7.3% as a result of the cool roof installation

Before and After Pictures

1000 Block of W. Thorain



Before



After

900 Block of W. Hermine



Before



After



Under 1 Roof

Residential Roof Repair Program

District 1

Councilman Roberto C. Treviño

City of San Antonio

210.207.7279

Roberto.Trevino@sanantonio.gov

Barbara Ankamah Burford

Neighborhood Engagement Administrator

City of San Antonio – Neighborhood and Housing Services Dept.

210.207. 8162

Barbara.Ankamah@sanantonio.gov

Poll 2



Performance Assessment of High-Solar Reflectance Roofs in San Antonio

Dr. Hazem Rashed-Ali

The University of Texas at San Antonio



Cool Fixes for Hot Cities webcast series
City of San Antonio's Under 1 Roof program

PERFORMANCE ASSESSMENT OF HIGH-SOLAR REFLECTANCE ROOFS IN SAN ANTONIO

HAZEM RASHED-ALI, PH.D.

*Associate Professor, The University of Texas at San Antonio
President, Architectural Research Centers Consortium*



PROJECT OBJECTIVES

- Project has two major objectives:
 - Assess impact of high solar-reflectance roofs on attic temperatures in different seasons.
 - Assess impact of high solar-reflectance roofs on home electricity use intensity.

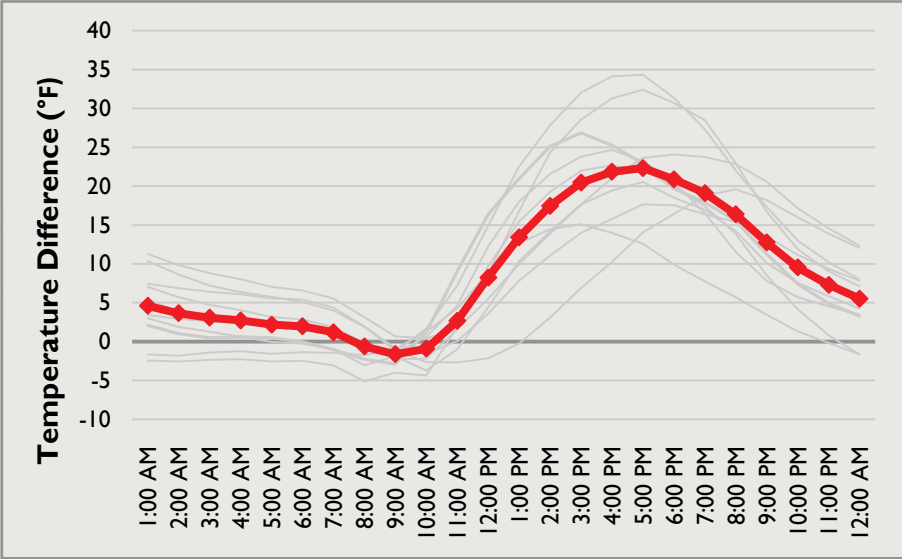


PROJECT METHODOLOGY

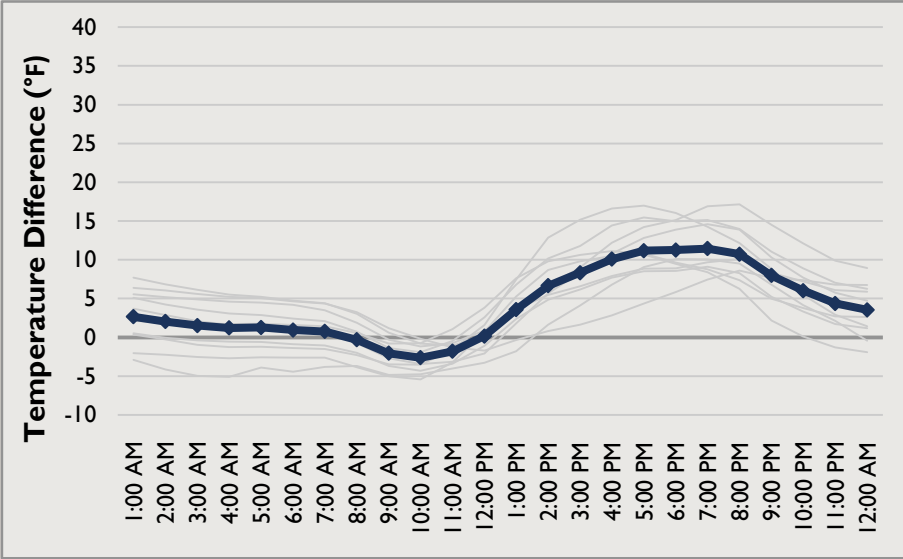
- Phase I includes the monitoring and performance analysis of 30 homes. An additional 30 homes are currently being monitored.
- The study included three major parts:
 - Using dataloggers to monitor, analyze and compare average home attic temperatures pre- and post- roof installation.
 - Analyzing home electricity use (billing) information to assess the impact of the cool roof installation on electricity use. Utility data were normalized for weather.
 - Surveying home-owners to identify any external factors that may have affected electricity use.



