Statewide Energy Efficiency Collaborative

Energy Efficiency and Adaptation:

Coordination for Mutually Beneficial Outcomes

- **Michael McCormick**, Senior Planner, Governor's Office of Planning and Research
- **Kathleen Bryan**, Senior Energy Efficiency Specialist, City and County of San Francisco
- **Lauren Casey**, Deputy Director, Sonoma County Regional Climate Protection Authority
- **Kristine Lloyd**, Senior Environmental Policy Advisor, Southern California Gas Company

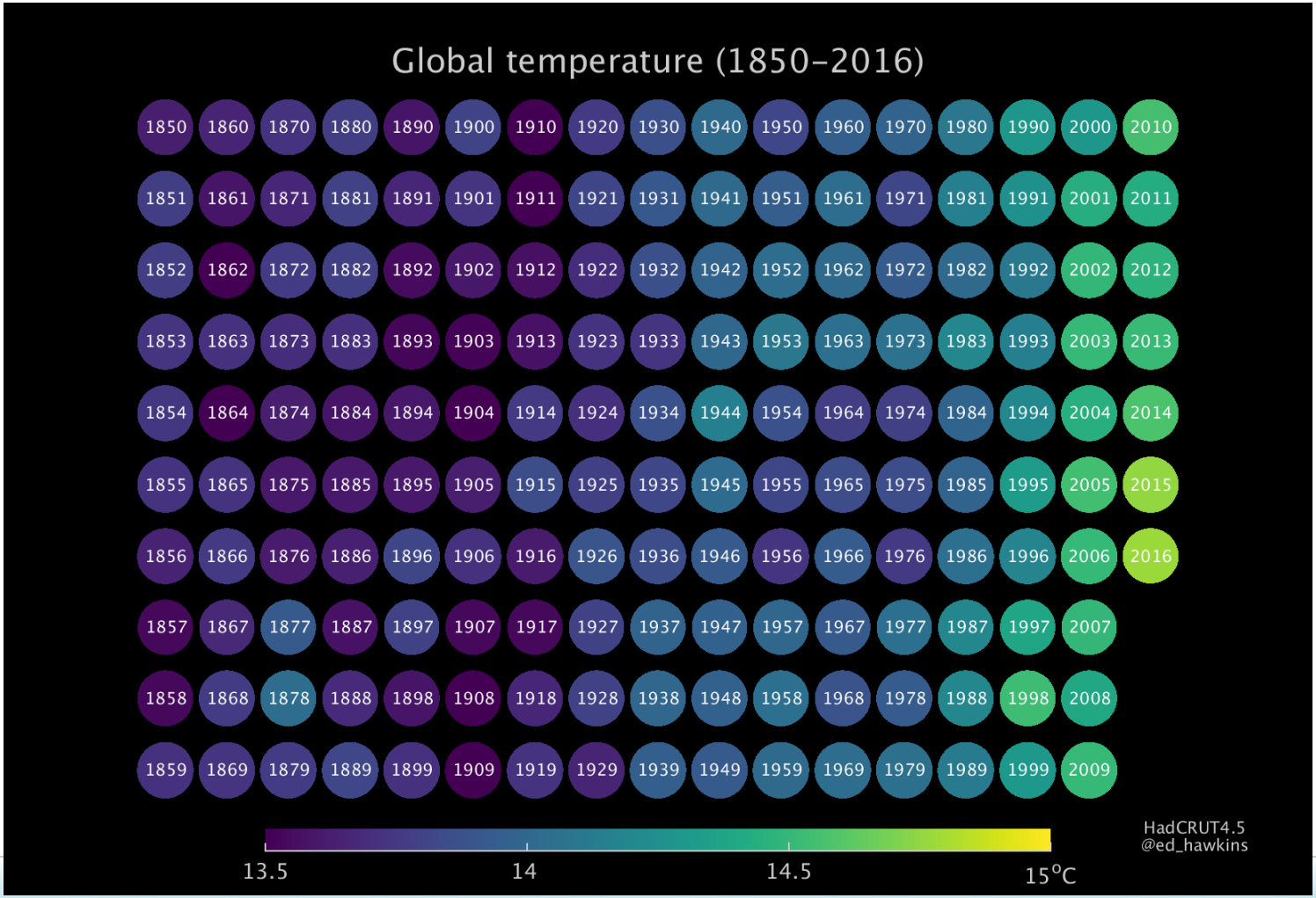
Office of Planning and Research

- State Land Use Policy
- CEQA Guidelines
- General Plan Guidelines
- Military Liaison
- Technical Advisories
- Interagency Coordination
- Executive Initiatives
- Within OPR:
  - Strategic Growth Council
  - Integrated Climate Adaptation and Resiliency Program

Institutionalization

- EO S-03-05 – Targets for 2020 and 2050
  - 2006 AB32 – Global Warming Solutions Act
  - 2009 SB97 – Climate Change and CEQA
  - 2008 SB375 – Linking Emissions, Housing and Transportion
    - SB732 – Strategic Growth Council
- EO S-13-08 – Climate Adaptation
- EO B-30-15 – Integrated approach to climate
  - SB32 – Scoping Plan
  - AB1482 – Safeguarding California and related
  - SB246 – OPR, ICARP and Clearinghouse
  - SB350 – New greenhouse gas emissions targets
  - AB2800 – Infrastructure Planning
  - SB379 – Local governments and climate risk
  - SB1000 - Environmental Justice Requirements

Climate Change is Now



IMPACTS *CA Extremes and Contrasts*

STRATEGY *Extreme Heat Days*

City	2050	2099
Bakersfield	48	93
El Centro	60	101
Fresno	46	90
Los Angeles	78	110
Redding	35	75
Sacramento	44	85
San Diego	76	129
San Francisco	39	126
San Jose	71	111
Truckee	41	83

Six Goals "Pillars"
Executive Order B-30-15

Vision

Reducing Greenhouse Gas Emissions to 40% Below 1990 levels by 2030

Goals

Governor's Key Climate Change Strategies

- **Increase Renewable Electricity Production to 50%**
- **Reduce Petroleum Use by 50% in Vehicles**
- **Double Energy Efficiency Savings at Existing Buildings**
- **Reduce GHG Emissions from Natural and Working Lands**
- **Reduce Short-Lived Climate Pollutants**
- **Safeguard California**

Popular Links

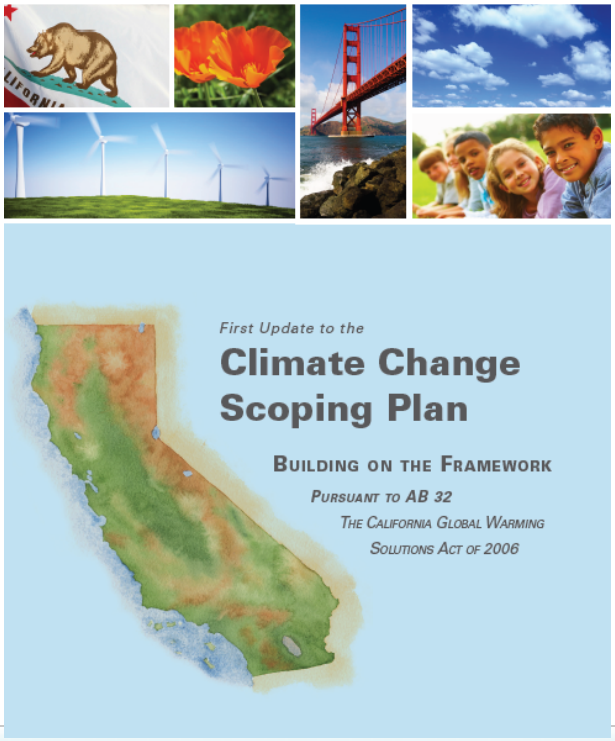
- About AB 32
- AB 32 Scoping Plan
- Adaptation
- Cal-Adapt
- Climate Change Programs
- California Adaptation Forum
- Climate Action Team Research
- California Climate Assessments
- Cap and Trade
- Greenhouse Gas Emissions Inventory

Focus on International

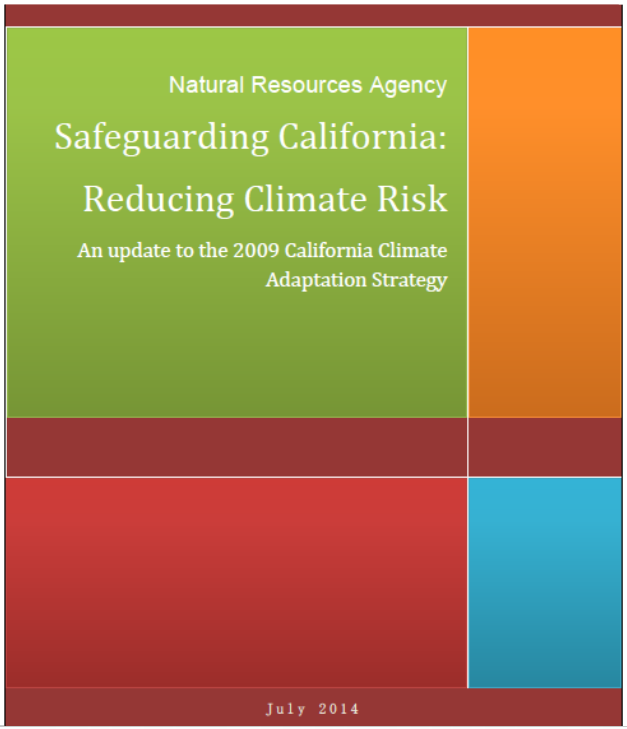
- Intergovernmental Collaboration
- Under2MOU
- Climate Change Conference of the Parties – COP 21
- Intergovernmental Panel on Climate Change
- International ZEV Alliance
- California Climate Action

