

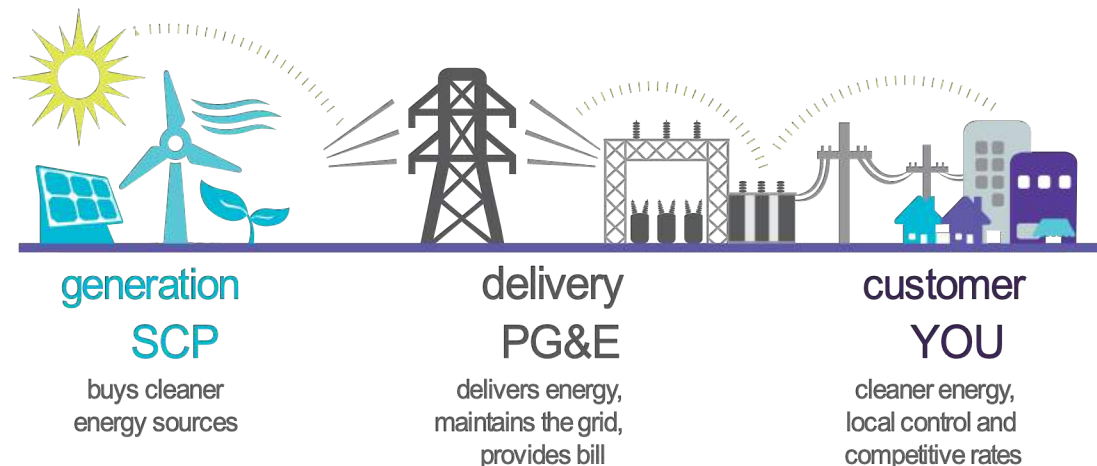
Decarbonization Strategies for New and Existing Buildings A Sonoma Clean Power Perspective



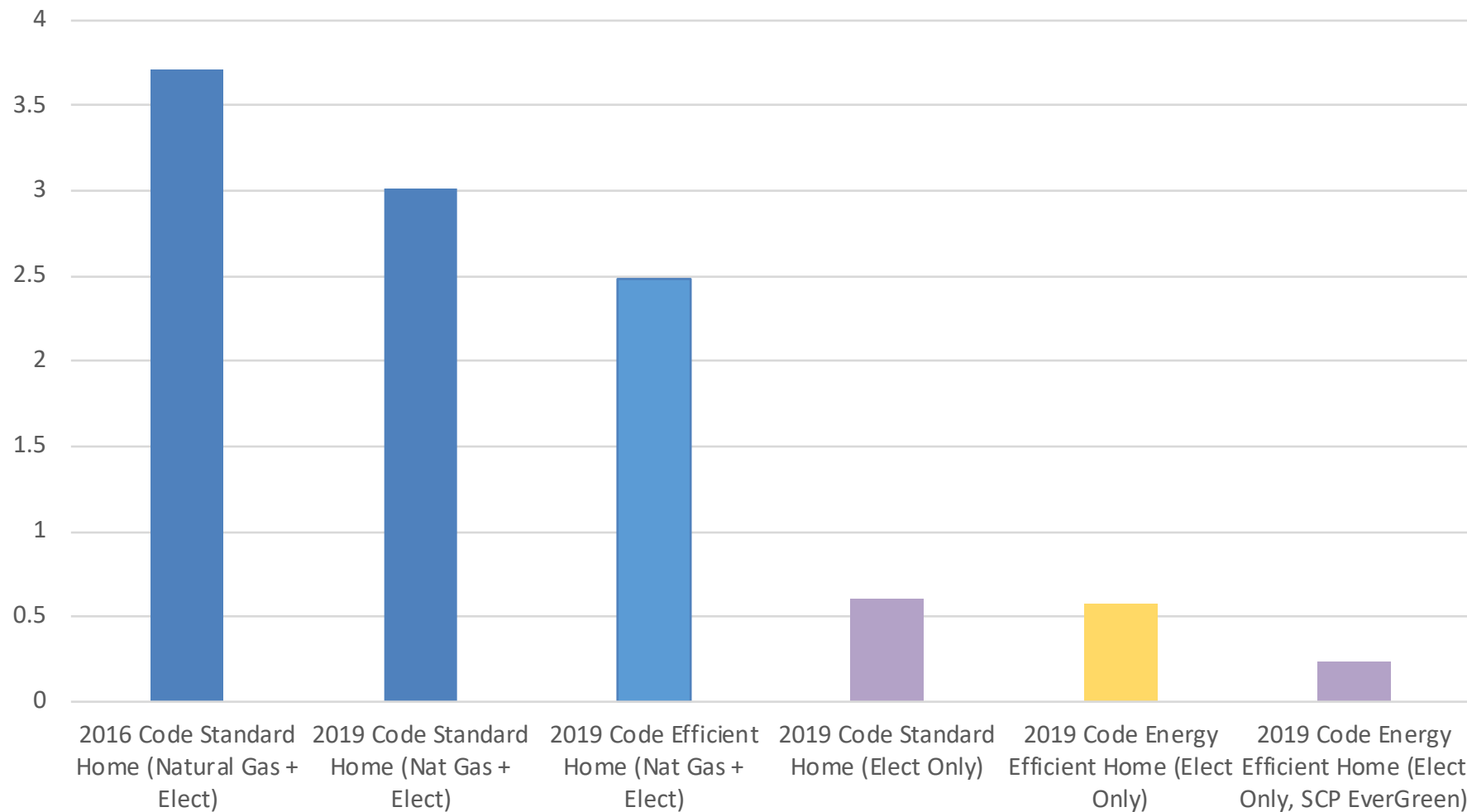
Rachel Kuykendall
Senior Programs Manager
Sonoma Clean Power
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Who is Sonoma Clean Power?

- **Not-for-profit** public agency that started serving customers in 2014.
- First stated mission of the joint power's authority establishing SCP is “**reducing greenhouse gas emissions** in Sonoma County and neighboring regions.”
- Generates electricity for approximately **600,000 customers** in California's Sonoma and Mendocino counties.
- Pacific Gas & Electric (PG&E) provides distribution of electricity.
- SCP customers pay for, and can participate in, PG&E programs.



Yearly Per Home Emissions (MT CO₂e)