ATTIC TEMPERATURE – SUMMER

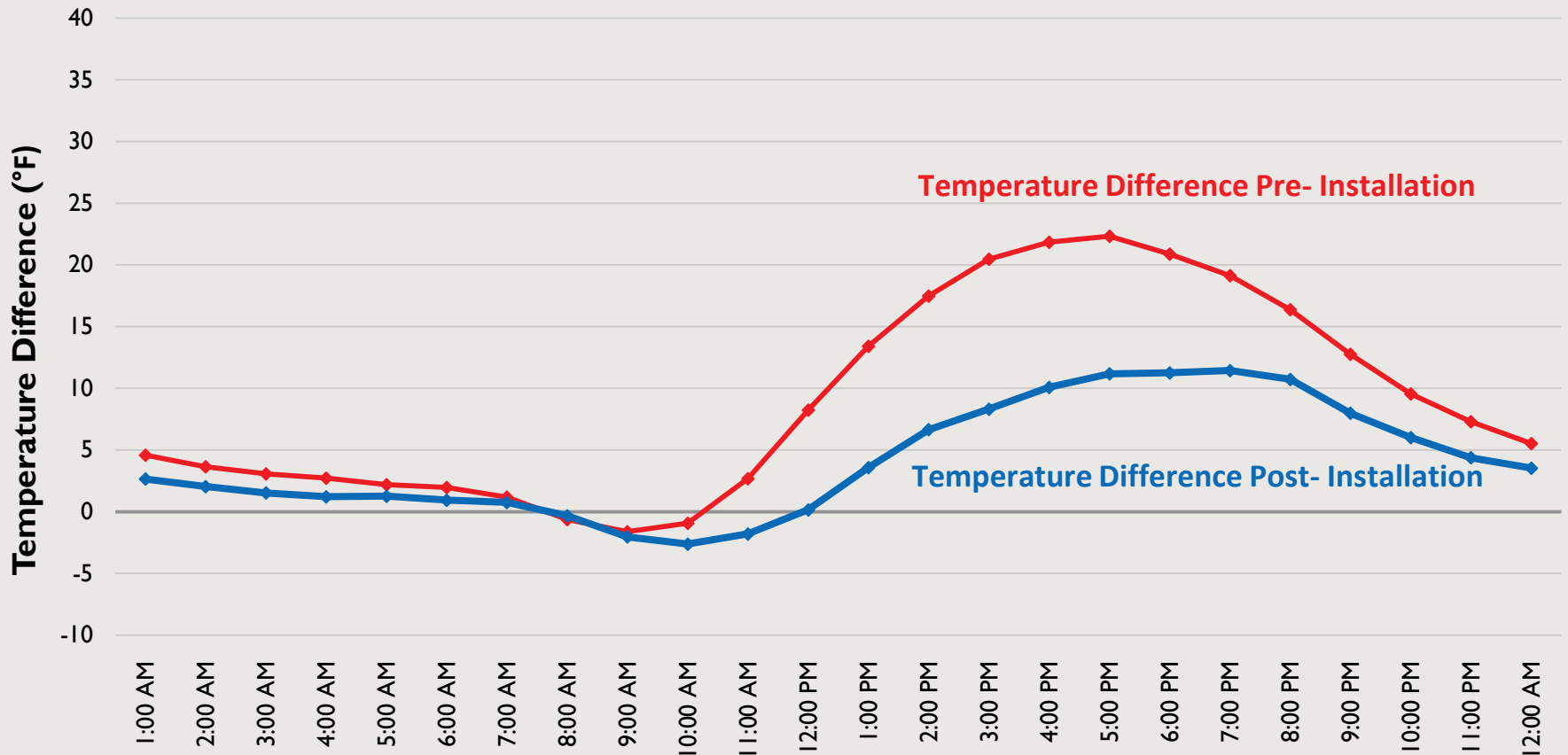


Average Summer Temperature Difference between Attic & Outdoor – Pre-Installation



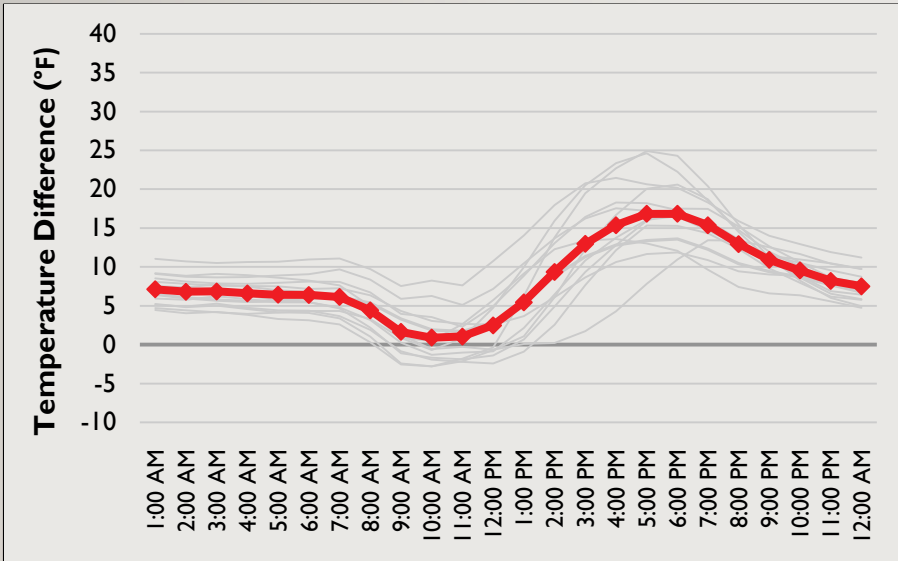
Average Summer Temperature Difference between Attic & Outdoor – Post-Installation

