

# Technical Workshop

## Efficiency, Renewables & Grid Management

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California Energy Commission

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San Diego, CA



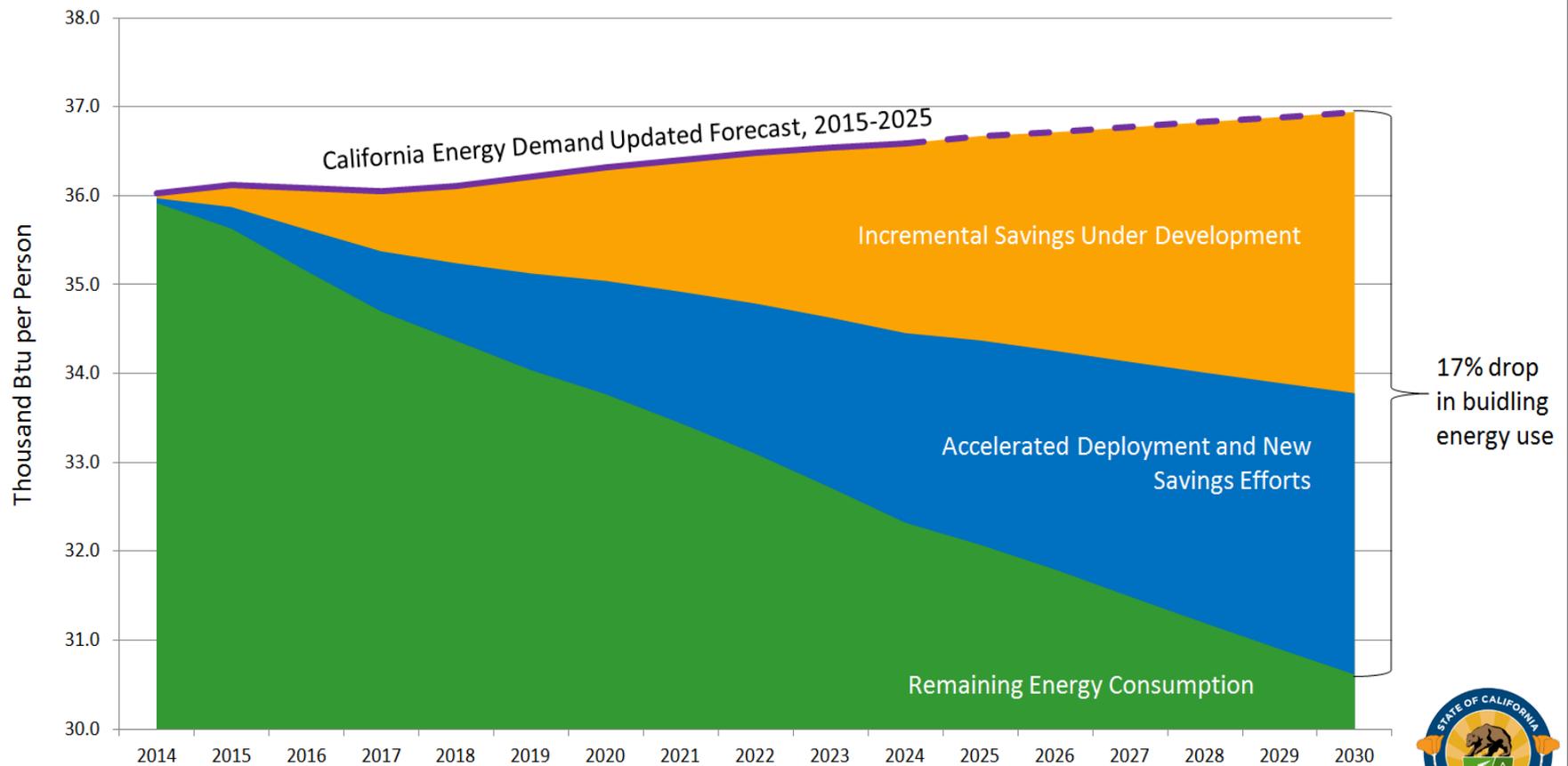
# California's 2030 Energy Goals

- Governor Brown's inaugural address, January 2015. By 2030:
  - 50% of electricity from renewable sources
  - Cut petroleum use by vehicles in half
  - **Double EE savings in buildings**; cleaner heating fuels
- Ensure CA trajectory for its long term climate goals
  - Reduce GHG emissions to 40% below 1990 levels by 2030 and 80% below 1990 levels by 2050
- **Necessitates additional focus on existing buildings in order to achieve this level of energy savings**



