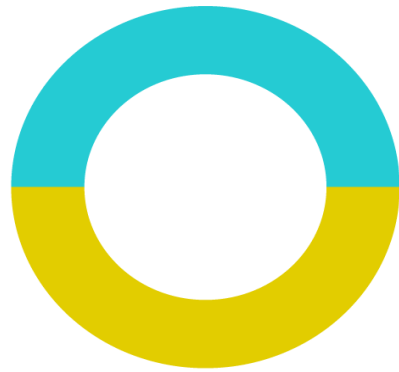


Innovation in Climate Change Adaptation and Mitigation in Los Angeles

Jonathan Parfrey
Climate Resolve
October 13, 2016

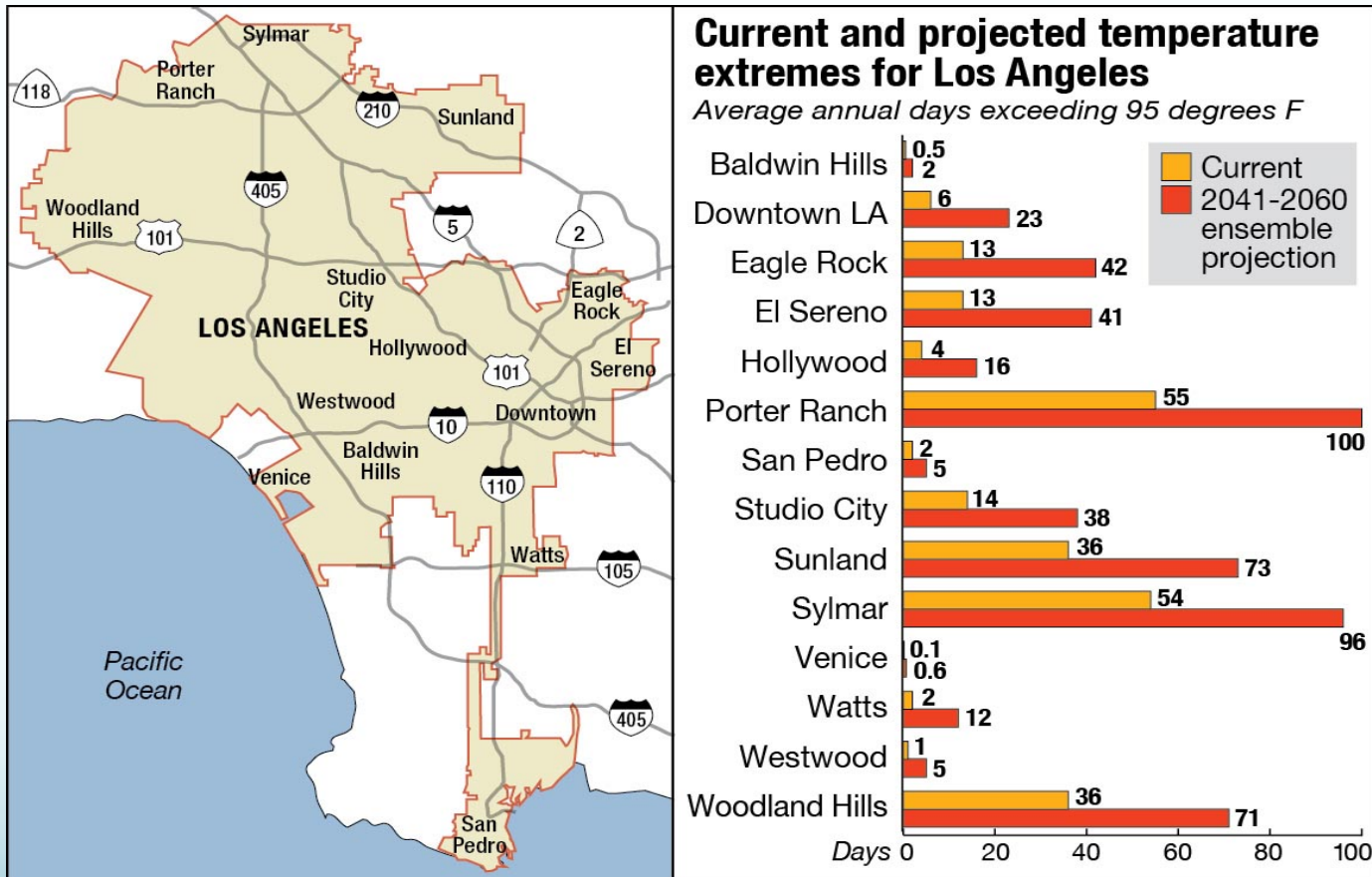


Climate
Resolve

MISSION:

