

Climate Readiness in the Capital Region

Presented to the 2nd Regional Convening of
Public Health Officers, Planning Directors & New Partners
June 7, 2017

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SMUD Energy Research & Development
and
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Powering forward. Together.

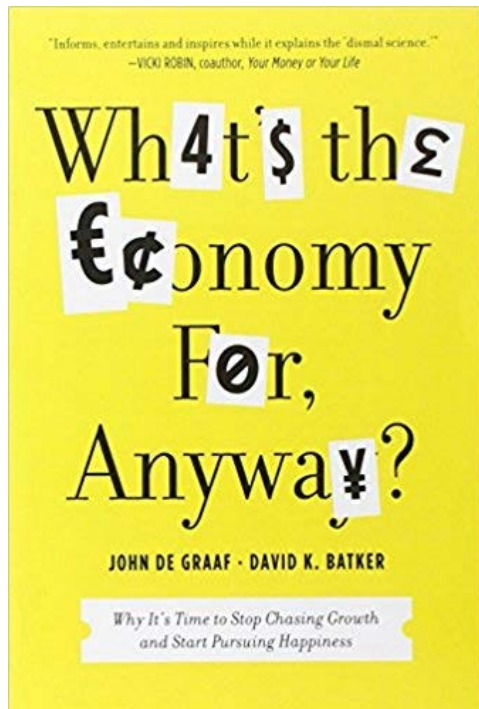


Agenda

- Context & Background
- 2016 Readiness Assessment & Plan
- Community Engagement via CRCRC
 - HEAT!

What is the Economy for anyway?

Facilitate more work days & more buying power?



Create more freedom and more time for citizens to live with basic security, balance and richness?



SMUD Board Vision: to ‘...increase energy efficiency, **reduce global warming...**’

SD 7 (b) – Environmental Leadership (b): SMUD will provide **leadership** in the **reduction of the region’s total emissions of greenhouse gases** through **proactive programs** in all SMUD activities and development and support of national, State, and regional climate change policies and initiatives

SD 9 – Resource Planning: Includes Sustainable Energy Supply Goal equivalent to a 90% reduction below 1990 GHG levels by 2050, 30% by 2020

SD 17 - Enterprise Risk Management: Directs SMUD to maintain a risk management system that identifies, assesses, prudently manages and mitigates a variety of risks facing SMUD, **including climate change**

