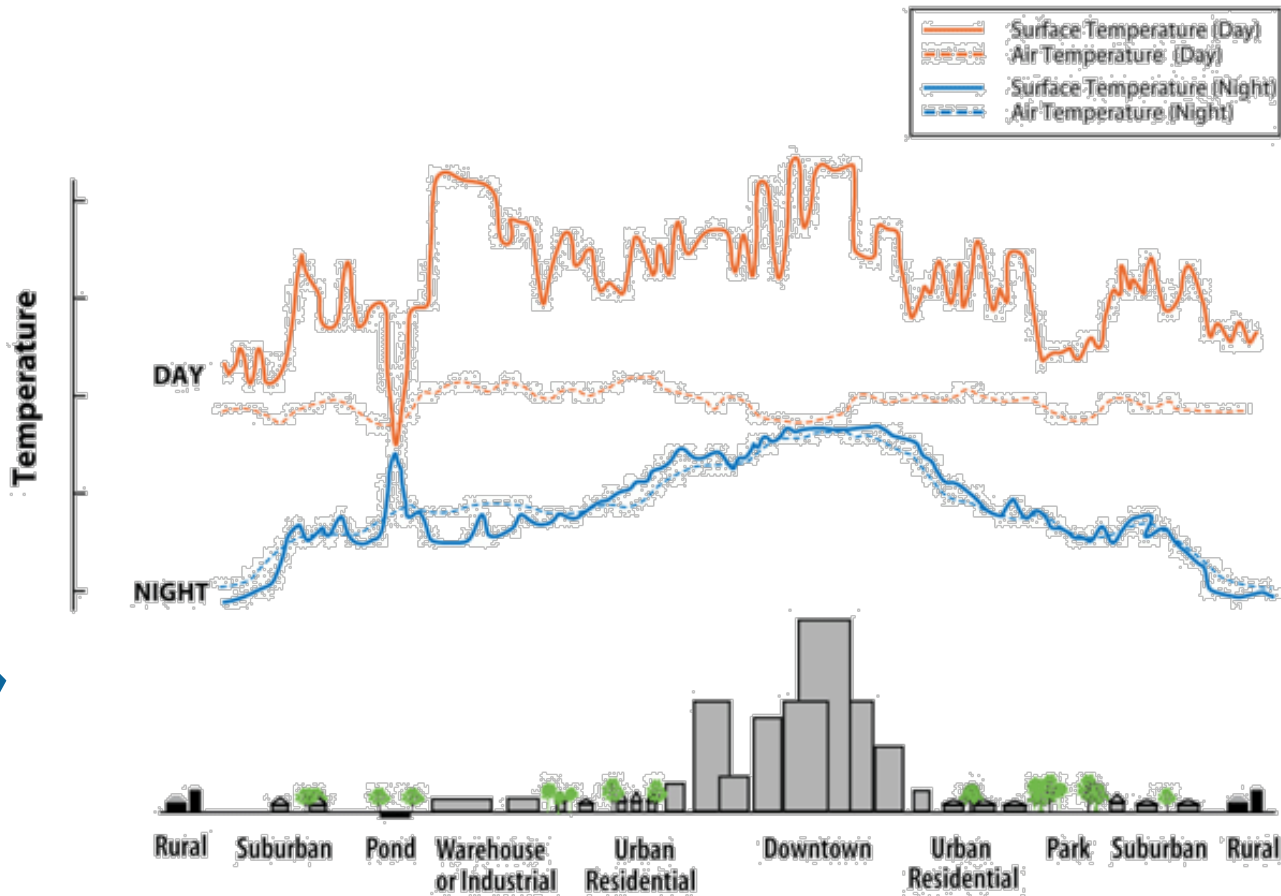


# The Heat Island Effect



# Heat Island Impacts

- Higher energy use
- Reduced air quality
- Higher risks to public health
- Increased emissions of GHGs and criteria pollutants
- Degraded water quality

# Mitigation Strategies and Co-benefits

*Green  
Roofs*



*Trees and  
Vegetation*



*Cool  
Pavement*



*Cool  
Roofs*



Air quality



Energy use



Greenhouse gas emissions



Human health and comfort



Nighttime visibility



Quality of life



Safety



Stormwater management



Tire noise



Water quality



# Heat Island Mitigation Benefits



## Lower energy use

- 1-9% ↑ energy demand for every 2°F ↑
- Shorter peak periods; less pressure on energy grid; fewer brownouts and blackouts