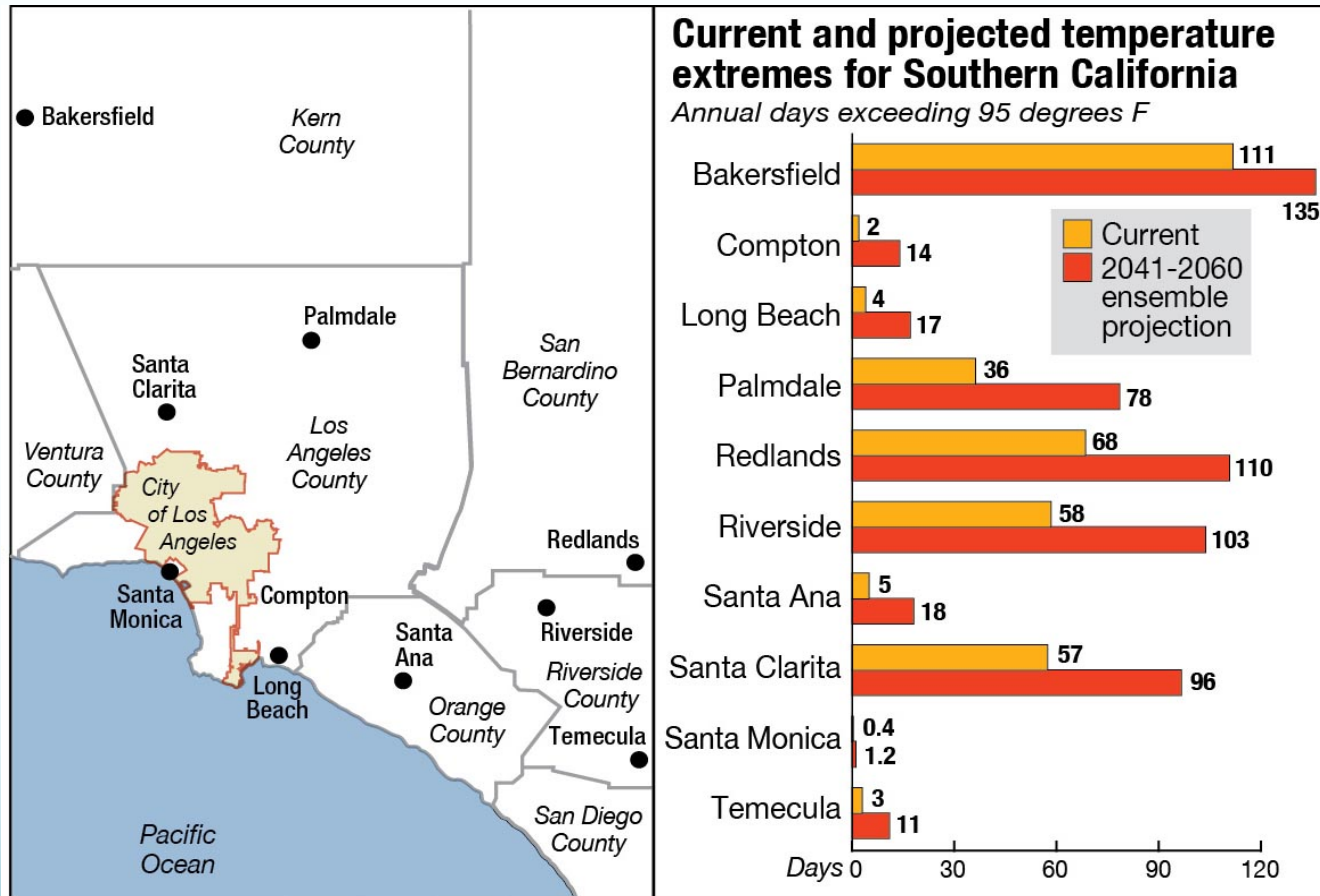
It is Climate Resolve's mission to make Southern California more livable and prosperous today and for generations to come by inspiring people at home, at work and in government to reduce greenhouse gas pollution and prepare for climate impacts.

City of LA Heat Impacts



Source: UCLA LARC study, 2012; chart based on the mean/average projected by the 18 climate models

LA Regional Heat Impacts



Source: UCLA LARC study, 2012; chart based on the mean/average projected by the 18 climate models

Effects of Rising Temps



✧ ***Greater peak electricity demand***

- Unstable grid, power outages
- Greater costs



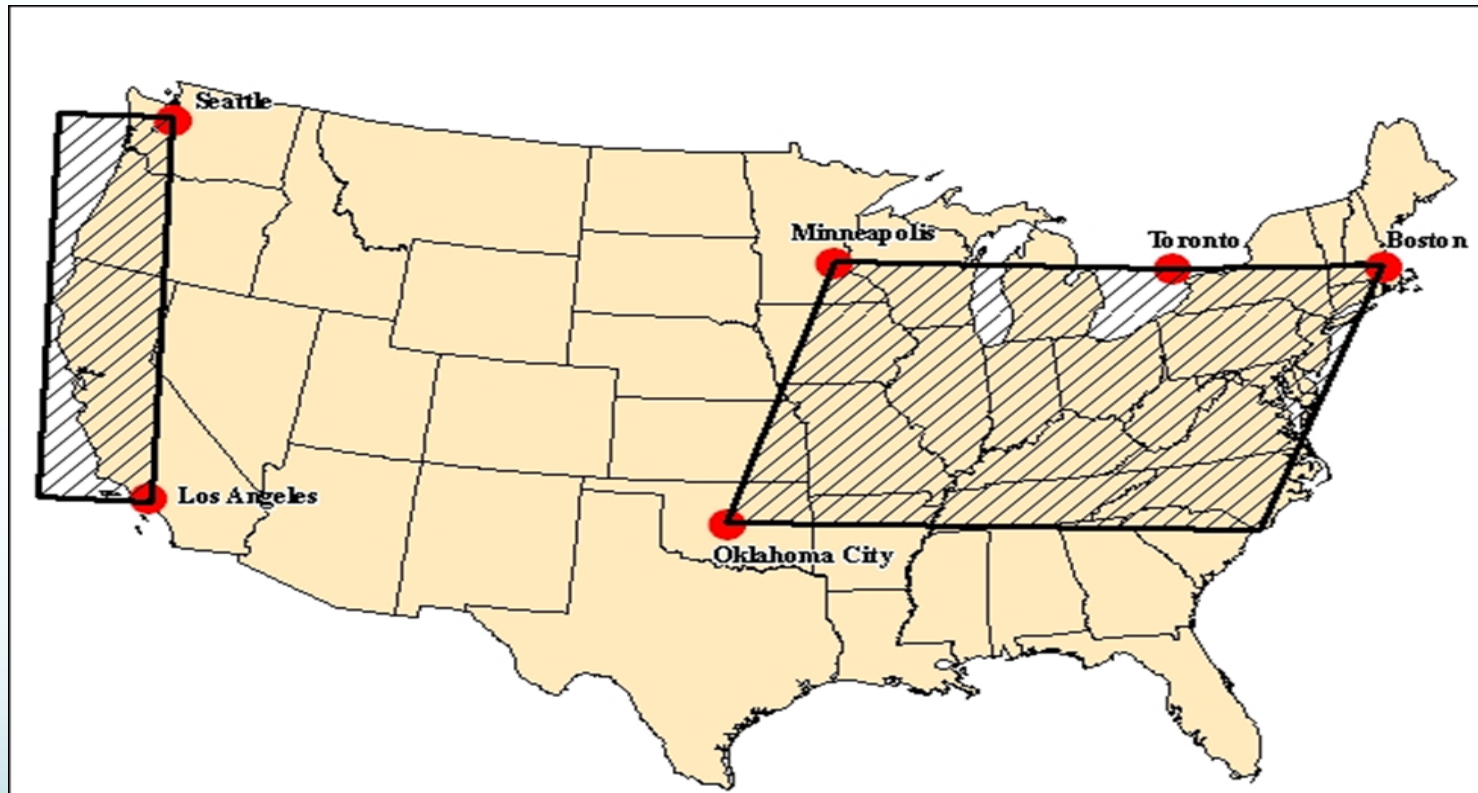
✧ ***More pollution***

- GHG and other pollution from greater electricity production
- Direct temp effects on smog