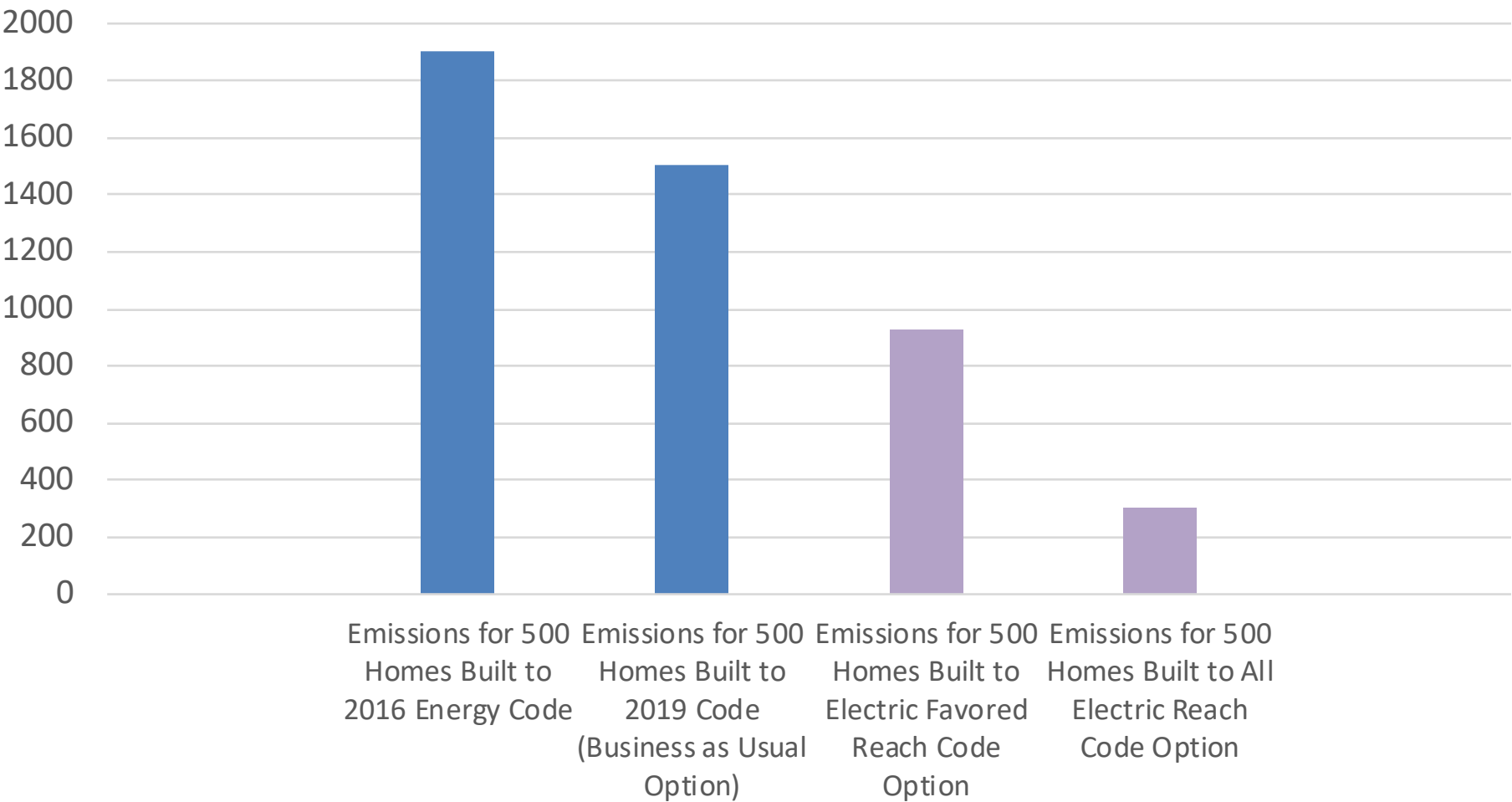
Decarbonization in New Construction

Electric Reach Code Options

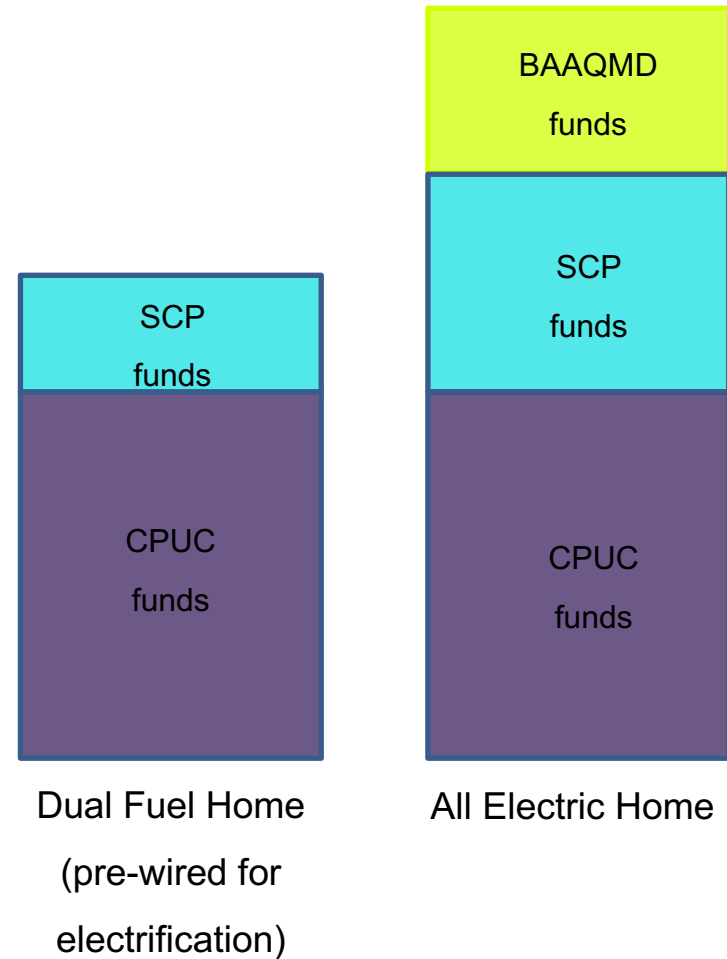
| Reach Code Option | Reach Code Option Description | Anticipated per home costs beyond 2020 Requirements | Anticipated GHG Impacts | Potential Barriers | Benefits |
|--|---|--|--|---------------------|---|
| Adoption of 2019 Energy Code (Business as Usual) | Jurisdiction adopts 2020 building code with no additional local requirements. | \$0 | Assuming 500 homes are built over next three years, 500 MT of CO2e annually | None | Reduction of ~1 megaton (MT) of CO2e annually for standard 2,000 sq ft single family home |
| All Electric Favored Reach Code | Jurisdiction offers two pathways for compliance, where buildings that use natural gas/propane must meet higher standard than all-electric homes | Unknown range of costs. | Assuming 1/3 of homes choose all-electric option, 900 MT of CO2e annually | Need State approval | Benefits would vary based on the number of homes that opt in to all-electric option, but would be between 1 and 3.4 MT CO2e |
| All Electric Reach Code | All homes must be electric. | Savings of \$6,171 (or \$3,361 for multifamily unit) compared to a home using natural gas* | Assuming 500 homes are built over next three years, 1,700 MT of CO2e annually | Need State approval | Reduction of 3.4 megatons (MT) of CO2e annually for standard 2,000 sq ft single family home |

* 2019 Energy Efficiency Cost Effectiveness Study, California Codes and Standards

Yearly Emissions for 500 Homes (MT CO₂e) for Reach Code/Ordinance Options



- Up to **\$17,500 in incentives** with one easy online application.
- Goes beyond existing program models by adding in non-standard measures like electric vehicle charging, grid responsiveness, battery storage, and water measures.
- **218 homes** have applied for the program. Approximately **36% of which are all-electric.**
- Projects include **218 EV chargers, 132 kW of solar** and **150 kWh of battery storage.**
- Energy models for the submitted projects are on average **26% better than current Title 24 code** and are predicted to **save \$650 annually on their utility bills.**



Decarbonization in Retrofits

- Overall program startup costs: \$1,380 and 9 hours of staff time. Ongoing staff time requirements: Approximately 1 hour per week.
- 100 check outs in first program year.
- “On a scale from 0 to 10, how would you rate your overall experience cooking with induction?(0 being very poor and 10 being excellent)?” Average Score of 8.09
- “On a scale from 0 to 10, how likely are you to switch to induction cooking?(0 being extremely unlikely and 10 being extremely likely)?” Average Score of 7.16

“Love the temperature precision, quick response, no combustion fumes, freedom from worry about starting fires by forgetting flames are on, easy clean.” – SCP customer



Induction Cooktop Check Out

Interested in testing out an Induction Cooktop? Fill out the form below to reserve your cooktop. Cooktops can be picked up at our office in downtown Santa Rosa, located at 50 Santa Rosa Avenue, on the 5th Floor.

Not sure if your pots and pans are Induction ready? Add a pot or pan to your check out to optimize your induction experience.