# Reduced Energy Consumption by Doubling Energy Savings

Reduction in Building Energy Consumption per Capita



Source: CEC Existing Buildings Energy Efficiency Action Plan, March 2015 draft

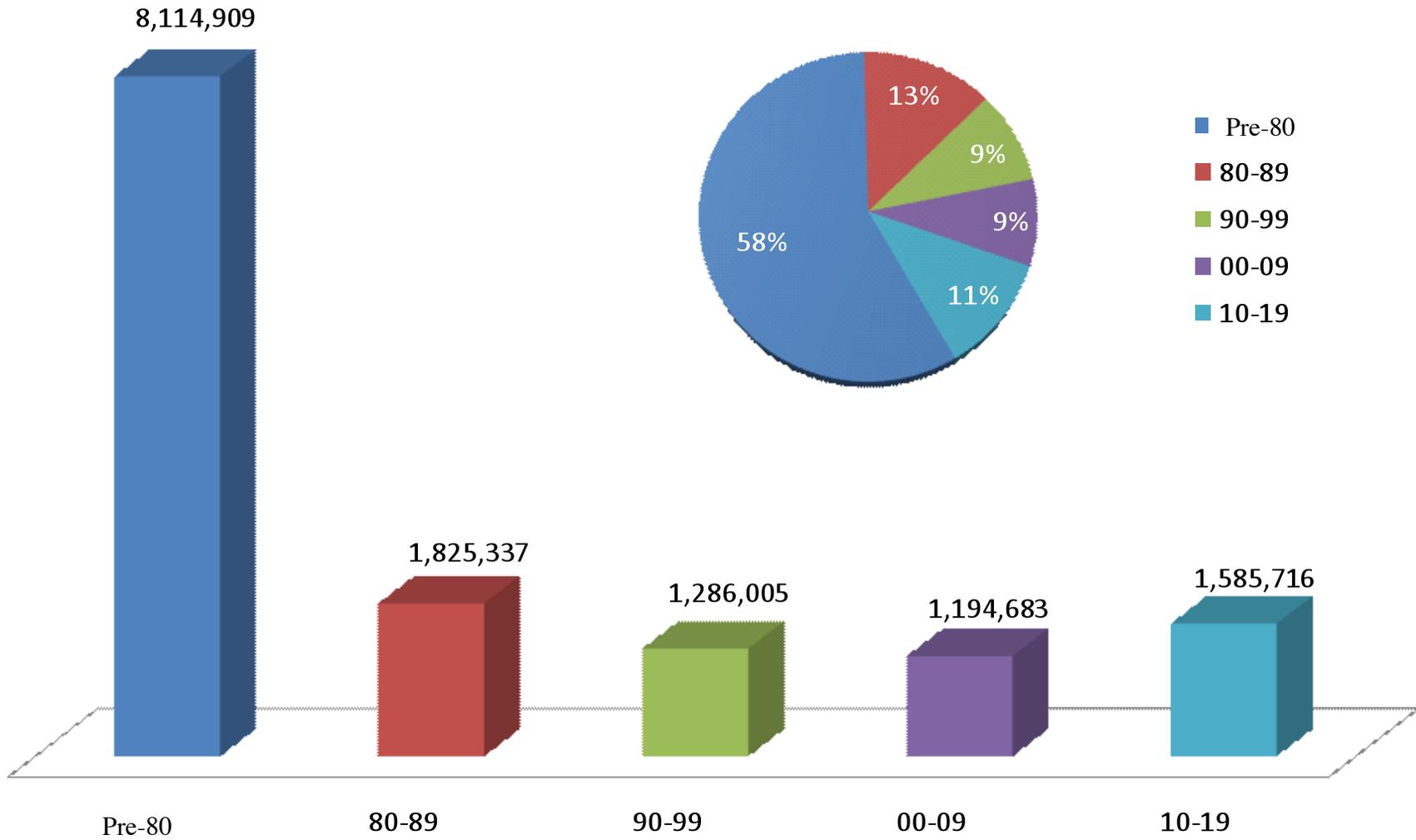


# Existing Building EE Action Plan

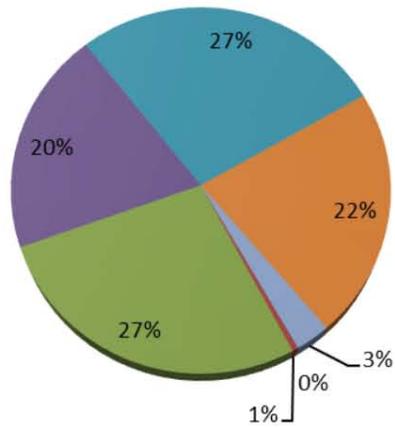
- Current efficiency savings trajectory is insufficient to achieve CA's clean energy and emissions reduction goals
- Unlocking EE potential of existing buildings requires market focused solutions
  - Data analytics to support consumer decisions
  - Research to better predict behavior and pricing impacts
  - Goals are too large for just ratepayer & taxpayer funding
  - Leveraging private capital will be required