✧ ***Public health threats***

- Heat deaths and injuries
- Asthma rates and attacks

Regions Most Vulnerable to Heat Impacts

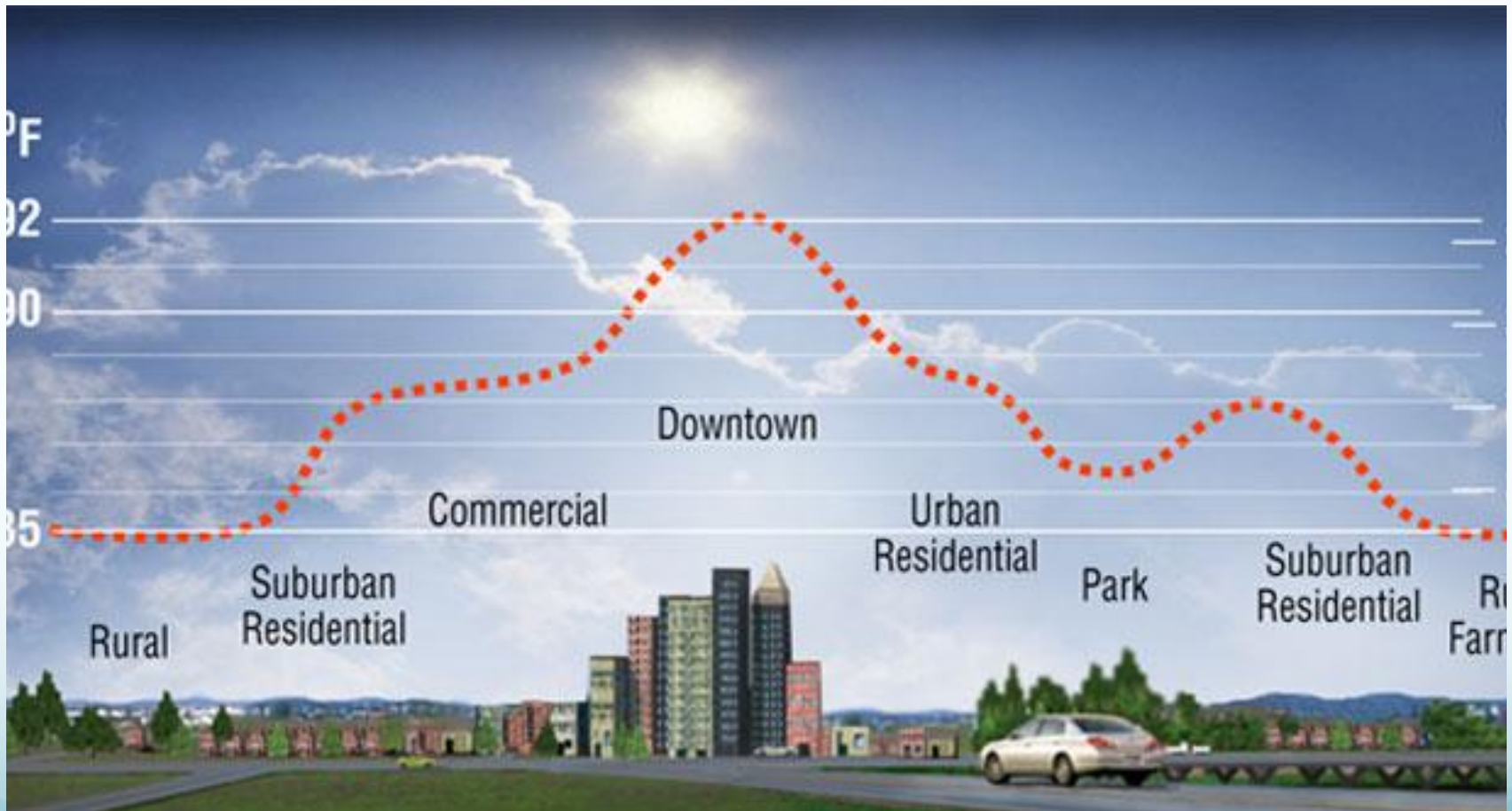


The key: highly variable day-to-day weather

Heat and Health

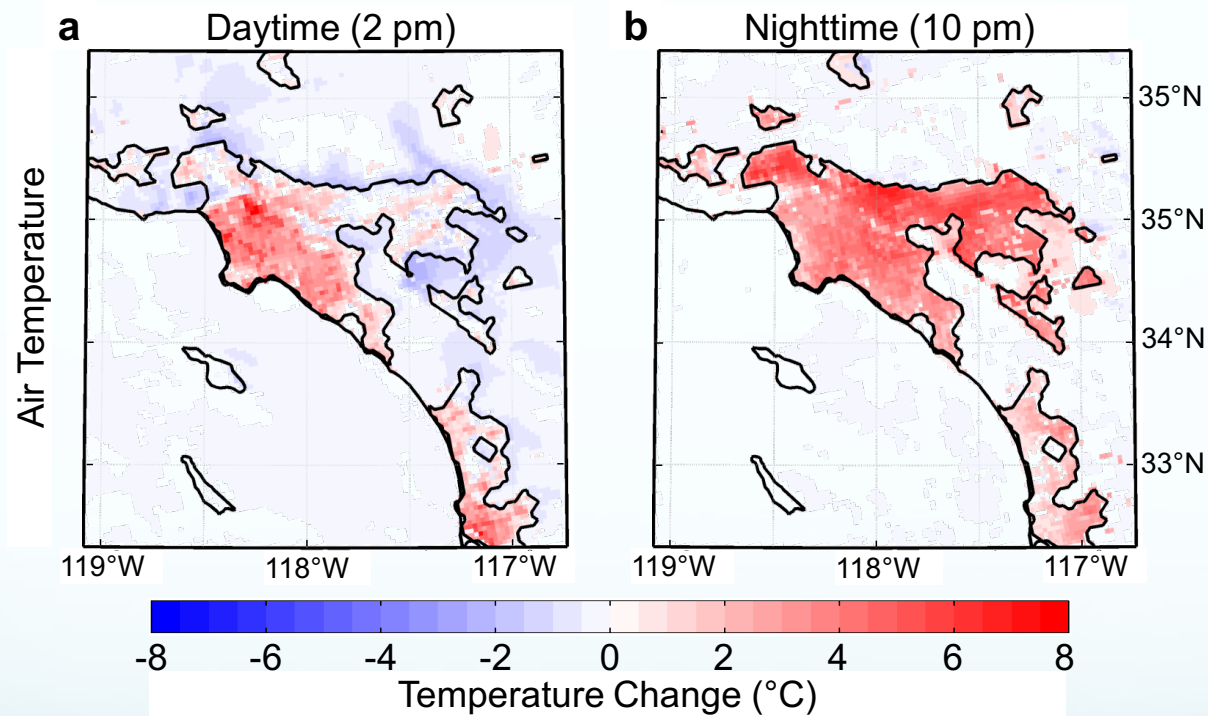
- ❖ Heat is the leading weather related cause of death
- ❖ Climate variability is more important than temperature
- ❖ Air-mass type and apparent temperature are better indicators than temperature alone
- ❖ SoCal has a greater number of winter days above 90°F than any other region in the country

