



THE EMMETT INSTITUTE

ON CLIMATE CHANGE AND THE ENVIRONMENT



UCLA | SCHOOL OF LAW



## Cool Roofs in Los Angeles – A Report on Progress



David Fink | June 2014

# INTRODUCTION

- Los Angeles has quickly become one of the most progressive cities in the U.S. for cool roofs
- How did L.A.'s new cool roof ordinance come to be? We'll give the back story, political history, and lessons for other cities



# CLIMATE RESOLVE



## OUR MISSION:

Climate Resolve's mission is 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.

# EMMETT INSTITUTE

- First law school center focused on climate law and policy
- Interdisciplinary, creates policy-relevant research
- Done some work on cool roofs that caught the attention of city leaders



## PRITZKER BRIEFS

Anthony Pritzker Environmental Law and Policy Briefs

POLICY BRIEF NO. 2 | October 2011

### Bright roofs, big city: Keeping L.A. cool through an aggressive cool-roof program

By Cara Horowitz

**Introduction** Los Angeles is one of the best places in the country for a relatively easy and cost-effective public health, combat energy demand, stalling cool roofs. The case for accelerating a in Los Angeles and will policy strategies for ac

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Cara Horowitz is the Andrew Sabin Family Foundation executive director of the Emmett Center on Climate Change and the Environment at UCLA Law, which is dedicated to advancing climate change law and policy. She teaches at the law school and directs the work of the Emmett Center to find solutions to the climate change crisis. Before joining UCLA, Cara worked in the non-profit sector as a lawyer with the Natural Resources Defense Council, where she advocated domestically and internationally to preserve and protect oceans and wildlife.



NRDC REPORT  
JUNE 2012 R:12-06-B

### Looking Up: How Green Roofs and Cool Roofs Can Reduce Energy Use, Address Climate Change, and Protect Water Resources in Southern California

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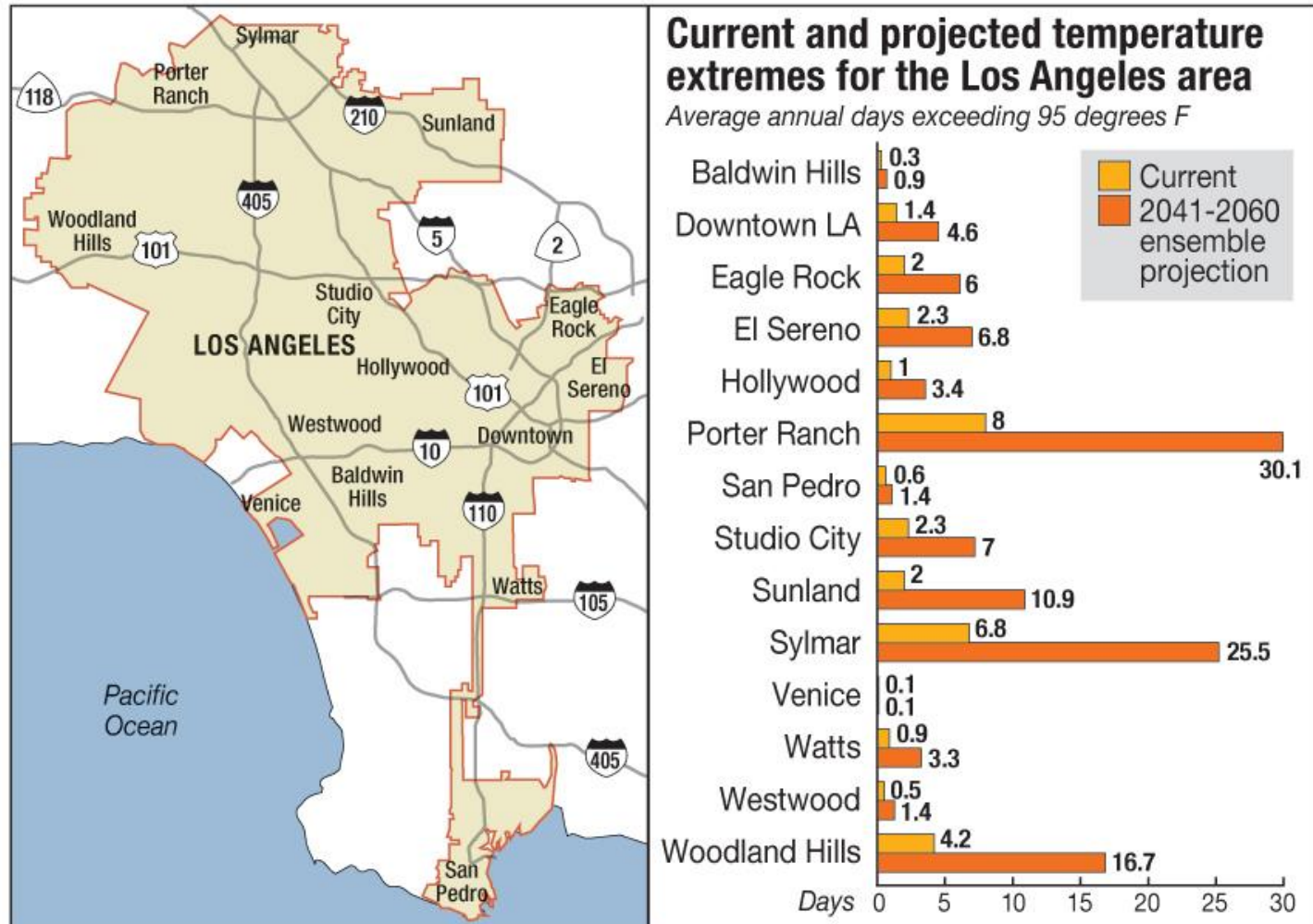
**CONTRIBUTING AUTHOR:**  
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**PROJECT DESIGN AND DEVELOPMENT:**  
Jon Devine  
David S. Beckman  
Natural Resources Defense Council