CALIFORNIA'S CLIMATE CHANGE POLICY

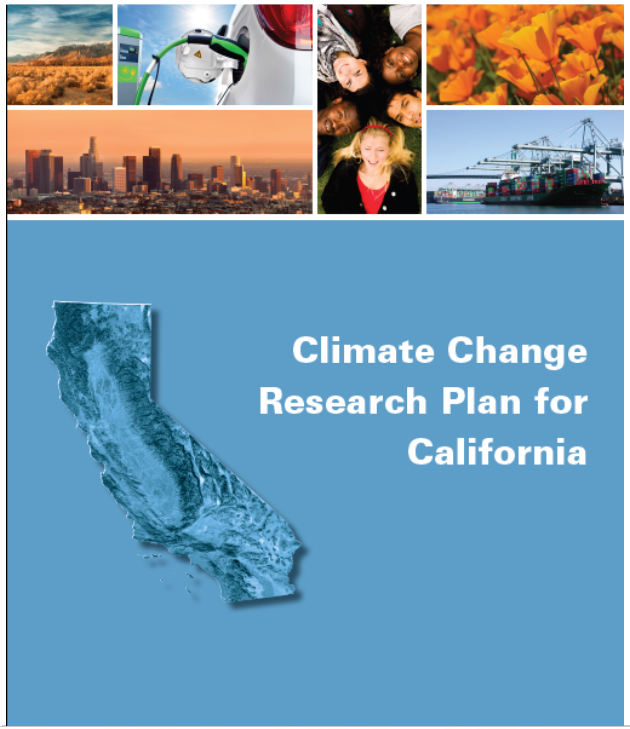
Reducing Emissions



Preparing for Impacts

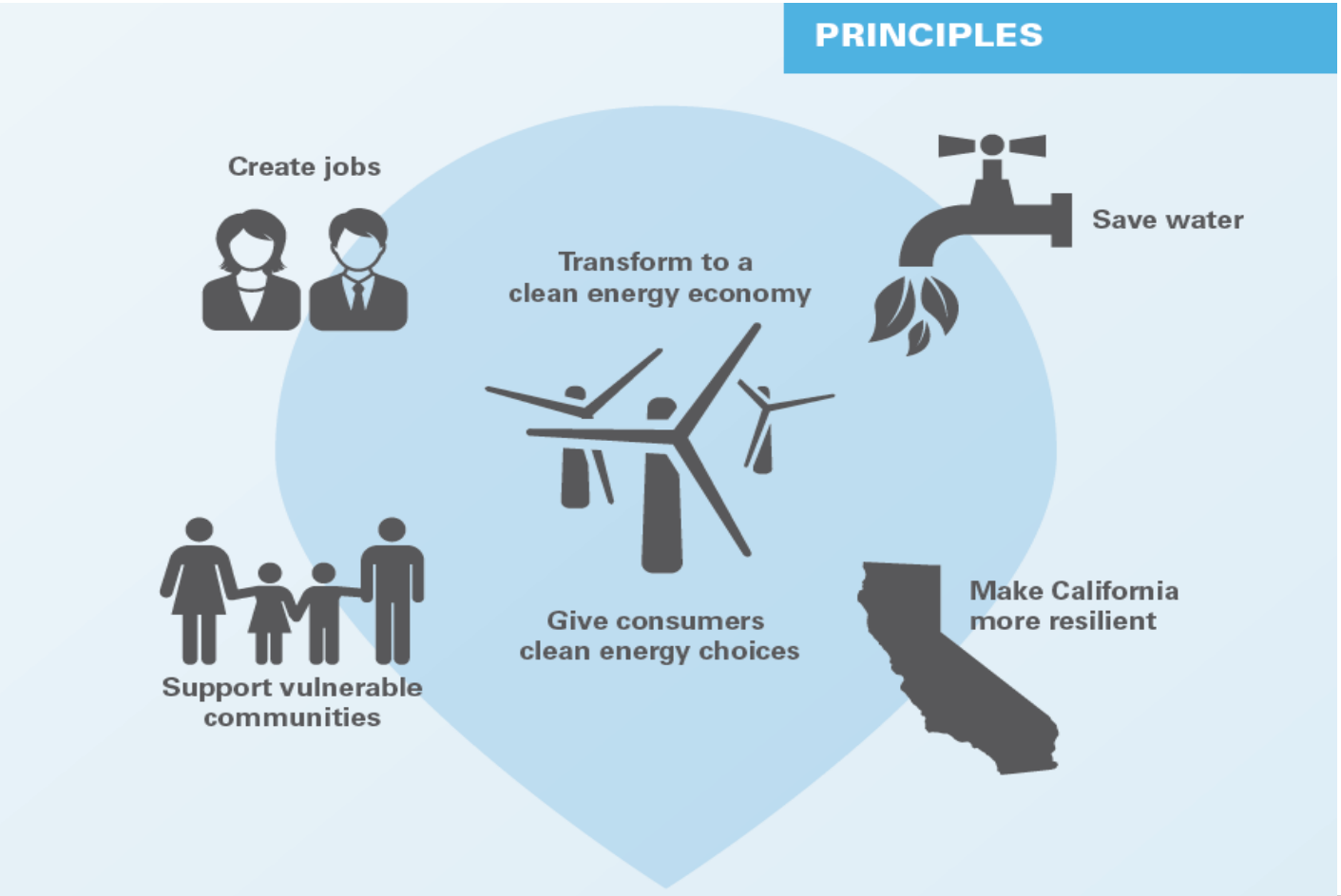


Research



What Does it Mean?

Energy Efficiency Links All of These



SoCalGas A Sempra Energy utility

Glad to be of service.®

Energy Efficiency

ENERGY EFFICIENCY & ADAPTATION

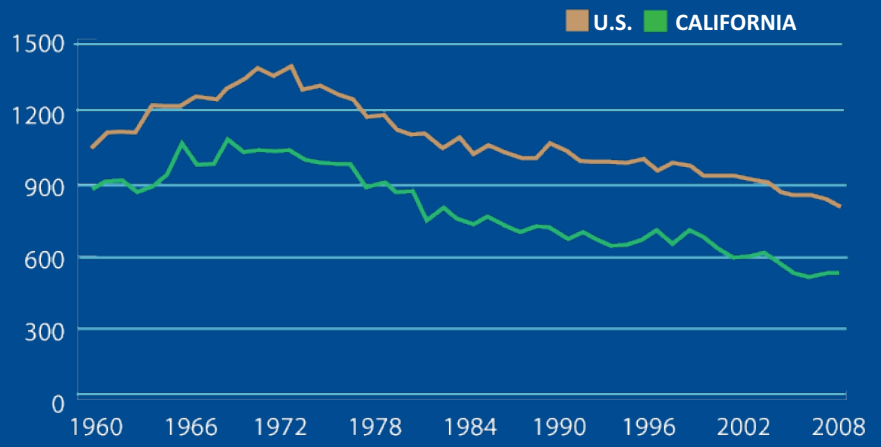
Kristine Lloyd, SoCalGas

About SoCalGas

- 140 years young
- The nation's largest natural gas distribution utility
  - 20.9 million consumers
  - 5.8 million meters
  - 500 communities
- We deliver clean, safe and reliable natural gas
- We pride ourselves on customer service: we've earned the highest customer satisfaction score among all utilities nationwide, according to the J.D. Power and Associates

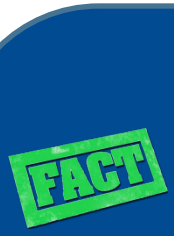
Natural Gas Energy Efficiency: A Resource of First Choice

- GOAL Reducing energy usage to meet California's energy needs
- GOAL Reducing greenhouse gas emissions to meet SB350 goals
- GOAL Using energy efficiency to grow the economy
- GOAL Achieving market transformation to accomplish longer-term savings



Source: U.S. Energy Information Administration

Energy Efficiency Programs



Spent $1 billion in natural gas Energy Efficiency (1990-present)

Since 1990, saved >564mm therms and reduced GHG emissions by >3mm metric tons

90% of homes use natural gas but average use per customer reduced from 2,126 therms/year in 1990 to 1,890 therms/year today, with 25% more customers

