Better Buildings Residential Network Peer Exchange Call Series:

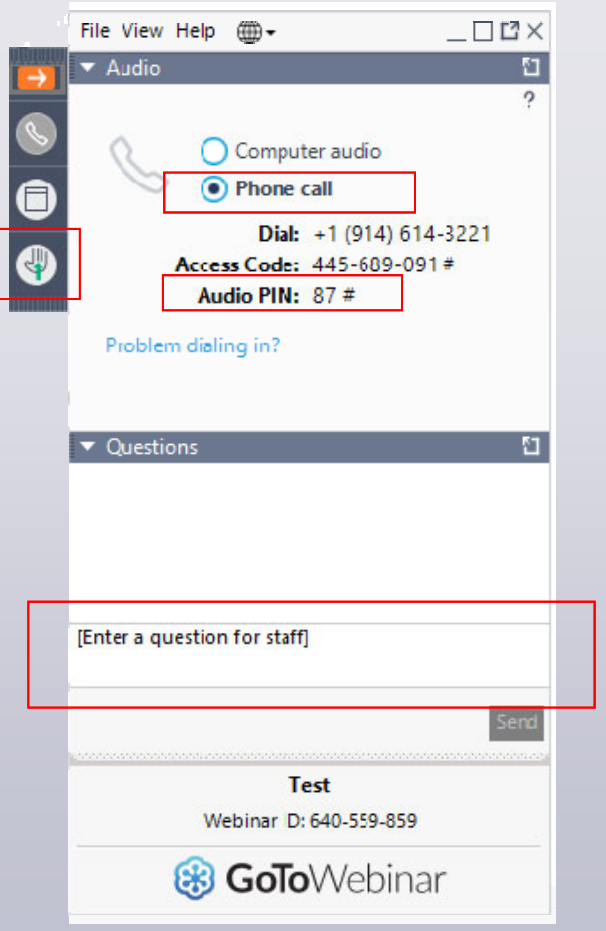
Preparing Multifamily Properties for Summer Cooling Season

April 9, 2020

How to Participate Today

Open and close your **control panel**

Raise your hand to enter the discussion



Please use the **questions box** to submit questions, comments, or alert us of technical difficulties

If you have called in on a phone today, double check that you've selected telephone as your audio option.

Agenda and Ground Rules

- Agenda Review and Ground Rules
- ASHRAE Guidance for Building Operations During COVID-19
- Opening Poll
- Residential Network Overview and Upcoming Call Schedule
- Featured Speakers:
  - **Kurt Shickman**, Global Cool Cities Alliance
  - **Larry Rush**, Avangrid, Inc.
- Open Discussion
- Closing Poll and Announcements

Ground Rules:

1. **Sales of services and commercial messages are not appropriate** during Peer Exchange Calls.
2. Calls are a safe place for discussion; **please do not attribute information to individuals** on the call.

The views expressed by speakers are their own, and do not reflect those of the Dept. of Energy.

ASHRAE Guidance for Building Operations During the COVID-19 Pandemic

ASHRAE Journal article, March 24, 2020

By Lawrence J. Schoenberg, P.E.

Chair, ASHRAE Committee that wrote the "ASHRAE Position Document on Airborne Infectious Diseases"

President & Principal Engineer, Schoen Engineering Inc.

https://www.ashrae.org/news/ashraejournal/guidance-for-building-operations-during-the-covid-19-pandemic

Better Buildings Residential Network

Join the Network

Member Benefits:

- Recognition in media and publications
- Speaking opportunities
- Updates on latest trends
- Voluntary member initiatives
- One-on-One brainstorming conversations

Commitment:

- Members only need to provide *one number*: their organization's number of residential energy upgrades per year, or equivalent.

Upcoming Calls (2nd & 4th Thursdays):

- May 14: The Impact of the Coronavirus on Energy Efficiency
- May 28: Smart Home Growth as a Result of the Coronavirus
- June 11: Your Home is Your Health: Measures and Data

Peer Exchange Call summaries are posted on the Better Buildings website a few weeks after the call

For more information or to join, for no cost, email bbresidentialnetwork@ee.doe.gov, *or go to* energy.gov/eere/bbrn & *click Join*

Better Buildings

U.S. DEPARTMENT OF ENERGY

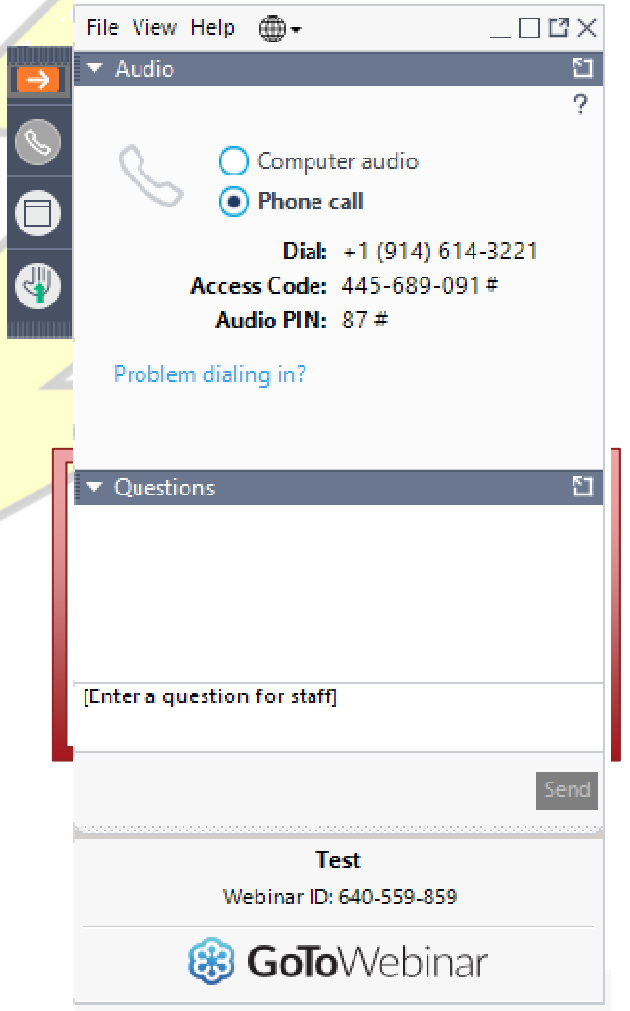
Call Attendee Locations

Opening Poll

- Which best describes your organization's familiarity or experience with multifamily cooling measures & strategies?
  - Very experienced/familiar
  - Some experience/familiarity
  - Limited experience/familiarity
  - No experience/familiarity
  - Not applicable

Opening Poll: Lightning Chat

What are you hoping to learn from today's call?



Please type a brief response in the questions box.