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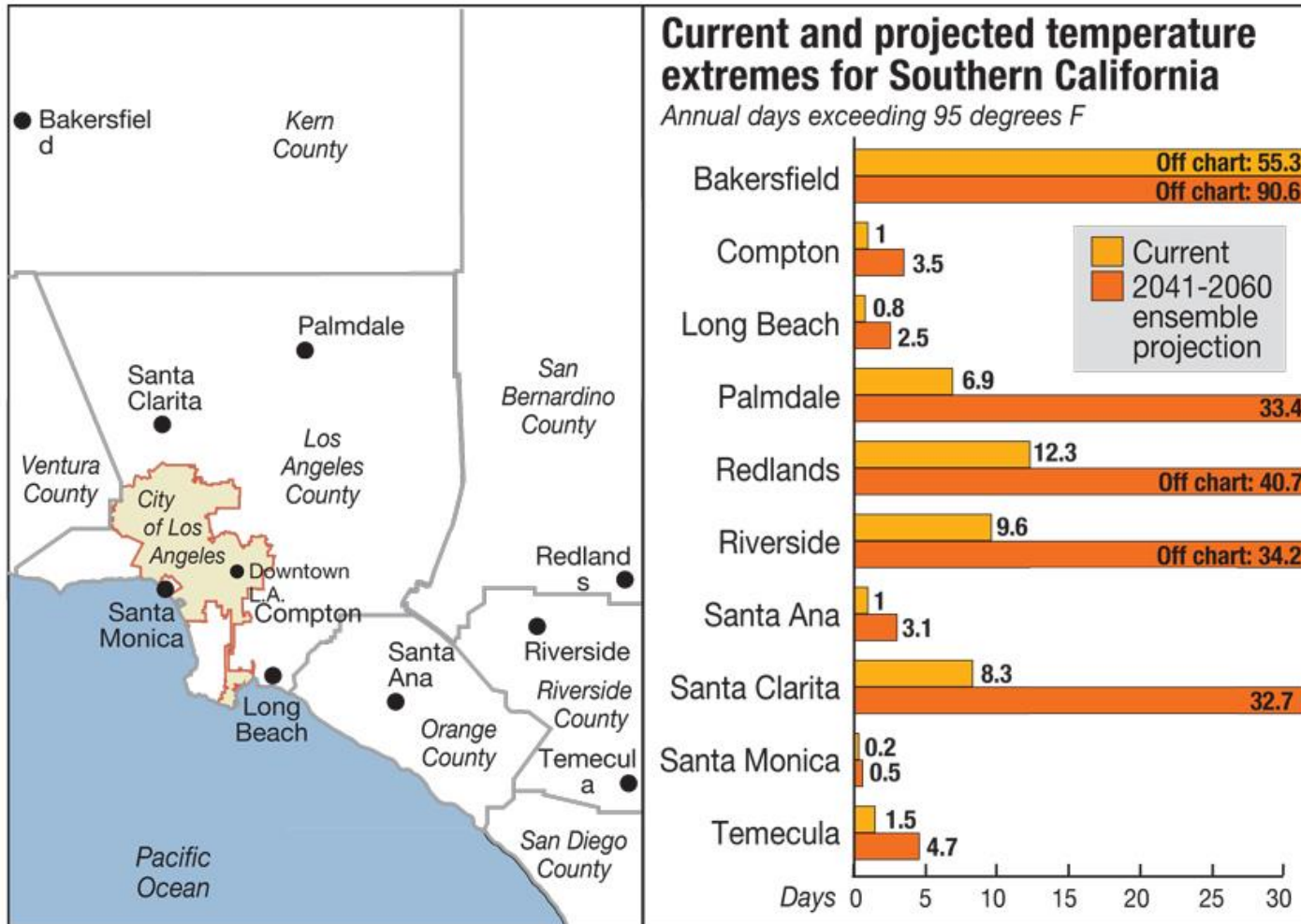
# REGIONAL HEAT IMPACTS – CLIMATE CHANGE