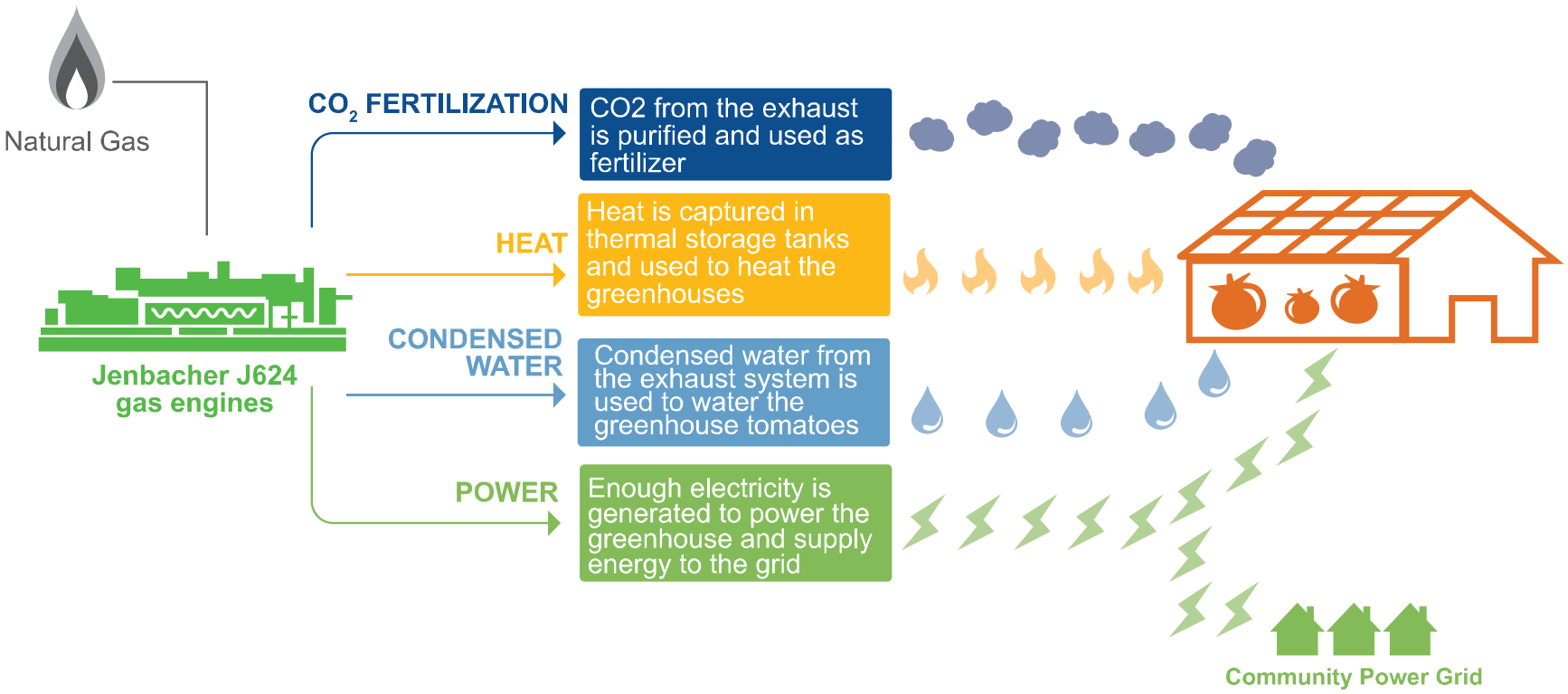
SoCalGas' 2016 EE programs met 124% of CPUC's therms savings goals

SoCalGas' EE programs created approximately 1,100 green economy jobs in CA

Conserve Energy SoCal:
An Integrated and Innovative Approach

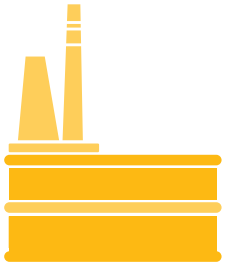
An Integrated, Multifaceted Campaign

Decarbonizing Energy: Distributed Generation



Decarbonizing Energy: Renewable Natural Gas

Convert waste from dairies, farms and landfills

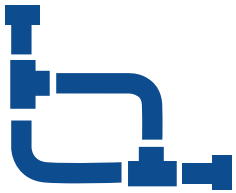


into biogas using anaerobic digestion

CH_4

extract the methane

put in the pipeline for future use



Source: Bioenergy Association of California, CARB May 2014 Look-Up Table30

WHAT'S POSSIBLE

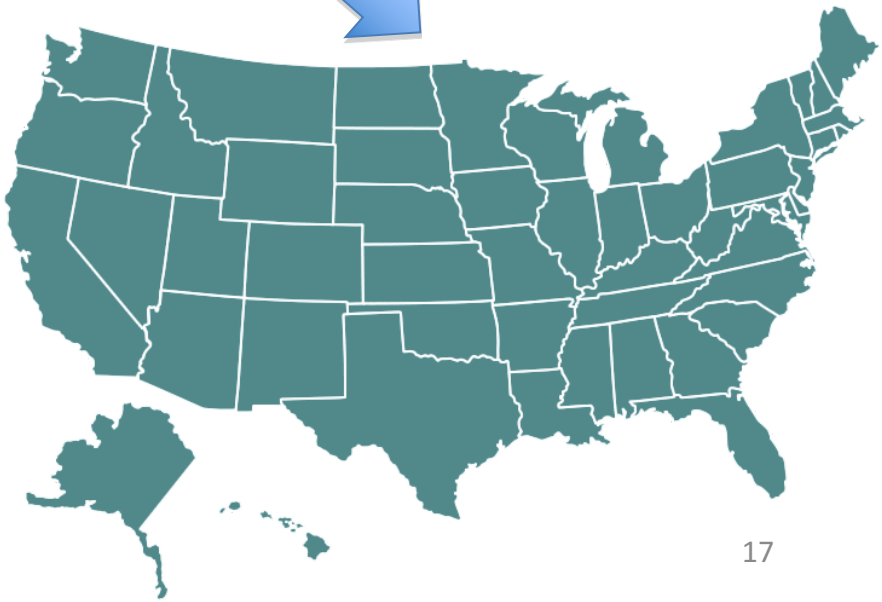
POWER
2-3 million homes

REPLACE
75% of all diesel used by CA vehicles

SUPPLY biogas from food and green waste with a
NEGATIVE carbon intensity

rcpa

REGIONAL CLIMATE PROTECTION AUTHORITY



20 x 2020: Countywide Reduction Goals

6 GREENHOUSE GAS **Sources**

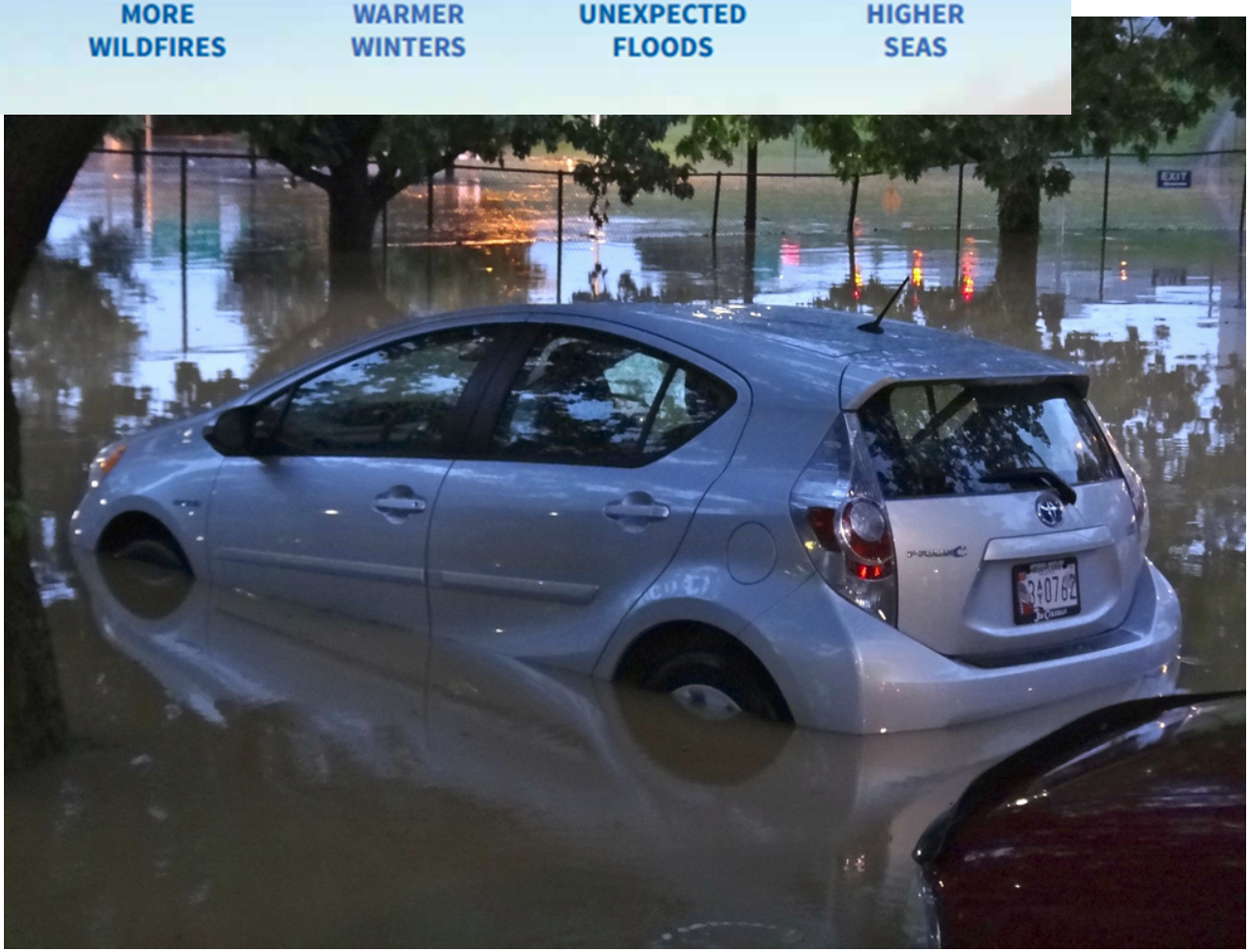
- BUILDING ENERGY
- TRANSPORTATION & LAND USE
- SOLID WASTE
- WATER & WASTEWATER
- LIVESTOCK & FERTILIZER
- ADVANCED CLIMATE INITIATIVES