Kurt Shickman
Global Cool Cities Alliance

U.S. DEPARTMENT OF ENERGY

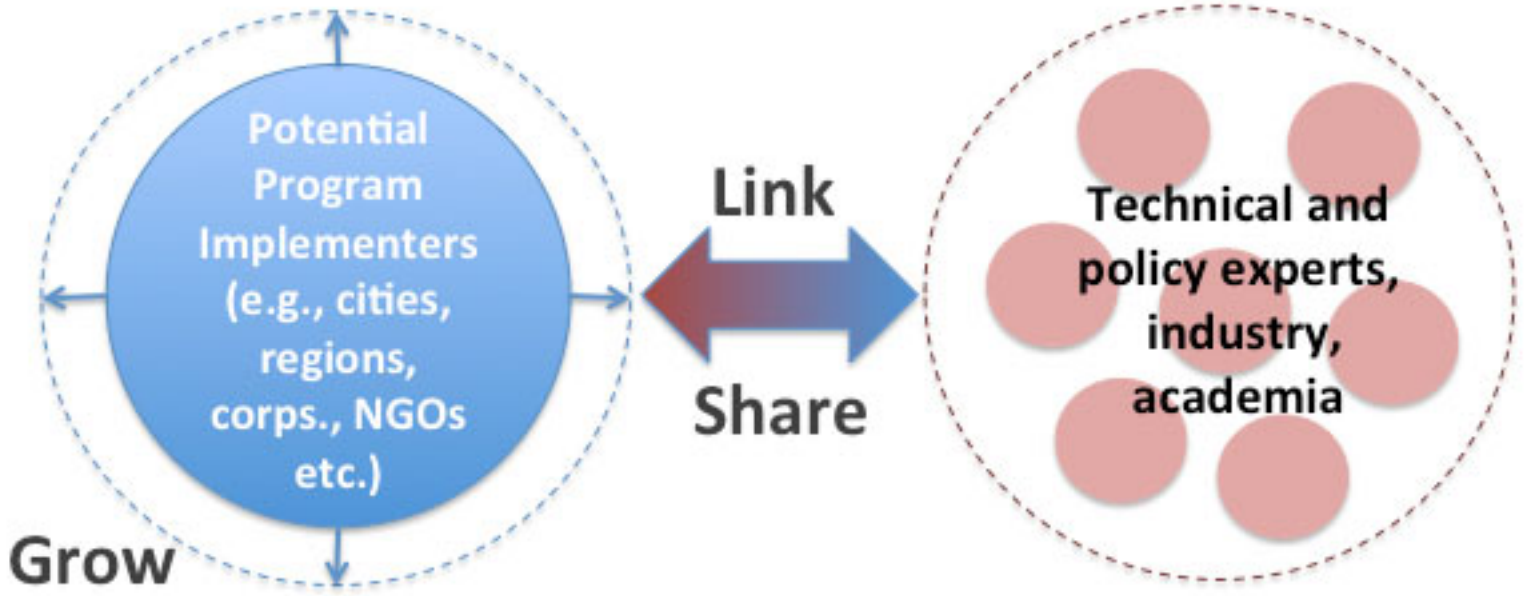
Lightening Up to Cool Off

Kurt Shickman
Global Cool Cities Alliance

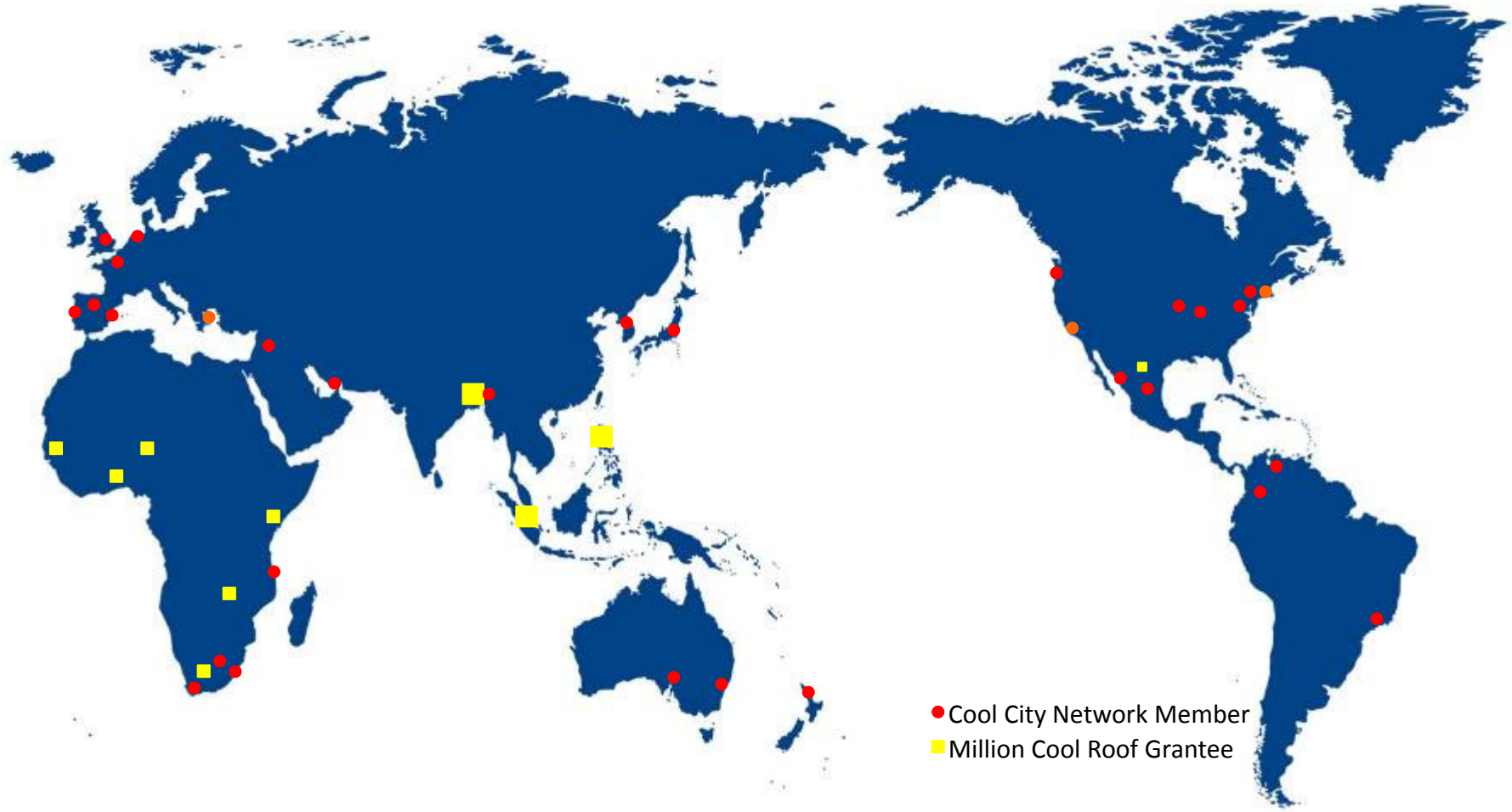
April 9, 2020

Global Cool Cities Alliance (GCCA)

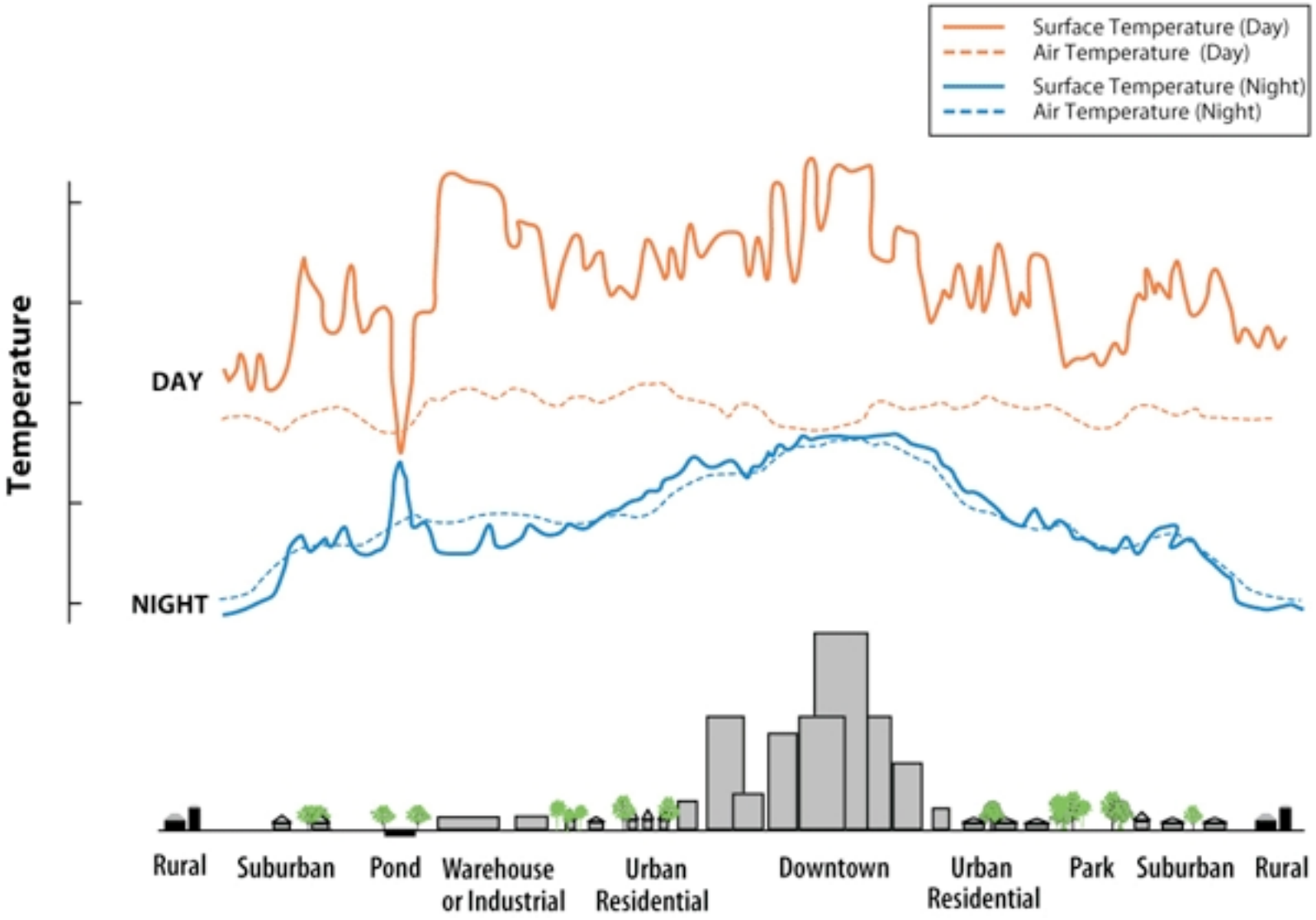
The Global Cool Cities Alliance is dedicated to advancing policies and actions that reduce excess urban heat in order to cool buildings, cool cities, and to mitigate the effects of climate change through global cooling.