Urban Heat Island



Lawrence Berkeley National Lab

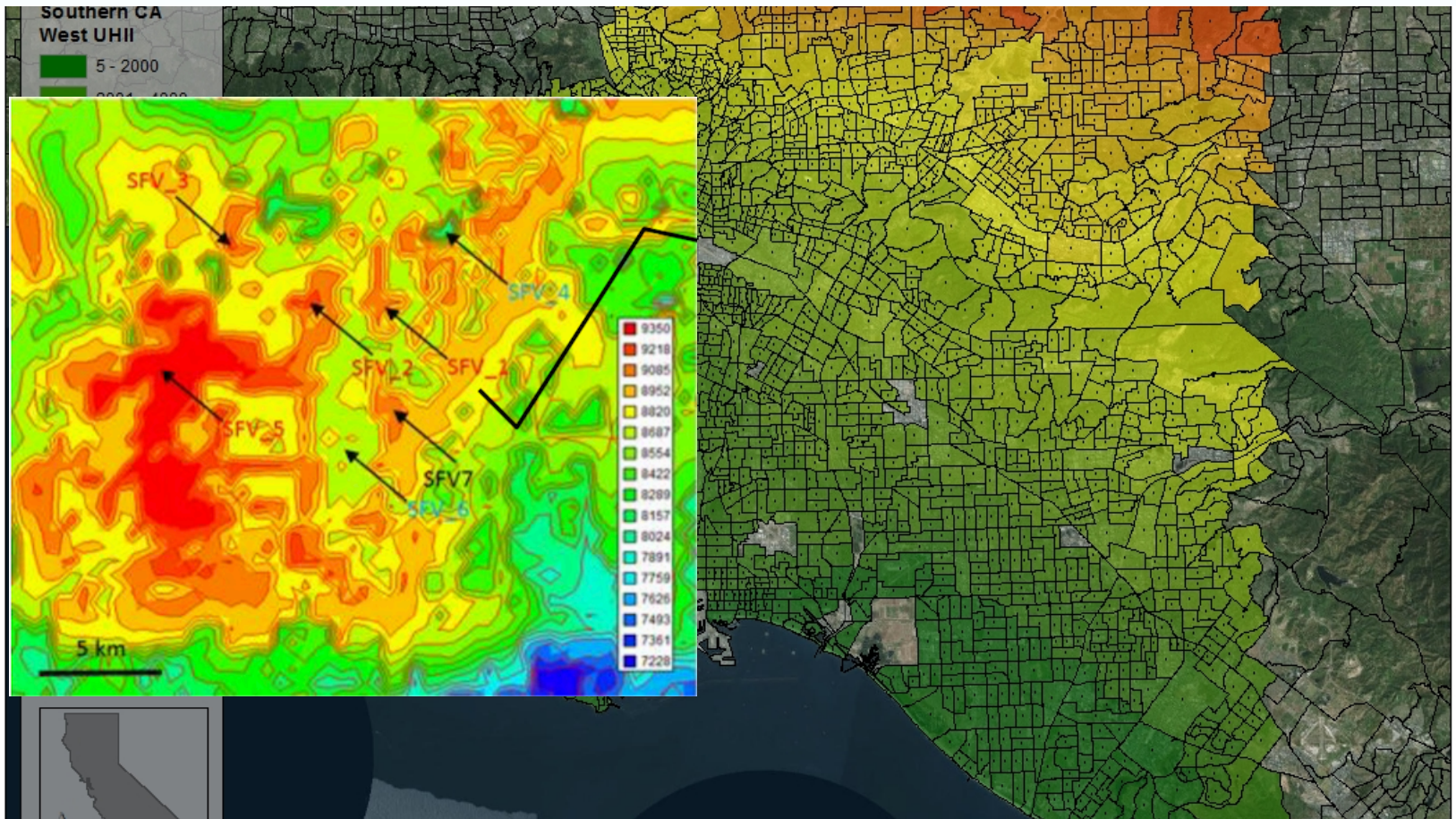
LA is a large Urban Heat Island



- Daytime air temperature urban heat island is 1.3 °C
- Nighttime air temperature urban heat island is 3.1 °C