Equipment must be returned within 2 weeks of your check out date. This check out program is available to all Sonoma and Mendocino County residents.

| | |
|--|--------------------------|
| First Name * | Last Name * |
| <input type="text"/> | <input type="text"/> |
| Email * | Phone * |
| <input type="text"/> | <input type="text"/> |
| Type of Equipment | Preferred Pick Up Date * |
| <input type="checkbox"/> Frying Pan | <input type="text"/> |
| <input type="checkbox"/> 1.5 qt Sauce Pan w/ lid | |
| <input type="checkbox"/> 2 qt Sauce Pan w/ lid | |
| <input type="checkbox"/> 5.5 qt Stock Pot w/ lid | |
| <input type="button" value="SUBMIT"/> | |



GridSavvy Community for Heat Pump Water Heaters

Heat pump water heaters work like your refrigerator in reverse, using clean electricity to move heat from one place to another instead of generating heat directly. Therefore, they can be two or three times more energy efficient than conventional gas or electric resistance water heaters, saving you money on your utility bill while reducing greenhouse gas emissions in Sonoma and Mendocino counties. That's why Sonoma Clean Power is offering our customers \$700 off the purchase price of a heat pump water heater, plus a \$5 per month bill credit if you choose to participate in the GridSavvy Community!

For more information on the requirements for the program and how to receive your incentives, please [click here](#).

Ready to Participate? Getting your new heat pump water heater is easy, just follow the steps below!

Step 1 – Purchase a Qualifying Model from a Local Plumber and Receive Your Instant \$700 Incentive

The following water heater packages are eligible for an instant incentive of \$700 at time of purchase. To receive an incentive, all water heaters must also have a [thermostatic mixing valve](#) installed by your plumber. All A. O. Smith water heaters must also have a [SkyCentrics module \(Model CTA-2045\)](#) installed. The SkyCentrics module may be purchased online or directly from your plumber.

| Manufacturer | Required Water Heater and Components | Volume (gal) | Energy Factor (EF) | Minimum Clearance / Space Requirements | Required Amperage |
|-----------------------|---|--------------|--------------------|---|-------------------|
| Rheem Package 1 | PROPH80 T2 RH350 D PLUS a thermostatic mixing valve | 80 | 3.5 | 6 in. (above), 2 in. (sides); 700 cu. ft. | 24 |
| Rheem Package 2 | XE80T10HD50U1 PLUS a thermostatic mixing valve | 80 | 3.5 | 6 in. (above), 2 in. (sides); 700 cu. ft. | 30 |
| A. O. Smith Package 1 | HPTU-80N PLUS a thermostatic mixing valve AND a port adapter AND a SkyCentrics CTA-2045 module | 80 | 3.07 | 700 cu. feet | 25 |
| A. O. Smith Package 2 | FPTU-80 PLUS a thermostatic mixing valve AND a port adapter AND a SkyCentrics CTA-2045 module | 80 | 3.07 | 700 cu. Feet | 25 |

At the time of purchase, your installing plumber will take \$700 off the price of the water heater. No need to fill out any additional paperwork! To get your water heater, you may call one of the participating contractors below. The below list is provided by local heat pump water heater distributors and is not a Sonoma Clean Power endorsement of participating contractors.

Rheem Contractors

- Contractor 1
- Contractor 2
- Contractor 3

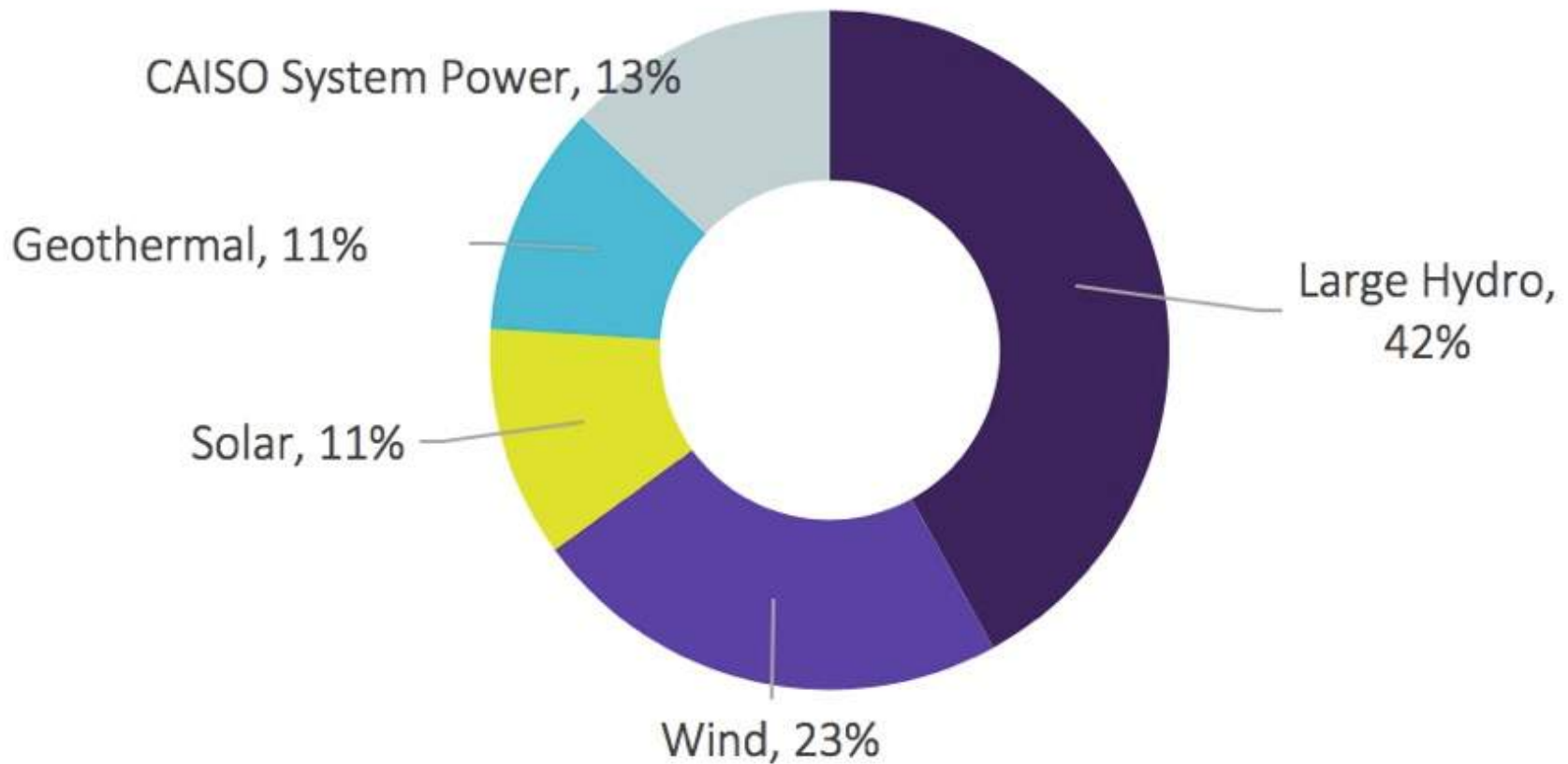
A. O. Smith Contractors

- Contractor 1
- Contractor 2
- Contractor 3

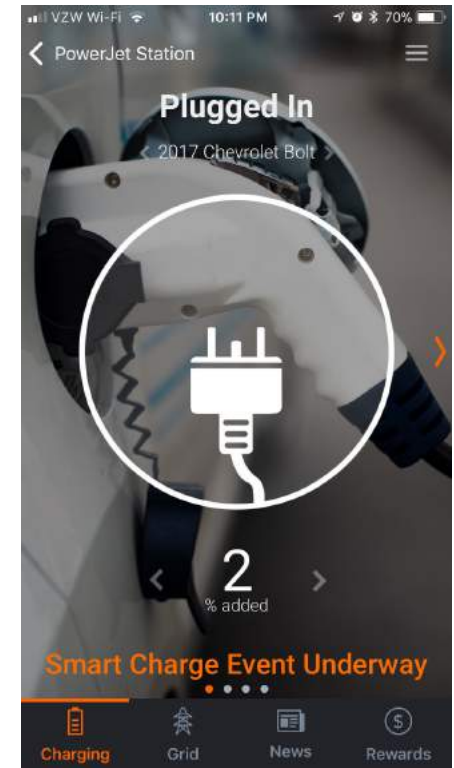
Step 2 – Start Earning Incentives While Helping Reduce Greenhouse Gas Emissions

By choosing to connect your new water heater to the GridSavvy Community, you can earn \$5 per month in on-bill credits while helping to create a cleaner

SCP's 2017 Power Sources



- **Shape Sonoma Clean Power loads** (customer usage) to match supply (procured energy sources).
- Use as a resource to **displace gas powered plants**.
- Get customers excited about demand-response capable technologies, and pay them for their contribution to making a cleaner grid.