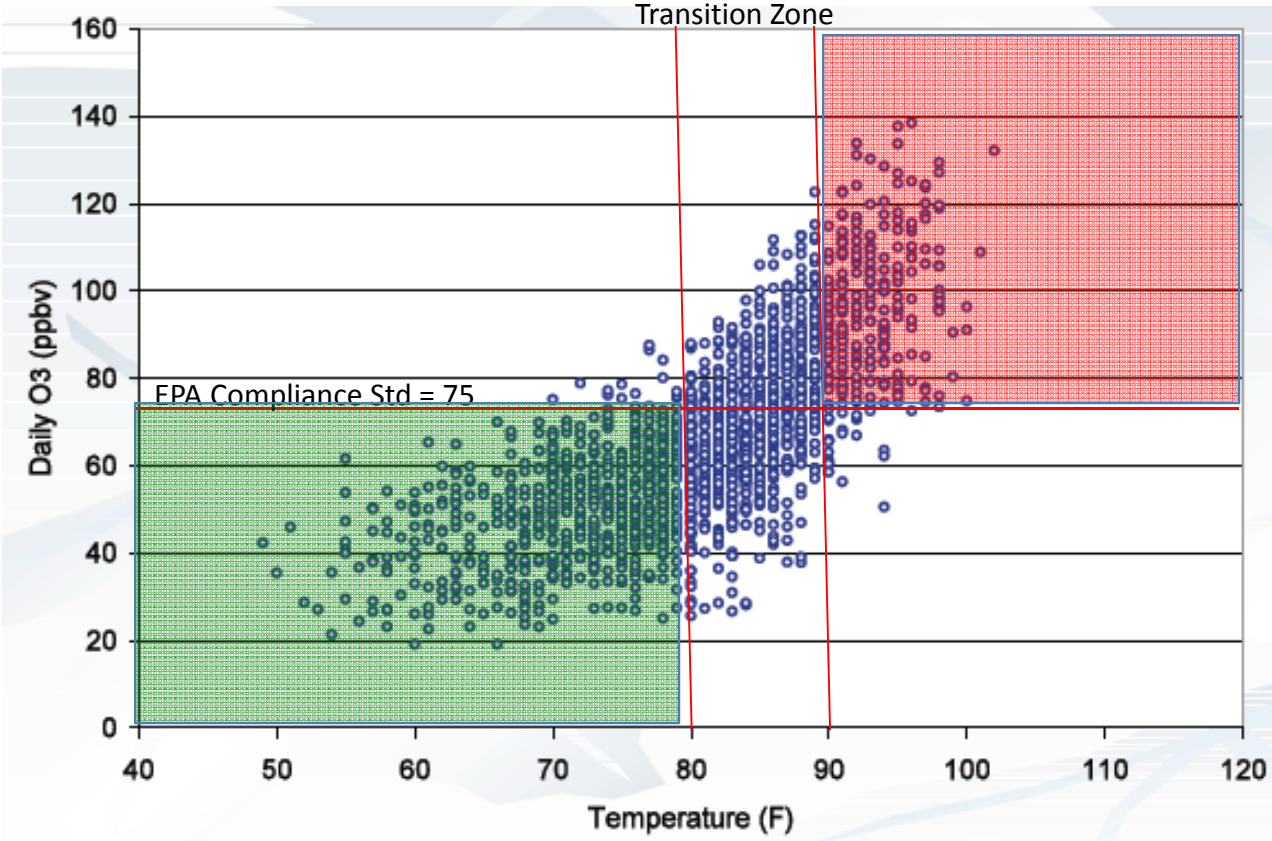
Cool Cities Network



Cities are hotter than rural areas and heating up at two times the global average



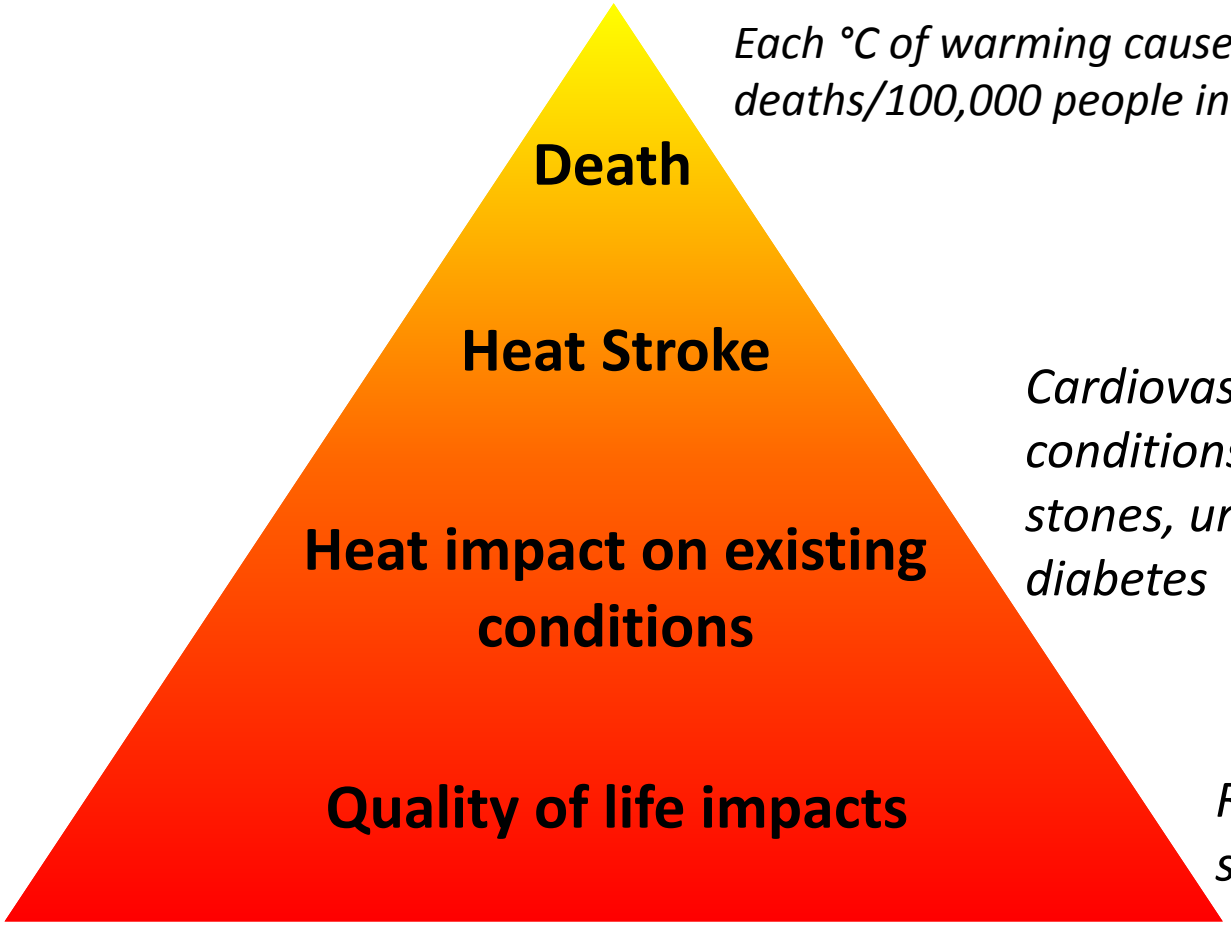
Heat is an air quality and health problem



Maximum surface temperature at BWI versus peak 8-hr ozone concentrations in the Baltimore non-attainment area for the period May-September, 1994-2004 (Piety, 2007).

Source: Maryland Commission on Climate Change

Heat is a threat to health and wellness

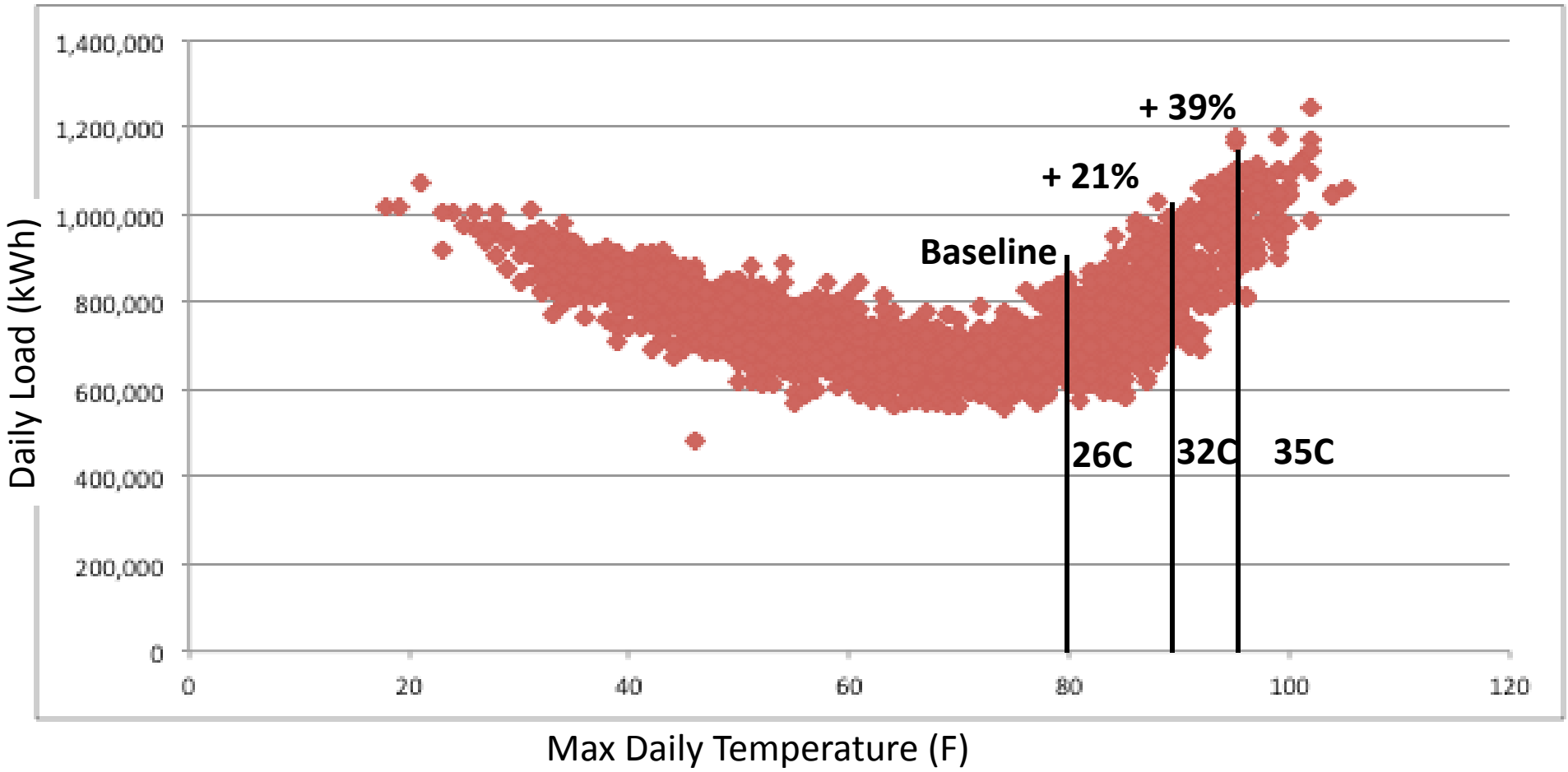


Each °C of warming causes 5.4 additional deaths/100,000 people in U.S.