Vahmani et al. (submitted) & Prof. George Ban-Weiss' group at USC

Los Angeles UHI



UHI Reduction Opportunities

Urban Tree Canopy



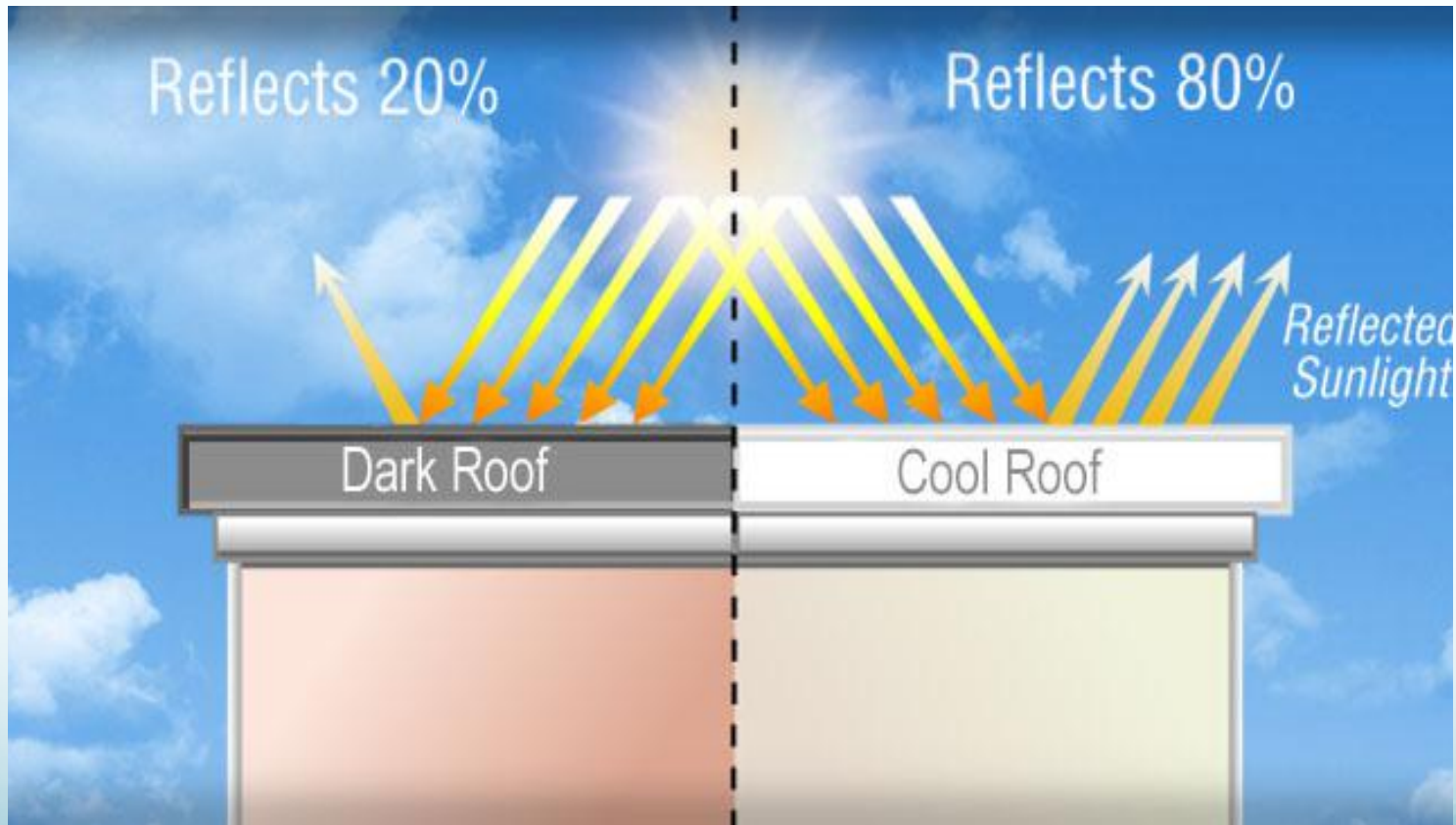
Cool Roofs



Cool Pavements



Cool Roofs



Benefits of a Cool Roof

- ✧ ***Residents will save money on their utility bills***
 - Avg. consumer saves 10-20% on utility bill over a year
- ✧ ***Decrease greenhouse gas emissions***
- ✧ ***Provide a healthier environment – cooling of 3-12 degrees indoors***
 - Protects public health
- ✧ ***Reduces likelihood of outages, aiding resilience***
- ✧ ***Helps residents survive heat waves***
- ✧ ***Helps reduce ozone formation . . . if . . .***

LA Ordinance

- ✧ **March 2013 Mayor Antonio Villaraigosa directs LA Department of Building and Safety to write new building code regulations requiring residential cool roofs.**
- ✧ **April, 2013 the Los Angeles Department of Water and Power expands existing cool roof rebate.**
- ✧ **December 2013 Los Angeles City Council unanimously approves residential cool roof ordinance.**
- ✧ **January 2015 ordinance goes into effect**



LA's Cool Roof Ordinance



99.01.101.3. Scope. The provisions of this code shall apply to the construction, of every new building, every building alteration with a building permit valuation of \$200,000 or more and every building addition, unless otherwise indicated in this code, through-out the City of Los Angeles.

EXCEPTIONS:

- 1.** Roof repair; or
- 2.** Roof replacement when the roof area being replaced is equal to or less than 50% of the total roof area; or
- 3.** Building-Integrated Photovoltaics (BIPV)

TABLE 4.106.5

ROOF SLOPE	MINIMUM 3-YEAR AGED SOLAR REFLECTANCE	THERMAL EMITTANCE	SOLAR REFLECTANCE INDEX SRI
< 2:12	0.63	0.75	75
≥ 2:12	0.20	0.75	16

Cool Roofs: Many Colors



3M Cool Roofing Granules



Two State Commissions



- ✧ All local **energy efficiency** standards that meet or exceed the California Building Energy Efficiency Standards (Title 24, Part 6) must be approved by the **California Energy Commission**.
- ✧ All local standards that exceed the California Building Code (plumbing, electric, historic, etc) must be filed with the **California Building Standards Commission**.

Local Government “Reach Codes”

Local governments have unique authority to pass ordinances (“Reach Codes”) requiring that buildings exceed minimum energy efficiency standards.

- Prepare a “Cost Effectiveness” study
- Adopt an Ordinance determining that measure(s) are cost-effective
- California Energy Commission reviews and confirms

Cool Roof Rating Council

- ✧ **Asphalt-shingle:** 61 approved products
- ✧ **Bitumen sheet roofing:** 123 approved products
- ✧ **Concrete/clay tiles or slate:** 455 approved products
- ✧ **Coatings:** 579 approved products
- ✧ **Metal products:** 1019 approved products
- ✧ **Wood shake/stone aggregate/pavers:** dozens of approved products
- ✧ **Thermostatic plastic:** 113 approved products



www.CoolRoofs.org

Net Zero Energy Homes

Big, bold strategies for energy savings:

By 2020:

- All California residential new construction zero net energy

By 2030:

- All California new commercial construction zero net energy
- Reduce Greenhouse Gas Emissions
- Energy Efficiency 1st in the Loading Order