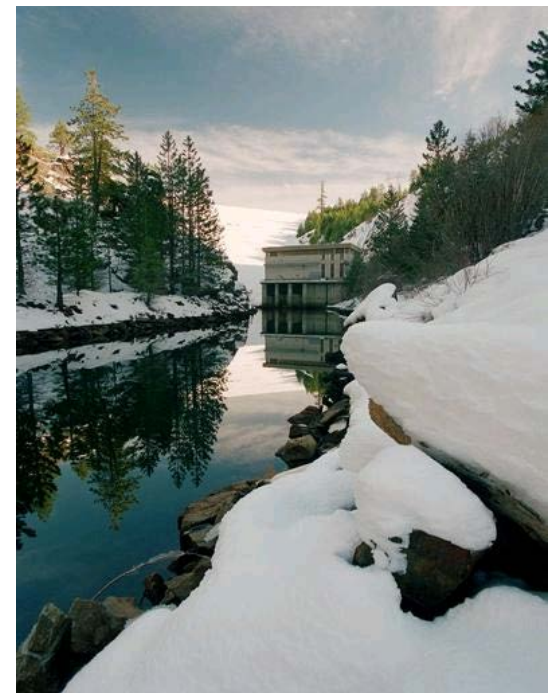
SMUD Energy Resources



Distributed Solar – 117MW
rooftop, 100 MW groundmount



COTP Transmission to NW –
1600 MW



Upper American River Hydro
Project – 688 MW



Biomass -203 MW

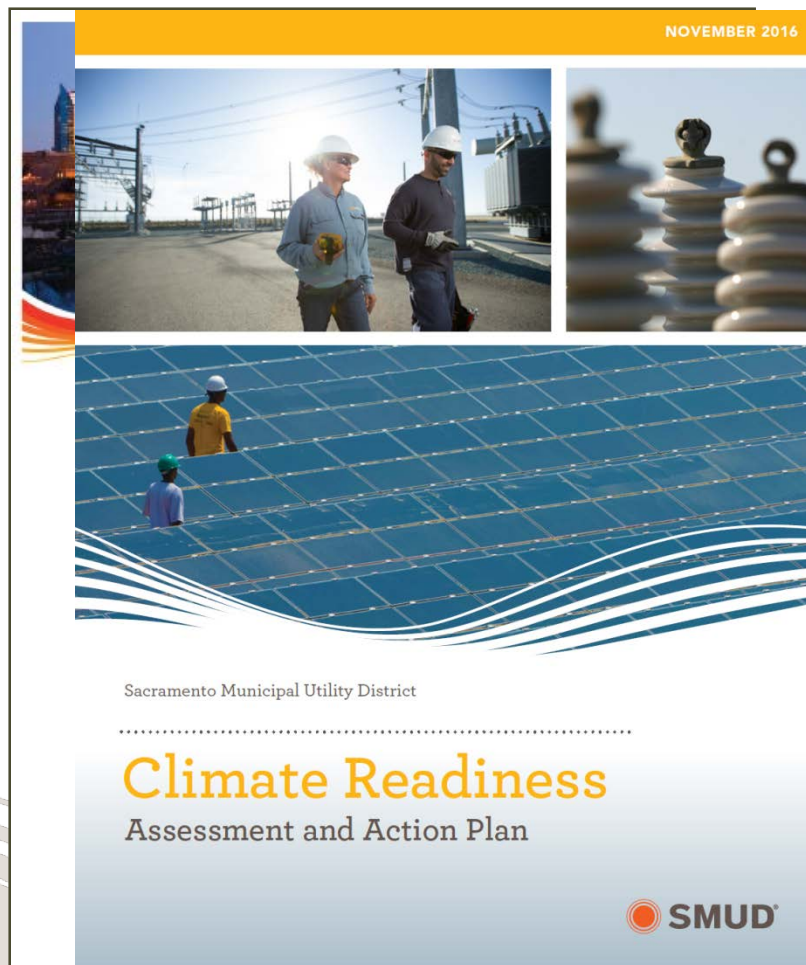


Solano Wind – 280 MW



Natural Gas Combined Cycle – 850 MW at 4
locations, NG Peakers 150 MW at 3 loc's

SMUD Climate Readiness Strategy



- Track Climate Changes as an Enterprise Risk
- 4 year science update cycle
- Use findings in all long term planning (>5 years)
- Perform additional research and **support regional readiness efforts**



Includes supply chain analysis in addition to power generation contracts



Plan Component	Title	Impacts Addressed	Timeframe
Community Engagement	Capital Region Climate Readiness Collaborative	All	Ongoing
Community Engagement	Regional Urban Heat Island Initiative	Temperature	Beginning 2017
Community Engagement	Regional Biosequestration	All	Begin Dec. 2017
Enterprise Program	Sacramento Resilient Grid Initiative (REDI Grant)	Flooding	Complete Dec. 2017
Enterprise Program	Climate Change And Enterprise Risk Management	All	Monthly Review
Enterprise Program	Customer Program Evaluation and Metrics Research	All	Complete 2017
Enterprise Program	Environmental Sustainability	All	Complete Dec. 2020
Enterprise Program	Long Range Asset Management Plan	All	Complete 2017
Enterprise Program	Focused Climate Research	Hydrology, Wind	To be Determined
Enterprise Program	Contract Climate Exposure Evaluation	All	Pilot Launch 2017
Enterprise Program	Flood Data Analysis and Preparedness Planning	Flooding	Complete 2017
Enterprise Program	Emergency Preparedness	All	Ongoing
Capital Project	SPA County Recycled Water Project	Drought, Hydrology	Fall 2017
Capital Project	SMUD Nature preserve Mitigation Bank	Native Species	Operational 2014 Monitoring Through 2017
Capital Project	SMUD Headquarters Design and Renovation	All	Renovation Began 2016
Operational Initiative	Forest Thinning, Stream and Revenue Flows in UARP	Wildfire	2017 - 2021
Operational Initiative	Unmanned Aerial Systems Risk Identification Program	Wildfire	Annual
Operational Initiative	Cloud Seeding	Drought	Annual
Operational Initiative	Hydropower Risk Mitigation Strategies	Drought, Hydrology, Wildfire	Ongoing
Operational Initiative	SMUD Cool Roof Incentive	Temperature	Ongoing
Operational Initiative	SMUD Shade Tree Program	Temperature	Ongoing
Operational Initiative	Savings By Design ILFI Incentive	All	Ongoing
Operational Initiative	AB327 / More than Smart Grid Modernization Research	All	2016-2020
Operational Initiative	Distributed Energy Resource Strategy	All	2016-2020