Cardiovascular & respiratory conditions, renal failure, kidney stones, urinary tract infections, diabetes

Reduced exercise, social isolation

Rising temperatures and energy demand

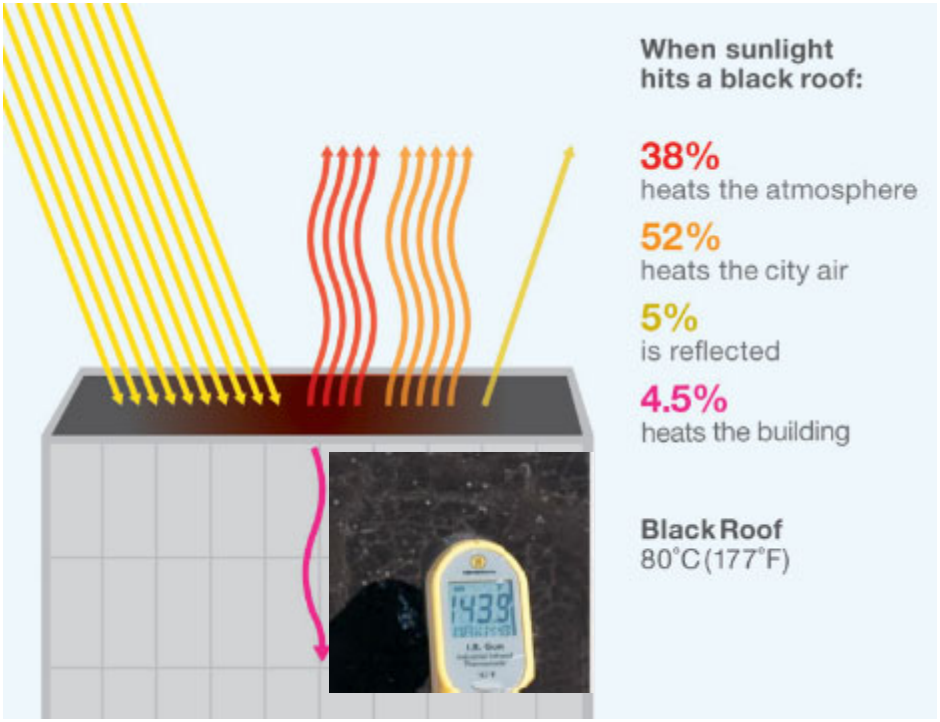


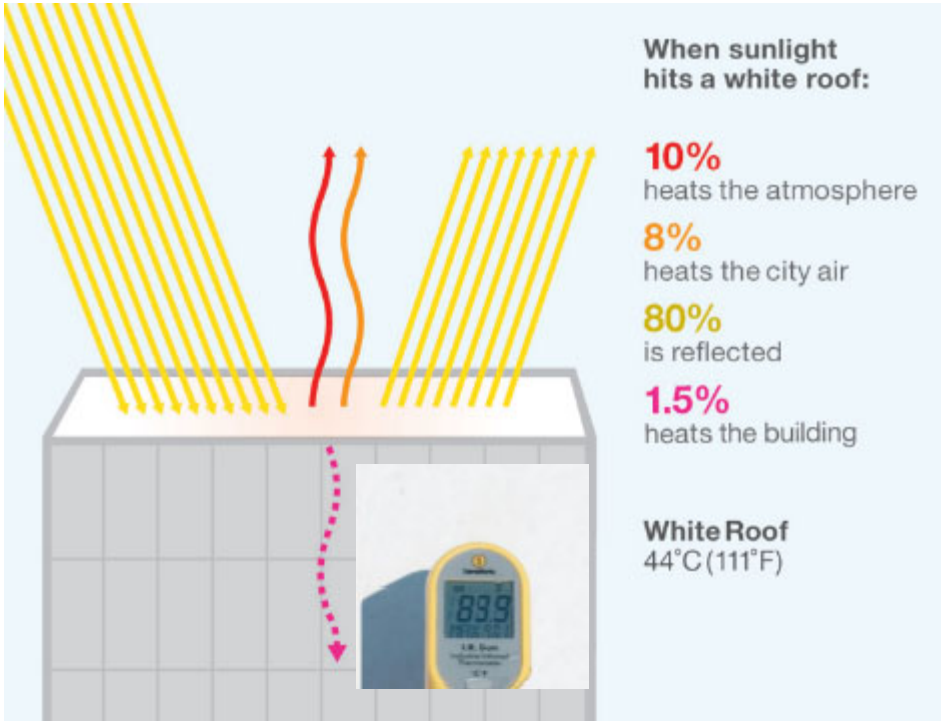
Source: Weather Underground, PJM Interconnection (PJME). Data includes 2009-2014

We can cool our urban spaces with a mix of several strategies.

Source: Dr. Paul Osmond, University of New South Wales

How reflective “cool” surfaces work

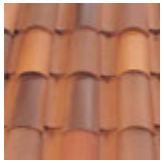




Air Temperature 37°C (99°F)

All sorts of roof types and colors are cool

Metal Roofs



Clay & Concrete Tiles

Coatings

Built-Up Roofs

Asphalt Shingles

Membranes

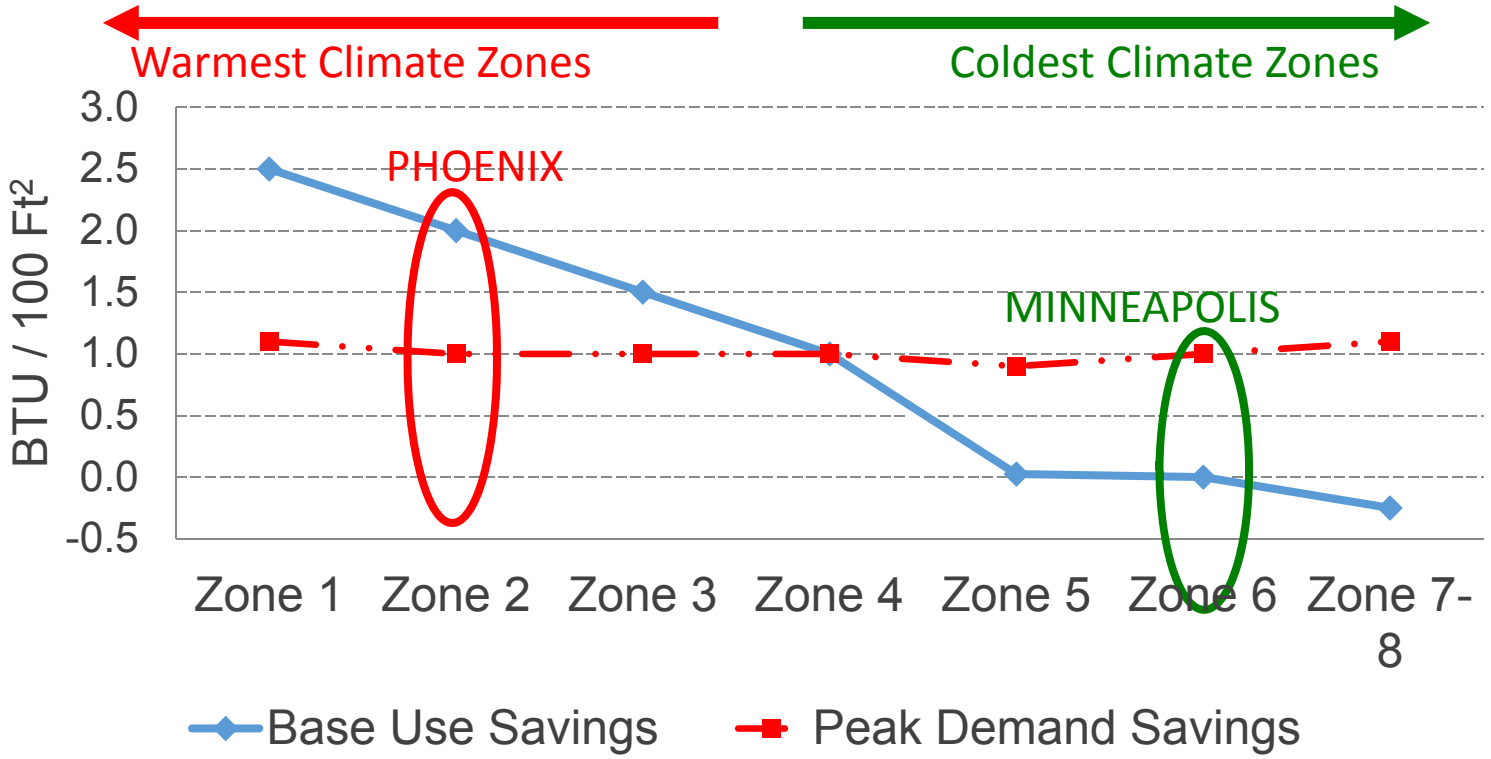
Standard Concrete Tiles (SR)	0.04	0.18	0.24	0.33	0.17	0.12
With Cool Coating Applied (SR)	0.41	0.44	0.44	0.48	0.46	0.41

Source: Adapted from data from American Rooftile Coatings.