Cool Pavements



Anthropogenic Heat

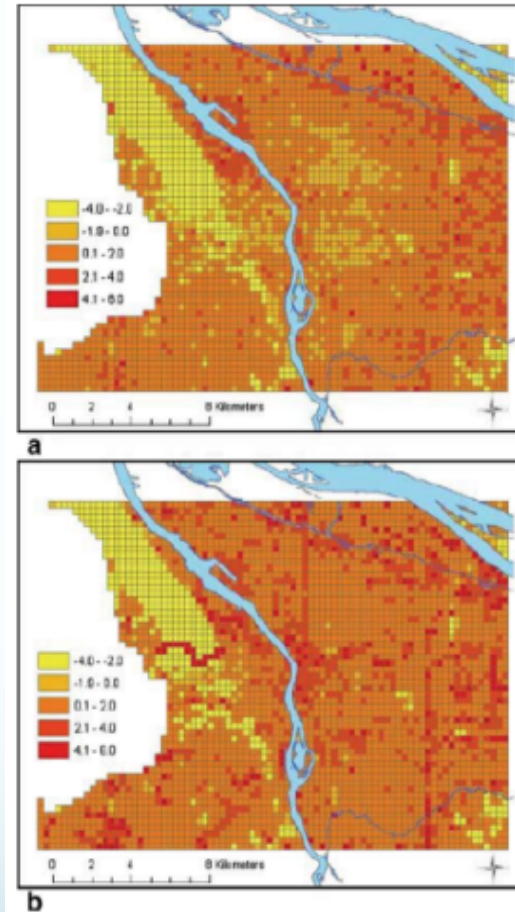


Fig. 7 Grid values of UHI intensity produced using tree-structured regression models (UHI magnitude is in °C) for a weekend daytime UHI, and b weekday daytime UHI

Hart & Sailor, 2009



TRANSFORMING LOS ANGELES

ENVIRONMENT | ECONOMY | EQUITY



pLAn



We are prepared for natural disasters, and we decrease our vulnerability to climate change.

1.7↓
degrees



2035

3.0↓
degrees



2035

.....
**Reduce urban/rural
temperature differential**

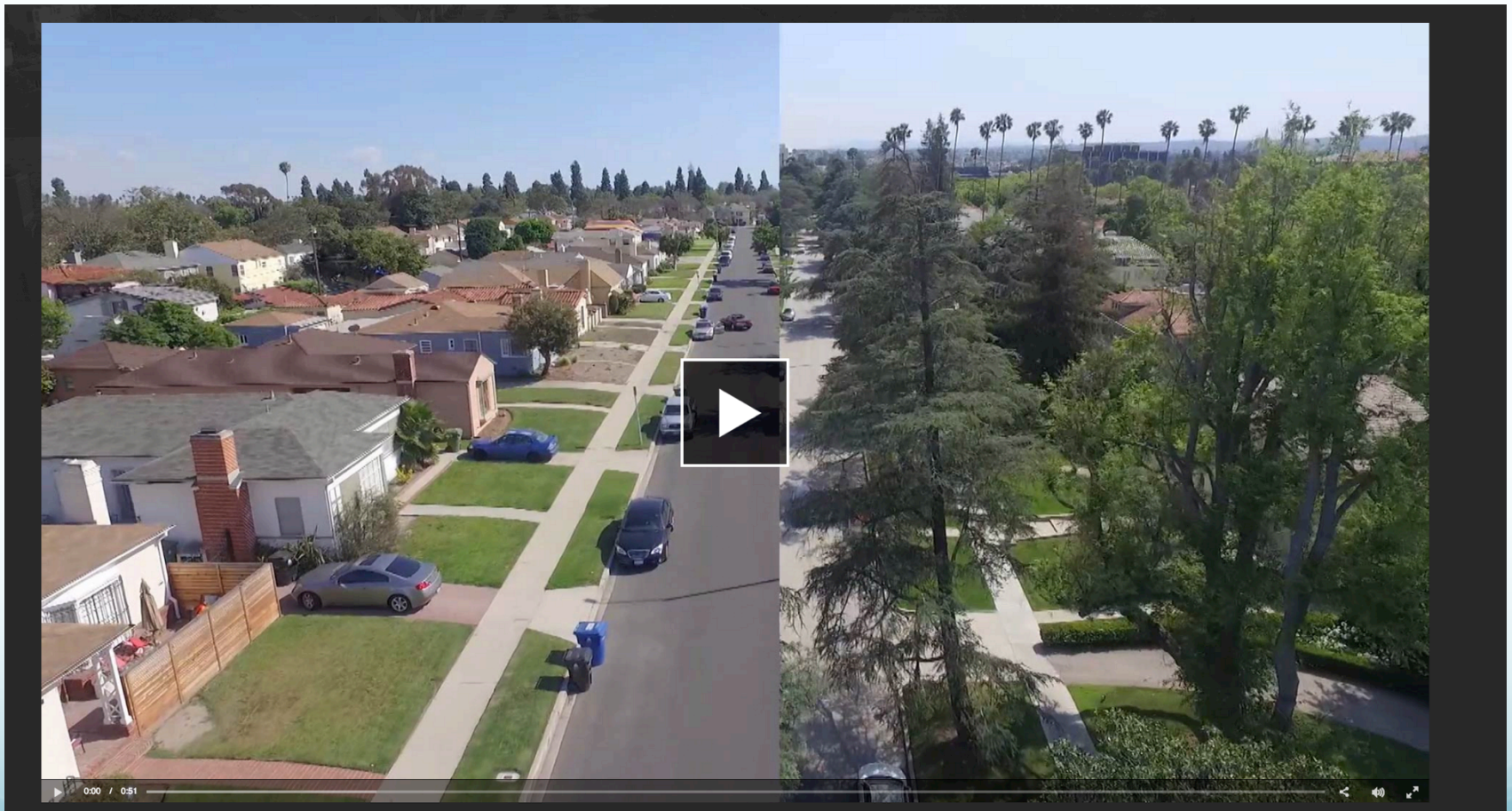


.....
**Install 10,000 cool roofs
by 2017**

City Plants

- Formerly Million Trees LA
- Free Trees distributed to each council district via partners:
 - Los Angeles Department of Water & Power (LADWP)
 - Los Angeles Conservation Corps
 - Hollywood Beautification Team
 - Koreatown Youth and Community Center (KYCC)
 - North East Trees
 - TreePeople
 - ACG: A Cleaner Greener East LA

KCET Tree Canopy Story



LA County and region

[Environmental Health](#)

[Home](#)[About](#)[FAQs](#)[Comment](#)[Contact](#)