2 0 X 2 0 GOALS

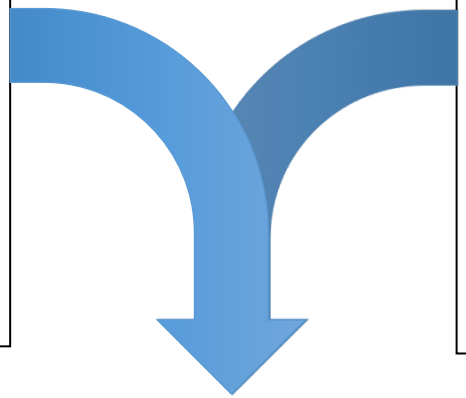
20 Goals for Reducing Greenhouse Gases

1. Increase building energy efficiency
2. Increase renewable energy use
3. Switch equipment from fossil fuel to electricity
4. Reduce travel demand through focused growth
5. Encourage a shift toward low-carbon transportation options
6. Increase vehicle and equipment fuel efficiency
7. Encourage a shift toward low-carbon fuels in vehicles and equipment
8. Reduce idling
9. Increase solid waste diversion
10. Increase capture and use of methane from landfills
11. Reduce water consumption
12. Increase recycled water and graywater use
13. Increase water and wastewater infrastructure efficiency
14. Increase use of renewable energy in water and wastewater systems
15. Reduce emissions from livestock operations
16. Reduce emissions from fertilizer use
17. Protect and enhance the value of open and working lands
18. Promote sustainable agriculture
19. Increase carbon sequestration
20. Reduce emissions from consumption of goods and services

Adaptation: Climate Resilience Roadmap



Mitigation
Reduce greenhouse gas emissions, sequester carbon

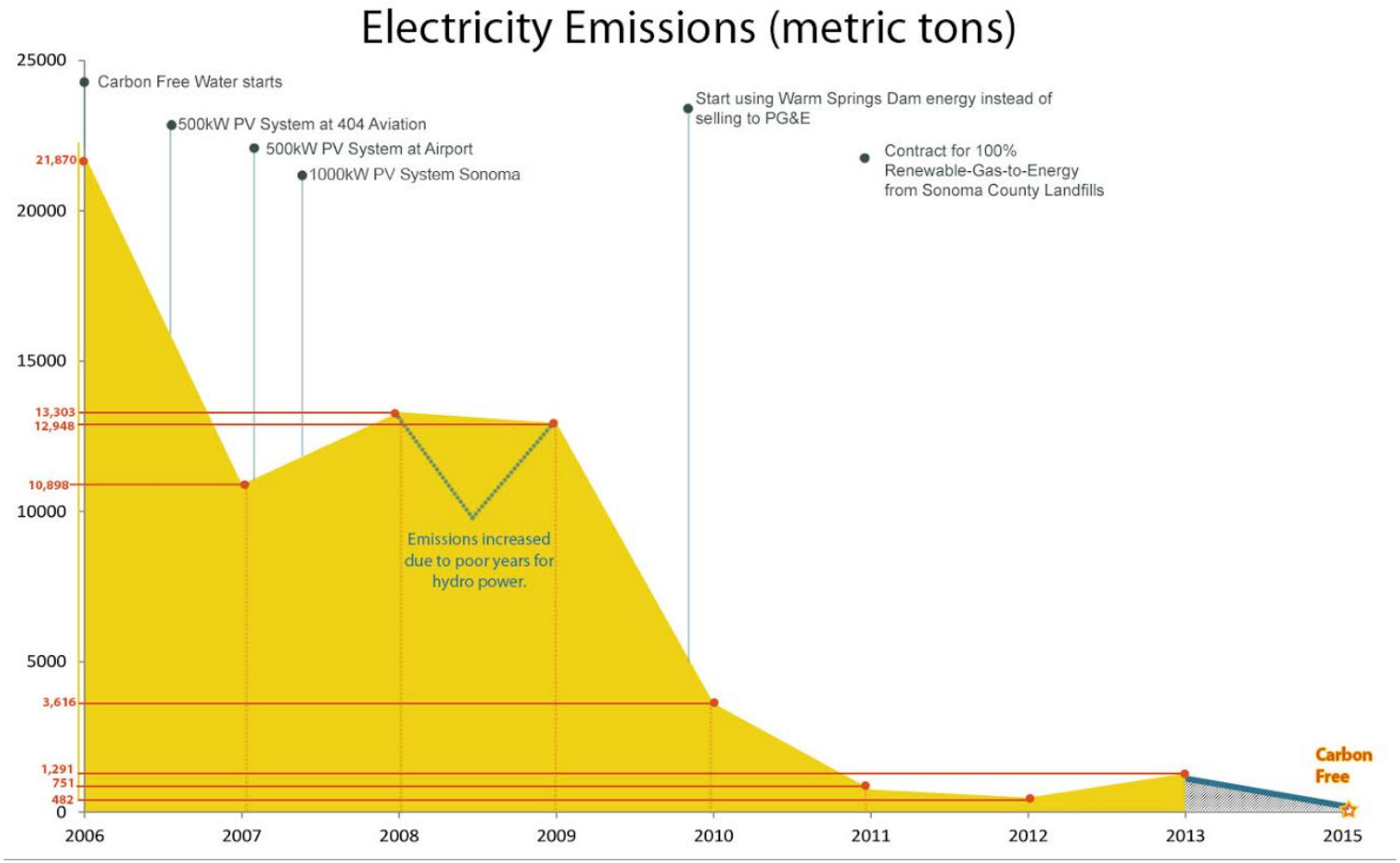


Adaptation
Protect communities from inevitable impacts of climate change

WIN-WIN-WIN

- Water efficiency
- Energy efficiency
- Local power
- Local food
- Natural water infrastructure
- Compact development
- Diverse agriculture
- Biodiversity-oriented forestry

Carbon Free Water



http://www.scwa.ca.gov/carbon-free-water/

Energy Independence Program

- PACE Financing
- Green house-calls
- DIY toolkits

PROJECTS FUNDED

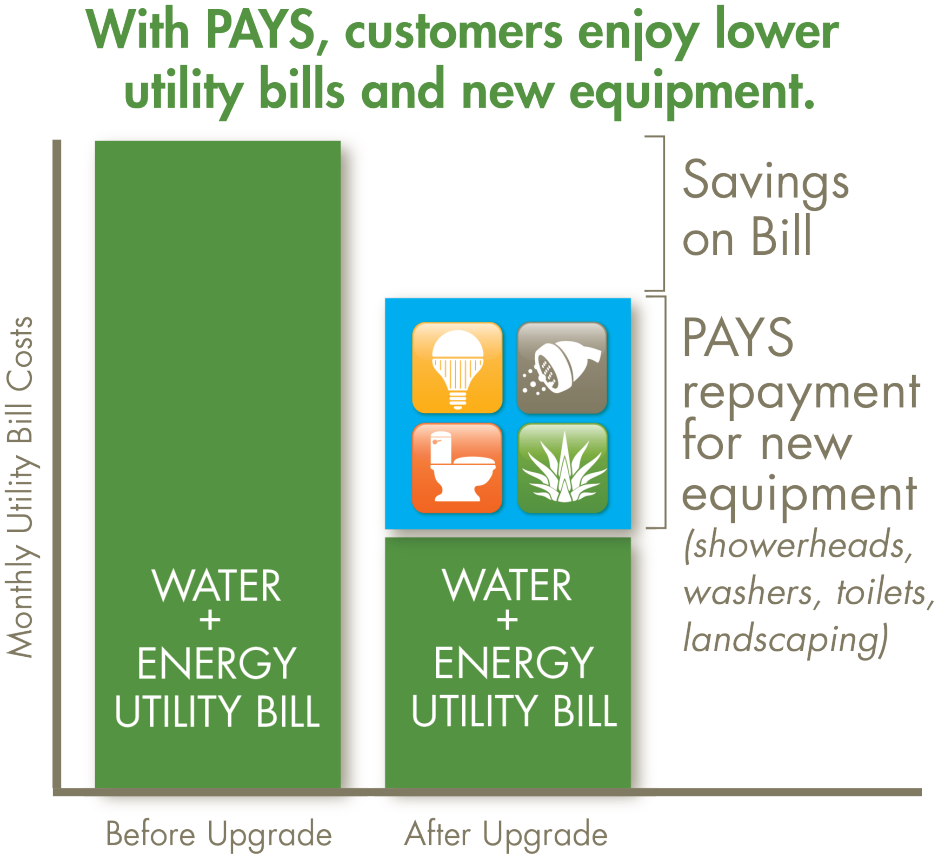
Residential: 2,326
Commercial: 67
Total Contracts Funded: $76,497,914.09
Gross Direct, Indirect and Induced Jobs: 1,531.42
Percent of Projects Completed by Local Contractors: 89%
Metric Tons of CO2 Equivalent Emissions Reduced per Year: 10,451.84

What is it about for you?