Source: UCLA LARC study, 2012; chart based on the mean/average projected by the 19 climate models



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Source: UCLA LARC study, 2012; chart based on the mean/average projected by the 19 climate models

# NATIONAL CLIMATE ASSESSMENT



<http://nca2014.globalchange.gov/report>

# EFFECTS OF RISING TEMPS

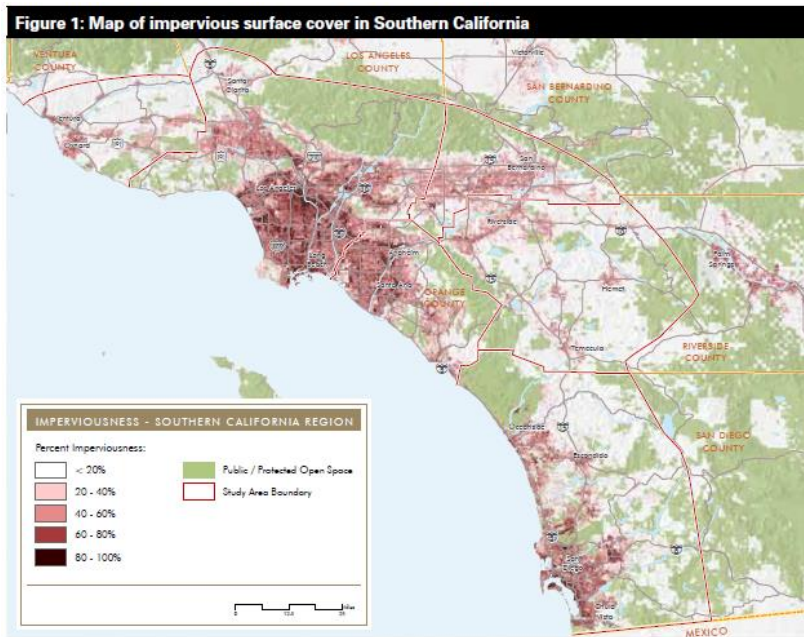


- Greater peak electricity demand
  - **Unstable grid, power outages**
  - **Greater costs**
- More pollution
  - **GHG and other pollution from greater electricity production**
  - **Direct temp effects on smog**
- Public health threats
  - **Heat deaths and injuries**
  - **Asthma rates and attacks**
- Neighborhoods not as comfortable
  - Exacerbates urban heat island effects