MCE

A local, not-for-profit electricity provider

Jenn Kreutzer

Customer Programs Manager
jkreutzer@mcecleanenergy.org

Making Clean Local Energy Accessible Now

OUR MISSION | Address climate change by
reducing greenhouse gas emissions



Renewable Energy
Stable, Competitive Rates
Local Economic & Workforce Benefits
Energy Efficiency



MCE Ratepayer Funded Energy Efficiency Programs

- Multifamily Energy Savings Program
- Low Income Families and Tenants (LIFT) Program
- Residential Direct Install Program
- Single Family Behavioral Program

Other MCE Programs

- Advanced Energy Rebuild Napa
- Low-Income Solar Rebates
- Net Energy Metering Program
- Green & Healthy Homes Initiative (GHHI)
- Transportation Electrification Programs



- Comprehensive EE assessments of multifamily properties
- Technical assistance to develop projects
- Rebates for energy efficiency and water-saving measures
- Referrals to other programs



Low Income Families and Tenants Program

Blended with
MF Program

- Layered rebates
- Technical Assistance
- Replicable model

Electrification

- Heat pump incentives
- Tenant education
- EM&V





Residential Direct Install

- Simple measures installed in both single and multifamily residents
- Entry point to other MCE programs

Single Family Behavioral Program

- Home energy reports
- Savings at the meter

Programs Coming Soon!

Partnership with Napa County, Bay Area Air Quality
Management District, BayREN, and PG&E



BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT



- Up to \$17,500 for single-family homes in Napa County lost to 2017 and 2018 wildfires
- Provide technical support to homeowners in rebuilding energy efficient, sustainable, and safe homes above current Title 24 energy code
- Rebates for electrification measures through 2020

Program Status

| | |
|--------------------|----|
| Inquiries | 74 |
| Eligible Customers | 49 |
| Enrollments | 15 |
| Completed Projects | 0 |



Program Barriers

- Program ramp-up
- Customers too far along in their rebuild to participate or to change their design
- Many stakeholders involved in rebuild process
- Cost



- Allocated \$535,000 in rebates for income qualified customers
- Helped fund over 200 solar installations → 699 kW of new, local solar
- Over \$2M in expected energy savings for income qualified families



MCE is a proud partner of GRID Alternatives!

- MCE pays premium rates for excess electricity, crediting customers an extra \$0.01/kWh
- Credits roll over every month
- Annual cash out
- Bill customers monthly vs. an annual true-up



Eligibility: customers with renewable electric generation systems (solar, wind, biogas, and fuel cell) that are less than 1,000 kW.



- Improving the lives of our customers by improving the quality of their homes
- Serves both Single Family and Multifamily residents
- Partnership of local non-profits, government agencies, utility providers, and funders



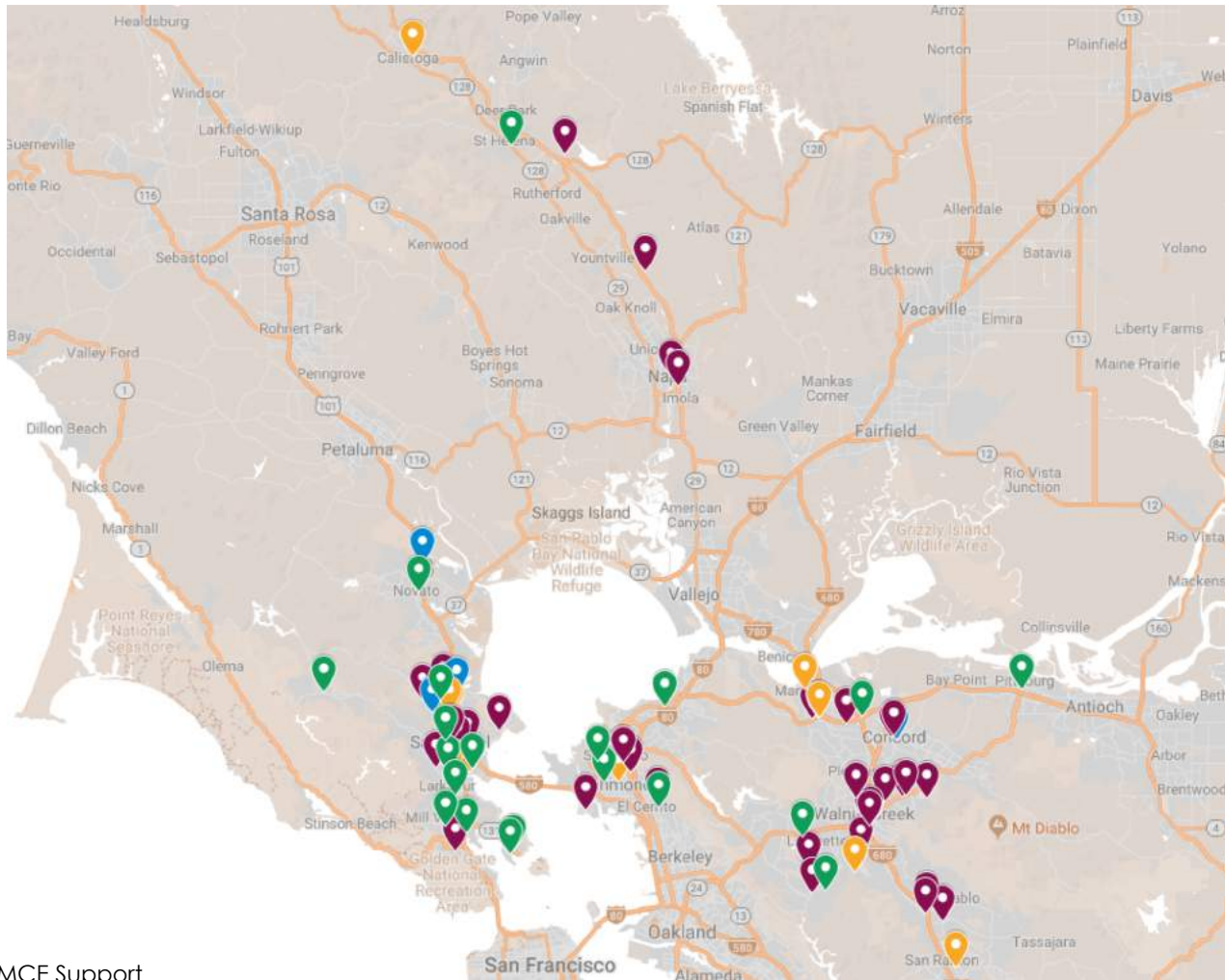
Funding Goal: 540 ports, 100 low-income EVs