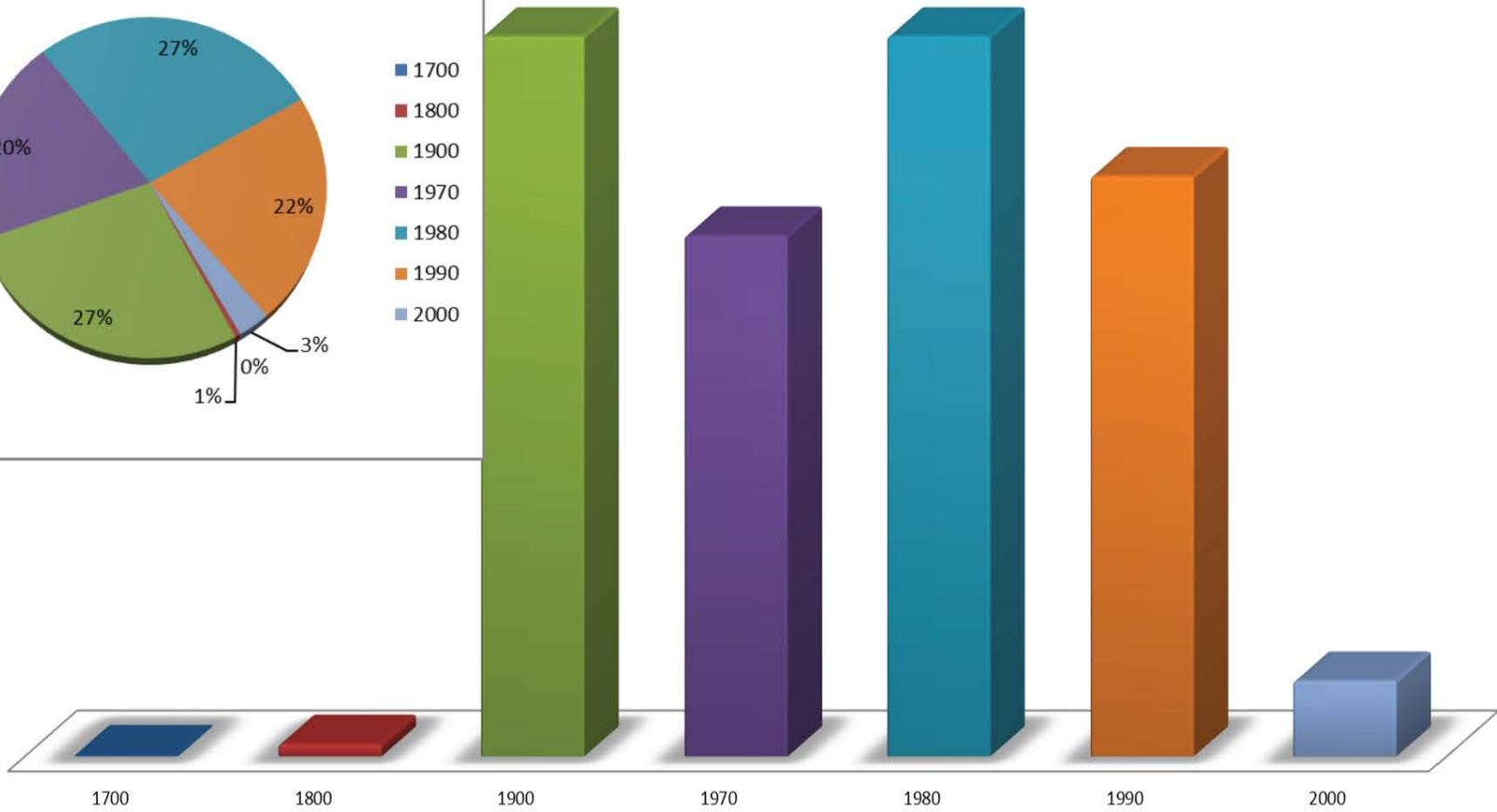
### Existing Homes by Construction Decade