ATTIC TEMPERATURE – SUMMER

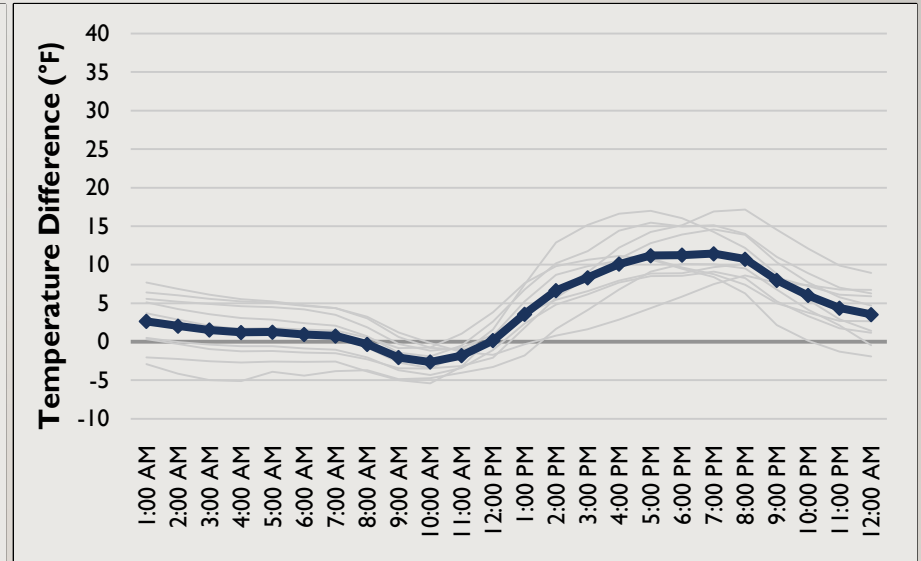


Summer Temperature Difference Pre- and Post-Installation

ATTIC TEMPERATURE – WINTER



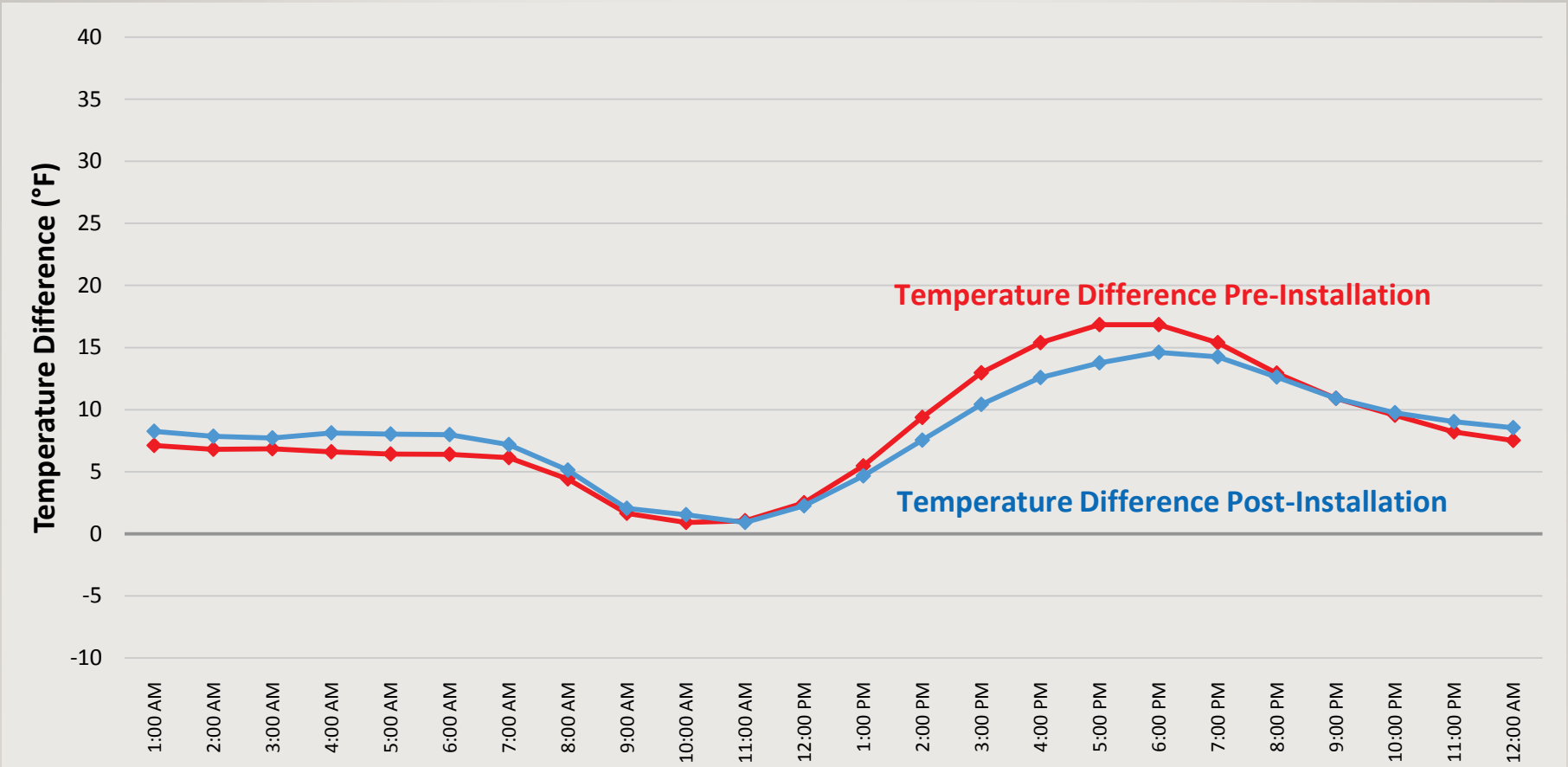
Average Winter Temperature Difference between Attic & Outdoor – Pre-Installation



Average Winter Temperature Difference between Attic & Outdoor – Post-Installation