Results: 631 ports, 330+ customers engaged

- **Supplemental rebate to PG&E's EV Charge Network:** 10+ port projects
- **MCEv Charging:** Rebate for 2-20 port projects
- **Low-Income EV Rebate:** \$3,500 rebate for EVs for income qualified customers
- **EV Car Sharing:** EVs at income qualified multifamily properties



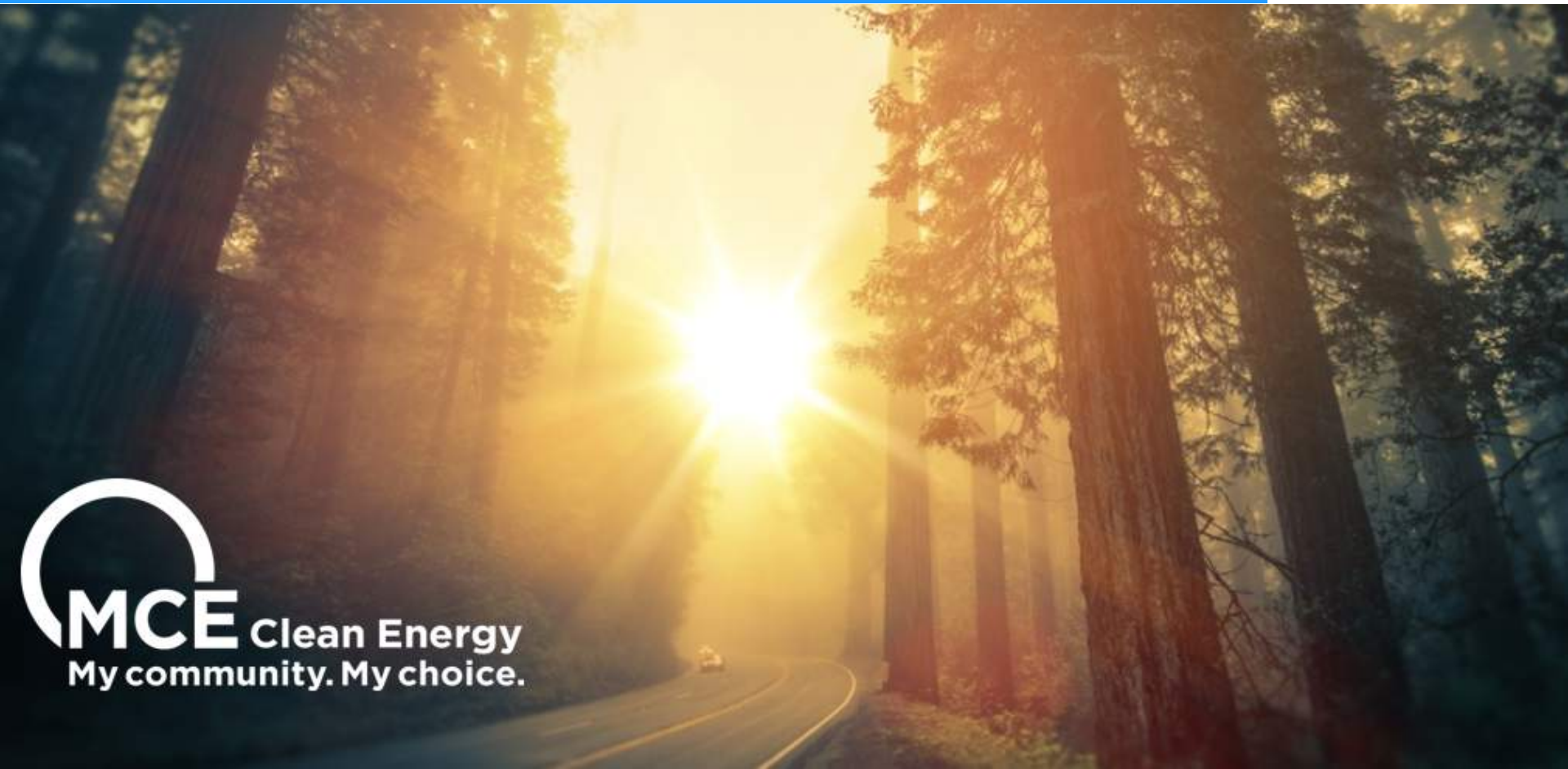
MCE's EV Charging Project Locations



- Completed Project
- Active Project with MCE Support
- Waitlisted – MCEv Charging
- Waitlisted – EV Charge Network

Source: MCE
Program Map

Thank You!



Jenn Kreutzer
Customer Programs Manager
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North Bay Community Resilience Initiative

Delivering unparalleled resilience, environmental, and economic benefits



John Sarter
Program Manager
415-342-7199 mobile
johns@clean-coalition.org

Mission

To accelerate the transition to renewable energy and a modern grid through technical, policy, and project development expertise

100% Renewable Energy End-Game

- 25% local, interconnected within the distribution grid and ensuring resilience without dependence on the transmission grid.
- 75% remote, fully dependent on the vulnerable transmission grid for serving loads.

North Bay Community Resilience Initiative (NBCRI): motivation & need

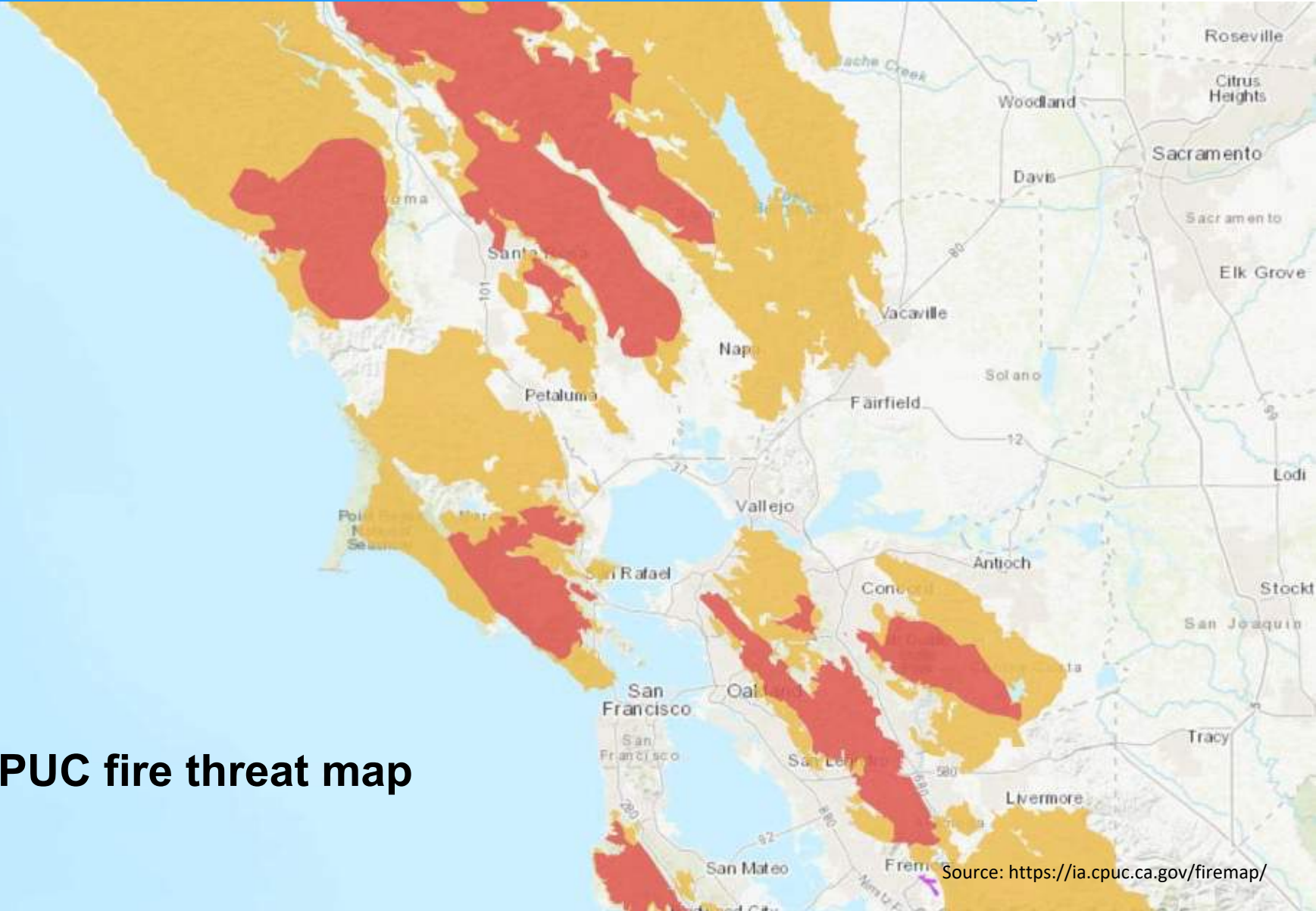
Devastation in Coffey Park neighborhood, Santa Rosa, Sonoma County



