Climate Readiness in the Capital Region

Presented to the 2nd Regional Convening of Public Health Officers, Planning Directors & New Partners
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SMUD Energy Research & Development

and

Chair, Capital Region Climate Readiness Collaborative

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

- Upper American River Hydro Project – 688 MW
- Solano Wind – 280 MW
- Natural Gas Combined Cycle – 850 MW at 4 locations, NG Peakers 150 MW at 3 loc’s
- Distributed Solar – 117MW rooftop, 100 MW groundmount
- COTP Transmission to NW – 1600 MW
- Biomass -203 MW
- Upper American River Hydro Project – 688 MW
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
<table>
<thead>
<tr>
<th>Plan Component</th>
<th>Title</th>
<th>Impacts Addressed</th>
<th>Timeframe</th>
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<tr>
<td>Community Engagement</td>
<td>Capital Region Climate Readiness Collaborative</td>
<td>All</td>
<td>Ongoing</td>
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<tr>
<td>Community Engagement</td>
<td>Regional Urban Heat Island Initiative</td>
<td>Temperature</td>
<td>Beginning 2017</td>
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<tr>
<td>Community Engagement</td>
<td>Regional Biosequestration</td>
<td>All</td>
<td>Begin Dec. 2017</td>
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<tr>
<td>Enterprise Program</td>
<td>Sacramento Resilient Grid Initiative (REDI Grant)</td>
<td>Flooding</td>
<td>Complete Dec. 2017</td>
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<tr>
<td>Enterprise Program</td>
<td>Climate Change And Enterprise Risk Management</td>
<td>All</td>
<td>Monthly Review</td>
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<tr>
<td>Enterprise Program</td>
<td>Customer Program Evaluation and Metrics Research</td>
<td>All</td>
<td>Complete 2017</td>
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<tr>
<td>Enterprise Program</td>
<td>Environmental Sustainability</td>
<td>All</td>
<td>Complete Dec. 2020</td>
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<td>Enterprise Program</td>
<td>Long Range Asset Management Plan</td>
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<td>Complete 2017</td>
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<td>Enterprise Program</td>
<td>Focused Climate Research</td>
<td>Hydrology, Wind</td>
<td>To be Determined</td>
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<td>Enterprise Program</td>
<td>Contract Climate Exposure Evaluation</td>
<td>All</td>
<td>Pilot Launch 2017</td>
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<td>Enterprise Program</td>
<td>Flood Data Analysis and Preparedness Planning</td>
<td>Flooding</td>
<td>Complete 2017</td>
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<td>Enterprise Program</td>
<td>Emergency Preparedness</td>
<td>All</td>
<td>Ongoing</td>
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<td>Capital Project</td>
<td>SPA County Recycled Water Project</td>
<td>Drought, Hydrology</td>
<td>Fall 2017</td>
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<td>Capital Project</td>
<td>SMUD Nature preserve Mitigation Bank</td>
<td>Native Species</td>
<td>Operational 2014 Monitoring Through 2017</td>
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<td>Capital Project</td>
<td>SMUD Headquarters Design and Renovation</td>
<td>All</td>
<td>Renovation Began 2016</td>
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<tr>
<td>Operational Initiative</td>
<td>Forest Thinning, Stream and Revenue Flows in UARP</td>
<td>Wildfire</td>
<td>2017 - 2021</td>
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<td>Operational Initiative</td>
<td>Unmanned Aerial Systems Risk Identification Program</td>
<td>Wildfire</td>
<td>Annual</td>
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<td>Operational Initiative</td>
<td>Cloud Seeding</td>
<td>Drought</td>
<td>Annual</td>
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<td>Hydropower Risk Mitigation Strategies</td>
<td>Drought, Hydrology, Wildfire</td>
<td>Ongoing</td>
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<td>Operational Initiative</td>
<td>SMUD Cool Roof Incentive</td>
<td>Temperature</td>
<td>Ongoing</td>
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<td>Operational Initiative</td>
<td>SMUD Shade Tree Program</td>
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<td>Ongoing</td>
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<td>Operational Initiative</td>
<td>Savings By Design ILFI Incentive</td>
<td>All</td>
<td>Ongoing</td>
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<tr>
<td>Operational Initiative</td>
<td>AB327 / More than Smart Grid Modernization Research</td>
<td>All</td>
<td>2016-2020</td>
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<td>Operational Initiative</td>
<td>Distributed Energy Resource Strategy</td>
<td>All</td>
<td>2016-2020</td>
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</tbody>
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Wildfire

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

Deaths due to heat, 2000-2013

ED visits due to heat, 2005-2014

Sources:
- Office of Statewide Health Planning and Development
- Office of Vital Statistics
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 UHII Heat Pollution

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

Quality of Life

Source: CalEPA
Local Parking Lot Shade Measures

All surveyed counties, cities have similar measures in place.

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

Source: Jim MacDonald, City of Sacramento, October 2016
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.
The Capital Region Climate Readiness Collaborative is a program of the Local Government Commission.

Local Government Commission
Leaders for Livable Communities
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.climatereadiness.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.