Existing Buildings by Construction Decade



- 1700
- 1800
- 1900
- 1970
- 1980
- 1990
- 2000



# Existing Building EE Action Plan

- Plan focuses on foundational efforts to ensure a credible environment for implementation of energy efficiency at scale
- Success = EE consideration and action embedded into all energy decisions

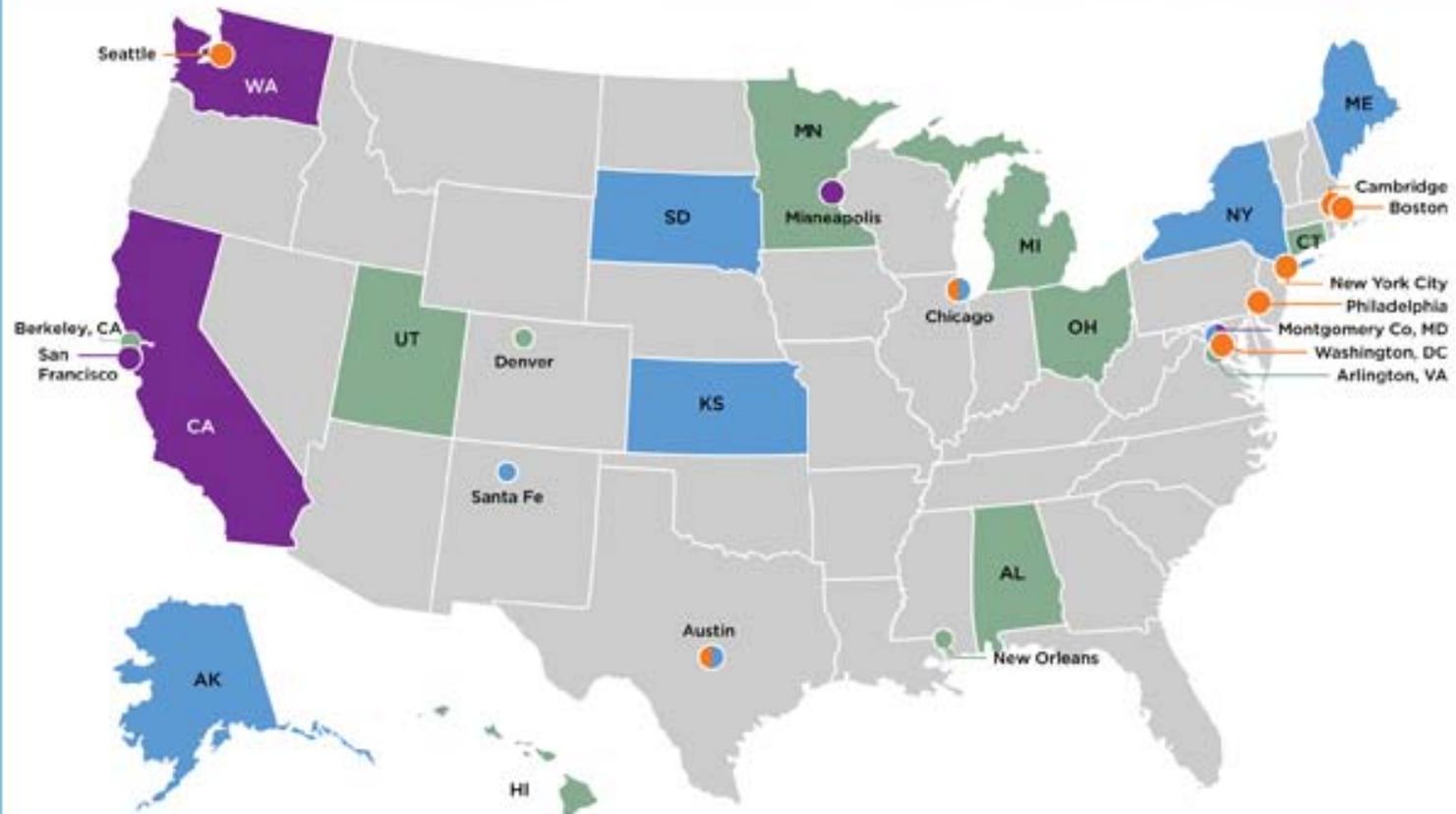


# Goal 1 - Proactive and Informed Government Leadership in EE

*Objective: Policies, initiatives and programs lead a long-term commitment to achieve EE at scale*