Action Plan Summary



Wildfire

California

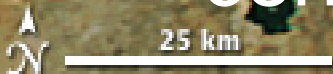
smoke

Nevada

Lake Tahoe

Small burn area
increase through
2020

Leveling off
through end of
century



Northern Sierra Nevada Hydrology



Estimate Precip
total -3% by 2069

(Range +9% to -23%)

SWE -70% by end of century



Variable
precipitation

More volume in Winter
Less in Spring and Fall





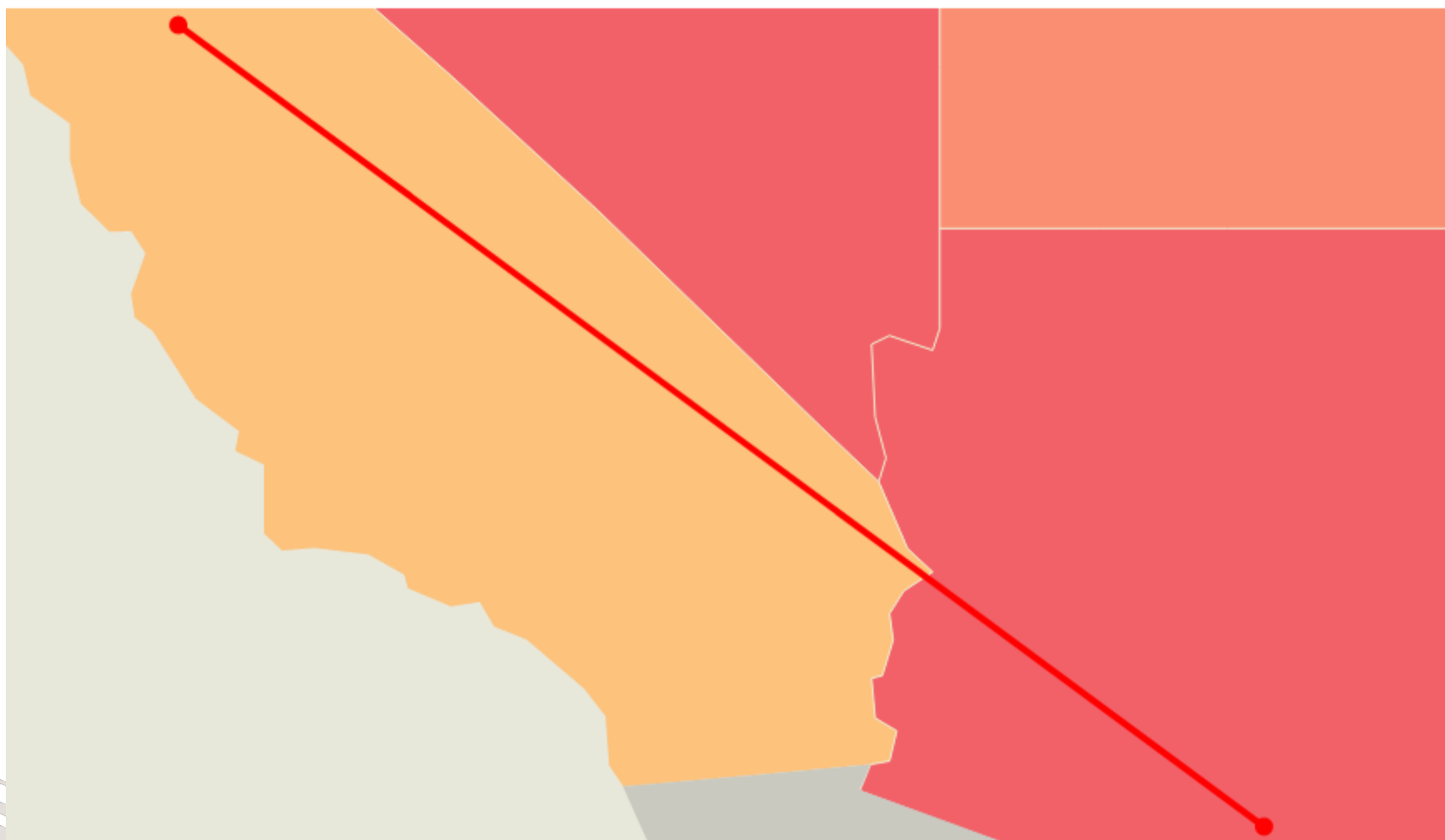
Average days over 101 F

13 > 45 > 85



I live in

Sacramento, CA



By 2100 summers in

SACRAMENTO, CA

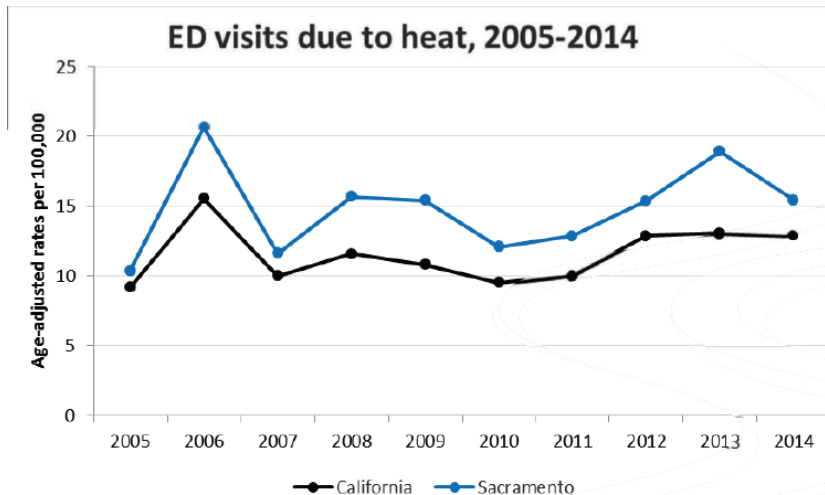
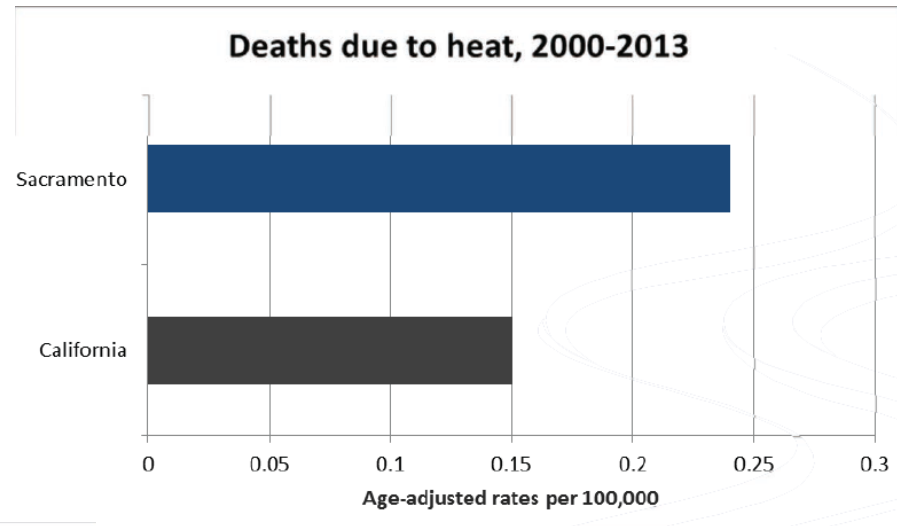
91.54 °F