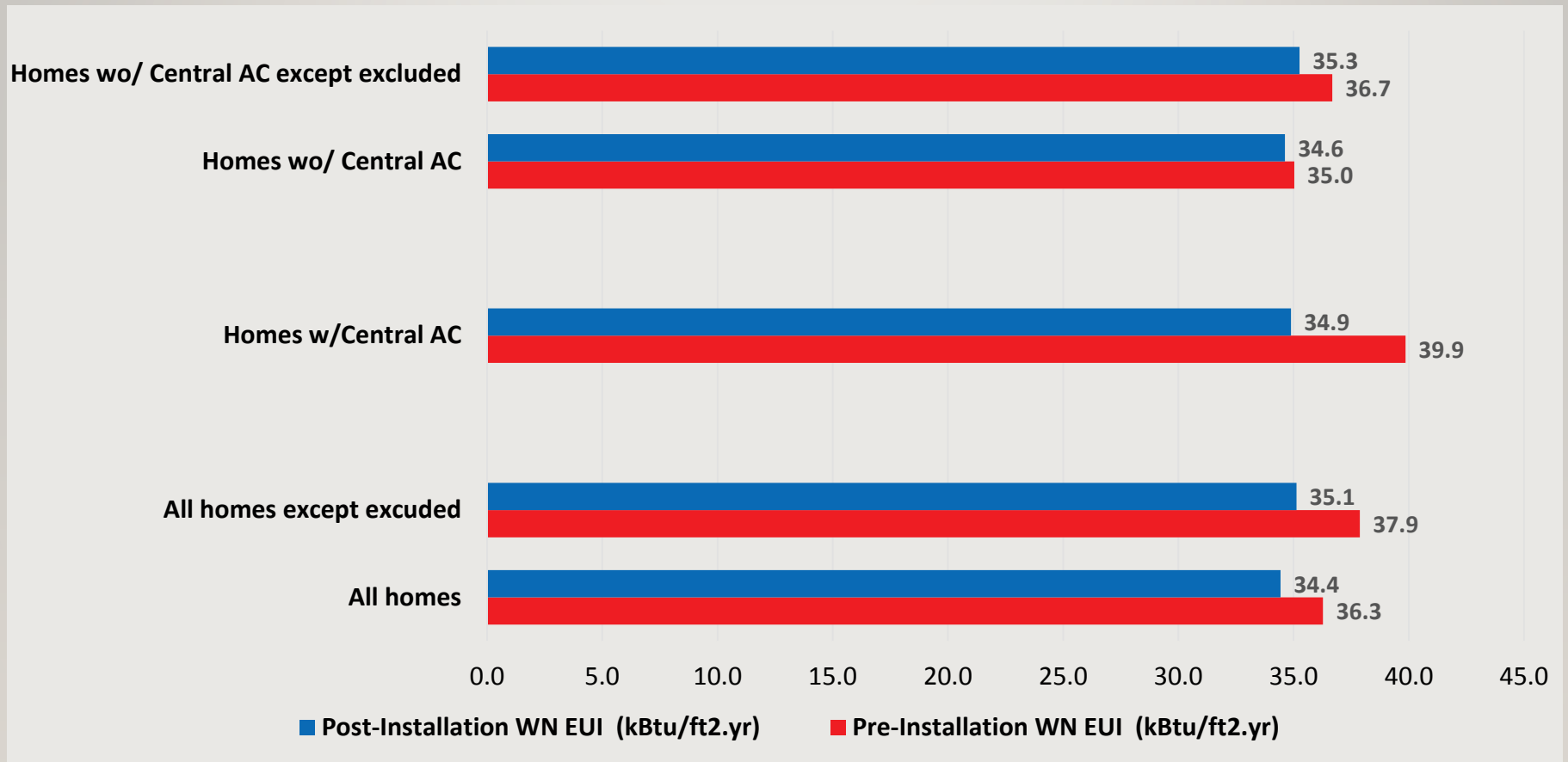
ATTIC TEMPERATURE – WINTER



Winter Temperature Difference Pre- and Post-Installation

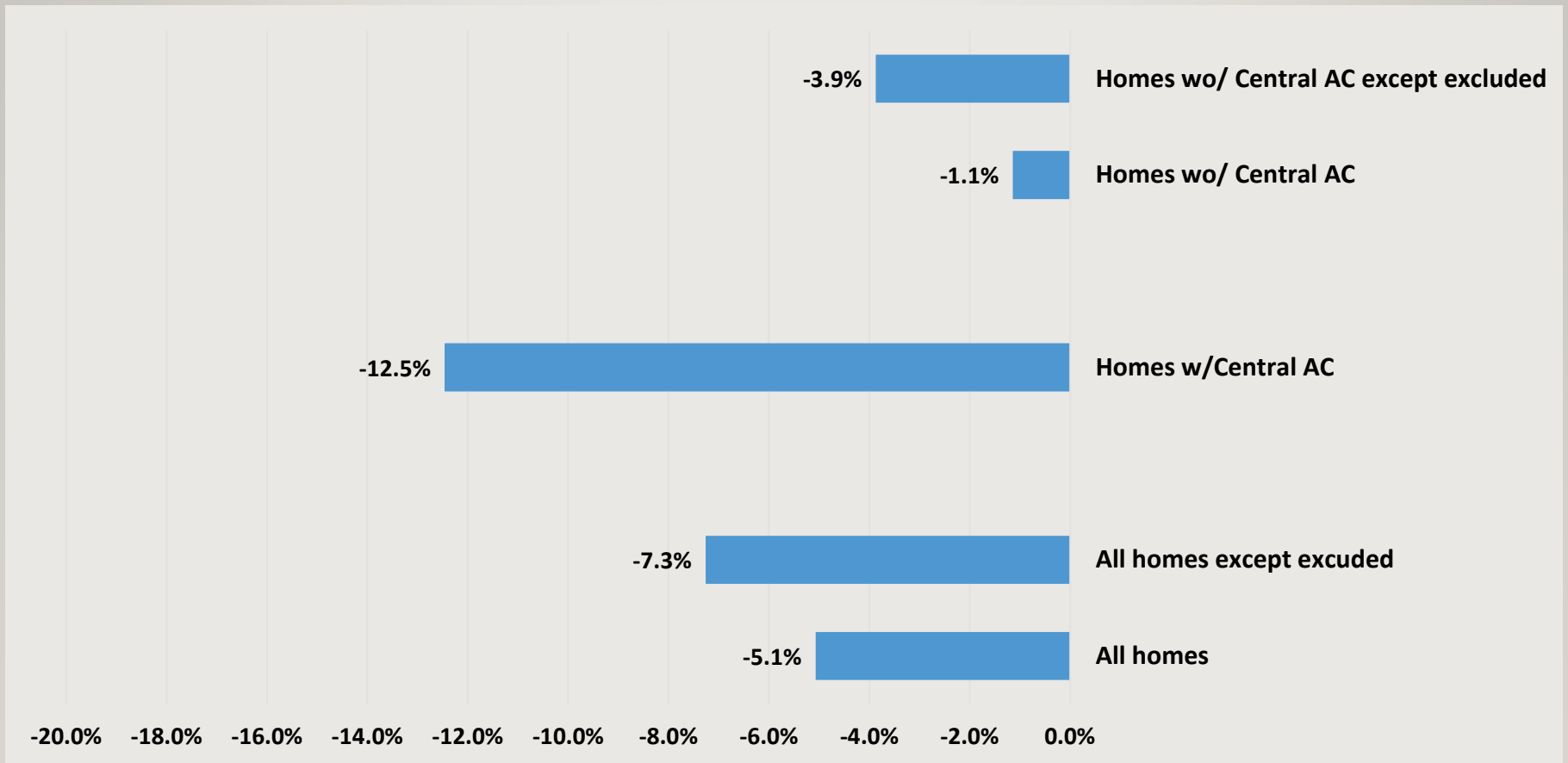


HOME ELECTRICITY USE INTENSITY



Pre-and Post-installation EUI for Phase I Homes

HOME ELECTRICITY USE INTENSITY



Percentage of Reduction in EUI for Phase I Homes

THANK YOU

Hazem Rashed-Ali, Ph.D.

*Associate Professor,
The University of Texas at San Antonio
President, Architectural Research Centers Consortium
Hazem.rashedali@utsa.edu*



Question and Answer Session



Cool Fixes for Hot Cities

Part 2: Los Angeles

September 12, 2018

[Register Now!](#)





Connect with the Heat Island Program

[Victoria Ludwig](#)

U.S. Environmental Protection Agency

202-343-9291



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