Climate Change & Public Health

In Los Angeles

CLIMATE NEWS



7 Things You Should Know About L.A. Heat Waves and Climate Change

[See the full article >>](#)



8 options for replacing your lawn, along with their pros and cons

[See the full article >>](#)



Climate change health impacts loom large

[See the full article >>](#)

RESOURCES

PRESENTATIONS FOR SPECIFIC AUDIENCES

General Public	>
County/City Departments and Partners	>

REPORTS

CLIMATE AND HEALTH SERIES - REPORT 1

Your Health and Climate Change in Los Angeles County



plan

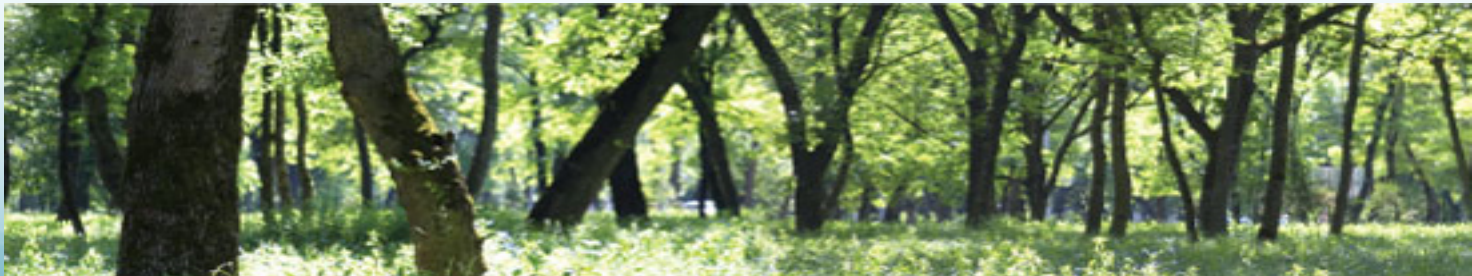


SD



What's Next

- ✧ Climate Zone requirement on cool roofs
- ✧ Cool Slurry Seal
- ✧ Committee on Cooling and Urban Heat Impacts
- ✧ Cool Parking Lot Ordinance
- ✧ Urban Heat Island Mitigation Index



Thank You!

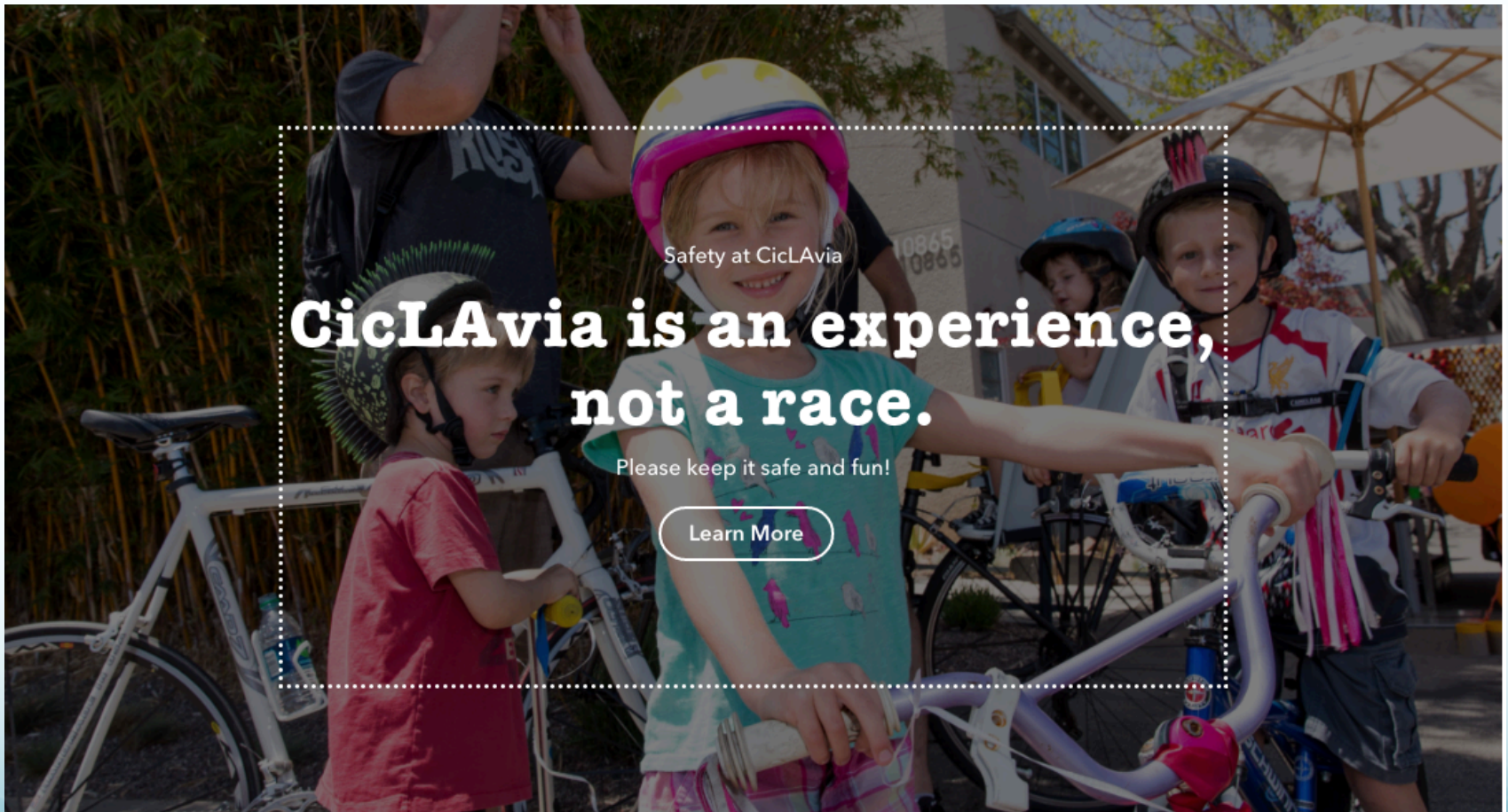
Jonathan Parfrey

Executive Director

Climate Resolve

jparfrey@climateresolve.org

CicLAvia



Safety at CicLAvia

**CicLAvia is an experience,
not a race.**

Please keep it safe and fun!