The effects of lighter colored roofs.

Building Scale	• Up to 20% reductions in cooling energy use. • Improved thermal comfort and productivity in unconditioned buildings/spaces. • Longer lasting roofs.
Urban Scale	• Improved air quality – a $10 billion energy and health cost reduction opportunity in the U.S. alone. • Reduced peak electricity demand and avoided adoption of air conditioning. • Greater resiliency to heat events and climate change.
Global Scale	• Offset the warming effect of 24 gigatons of CO_2 – equivalent to taking 500 coal power plants offline for 20 years. • Every 10 square meters of white roof = 0.5 tons of CO_2 offset per year.

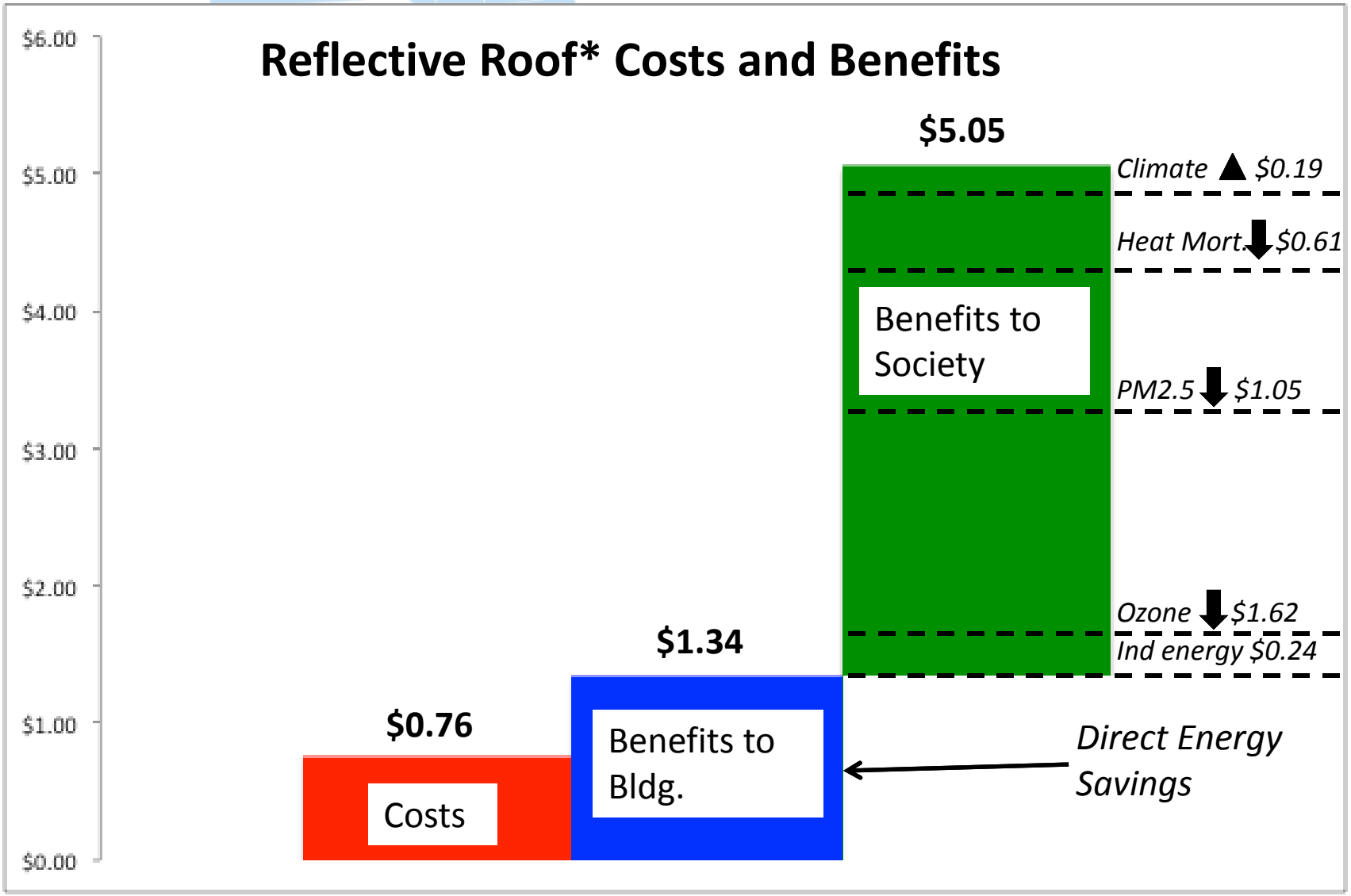
Peak Demand Savings: Uniform Across Climates



Potential Roof-Related Base Use and Peak Demand Savings

(by North America Climate Zone)

Source: Dr. Jim Hoff, RoofPoint Energy and Carbon Calculator



*0.15 to 0.65 reflectivity

Source: Cap-E

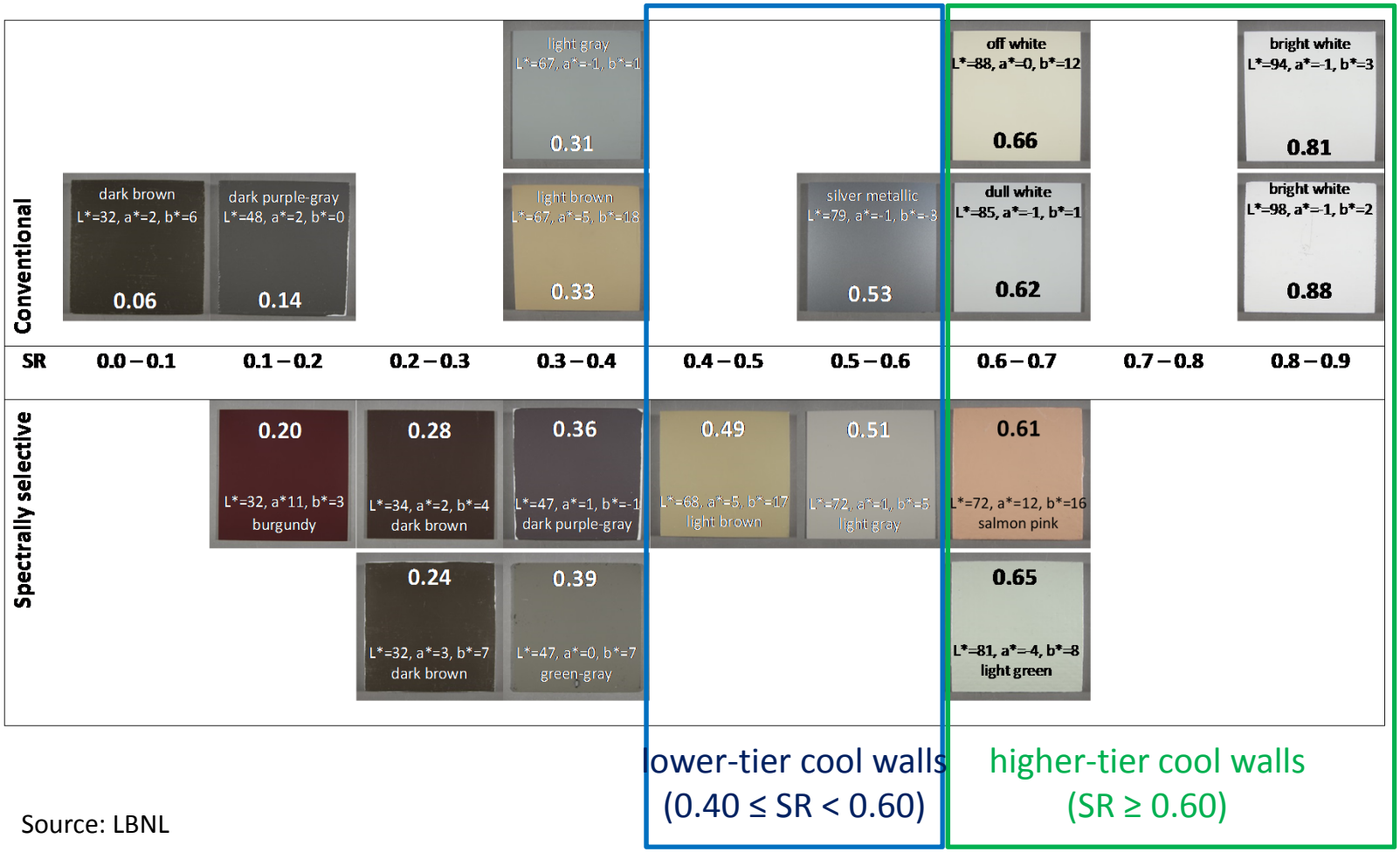
Cool walls also contribute to building and community cooling

Wall solar reflectance

- Conventional ≈ 25%
- Cool color ≈ 40%
- Off or dull white ≈ 60%
- Bright white ≈ 80%