- Government Leadership by Example
  - Local Government Challenge Program
- Nonresidential Energy Benchmarking and Disclosure
  - Large, nonresidential buildings initially
- Modernize Assessments, Asset Ratings and Labels

# U.S. Building Benchmarking and Transparency Policies



- Commercial policy adopted
- Commercial & multifamily policy adopted
- Public buildings benchmarked
- Single-family transparency adopted

# Goal 1 - Proactive and Informed Government Leadership in EE

*Objective: Policies, initiatives and programs lead a long-term commitment to achieve EE at scale*

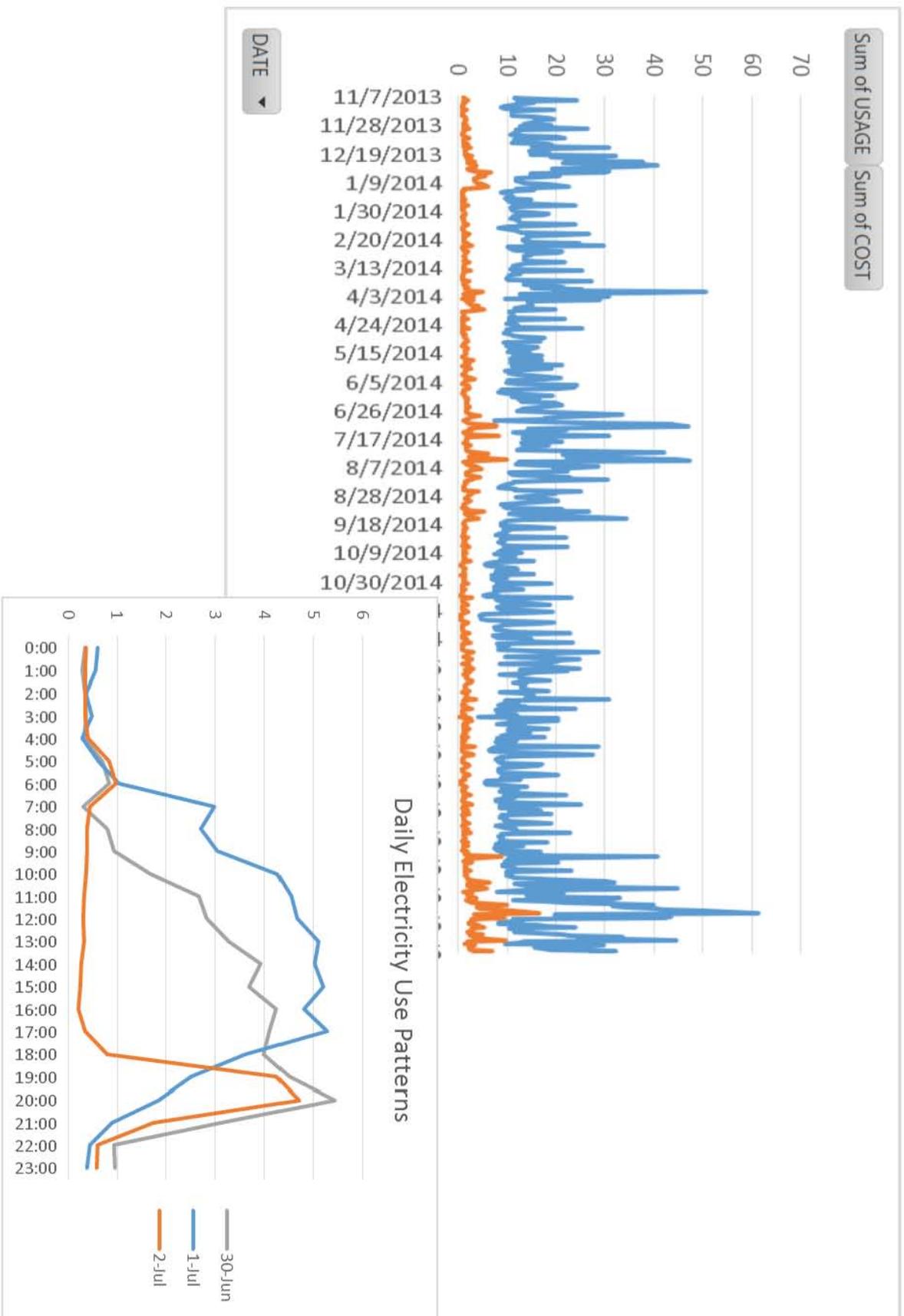
- Codes and Compliance
  - Assess complexity of code
  - Clarify for existing buildings including multifamily properties
  - Strategies to improve code compliance levels
  - Number of compliance forms
- Collaborative body to lead and coordinate progress toward energy efficiency across the energy agencies

