

Berkeley Municipal Energy & Green Building Report

Environment & Climate Commission
September 27, 2023

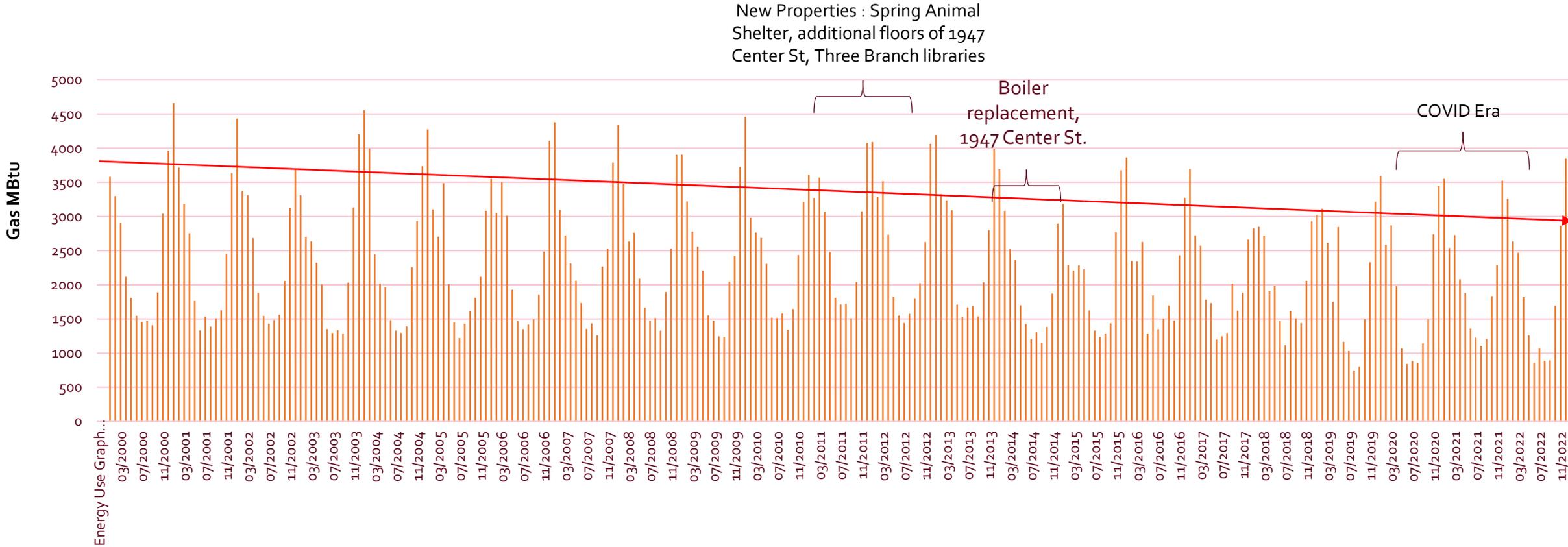


Berkeley Municipal Energy Trends - Natural Gas



Berkeley Municipal Facilities Trend Natural Gas (MBtu) Use through 2022

17% reduction in gas primarily through efficiency and whole-building electrification

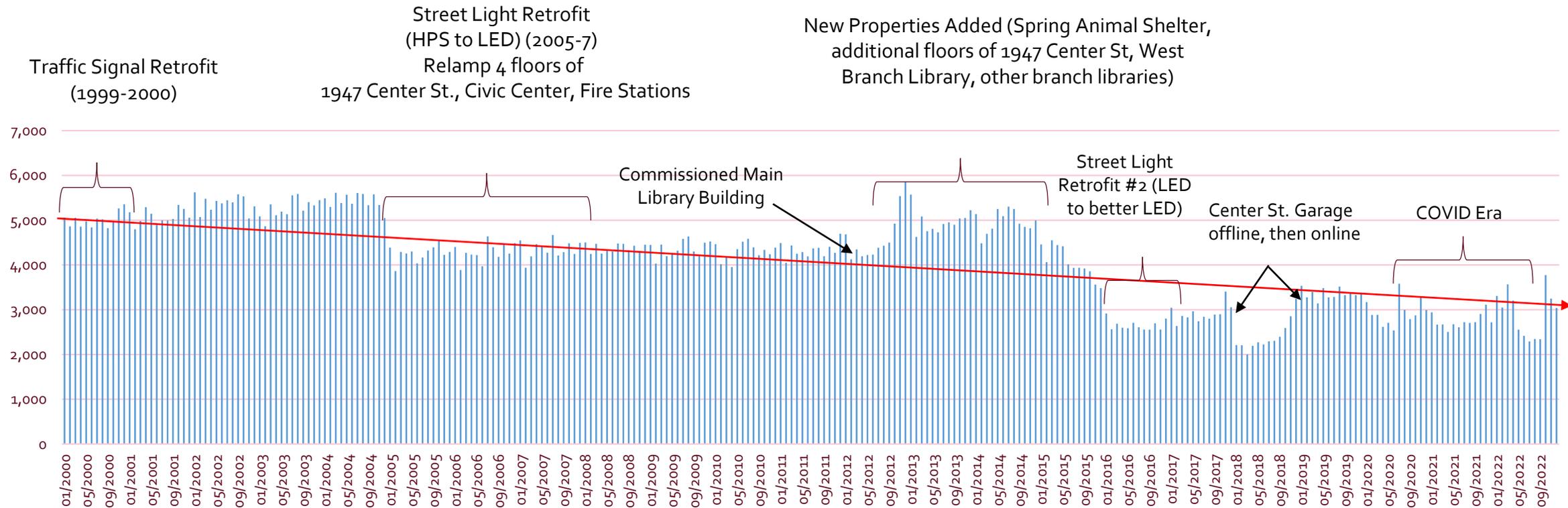


Berkeley Municipal Energy Trends - Electricity



Berkeley Municipal Facilities Trend Electricity (MBtu) Use through 2022

42% reduction in Electricity primarily through efficiency



Energy Efficiency Projects



Lighting Upgrades to LED

- Public Safety Building, 2023 DoE Award-Winning Design, saving over 300,000 kWh annually
- Other Fire Stations, Public garages, and Municipal buildings in process