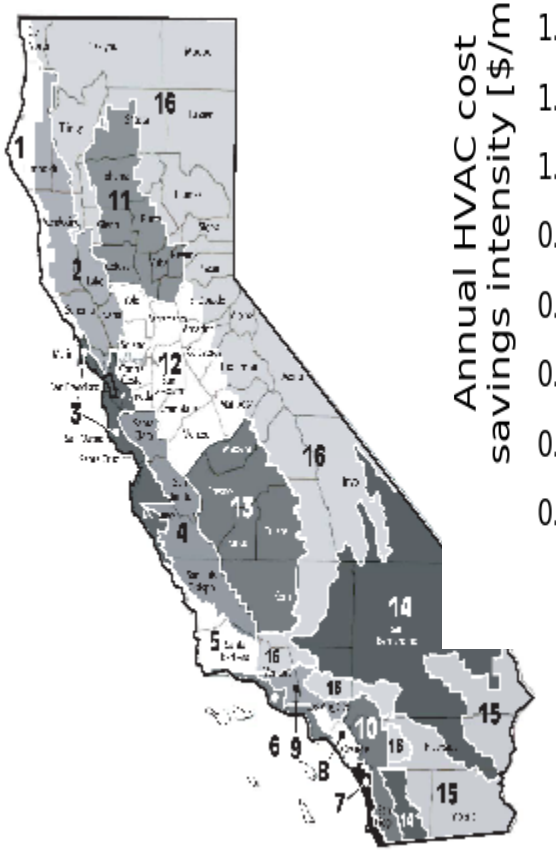
Source: LBNL

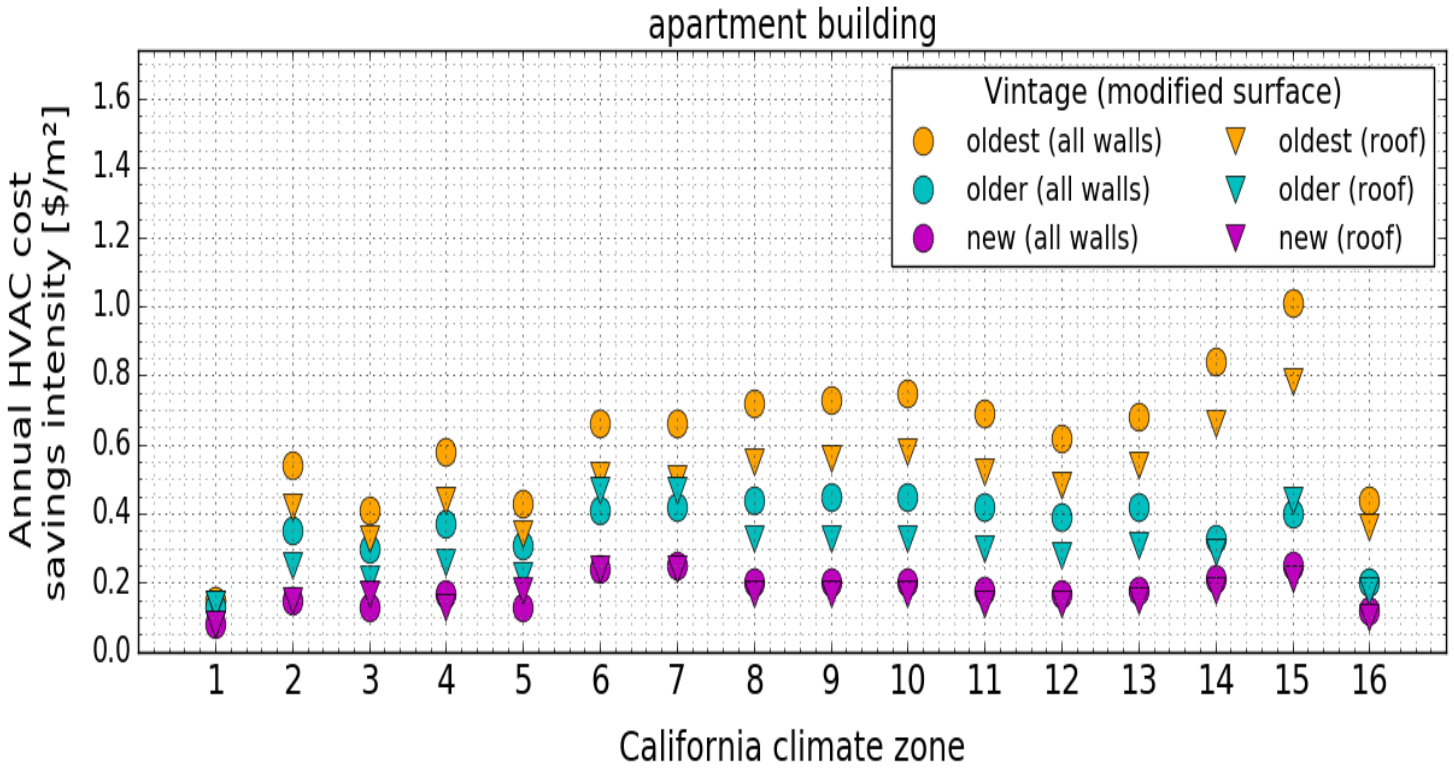
Cool wall products are available in the market today



Source: LBNL

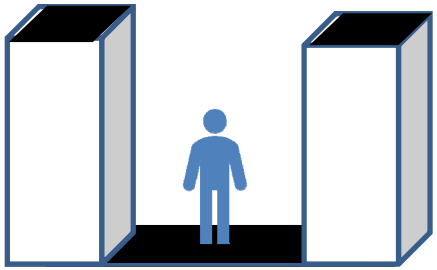
Energy savings in multifamily across all CA climates



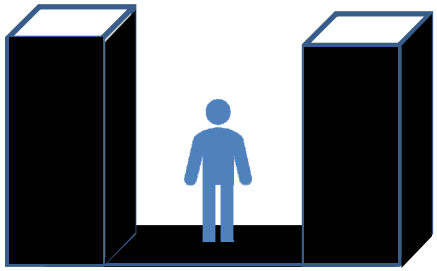


2.1 – 17% cooling energy savings in multifamily, with greatest effect observed in older structures…

Cool Walls

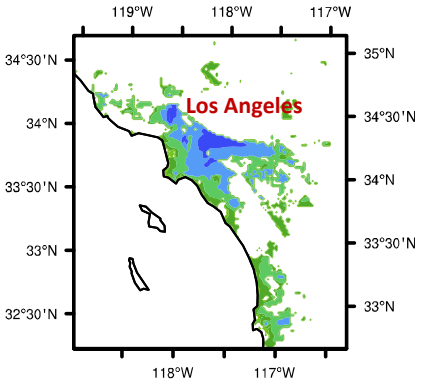


Cool Roofs

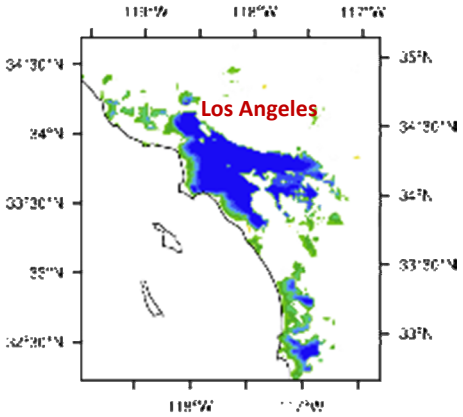


44% less cooling at 2 pm

2 pm

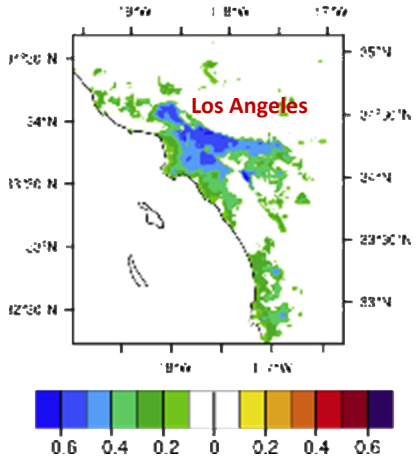


Change in urban canyon air temperature (K)