- The 2017 wildfires that swept across Sonoma, Napa, and other North Bay counties destroyed 8,900 structures, forced over 90,000 people to evacuate, and killed at least 44 people.
- These wildfires were among the most destructive and costly disasters in California history.
- Communities in the region have a strong desire to build back right and create a more resilient energy system.

Worsening fire threats highlight the need for energy resilience throughout the Bay Area

CPUC fire threat map



Source: <https://ia.cpuc.ca.gov/firemap/>

Plans for preemptive power shutoffs add to the need for energy resilience in the North Bay

Pacific Gas & Electric (PG&E) Public Safety Power Shutoffs (PSPS)

- Multiple PSPS events were planned in 2018; more expected this year due to high fire risk
- Serious negative impact:
 - Critical facilities and businesses lose power and cannot provide services
 - Revenue is lost
 - Food spoils
 - Life-saving medical equipment may not be able to operate
- PSPS are motivating even communities not affected by wildfires to proactively increase their resilience

WHICH CUSTOMERS ARE MOST LIKELY TO HAVE THEIR POWER TURNED OFF? ^

If we need to turn off power for safety, it will be limited to neighborhoods or communities served by electric lines that run through areas experiencing extreme fire danger conditions. We will turn the power back on as soon as it is safe to do so. The most likely electric lines to be considered for shutting off for safety will be those in areas that have been designated by the California Public Utilities Commission (CPUC) as at extreme risk for wildfire (Tier 3 areas).

- **Goal 1:** Track and publicize leading programs for energy efficiency, renewable energy, electrification, and resilience
 - For example, the NBCRI is publicizing the Advanced Energy Rebuild (AER) Program, a leading program offered by Sonoma Clean Power (SCP), MCE, and PG&E to incentivize homeowners to rebuild energy-efficient, all-electric, Net Zero Energy (NZE), renewables-driven resilient homes.
- **Goal 2:** Facilitate the development of model structures and streamline the permitting thereof
 - For example, the NBCRI has conducted numerous activities to promote the first AER home (in Santa Rosa) and has designed and published the Electrification & Community Microgrid Ready (EMCR) design standard and economic analyses – and is promoting to planning departments throughout the North Bay counties.
- **Goal 3:** Stage multiple Community Microgrids to provide economic, environmental, and resilience benefits to communities
 - For example, the NBCRI is designing the Calistoga Community Microgrid in partnership with the City of Calistoga and PG&E to ensure indefinite renewables-driven backup power for critical community facilities and to stage for much broader energy resilience throughout the City.

Decarbonization goals and imperatives

- **Eliminate GHG's** in built environment + transportation



- Increase building and system **efficiencies**



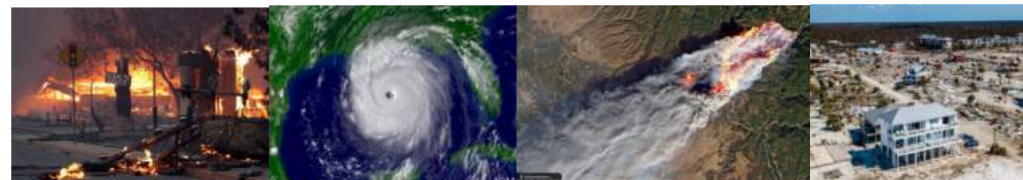
- Create **healthier & safer** homes and communities



- Increase **resilience**



- Design & build for **“The new abnormal”**



Distributed assets:

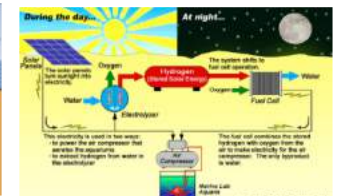
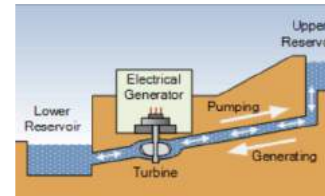
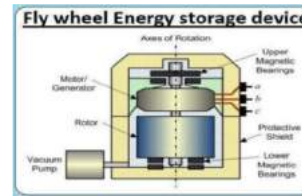
- Distributed generation

- Solar
- Wind
- Hydroelectric
- Geothermal



- Distributed energy etorage

- Batteries
- EV's
- Flywheels
- Pumped Hydro
- Hydrogen



= **Microgrids**



+



+

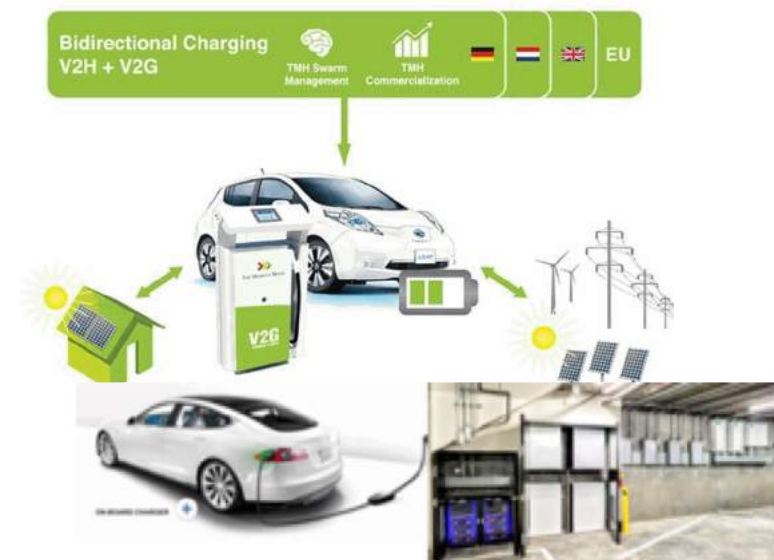


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Interconnected Microgrid Assets = **Community Microgrids**
for greatest resilience

- **V2B/V2G, aka V2X** (Vehicle to Building/Grid energy transfer) is on the very near horizon.
- V2X will allow EV's to monetize the energy in their large batteries to use for load shifting, and for “ancillary services” for the grid and microgrids.
- There is enough stored energy in today's high range EV's to power a home overnight for a week or more.
- A shift to utilization of EV batteries for these services will help flatten the “duck curve”, and provide extra value for owners of EV's
- V2X will also allow people to take their power with them, and use it in other locations for anything they want, without transmission lines
- Your home, your energy, and your vehicle will be managed easily on one simple platform



[Nissan Leaf powers a Concert !!](#)



Electrification & Community Microgrid Ready (ECMR) guidelines

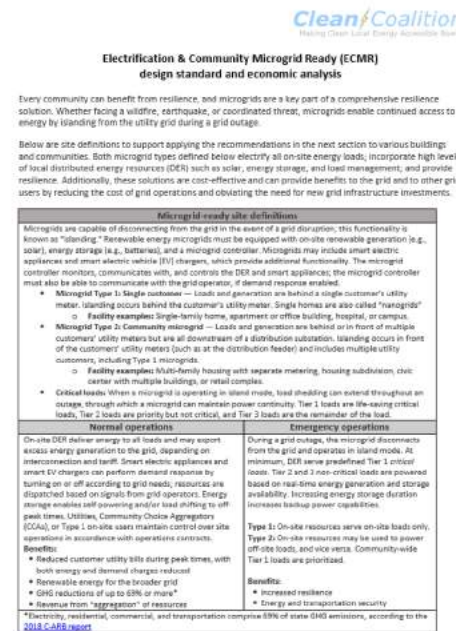


[ECMR guidelines developed by the Clean Coalition](#) and a team of industry experts, as a guideline for homeowners, trades installers, and electrical engineers to easily plan and install necessary wiring and communications to be all-electric and Community Microgrid Ready.