For us, it was about thermostat wars:
"Our home is comfortable year round… plus, it reduced our energy bills and consumption by over 50%."
- Tiffany and Scott Bagala, Santa Rosa

http://sonomacountyenergy.org/resources/pace-financing/

Pay As You Save (PAYS)

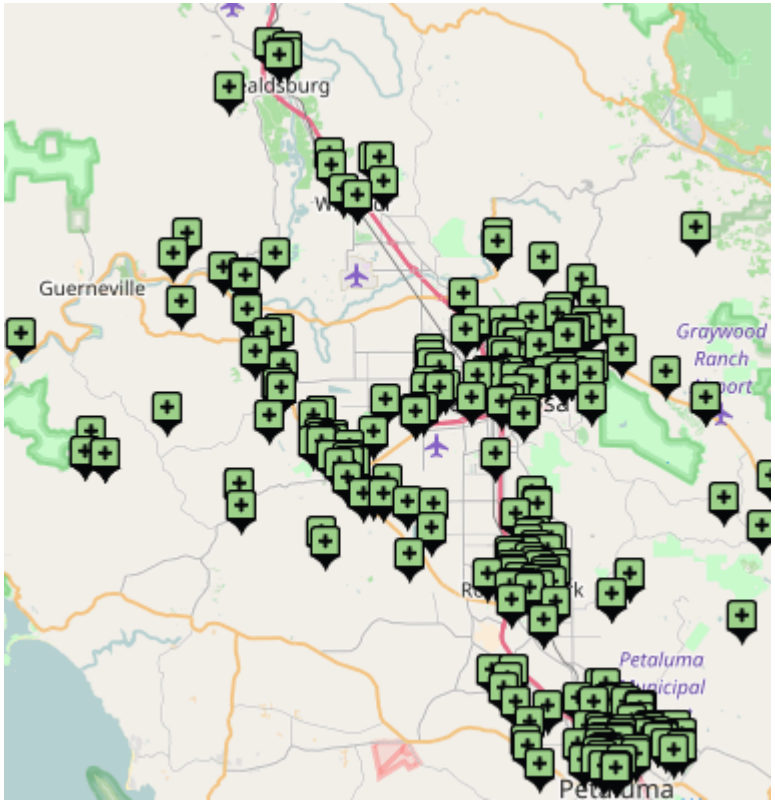


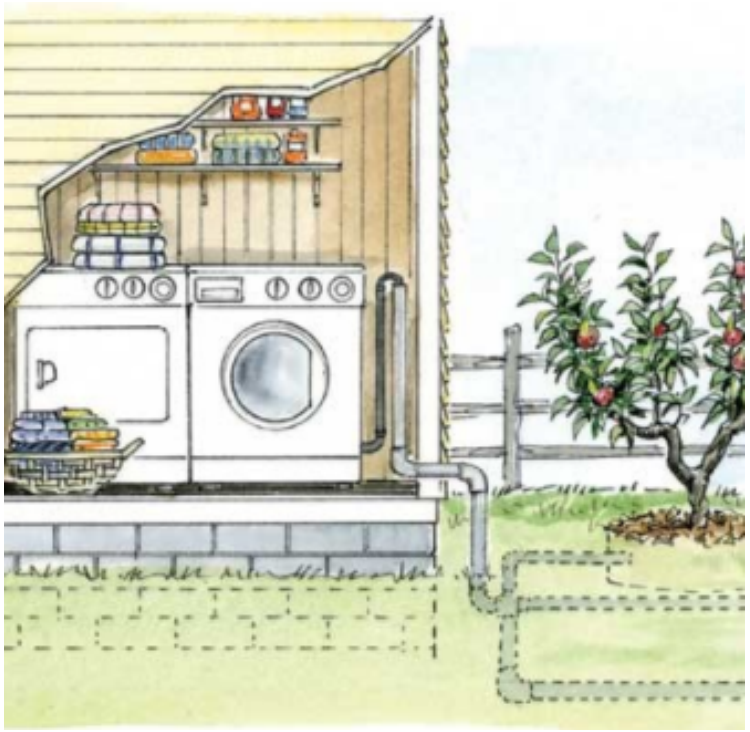
www.windsorefficiencypays.org/

community
RESILIENCE
challenge

SAVE **water** | GROW **food** | CONSERVE **energy** | REDUCE **waste** | BUILD **community**

"Over the past seven years, 30,787 resilience building actions have been registered locally!!"





http://www.communityresiliencechallenge.org/

Participants and communities are less exposed to…

- Extreme heat
- Supply disruption
- Price shocks
- Poor indoor air quality
- Resource constraints to growth
- Demand for health and emergency services

SF Environment

Our home. Our city. Our planet.

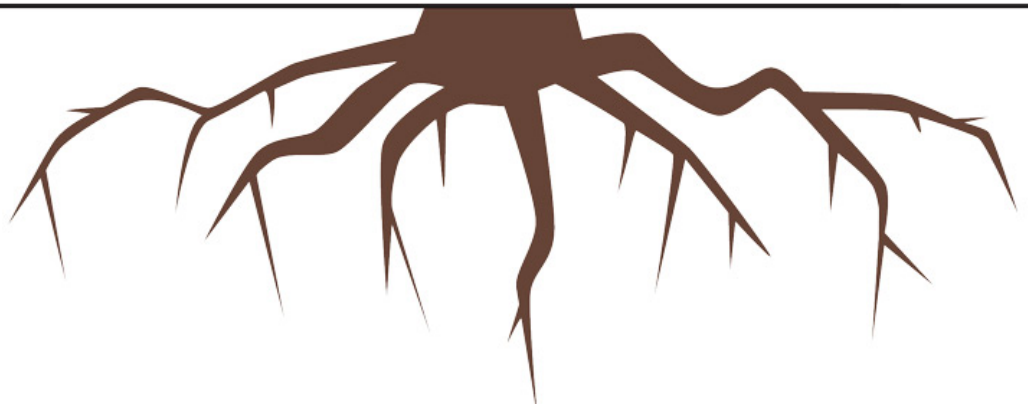
A Department of the City and County of San Francisco