will be like summers now in

TUCSON, AZ

99.63 °F

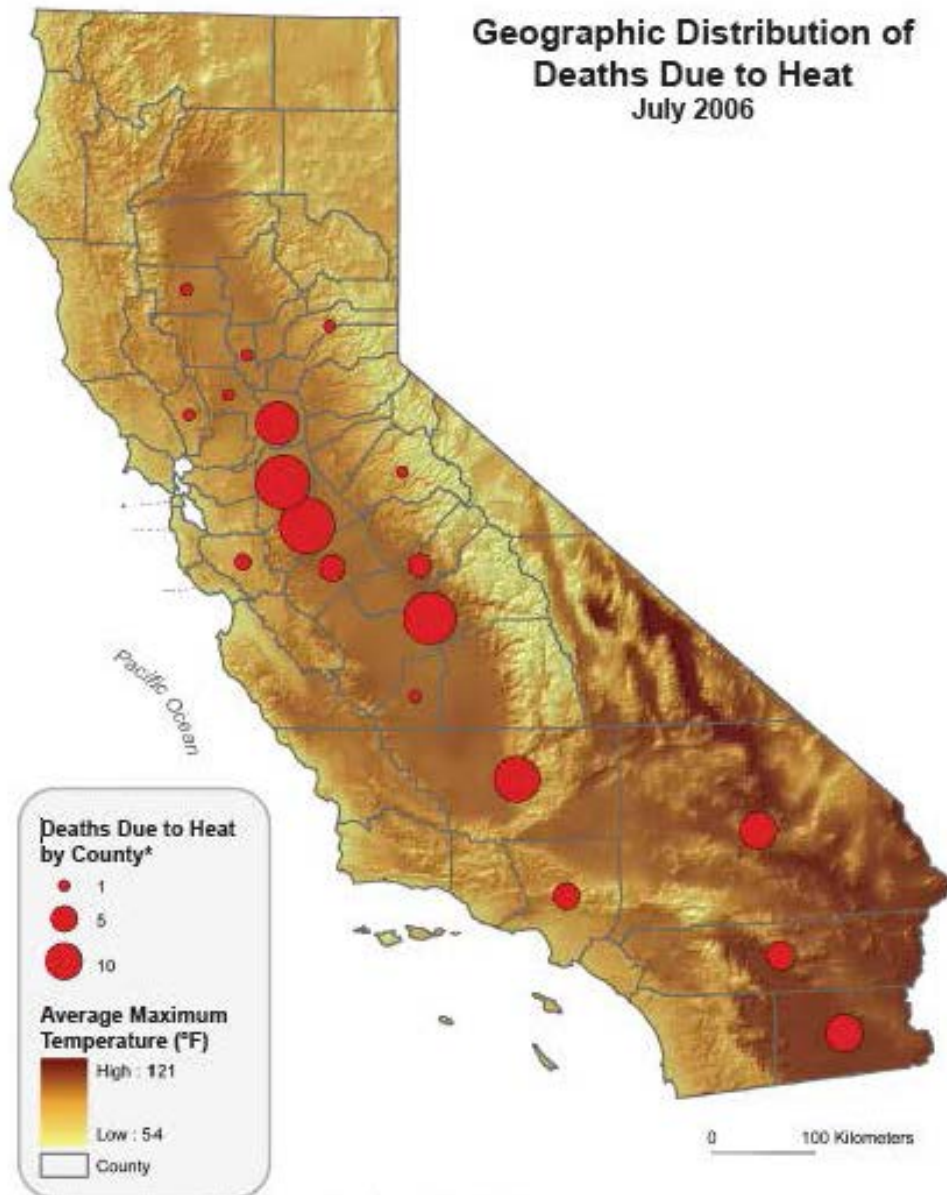
Sacramento Heat Illness & Death Exceed State Averages TODAY



Sources:

- Office of Statewide Health Planning and Development
- Office of Vital Statistics

Figure 6:



*Note: Proportional circles representing the number of deaths per county have been placed at the counties' geographic centers.