Simple 2-page document

- Page 1: Microgrid definitions and operations
- Page 2: Wiring for:
 - Connected appliances
 - Solar-ready
 - Energy storage
 - Connectivity
 - Additional recommendations



Page 1 of 4

ECMR recommendations

The ECMR recommendations apply to residential structures. The Clean Coalition is working with industry experts to develop similar guidelines for commercial facilities.

Residential properties participating in a microgrid and/or responding to emissions reduction targets should ideally be all-electric. All-electric appliances provide increased value for homes because, unlike appliances that rely on gas, they can all be powered by a solar-storage microgrid. If all-electric design is not currently possible for any reason, designs should at minimum include the electrical service features described below to facilitate future full electrification and on-site solar generation.

These recommendations vary by building, consult your electrician and/or engineer for site-specific recommendations. This is designed to be a "living document" which is adaptable and changeable as technologies advance and new technologies arise.

Wiring:

Install dedicated circuits and receptacles for all-electric appliances in single-family dwellings (SFDs):

- Grid-connected **heat pump/water heater** (15-30 amp, 240V)
- **Heat pump clothes dryer** (30 amp, 240V)
- **Induction electric range** (50 amp, 240V)
- Grid-connected **heat pump/space conditioner** (heater and air conditioner) (30-60 amp, 240V)
- **Grid-connected EV charger** (40-80 amp, 240V)

Solar-ready electrical service for future solar array:

- Main service panel (MSP) rated 225 amps (allows for a 200-amp main breaker plus bus bar capacity for a solar array of up to 70 amps)
- Double-pole circuit breaker
- Metallic conduit for future solar installation (from roof to inverter location/panelboard)

Energy Storage System (ESS) ready:

- Designated wires for ESS, size of this wire will depend on required/desired loads to be served by system (i.e., critical loads for backup only vs. full operability in grid outage)
- Main electrical main line "loop" to battery location, between electrical service meter and main panel or subpanel
- Main electrical panel sized for all existing and future loads, including solar and ESS
- Loop main subpanel power lead to designated ESS location
- Separate subpanel for loads that require backup (can be added during remodel) OR "smart" main panel with programmable breakers (e.g., [Caton](#) or [Leviton](#))
- Capacity in subpanel for emergency circuits to serve critical loads (e.g., refrigerator, HVAC, water heating, microwave) and outlets with battery power during grid outages
- Ethernet line from main router to ESS location
- Conduit for communication from solar inverter(s) to ESS location

Additional recommended features for interconnection:

- Communications conduit for demand response-capable electric appliances
- Connectivity: [OpenADR CTA 245](#) for appliances, [IEEE 2030.5](#) for energy storage

Page 2 of 4

- Page 3 : Costs for electrification
 - Page 4 : Costs for Community Microgrid Ready
- ECMR DOCUMENT

Approximately \$1000 total

- [RMI REPORT](#) \$8800 Savings - \$1000 = \$7800 savings

Clean Coalition
Making Clean Local Energy Accessible Now

Estimated costs for rewiring electric-ready homes
(Community Microgrid Ready costs are on following page)

Below is a rough cost estimate for the parts and labor required to prewire typical floor plans offered by Santa Rosa contractors in the North Bay, California, rebuild area.

The rewiring costs for appliances vary depending on the architect's design. A primary 200-amp electrical panel is typically positioned where power reaches the home, often on the outside of the garage nearest the street. In small homes, runs of wire may go directly to receptacles to serve major appliances. In larger homes, 100-amp subpanels are often installed in easily accessible indoor locations, such as the laundry room, to serve large nearby appliances such as the dryer, water heater, electric stove, or spa.

Wiring may not be placed in walls but may go more directly to appliances through crawl spaces, attics, floor joists, and other spaces deemed non-occupied areas. The largest expense for a dedicated circuit is for the electric stove wire (AUG 6/3 Romex), at about \$2.25/ft. Other wire sizes for each appliance are indicated.

| Item | Wire size | Length*** | \$/ft. | Total |
|----------------------------------|-------------|-----------|--------|-------|
| Stove | 6/3 Romex | 50 ft. | 2.25 | \$113 |
| Water heater | 6/10 Romex* | 35 ft. | 0.80 | \$28 |
| Dryer | 6/10 Romex | 35 ft. | 0.80 | \$28 |
| Heat pump | 6/4 Romex** | 35 ft. | 1.50 | \$53 |
| Receptacles (4 @ \$5 ea) | | | | \$20 |
| Subtotal for materials | | | | \$242 |
| 2-3 hours labor for installation | | | | \$250 |
| ESTIMATED TYPICAL TOTAL COST | | | | \$500 |

* Water heater circuit will be required by 2018 title 24 code.
** Heat pump circuit can replace air conditioner unit circuit, which is often offered in new homes.
*** Typical distance from the garage (where the main electrical panel is typically placed) to the appliance

Costs will vary by \$250-\$700 depending on the position of the electrical panel, appliance locations, home size, etc. Water heaters, dryers, and external heat pump compressors are typically located in or near the garage.

Page 3 of 4

Clean Coalition
Making Clean Local Energy Accessible Now

Estimated costs for additional features to make homes Community Microgrid Ready

| ITEM | APPK COST |
|--|---------------|
| Energy Storage System (ESS) ready: | |
| • Designated area for ESS; size of this area will depend on required/desired loads to be served by system (i.e., critical loads for backup only vs. full operability in grid outage); keep near "smart" main and/or backup loads subpanel | \$0 |
| • Main electrical main line "extra loop" (8 feet) to ESS location, between electrical service meter and main panel or subpanel; keep ESS near main and subpanel | \$50 |
| • Separate subpanel for loads that require backup (can be added during remodel); keep next to main panel and ESS | \$200 |
| - OR - | |
| • Capacity in subpanel or "smart" main panel (Eaton, Leviton, or similar) for emergency circuits to serve critical loads (e.g., refrigerator, HVAC, water heating, microwave, lights and outlets with ESS battery power during grid outages, including EV-ready) | Incl. above |
| • Ethernet communications line from main router to ESS location (60') | \$80 |
| • Ethernet line for communication from solar inverter(s) to ESS location | \$100 |
| • Upgrade to certified smart inverter for islanding, plus ESS export to grid (optional); this is included in the ESS package price and user interface | \$300 |
| V2B bi-directional EV charge/inverter ready | |
| • No additional costs required; same electrical cable as for EV charging | \$0 |
| COMMUNITY MICROGRID READY TOTAL | \$410 - \$510 |

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Featured Links

→ [Contact Us](#)

→ [Customer Service](#)

Community Development
Agency

▣ [Building and Safety](#)

▣ [Environmental](#)

[Health Services](#)

▣ [Planning](#)

▣ [Sustainability](#)

▣ [Environmental](#)

[Review](#)

▣ [Housing](#)

▣ [Federal Grants](#)

▣ [Mapping](#)

▣ [Code Enforcement](#)

Electrify Marin

Community Development Agency



Electrify Marin - Natural Gas Appliance Replacement Rebate Program



The County of Marin is offering rebates to single family property owners for the replacement of natural gas appliances with efficient all-electric units, including water heaters, furnaces, ranges and cooktops. Replacing natural gas appliances with electric models will reduce greenhouse gas emissions, improve indoor air quality, and make your home a safer environment. Rebates range from

\$250 to \$1,000 dollars per replaced gas appliance (or **\$250 to \$4,500** for income-qualified households*). In cases where installing a new electric appliance would require an upgrade to the existing electric service panel, further rebates are available to offset the cost of the additional capacity. This program is available in all areas of Marin County. Electrify Marin is funded by a Grant from the Bay Area Air Quality Management District.