[Learn More](#)

CicLAvia

CICLAVIA

HEART OF LA – 5.75 miles

1/2 mile



CicLAvia Route

Ruta de CicLAvía



Crossing Points for Cars

Puntos de cruce para carros



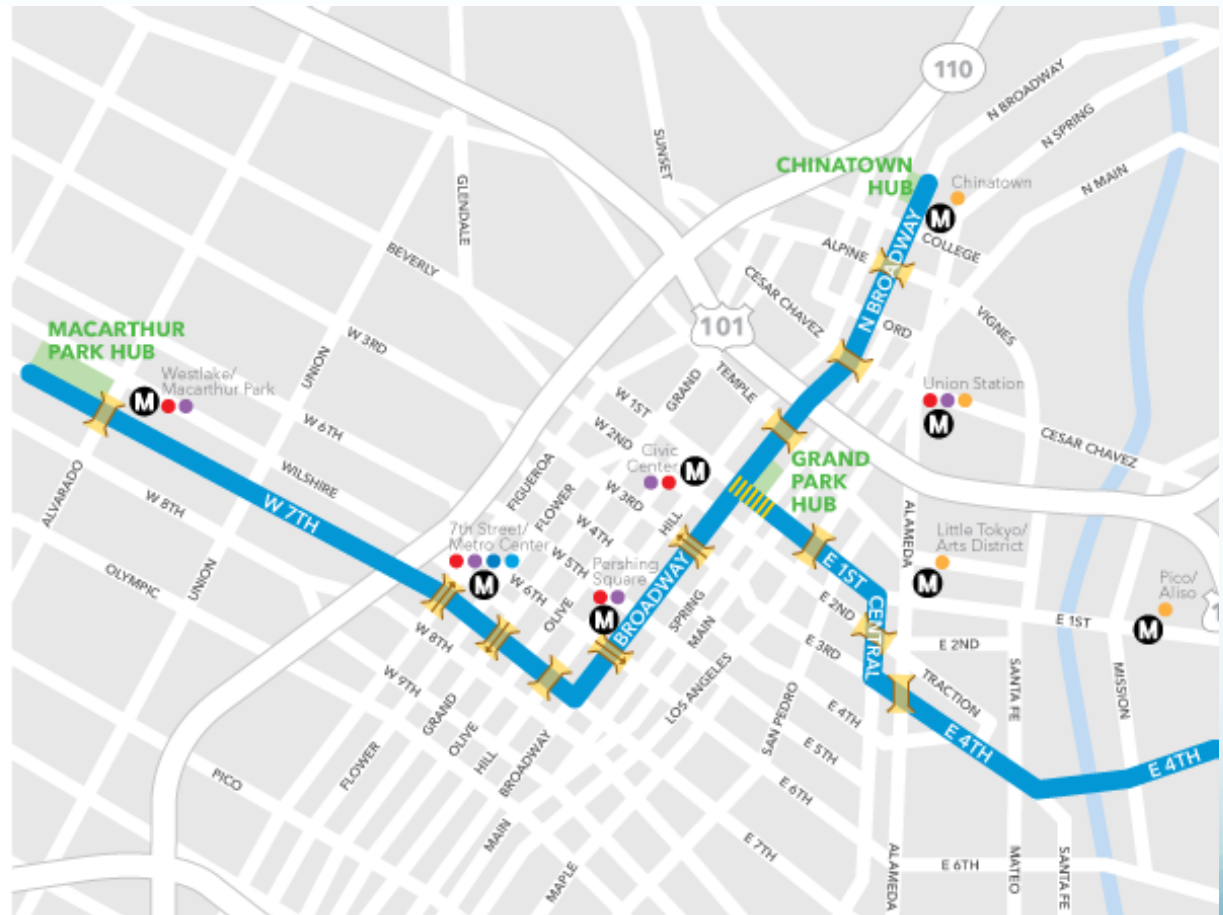
Pedestrian Zone

Area de los peatones




Metro Rail Stations

Estaciones de Metro



KCET partnership





CLIMATE CHANGE L.A.


How is climate change affecting Los Angeles?

[▶ READ THE STUDIES](#)

SECTIONS

SHOWS VIDEO SUPPORT  SCHEDULE 

[DONATE](#)



CLIMATE STUDIES



RECENT STORIES

KCET partnership

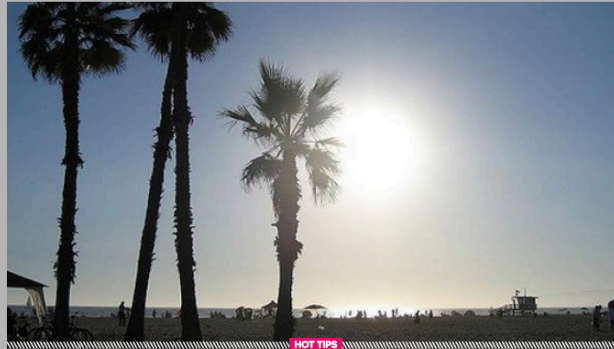
CONTENT STORIES



OCEAN COMMOTION

Resolve Q&A: Paul Bunje

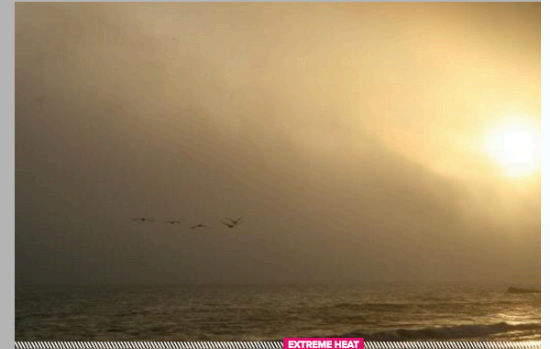
Paul Bunje talked to Climate Resolve about ocean acidification, hypoxia and climate change.



HOT TIPS

How to Stay Cool During Heat Waves

10 ways for Angelenos to beat the heat.



EXTREME HEAT

Extreme Heat and Climate Change in L.A.

As global temperatures continue to break records, we are experiencing a rise in local temperatures and in the number of extreme heat days in Los Angeles.



RESILIENT DESIGN

Architect Interview

Architect Mia Lehrer on urban revitalization projects, sustainability, climate change, and her LA favorites.



LOS ANGELES ENVIRONMENT

Do Something

Ways you can make a difference at work and at home.



CLIMATE CHANGE L.A.

7 Things to Know About Soil and Climate Change

Here's how soil plays a role in climate change.