Source: California Department of Public Health

2006 CA heat wave

655 excess deaths

16,166 excess ED visits

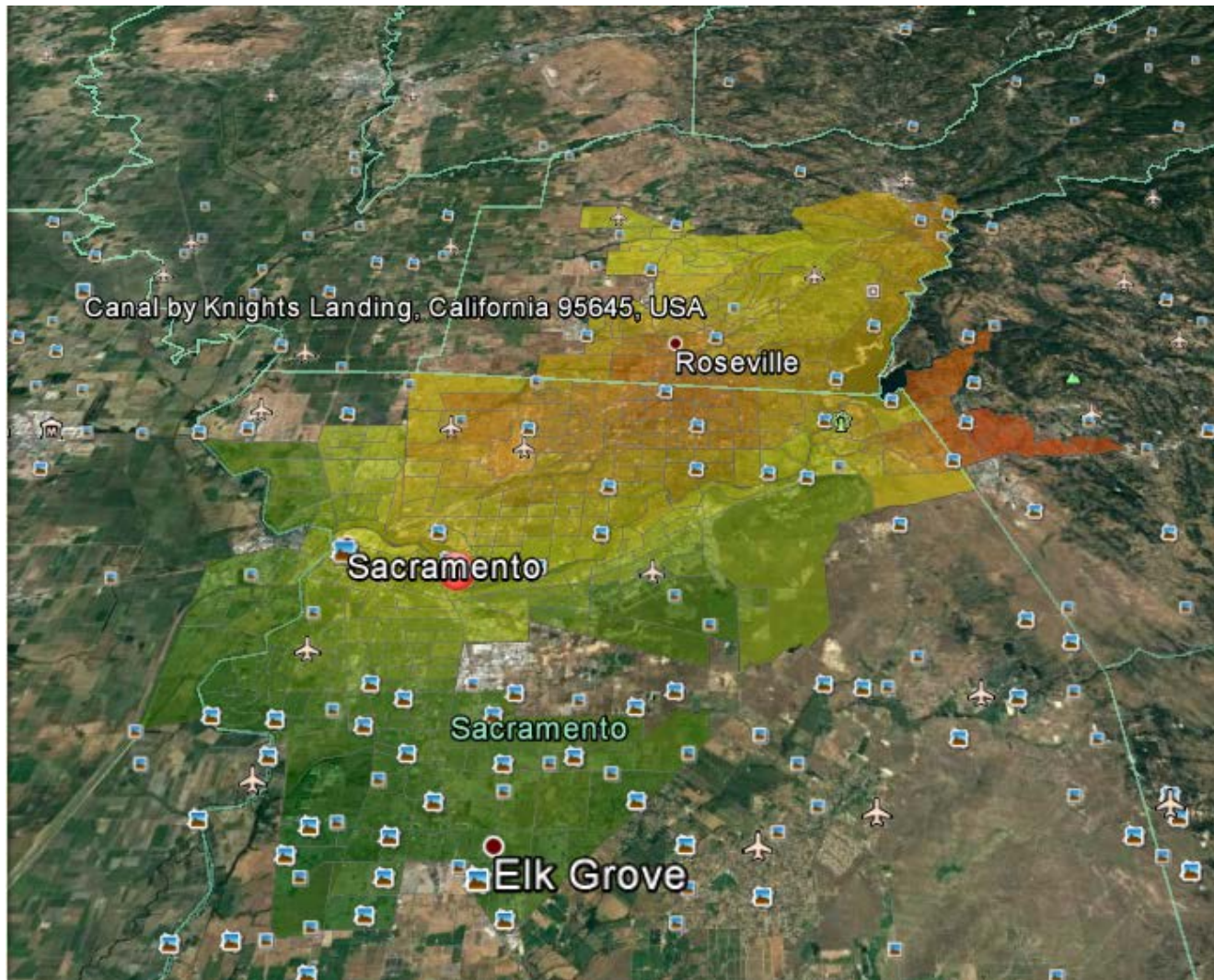
1,182 excess hospitalizations

Children, the elderly, and the poor were at greatest risk.

\$133 million in health-related costs

Agricultural losses exceeded \$1 billion

Capital Region UHI Heat Pollution



Major Impacts

- Health!
- Electricity Demand
- Outdoor Water Use
- Agriculture
- Recreation & Tourism
- Business & Economic Development

Quality of Life

Local Parking Lot Shade Measures

SURVEY OF LOCAL MEASURES TO REDUCE URBAN HEAT ISLAND EFFECT

Jurisdiction	Parking Lot Shading Requirement
Sacramento	50% coverage within 15 years
Sacramento County	30-50% coverage within 15 years, depending on number of spaces.
Placer County	50% coverage within 15 years
Yolo County	50% coverage within 10 years
Elk Grove	30-50% coverage within 15 years, depending on number of spaces.
Roseville	50% coverage within 15 years
Citrus Heights	50% coverage within 15 years
Folsom	40% coverage within 15 years
Davis	50% coverage within 15 years
Rancho Cordova	50% coverage within 15 years
Rocklin	One large tree @ 5 spaces
West Sacramento	3 trees per 100 linear feet

All surveyed counties, cities have similar measures in place.

