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Disaster Recovery and Energy Efficiency: Lessons Learned from the North Bay Fires

BayREN Codes & Standards

October 2018

Introduction and Recommendations

After the North Bay Fires of 2017, the Bay Area Regional Energy Network (BayREN), and especially its representatives from Napa and Sonoma Counties, began thinking of ways to improve energy efficiency and energy code compliance during the rebuilding process. This document summarizes what we did and what we learned from that work, so that others can benefit from our experiences when recovering from other fires or disasters. The intended audience is local government staff, especially those working on sustainability and energy efficiency programs. For more information about anything here, please contact: codes@bayrencodes.org.

The document begins with a summary of recommendations based on our experiences helping support disaster recovery and, in the next section, provides more information about our findings, followed by descriptions of what worked well and less well.

Recommendations for Before a Disaster

- Have information about energy efficiency measures for new buildings readily available, especially those that are low-cost or very cost-effective, so it can be easily updated and provided to stakeholders after a disaster. Example: Home Energy Features Everyone Should Consider
- Be well-connected to the building industry and building department staff, including professional organizations (e.g. Redwood Empire Association of Code Officials [REACO]). This will help improve communication and collaboration on rebuilding post-disaster.
- Looking back, it would have been ideal if discussions had occurred before the fires of how building departments and permit centers could be supported to ensure energy code compliance when rebuilding, as well as to distribute information about energy efficiency measures and rebates. The focus after a disaster is on rebuilding quickly, and we found it difficult to have these discussions.

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Recommendations for Soon After a Disaster

- Distribute information on energy efficiency measures to homeowners, by making it available at permit centers and other public locations, as well as online. Resource: Green Building, Sonoma County Recovers
- Distribute information on energy code requirements for rebuild. Resource: Residential Recover and Rebuild Fact Sheet, Energy Code Ace
- Participate in rebuilding events by having a table or sponsoring a workshop.
- Host training events for homeowners and the building industry.

Recommendations for Medium- to Long-Term Actions after a Disaster

- Develop an incentive program for homeowners to rebuild energy efficient, sustainable homes. See the Advanced Energy Rebuild Program Case Studies below.

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What We Found After the Fires

Those who lost their homes are understandably overwhelmed

Fire survivors experienced an immense trauma, with some barely escaping with their lives and others losing everything. They were not planning to rebuild their home, find a place to live, or replace their belongings. Homeowners were expected to itemize everything lost and fill out countless forms to be fully reimbursed. In many cases, finances presented a challenge, particularly because building costs increased after the fires due to greater demand for labor and materials. This meant some people had less money available for extra home features, including energy efficiency.

Insurance difficulties

Many homeowners found themselves underinsured after filing claims. Typical insurance policies did not include additional amounts for homeowners to rebuild the house to meet current Building Standards.[1] The ramifications of the large gap between insured and uninsured losses will be significant. If homeowners don't have enough money to rebuild, then financial pressures could force many to leave the North Bay and delay efforts to rebuild.

In conversations with Ventura County after the fires there in 2018, there were stories of incomplete inspections, clean up, and repairs from insurance agency approved contractors for houses damaged by fire or smoke. These contractors would perform a quick check and allow residents to move back in, only for them to find ashes or smoke in the attic later. This led to further problems with insurance coverage as well as concerns about health impacts.

Rebuilding unknowns and confusion

Post-disaster there was much confusion on many topics, including debris removal, rebuilding, insurance, processes, etc. Homeowners were initially unsure whether

[1] Swindell, B (2018) 'Many North Bay homeowners increase insurance coverage in fire aftermath' The Press Democrat, January 1

rebuilt homes would be required to meet current Building Standards, such as the 2016 Energy Code. In this process, local government, building professionals and homeowners were all navigating the disaster response together. Early and constant communication between these groups was extremely important.

Politically, the desire is to help people rebuild as quickly as possible

During this time, the focus was on helping those who lost their homes rebuild as quickly as possible. Anything perceived as adding cost or delaying construction, such as reach codes, were not supported. Choice was also very important. Immediately after the fire, some homeowners expressed interest in more resilient communities with all-electric homes and PV installation, while others wanted to rebuild with gas cooking and a fireplace.

Community collaborations and groups are very active at the onset, and discussions naturally wane over time

Post-disaster and during emergency response, collaborations and community groups formed. After the North Bay Fires, existing collaborations and community groups had structures already in place to be successful in their efforts. New partnerships and campaigns were also created in response. There was often uncertainty, confusion, and overlap in their efforts. Some collaborations were temporary in nature to respond to one issue, while others turned out to be ongoing. After 3-6 months, the initial response seemed to quiet down. Individuals and volunteers often become fatigued.

Conversations start early

It was important for BayREN, and local government staff through BayREN, to reach out to contacts at PG&E and Sonoma Clean Power (SCP) soon after the fires to begin coordination. The investor owned utility (IOU), PG&E, was extremely busy with the restoration of power and natural gas lines during the fires and the following weeks. The Community Choice Energy provider for Sonoma County, SCP, immediately provided support for city and county needs and began investigating

how to help support a more energy efficient rebuild. Sonoma's Regional Climate Protection Authority (RCPA) coordinated several meetings with SCP, County of Sonoma Energy and Sustainability Division, and local energy professionals within the first few weeks to help draft the Resilient Rebuild Features resource in coordination and collaboration with BayREN.