6% more cooling at 8 pm

8 pm



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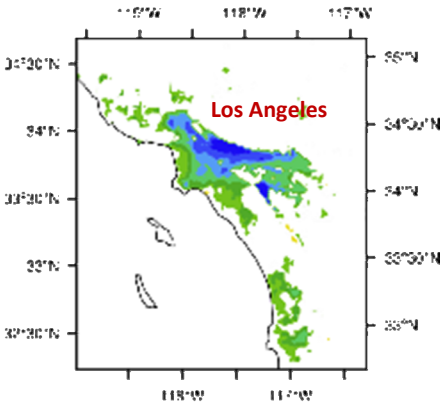
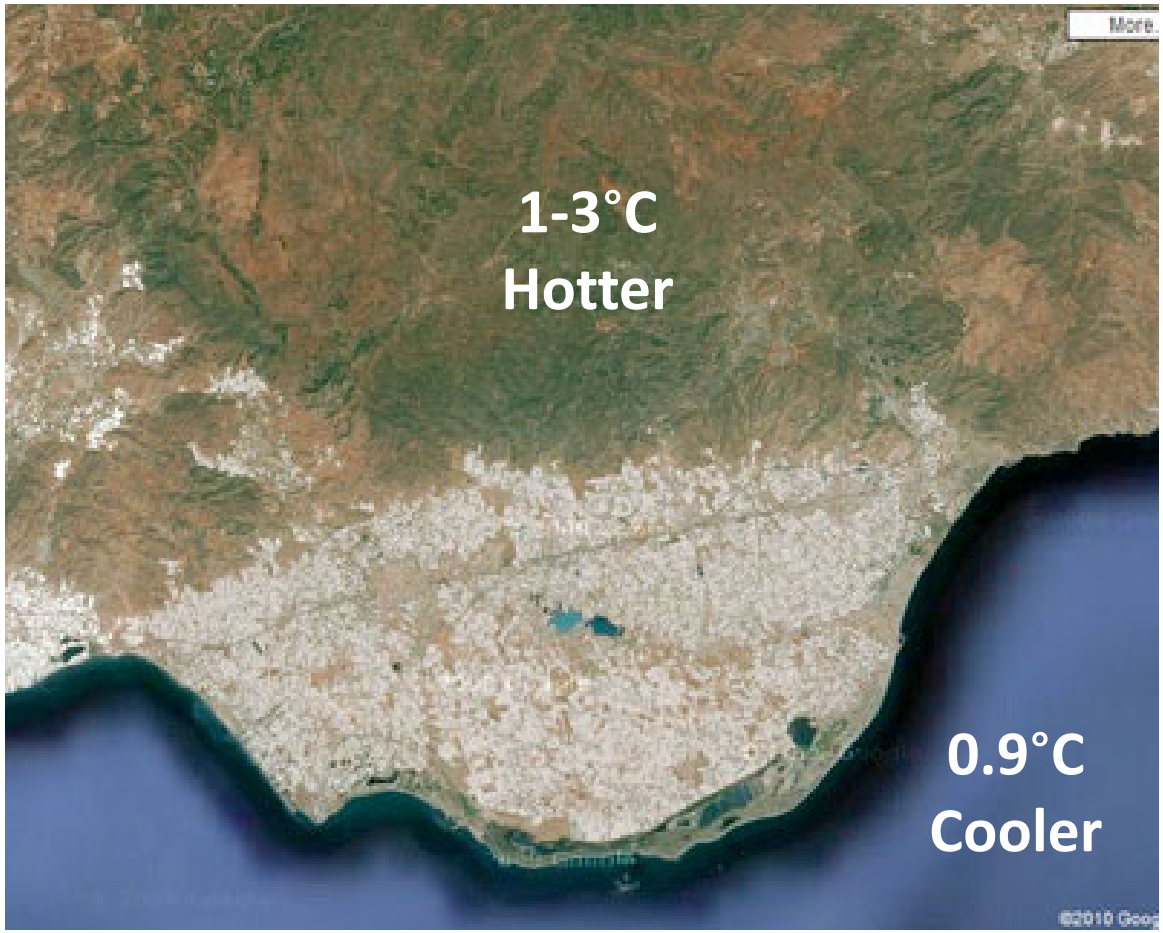


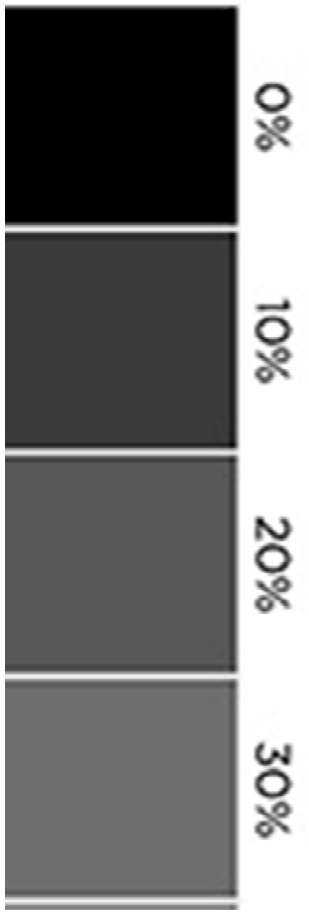
Deployed at scale, cool surfaces reduce air temperatures

Since 1980 in Almeria, Spain…



Studies indicate meaningful air temperature reductions from reflectivity and vegetation increases

LA's avg. reflectance is 17%



A 0.1 increase in reflectivity cools average air temperatures by 0.3°C and peak air temperatures by 0.9°C – Santamouris 2014

Increased vegetation and reflectivity, urban air temperatures could cool by 3 - 4°C – Ma 2018

Green and cool roof deployments reduce air temperature by 3 - 5°C – Li 2014, Osmond 2018

The net co-benefits of reflective surfaces are worth 12x their cost.

Up to 20% energy savings, on average

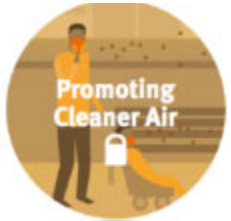
Reduced heat wave deaths from small increases in reflectivity and vegetation

2-4°C indoor air temp reductions

Equivalent of taking 50% of all vehicles off the road for 20 years

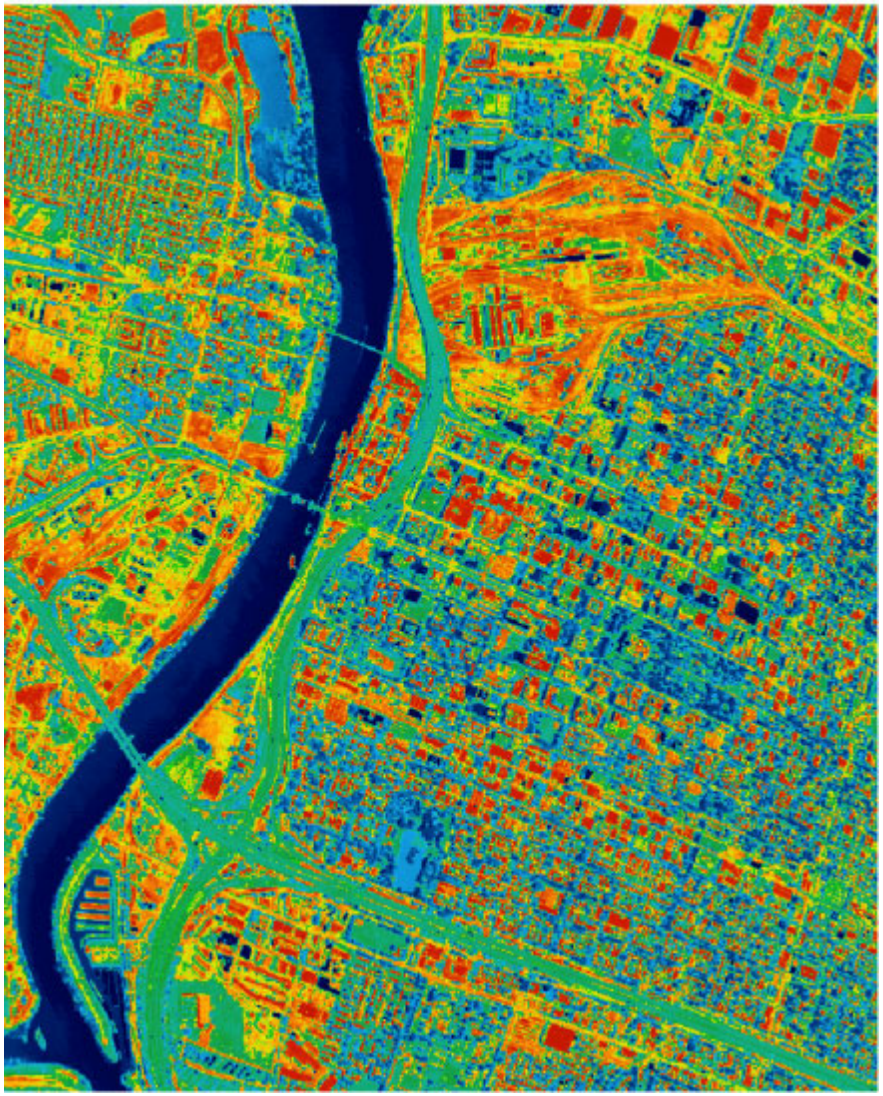
Reduced ER visits, less direct and indirect heat health challenges

Peak demand reductions, improved transmission efficiency



Efficiency gains and lower temperatures reduce ozone

Cool surfaces deliver benefits worth 12x their cost



Thank you!

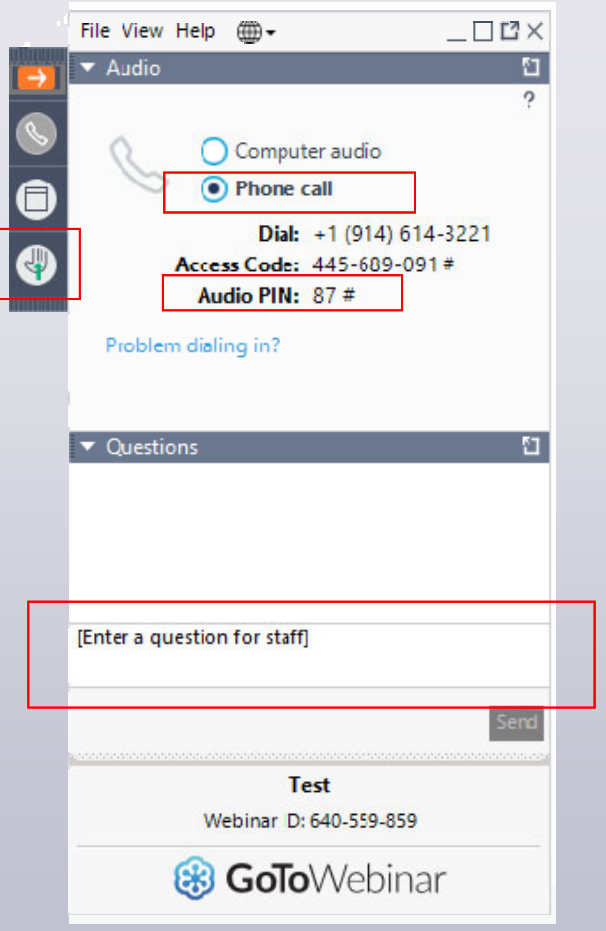
GlobalCoolCities.org
CoolRoofToolkit.org

kurt@globalcoolcities.org
202-550-5852
@globalcoolcity

Discussion

Open and close your **control panel**

Raise your hand to enter the discussion



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Larry Rush
Avangrid, Inc.