# Goal 2 - Data Drives Informed Decisions

*Objective: Building owners and residents expect EE services informed by the full range of relevant information*

- Increased accessibility and availability of energy use data is foundational to improving existing buildings
  - Data analytics rapidly evolving
  - Customer specific insight
  - Monitoring and persistence of savings
  - Standardized protocols and data interchange
  - Energy use baselines for policy

# Example of smart meter data



# Goal 3 - Building Industry Delivers Innovation and Performance

*Objective: A robust and sustainable building industry drives and satisfies demand*

- Performance-driven industry and programs
  - Industry Partners Programs
  - Performance Assurance
  - Incentives tied to Performance
- High-performance workforce, education and training
- Explore and encourage zero net energy retrofits

# Goal 4 - Californians Recognize and Benefit from the Value of Efficiency Upgrades

*Objective: Building values reflect energy performance and associated benefits*

- Adopt property asset-related energy characteristics in building valuation
  - Introduce uniform property valuation approaches
  - Evaluate Appraisal Institute's Green Addenda
  - Support development and deployment of Green Leases
- Energy performance information included in property listings
- Develop best practices for targeted ME&O

# California Home Energy Rating Certificate



<p>Information goes here on compliance with other programs:</p>	<p><b>Energy Impact</b></p> <p><b>Greenhouse Gas Emissions</b> Carbon Dioxide xxx tons/year</p> <p><b>Energy Consumption</b> Electricity (kWh/year) Cooling --- Lights --- Appliances --- Total ---</p> <p>Natural Gas (therms/year) Space Heating --- Water Heating --- Total ---</p> <p><b>Operating Cost (\$/year)</b> Electricity --- Gas --- Total ---</p> <p><b>Renewable Energy Production</b> None</p>	<p><b>Site Information</b></p> <p><b>Address</b> 123 Jones Street Anywhere, California 9410x</p> <p><b>General Information</b> Conditioned Floor Area 2,200 ft<sup>2</sup> Bedrooms 4 House Type Single Family Foundation Type Slab-on-Grade</p> <p><b>Energy Efficiency Features</b></p> <p><b>Insulation</b> Ceiling R-30 Wall R-11 Floor over crawlspace None Slab Edge None</p> <p><b>Windows</b> Frame Aluminum Glazing Double</p> <p><b>Heating System</b> Gas furnace, 0.80 AFUE Unsealed air distribution ducts</p> <p><b>Cooling System</b> None</p> <p><b>Water Heating System</b> Gas storage type, 0.52 EF</p>	<p><b>Official Home Energy Rating</b> in conformance with the requirements of the California Energy Commission <a href="http://www.energy.ca.gov">www.energy.ca.gov</a></p>  <p><b>HERS Provider:</b> Acme Energy Rated Homes 934 Energy Efficient Way Power Junction, California <a href="http://www.AcmeEnergyRatedHomes.com">www.AcmeEnergyRatedHomes.com</a></p> <p><b>Rating Information</b> Rating Number xxxx-yyyy Certified Rater EEH, Inc. Stockton, CA Rating Date: January dd, yyyy</p> <hr/> <p>Rater Signature _____ Date _____</p>
<p>Qualifying Information Goes Here:</p>			
<p>HERS Provider and/or Sponsor Co-Branding Logos Go Here:</p>			

## Goal 5 - Solutions are Accessible and Affordable for all Californians

- *Objective: Efficiency is an integral part of routine transactions and readily financed*
- Database of finance payment and project performance informs capital markets for risks & returns
- Ensure availability of financing matched to building trigger points
- Incorporate EE into the mortgage valuation and underwriting process
- Leverage PACE programs as appropriate

## Goal 5 - Solutions are Accessible and Affordable for all Californians

- *Objective: Efficiency is an integral part of routine transactions and readily financed*
- Encourage new investment cost recovery mechanisms to combat split incentive problem (e.g. tenant meter-based, green leases).
- Expand funding options for local and state governments, and schools
- Expand resources for revolving funds
- Promote expanded use of energy service agreements

California**FIRST**



Your energy efficient future, today.



**ENERGY**  
**INDEPENDENCE**  
A SONOMA COUNTY PROGRAM



**MPOWERPLACER**



Source:  **PACENow**  
Financing Energy Efficiency