Rebate amounts for eligible appliances** are as follows:

| Appliance Type | Standard Rebate | Income Qualified Rebate |
|-------------------------------|-----------------|-------------------------|
| Heat Pump Water Heater | \$1,000 | \$2,000 |
| Heat Pump Space Heater | | |
| Central Heat Pump | \$1,000 | \$4,500 |
| Mini-Split Heat Pump | \$800 | \$3,000 |
| Induction Cooking | | |
| Range (Cooktop & Oven) | \$500 | \$500 |
| Cooktop only | \$250 | \$250 |
| Service Panel Upgrade | \$500 | \$1,200 |

Questions? Call 415-473-3069 or email energy@marincounty.org

Calistoga Community Microgrid

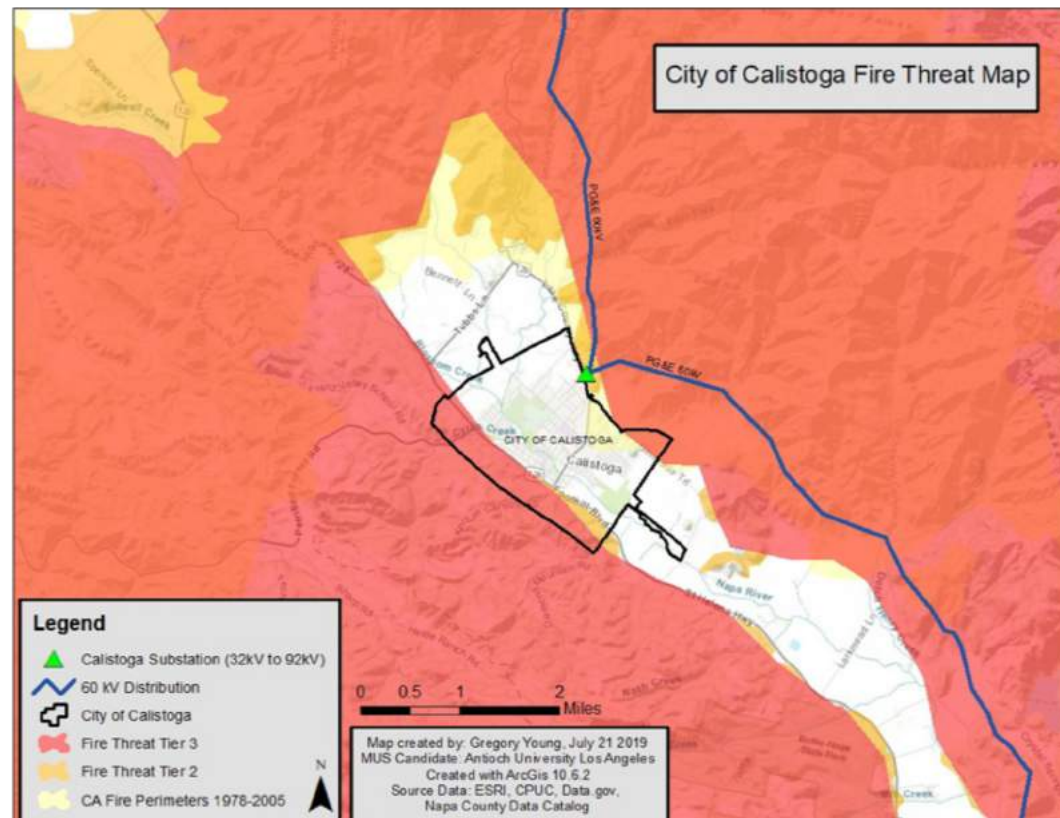
- City is motivated: vulnerable to wildfires, already experienced a 48-hour PSPS event, and is threatened with more PSPS events
- Project will start with 5 microgrids at discrete locations
- PG&E is investigating a pre-installed interconnection hub (PIH) for Calistoga
- Initial project steps:
 - Conduct a Solar Siting Survey.
 - Engage key stakeholders to identify the most vital critical community facilities and select the top 5 facilities to target.
 - Produce functional designs for the targeted 5 critical community facility microgrids and stage for the broader Calistoga Community Microgrid as well.



PSPS map of Calistoga — Source: PG&E

Calistoga Community Microgrid

- **Core element of NBCRI:** First Community Microgrid developed as part of NBCRI
- **Ultimate goal:** Develop a comprehensive Community Microgrid that serves the full Calistoga substation grid area and provides a game-changing showcase for renewables-driven resilience throughout the North Bay and beyond



The GLP is the perfect opportunity for a comprehensive Community Microgrid



- GLP spans 70 miles of California coastline, from Point Conception to Lake Casitas, encompassing the cities of Goleta, Santa Barbara (including Montecito), and Carpinteria.
- GLP is highly transmission-vulnerable and disaster-prone (fire, landslide, earthquake).
- **200 megawatts (MW) of solar and 400 megawatt-hours (MWh) of energy storage** will provide 100% protection to GLP against a complete transmission outage (“N-2 event”).
 - 200 MW of solar is equivalent to about 5 times the amount of solar currently deployed in the GLP and represents about 25% of the energy mix.
 - Multi-GWs of solar siting opportunity exists on commercial-scale built-environments like parking lots, parking structures, and rooftops; and 200 MW represents about 7% of the technical siting potential.
 - Other resources like energy efficiency, demand response, and offshore wind can significantly reduce solar+storage requirements.

Other communities surveyed

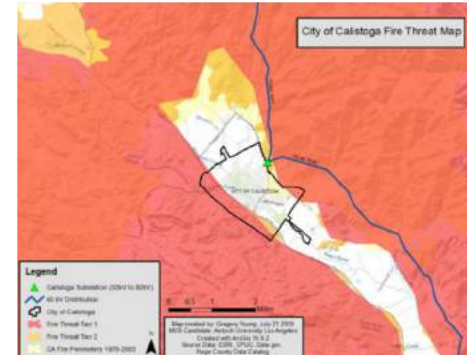
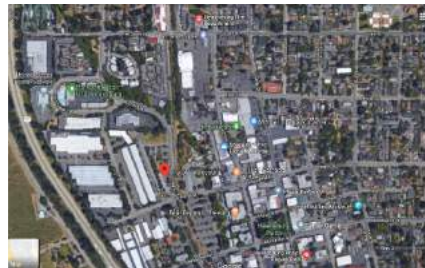
Clean Coalition has identified prime areas for resilient microgrids in vulnerable North Bay communities

Example 2: Coffey Park and Bicentennial Corridor, Santa Rosa

- Coffey Park and the Bicentennial Corridor — ideal for energy resilience.
- Served by single substation, Monroe.



- Calistoga
- Santa Rosa
- Windsor
- Healdsburg
- Cloverdale
- Occidental



Thank you for attending!

For more information:

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