Building Envelope

- Mental Health Clinic full insulation including slab, insulated windows, draft sealing
- Ann Chandler Health Clinic full insulation, insulated windows, draft sealing, HRV space conditioning efficiency and improved IAQ
- West Branch Library ZNE



Electrification Projects

Kitchen Electrification

- North & South Berkeley Senior Centers

Heat Pump Water Heaters

- Main Library, North & South Branches
- Corporation Yard Green Room & Ratcliff Building (Admin)
- Fire Stations 3 & 6
- Marina Admin/Restroom
- Non-Profit sites (non-City buildings):
Women's Daytime Drop-In Center, and
Harrison House DHW and boiler replacement

Added loads seem to be minimal; more data/time needed for assessment



On-Site Generation & Storage Projects

Solar Electric Generation

- Shorebird Park Nature Center
- Berkeley Corp Yard
- West Branch Library
- South Branch Library
- North Berkeley Senior Center



Solar Thermal

- West Campus Swim Center
- Shorebird Park Nature Center
- West Branch Library



Overall Energy Program Challenges

Funding challenges

- No dedicated budget for building improvements, only bonds/special project funds

Changes in incentive programs

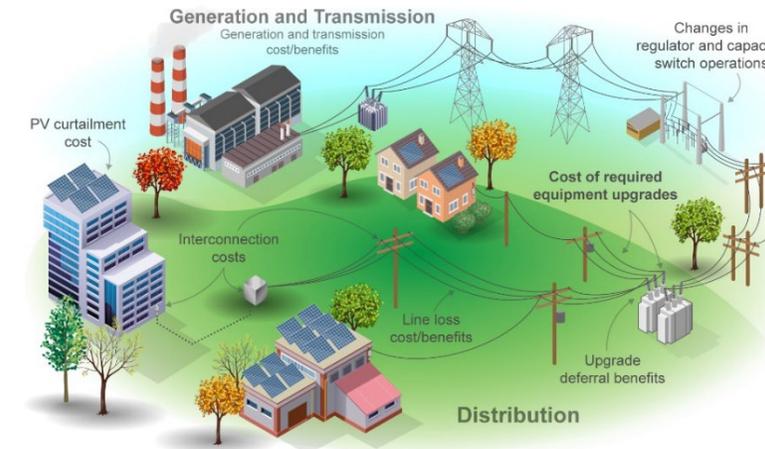
- Building & Energy code changes reduce program types
- Equipment types are removed from programs as they become ineligible under new codes

Staff capacity & training

- Code & Design Training needed for City staff
- No longer have Municipal Architect positions with background in Green Design

PG&E interconnection & capacity

- Major costs associated with PG&E engineering studies for increased grid capacity
- Interconnection contracts slow to process



Municipal Green Building Policy

2004 Municipal Green Building Resolution



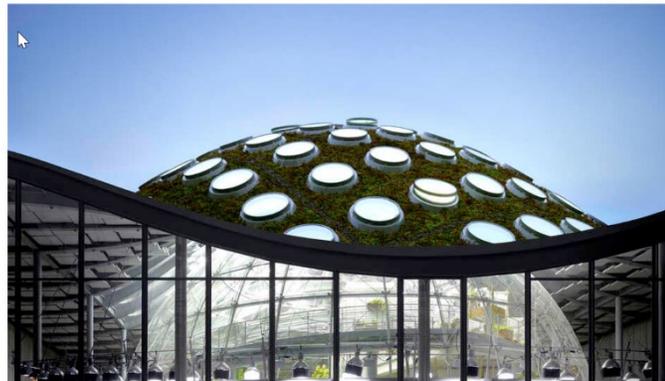
- New Construction or Renovations \geq 5000 square feet + \$200K meet a minimum LEED Silver rating
- Small renovations, maintenance, and appliance replacement are not Covered Projects
- Self-certification provision



Motivations for Updating Resolution



1. Updated Resolution can align with current policies such as fossil fuel free
2. Healthier buildings support retention of staff
3. Balance cost of LEED certification vs enhanced green measures
4. Leadership role for what is possible in built environments



New and Evolving Emphasis in Standards



- Broad Sustainability Outcomes
- Ultra Energy Efficiency
- Embodied Energy, Embodied Carbon, Supply Chain impacts



TIER 2



Provisions Under Consideration



- Green Building Certifications
- Ongoing energy and water efficiency for existing buildings
- Beneficial electrification including mobility

Evaluation Criteria



1. Advance fossil fuel free
2. Maximize building resilience
3. Prioritize energy loading order: efficiency, electrification, on-site generation/storage
4. Create healthy and productive spaces
5. Demonstrate green building leadership
6. Optimize building materials for low-carbon, zero-waste, health, etc.
7. Others?

Thank You!



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