## Improved air quality and lower carbon pollution

- Fewer GHG emissions
- Decreased air pollution
- Less ground-level ozone formation

# Heat Island Mitigation Benefits (con' d)



## Better water quality

- Controlled water runoff = fewer pollutants in waterways
- Cooler water runoff = ecological balance in waterways



## Improves human health

- Fewer respiratory illnesses, heat cramps, heat exhaustion episodes, heat stroke/sun stroke incidents, deaths
  - Heat among most deadly weather-related events
  - 658 annual heat-related deaths on average in US

# Who is the Most Vulnerable?



- Lower temperatures provide direct benefits to vulnerable people:
  - Older adults
  - Young children
  - People with lower incomes
  - Outdoor workers
  - People with compromised health
  
- Indirect health benefits include better air quality due to reduced ozone formation
  - More than 9% of U.S. children and nearly 8% of older adults aged 65-75 currently have asthma. Exposure to ozone can exacerbate asthma.



# Heat Islands and Equity

- Cities are not uniformly hot – intra-urban heat islands
- Historical development patterns and municipal policies cause unequal distribution of green and built-up areas
- People more vulnerable to heat impacts typically live in hotter areas of cities
- Higher temperatures compound factors that make at-risk individuals even more vulnerable – air quality/asthma, inefficient housing, lack of resources for A/C

# How Can Local Governments Address Heat Equity?

- Collect relevant data
- Provide information in multiple languages
- Use effective messaging
- Structure programs to be widely accessible
- Design programs to benefit renters





# Program Overview

## ■ Mission

The EPA Heat Island Reduction Program works to create sustainable and comfortable communities by promoting state and local programs and policies that include heat island reduction measures.

## ■ Program Audiences

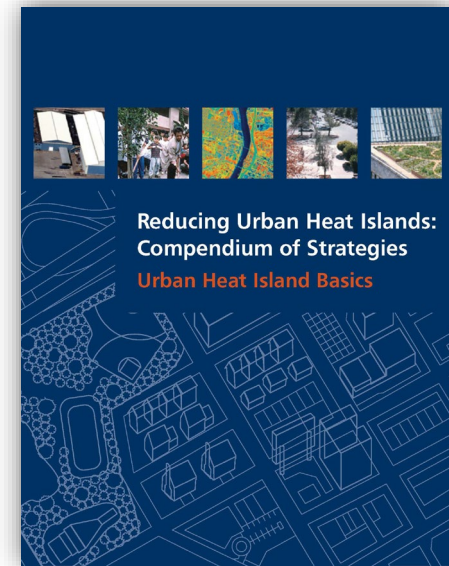
- Local and state policymakers and program implementers
- Academia/researchers
- Other federal agencies
- Non-profit organizations
- Industry



# Heat Island Program Resources

- **Compendium of Strategies:** 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
- **Examples:** Database of more than 75 local and state initiatives
- **Webcasts:** Topics include local case studies, public health, advances in mitigation strategies
- **Newsletter**

[www.epa.gov/heat-islands](http://www.epa.gov/heat-islands)





# Other Program Resources

- Information on co-benefits
- Case studies and best practices
- Tracking of policy trends
- Up-to-date science
- Connections with other federal agencies

# Related Federal Activities

- NOAA
  - Extreme heat research, meteorological trends
  - NWS issues heat warnings
- CDC
  - Extreme heat public education, guidance for policymakers
- GSA
  - Green roof initiative for federal buildings
- USFS
  - Research on urban forestry, quantitative tools for estimating benefits
- Federal Highway Administration
  - Research and demonstrations of cool pavements



# Contact Information

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**Heat Island Program Website**

[www.epa.gov/heat-islands](http://www.epa.gov/heat-islands)

**EPA Heat Island Newsletter Sign-Up**

[www.epa.gov/heat-islands/forms/heat-island-newsletter-signup](http://www.epa.gov/heat-islands/forms/heat-island-newsletter-signup)