U.S. DEPARTMENT OF ENERGY

AVANGRID

April 9, 2020

Connecticut Multifamily Initiative

Introduction – Larry Rush

- Home Energy Solutions Residential Program Manager for Avangrid in CT

- 10 Years working in Energy Efficiency Programs
  - Non-Profit Sector for WAP and ARRA
  - Private Sector – Multifamily Division Supervisor
  - Utilities

- Building Performance Institute Certifications
  - Building Analyst
  - Envelope Professional
  - Multifamily Analyst

Energize Connecticut

- Energize Connecticut is a statewide branding initiative which helps consumers reduce their energy bills, save money, and reduce their carbon footprint by offering incentives for qualified energy projects.

- Energize CT is a partnership between Avangrid, Eversource Energy, Connecticut Green Bank, and the Department of Energy and Environmental Protection ("DEEP").

- Programs are funded by a charge on customer electric and natural gas bills. "Combined Public Benefits Charge"

energize CONNECTICUT CT℠

Empowering you to make smart energy choices

Energize CT Multifamily Initiative

- Comprehensive energy solutions to reduce energy costs for tenants and property owners.
- Buildings or complexes with 5+ units.
- Market based and income based program.
- Combination of commercial and residential program.
- Custom incentives for projects.

Commonly Incentivized Measures

- Weatherization
- Water saving measures
- LED Lighting
  - Dwelling Unit
  - Common Area
  - Exterior
- Insulation
- Windows
- Water Heaters
- Appliances
- HVAC

Hot Incentives Keep Your Tenants Cool!

- Direct install measures covered in full
- Increased incentives for installing more than one measure
  - Direct Install + another measure
  - Follows end use
- Up to 80% of installed cost for income qualified properties
- 66% of units tenants must be 60% or less of the state median income
- Up to 50% of installed cost for non income eligible properties

Summer Projects

- HVAC Replacements
  - Boiler replacements
  - Heat Pumps
- Basement/Wall Insulation
- Basement/Crawlspace Air Sealing
- Window/Door Replacement
- Education Opportunities
  - Replace filters
  - Ensure a/c's are properly installed and sealed
- Exterior Lighting
  - Sensor replacement – longer days
- Appliance Replacement

Get Ready for Fall in the Summer!

- Attic Air Sealing
- Attic Insulation
- Common Area and Dwelling Unit Lighting Replacement
- A/C sleeve covers
- Pipe Wrap for commercial boilers
- Steam Traps

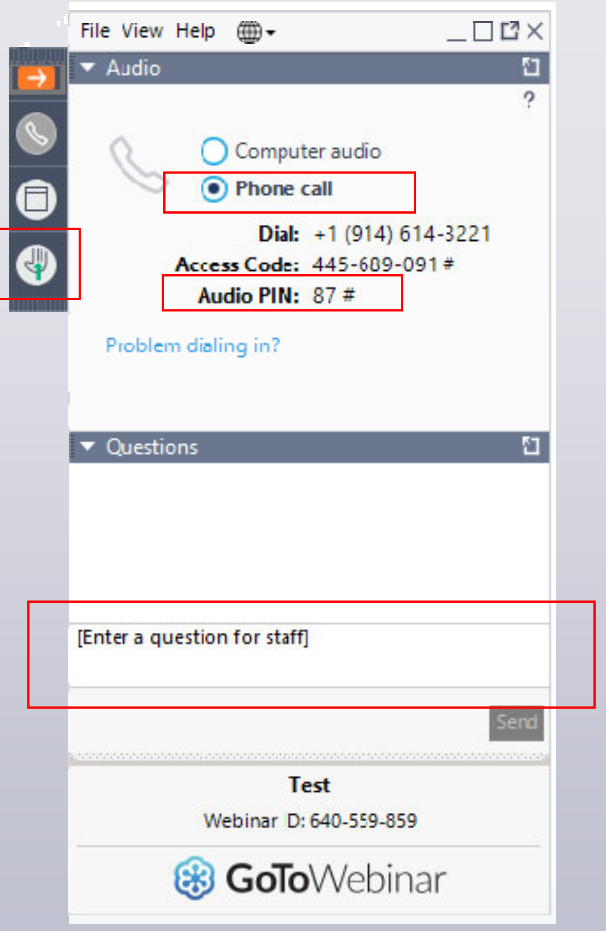
Questions???

Please Contact:
Larry Rush
HES Program Manager
203-499-3356
Lawrence.Rush@uinet.com

Discussion

Open and close your **control panel**

Raise your hand to enter the discussion



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Open Discussion

What are your thoughts or questions on multifamily cooling?

Closing Poll

- **After today's call, what will you do?**
  - Consider implementing one or more of the ideas discussed
  - Seek out additional information on one or more of the ideas
  - Make no changes to your current approach
  - Other (please explain)

DOE Intends to Invest $42 Million into "Connected Communities

Funding opportunity would enable regional GEB communities to share research results and lessons learned on projects that increase grid reliability, resilience, security and energy integration well into the future.

What We Hope to Achieve

- Measured impact of building as grid assets
- Solutions that address diverse grid needs that can be scaled in size and in other communities
- Input from occupants on impact and comfort level
- Demonstrated new business models for demand flexibility and DER coordination and optimization
- Online solutions center on best practices

Request for Information on Connected Communities

RFI Opened on March 27, 2020

Provide feedback and responses to key questions around FOA development by **May 12, 2020**.

Visit eere-exchange.energy.gov or Scan the QR Code for the Request for Information: DE-FOA-0002291: **Request for Information**: Funding Opportunity Announcement 2206: "Connected Communities"

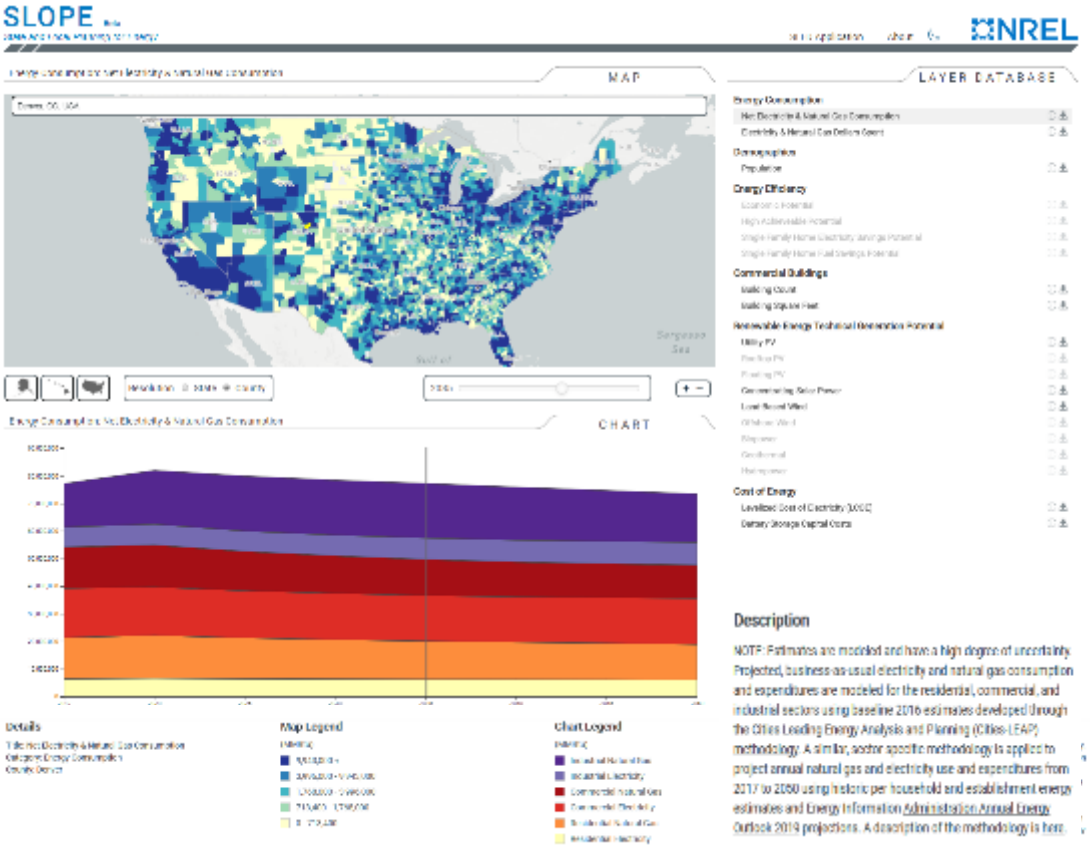
SLOPE Platform

A DOE-led collaboration between NREL and 8 EERE technology offices to create a *dynamic, comprehensive energy planning platform* of integrated, localized data for state and local decision makers

- **Phase I:** Beta version launched (Jan. 2020)
- **Phase II:** Adding transportation and generation mix data; enabling user-saved settings (under development in 2020)

Access the Platform:
https://gds.nrel.gov/slope

Comments or Questions?
slope@nrel.gov



Explore the Residential Program Solution Center

Resources to help improve your program and reach energy efficiency targets:

- Handbooks - explain *why* and *how* to implement specific stages of a program.
- Quick Answers - provide answers and resources for common questions.
- Proven Practices posts - include lessons learned, examples, and helpful tips from successful programs.
- Technology Solutions NEW! - present resources on advanced technologies, **HVAC** & **Heat Pump Water Heaters**, including installation guidance, marketing strategies, & potential savings.

https://rpsc.energy.gov

Thank You!

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Please send any follow-up questions or future call topic ideas to:
bbresidentialnetwork@ee.doe.gov