How can we effectively target cooling?

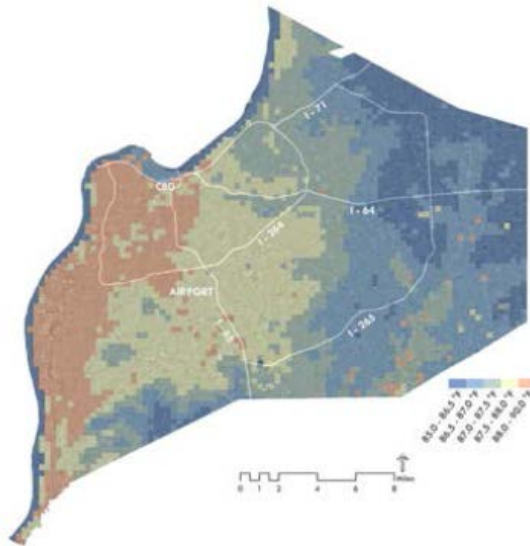


Figure 3.9 Warm season (May through September) average daily high temperature (°F) in Louisville Metro region. The Central Business District (CBD), Louisville International Airport (Airport), and regional interstate highways are labeled

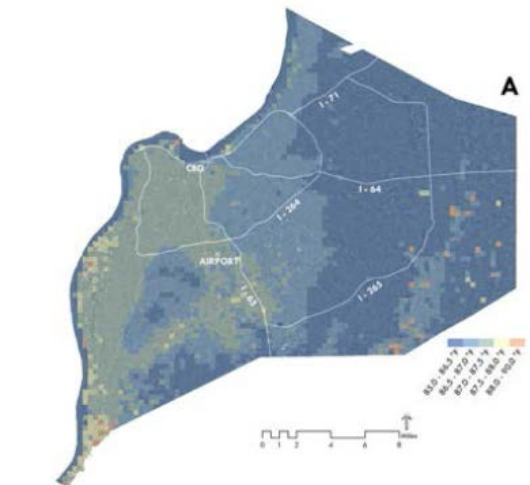


Figure 3.17 Warm season (May through September) average daily high temperature under the Combined Strategies scenario (Panel A) and temperature difference relative to Current Conditions (Panel B)



Figure 4.6 Distribution of avoided heat deaths under the Combined Strategies scenario during May to September 2012 by 1/4 km² grid cell in urban core neighborhoods of Louisville



Source: Daniel Neville <http://nevolution.typepad.com/theories/ludofication/>
Image: Superbrothers Sword & Sworcery



CAPITAL REGION
**CLIMATE READINESS
COLLABORATIVE**

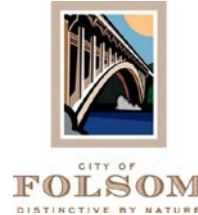


CAPITAL REGION
CLIMATE READINESS
COLLABORATIVE

Membership



AECOM



The Capital Region Climate Readiness Collaborative is a program of the Local Government Commission.

Channel Partners



Local Government Commission
Leaders for Livable Communities



**Franciscans
For Justice**





Why you should participate!

- **Build connections:** Stay connected to cities and counties actively working to address climate impacts
- **Regional climate network:** Reach out more effectively to a regional network
- **Smart partnerships:** Work with local jurisdictions on programs and projects of shared interest.
- **Adaptation leadership:** Help influence and support future projects and direction for regional climate adaptation.
- **Opportunities for Collaboration:** Vibrant statewide network of professionals working on climate resiliency in their regions.

www.climate readiness.info

CRCRC

Regional Heat Pollution Reduction

- Bring ALL stakeholders to the table
- Identify most effective methods to ELIMINATE the UHI
 - Cool Roofs
 - Cool Pavements
 - Tree Canopy, Vegetative cover, other shading
 - Decrease parking requirements
 - Road diets
- Conduct neighborhood scale research to support and refine approach to policy & incentives
- Quantify economic and health benefits of cooling
- Develop cross-sector funding agreements
- Support & share findings with decision makers

= Regional Health Improvement

AND YOU GET SOME SHADE

EVERYONE GETS SHADE!!!



Thank you!



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Powering forward. Together.