Resilient San Francisco: Getting to 80 x 50

Communicating Climate Change

SAN FRANCISCO CLIMATE ACTION

0 50 100



Climate Action

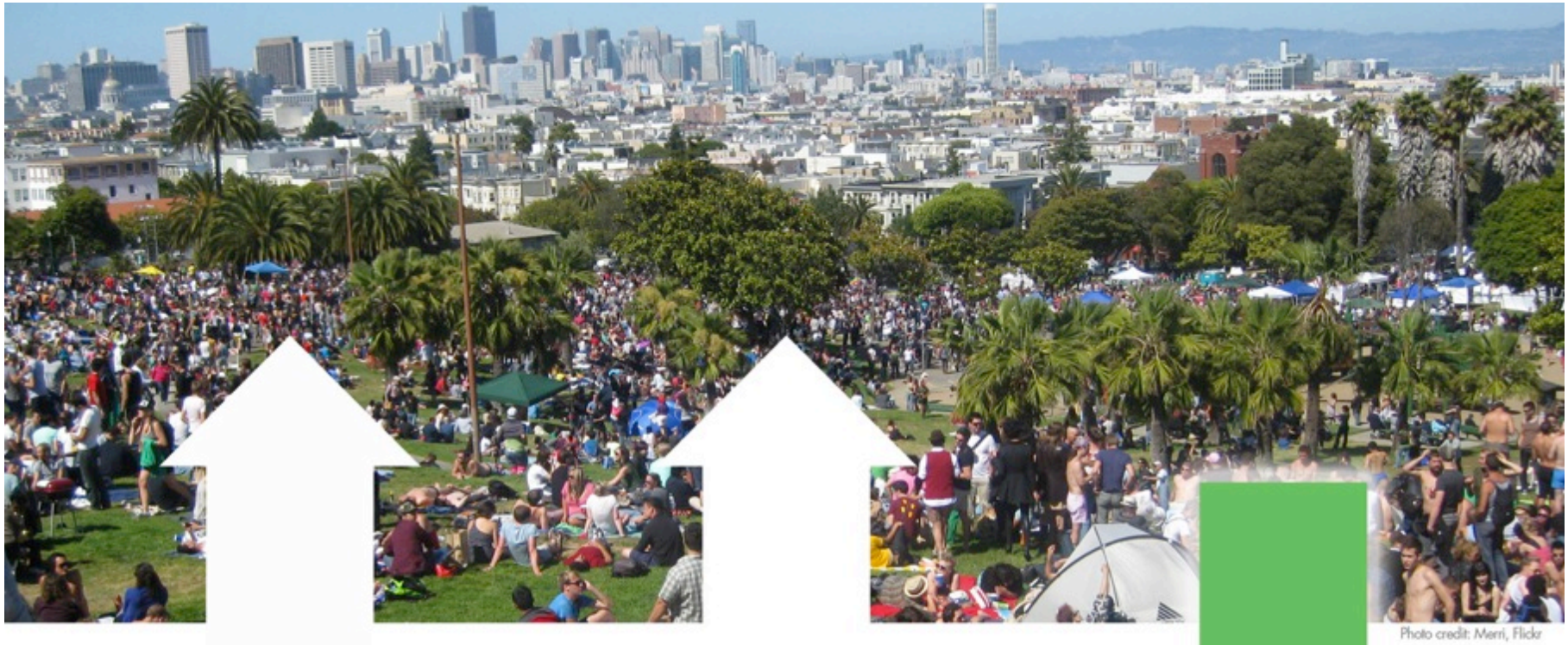


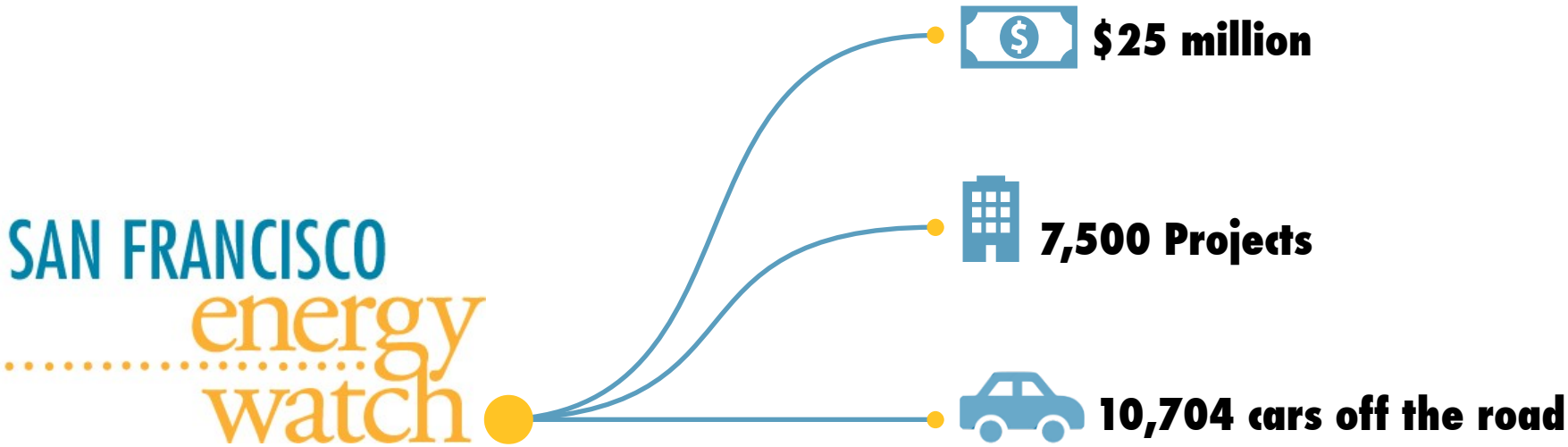
Photo credit: Merri, Flickr

19.5%
Population

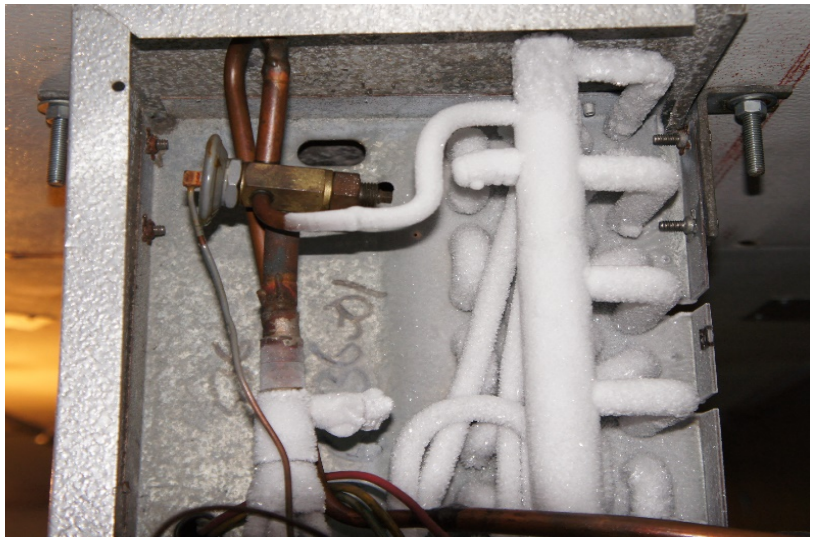
78%
GDP

28%
GHG Emissions

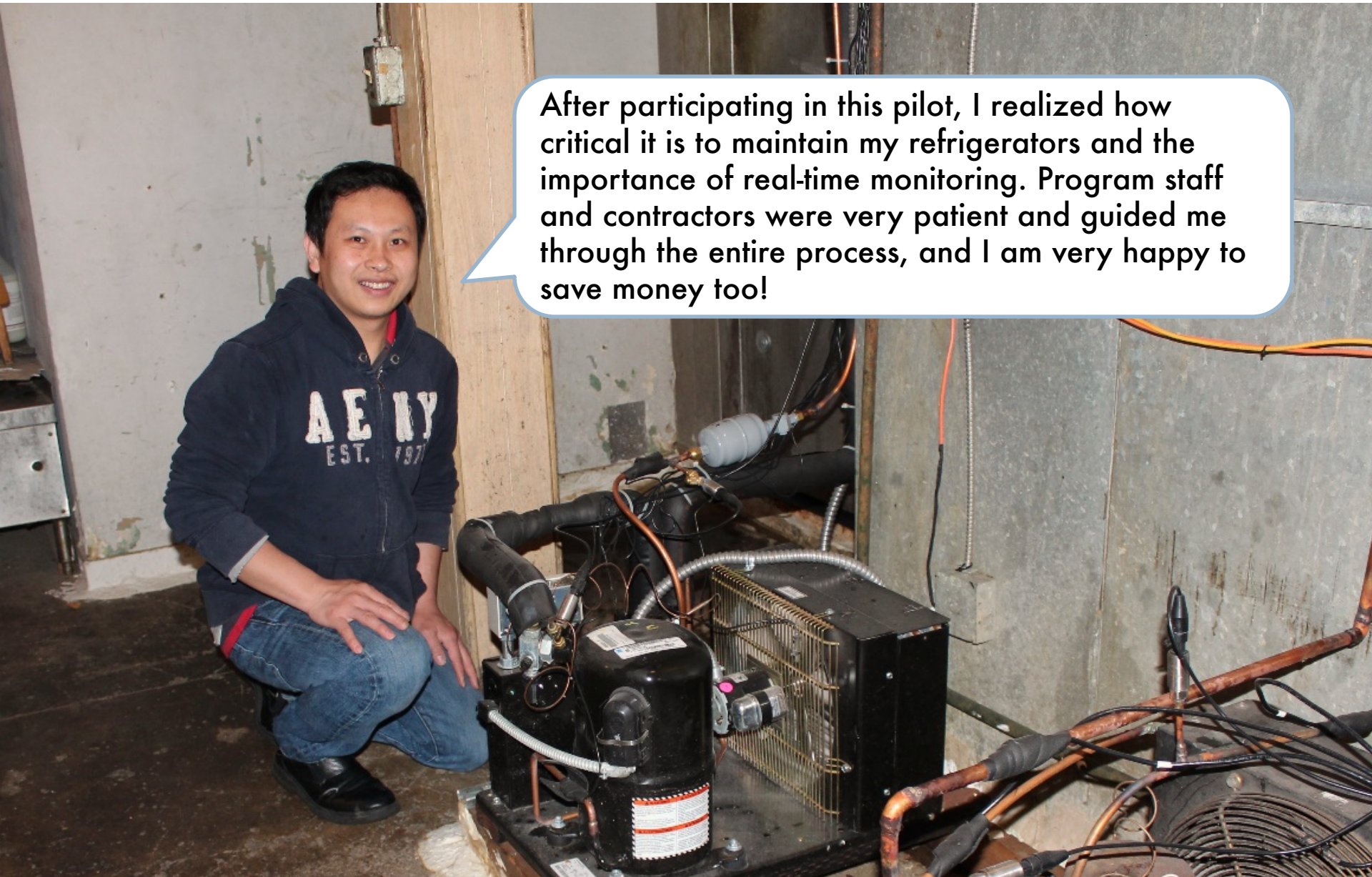
SFEW Achievements Since 2006



Comprehensive Maintenance in the Food & Beverage Sector



Ken Khoa, Owner of Taste of Vietnam



San Francisco results, BayREN Multifamily program

Visited 21,863 units in 326 Buildings

- 26% Conversion Rate

5,684 Completed Units Since 2013

- 71 Buildings

945 Unit in Construction Now

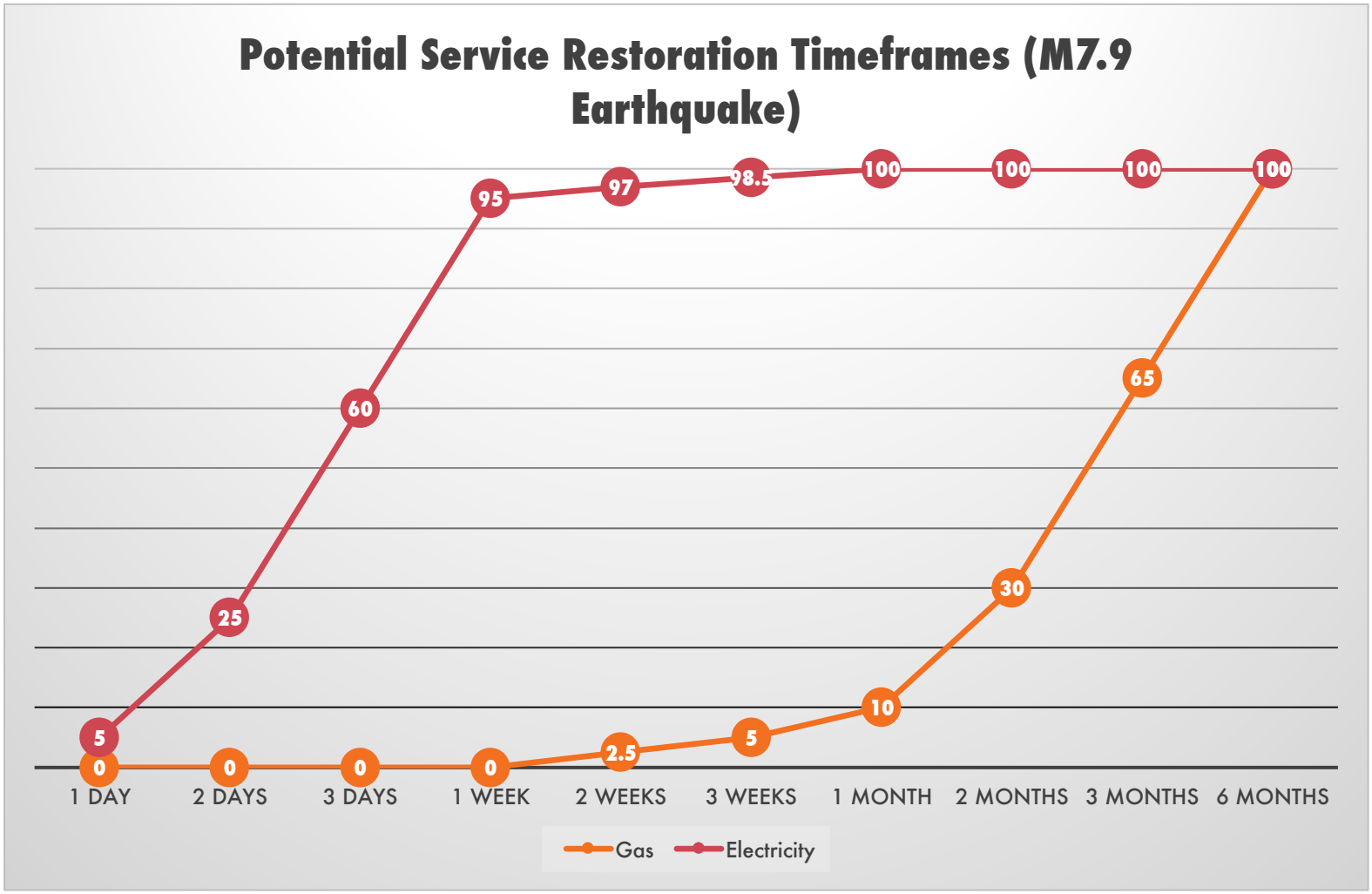