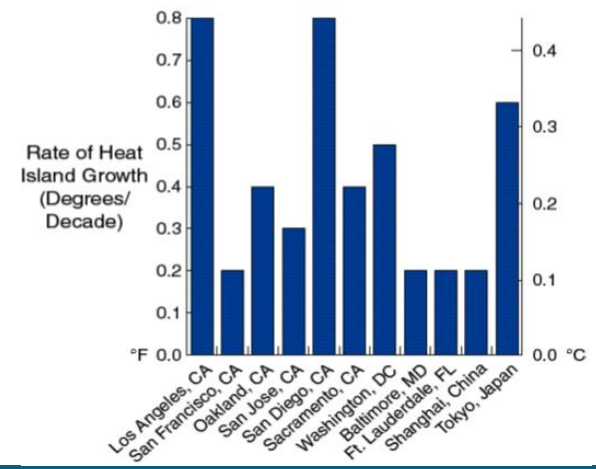


# L.A. RIPE FOR COOL ROOFS



Source: NRDC "Clear Blue Future," 2009.

- Hot summers, mild winters
- Dramatic urban heat island
- Poor air quality
- Significant potential: 20% of area is roof



# L.A. RIPE FOR COOL ROOFS

## Benefits

- Cost savings
- Electricity savings
- CO<sub>2</sub> reductions
- UHI reductions
- Improved air quality

Source: *Looking Up* (2012, NRDC & Emmett Inst.)

**Table 1: Electricity, cost, and greenhouse gas emissions savings per year, assuming coverage of 50 percent (high) or 30 percent (low) of existing Southern California rooftops**

Scenario	Roof Area (square feet, in millions)	Roof Area Over A/C Space (square feet, in millions)	Direct Elec. Savings (in thousands of MWh)	Cost Savings (\$, in millions)	CO <sub>2</sub> Reductions (in thousands of metric tons)
High	9,055	6,067	1,625	211	465
Low	5,433	3,640	565	73	162

# 2013 L.A. ORDINANCE

- March 13, 2013 Mayor Villaraigosa directs the Los Angeles 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 17, 2013 Los Angeles City Council unanimously approves residential cool roof ordinance.



# LA 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**

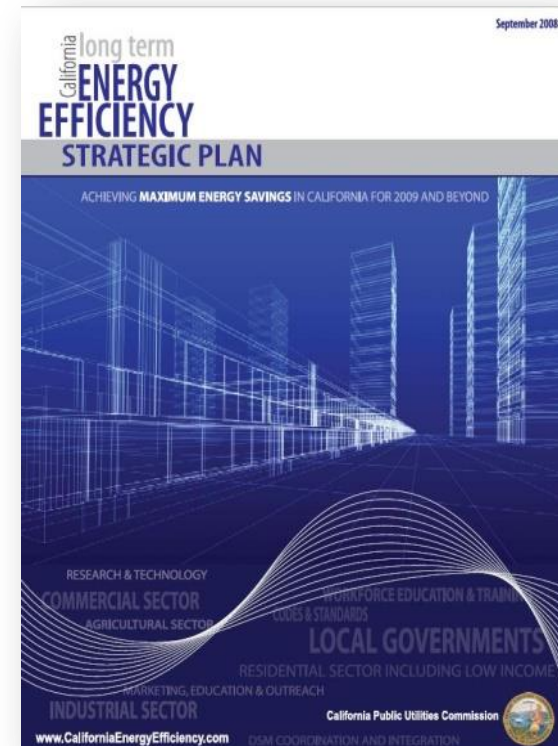
ROOF SLOPE	MINIMUM 3-YEAR AGED SOLAR REFLECTANCE	THERMAL EMITTANCE	SOLAR REFLECTANCE INDEX SRI
< 2:12	0.63	0.75	75
≥ 2:12	0.20	0.75	16

□

# California Long Term EE Strategic Plan

## 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 1<sup>st</sup> in the Loading Order





# 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

# COMMISSION APPROVAL


- Only those local energy efficiency ordinances that have been approved by the Energy Commission are legally enforceable.
- Unapproved local ordinances that **require** buildings under their jurisdiction to be **more** energy efficient than what is required under the California Building Energy Efficiency Standards, Title 24, Part 6, are not legally enforceable.
- Complaints are investigated and remedies are developed and enforced.



# CITIES of TOMORROW







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