- 31% Average Reduction

BayREN ZNE Case Study

Chinatown Community Development Center
華協中心

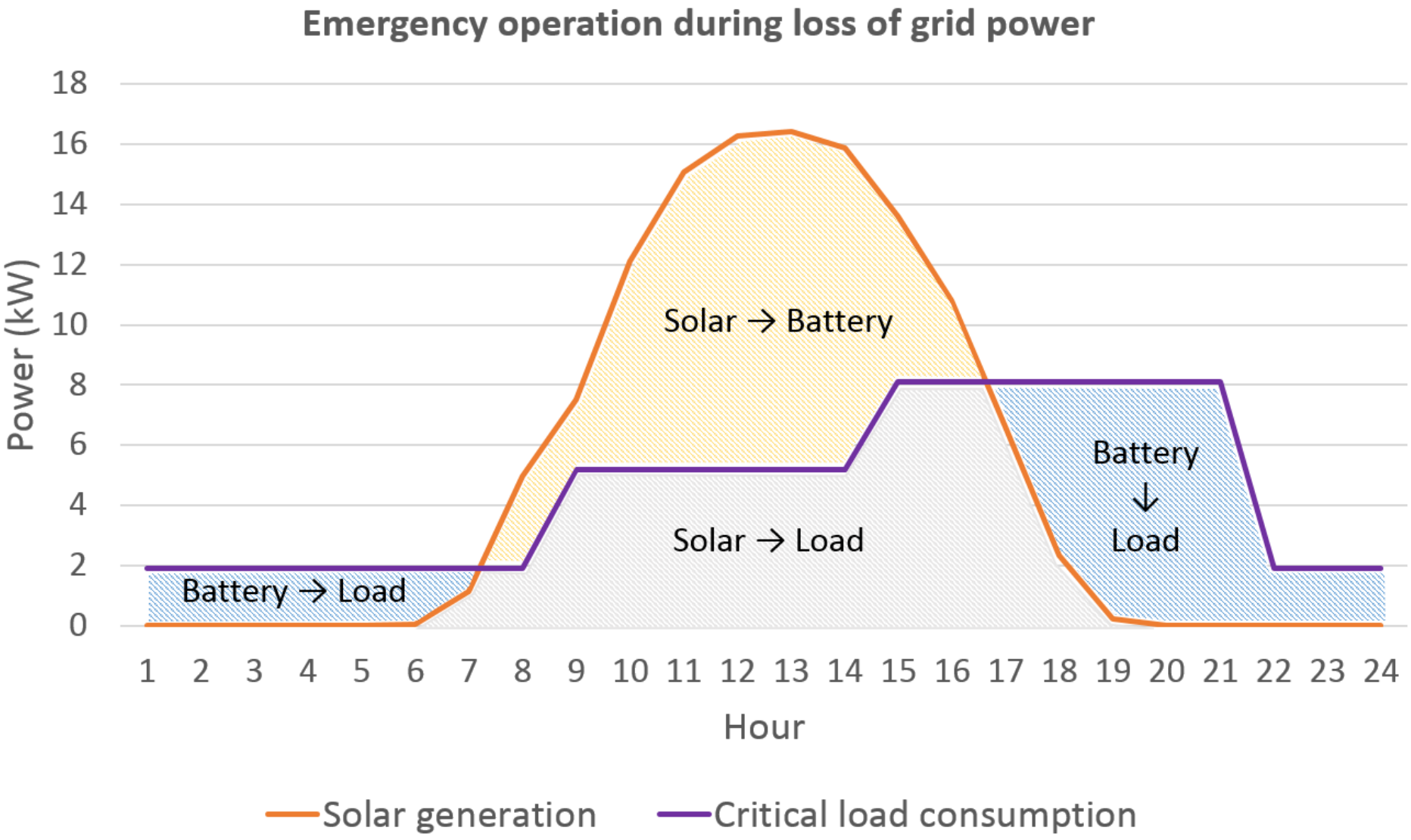
Solar + Storage = Climate + Resilience

USDOE S+S Grant: Plan for 3-7 day outage

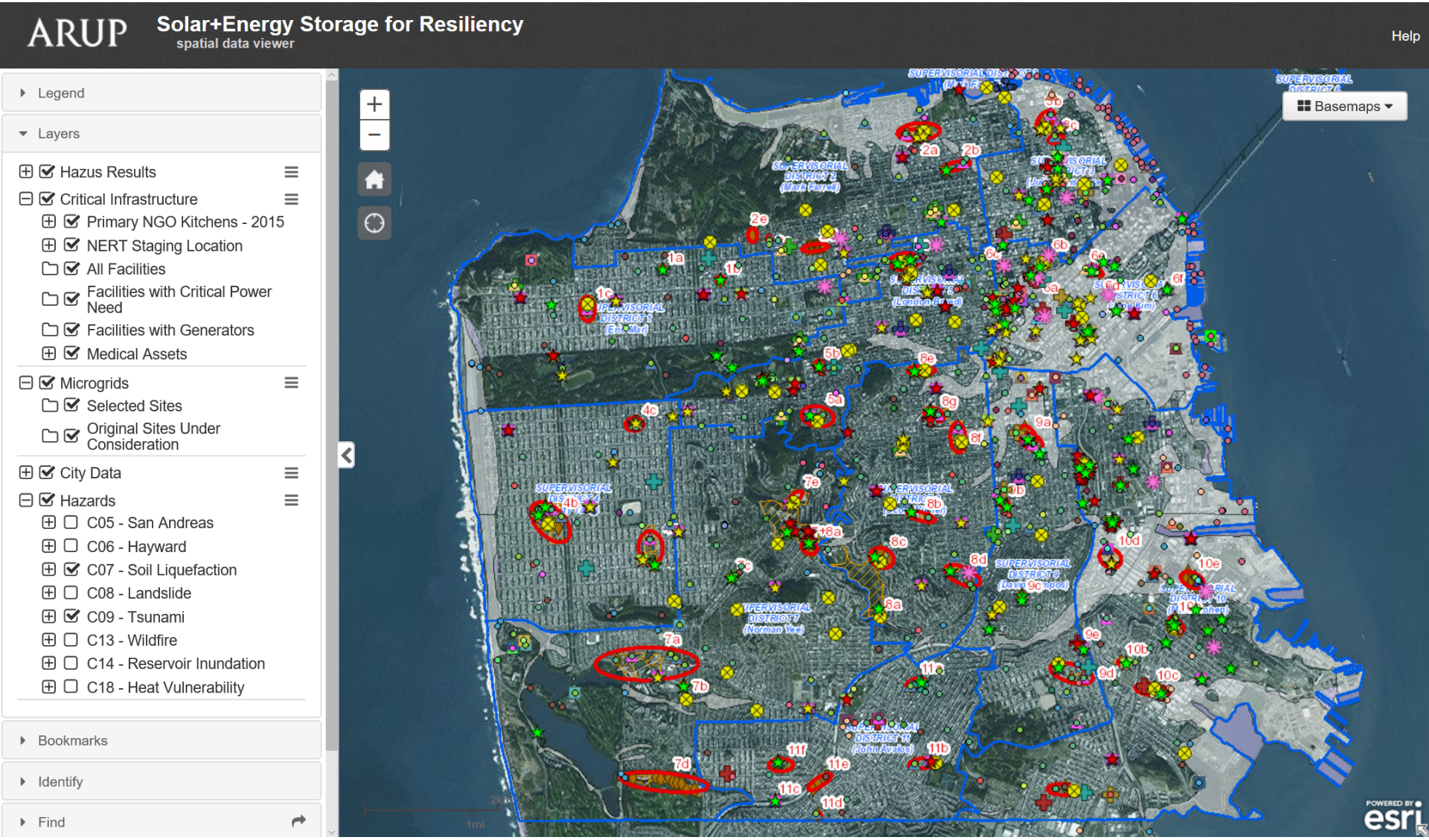


Data: SF Lifelines Council, April 2014

Design for emergency operation

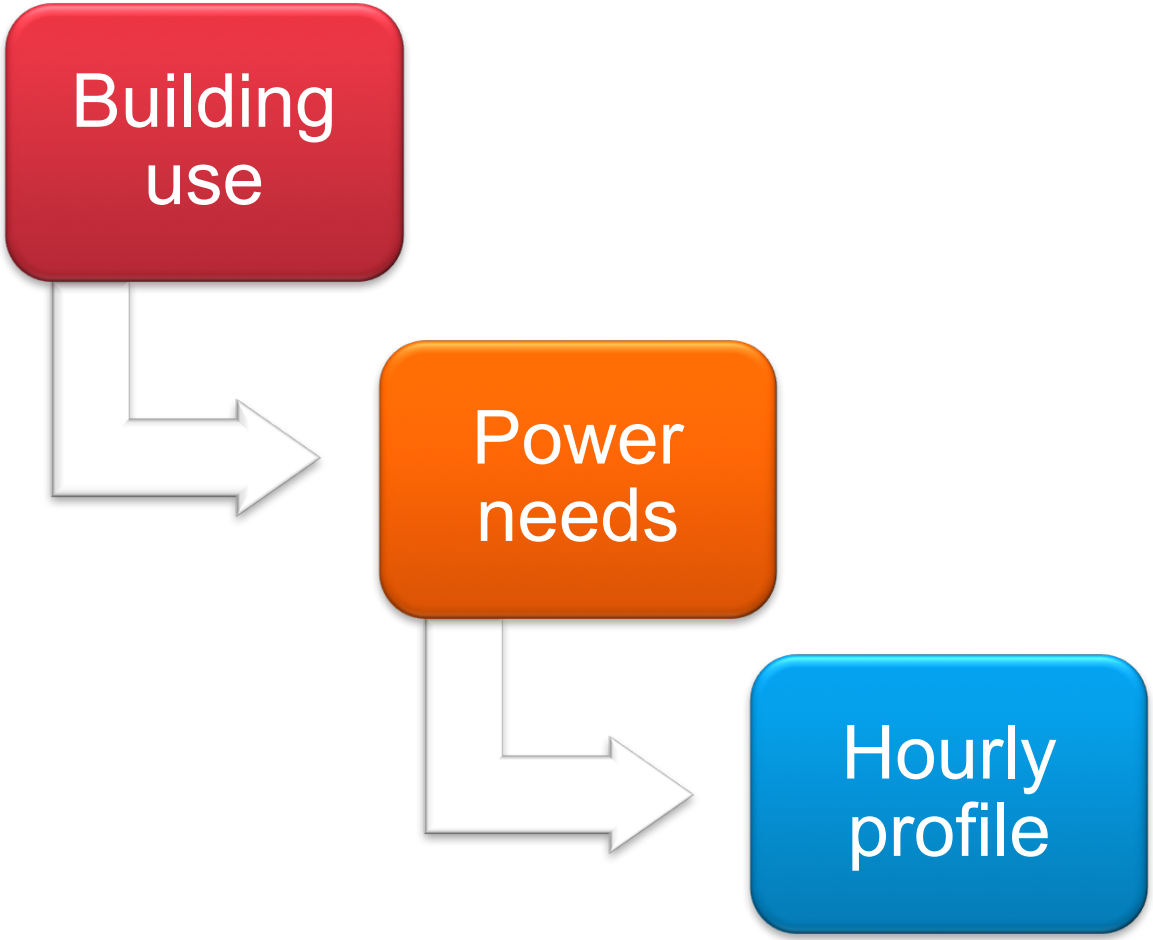


Site selection



Typical site

Critical loads assessment



System sizing – SolarResilient.org

PV System

Array size:
76 kW

Existing array size:
0 kW

Annual generation:
118,000 kWh

Roof
5,100 sq.ft.

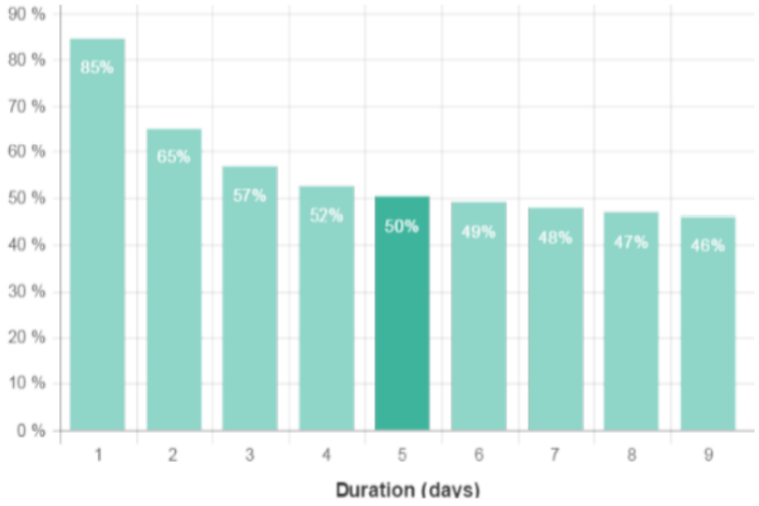
Parking
0 sq.ft.

Battery System

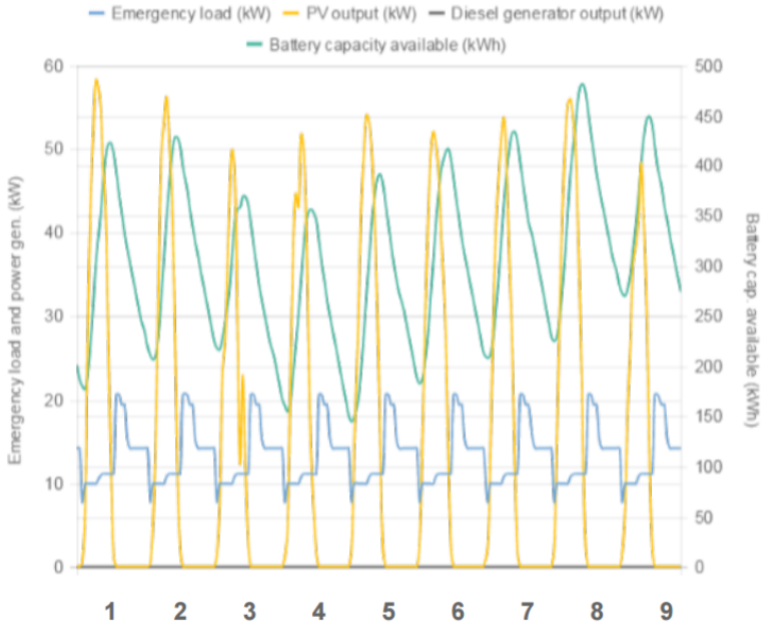
System size:
125kW / 500 kWh

Space required:
430 cu.ft.

System Duration - Probability



System Operation During Design Days



Contact

Kathleen Bryan
Senior Energy Specialist
San Francisco Department of the Environment
kathleen.bryan@sfgov.org

SF Environment
Our home. Our city. Our planet.
SFEnvironment.org • (415) 355-3700
A Department of the City and County of San Francisco

© 2014 SF Environment All Rights Reserved
The author of this document has secured the necessary permission to use all the images depicted in this presentation. Permission to reuse or repurpose the graphics in this document should not be assumed nor is it transferable for any other use. Please do not reproduce or broadcast any content from this document without written permission from the holder of copyright.