Community-based organizations and the building industry want to help

The American Institute for Architects (AIA) local chapter, Redwood Empire, created the Firestorm Recovery Committee to discuss impacts of the fire and how the AIA could help. The committee met once a week for several months discussing response, recovery and rebuilding. During this time, many rebuilding factors were unknown. The committee gave architects and stakeholders a space to debate ideas, consider tactics and converse with each other. The Redwood Empire AIA created a Basecamp to communicate about events and questions around the recovery and rebuild. At one point, a sustainability subcommittee was created. Sustainability efforts ultimately transitioned to the Rebuild Green Coalition (see below) to avoid duplication of efforts.

Resources:

Disaster Assistance Handbook, Third Edition

Disaster Assistance Quick Guide

The Rebuild Green Coalition, a group of green building professionals, community organizers, utility and government representatives and others, came together to help the community rebuild in the most sustainable and resilient way possible. This group started as an informal dinner and then organized a daylong workshop that was attended by 50 green building professionals and other stakeholders. That larger group then became the Rebuild Green Coalition. The Rebuild Green Coalition organized the successful free Rebuild Green Expo several months after the fires, which was attended by over 1,500 homeowners and building professionals for a day of education, information, and networking focused on resilient, affordable, community-centered "green" rebuilding options for the communities affected. The

event included education sessions about building energy-efficient Zero Net Energy residences, financing green building, adding granny units, using 100% renewable electricity, using fire-resistant construction and sustainable materials, microgrids, electric vehicles, and more. The Coalition is still active a year after the fires with continued dialogue through a Google Group and plans for a second Rebuild Green Expo for 2019 in progress.

Rebuilding requirements

Local governments were often willing to simplify or streamline local zoning requirements for those who were rebuilding, to make the process faster and less expensive. However, homeowners still had to meet the current California Building Code, including the Energy Code, which meant that they often had to rebuild to a much higher standard (with a higher cost) than their former homes.

Building officials and inspectors are even more busy than usual

The BayREN Codes and Standards Program works with building departments to accelerate energy code compliance. After the fires began, building department staff from neighboring cities as well as third-party building inspectors and plan reviewers helped with response and recovery. The City of Santa Rosa and County of Sonoma contracted with third parties, Bureau Veritas and WC-3 respectively, to open Resiliency Permit Centers to serve fire survivors with the rebuild process. The Resiliency Permit Centers offer expedited processes and many resources to support the rebuilding process. BayREN offered to fund Certified Energy Analysts to assist at permit centers, but this offer was not responded to.
Resources:
City of Santa Rosa Resilient City Permit Center & Rebuilding Information
County of Sonoma Resiliency Permit Center Information

Keeping the workforce local is desired

There was very strong support to hire local contractors, architects, developers, and other building professionals to keep money in the local economy. At the same time,

the amount of human power needed to rebuild was larger than the local workforce. To address this, a need to increase the local workforce through trade education was identified and made a priority.

What We Learned Worked Well

Empathy and compassion in conversations with fire survivors

In conversations with survivors, it was important to acknowledge the trauma they went through at the beginning of a conversation. For example, a good conversation starter was: “I am sorry that you lost your home and have to go through this process.”

Create rebuilding resources

Because BayREN has focused on energy efficiency measures for existing buildings, BayREN and local governments did not have much information on new construction that could help fire victims. With input from building professionals and local jurisdictions, BayREN created a Resilient Rebuild Features one-page document that provided a very general overview of ideas to consider when rebuilding as an introduction to the average property owner. Collaboration ensured that the identified features resonated with the green building industry and worked in conjunction with the Advanced Energy Rebuild principles. The handout was provided at the “Rebuild Green Expo”, at permit centers and featured online. The City of Santa Rosa also created many rebuilding guides with specific branding.
Resources:
Sonoma County Recovers: Green Building Incentives and Resources
BayREN Codes and Standards: North Bay Fire Recovery Resources
City of Santa Rosa Rebuilding documents
Rebuilding After the Fire: Napa County

The County of Sonoma, Energy and Sustainability Division started offering rebuilding consultations, focusing on green building at any point in the building

process. The goal of these consultations was to help make homeowners aware of the effectiveness and positive impact of the current energy code, and to stress how new construction offers an opportunity to incorporate high performance measures into a home's design at a much lower cost than during a retrofit of an existing home. Building measures that could receive rebates and incentives were also reviewed during the consultation. The Energy and Sustainability Division also provided a variety of tools to help with rebuilding.
Resource: Energy and Sustainability webpage

Outreach to the builder and construction industry is important

Training and classes on the energy code and energy efficient building practices were helpful post disaster. As a result of the large demand for architects, contractors, engineers and all construction industry workers, new individuals became involved in rebuilding projects.

BayREN presented a Zero Net Energy Introduction training for building professionals at the 2018 Rebuild Green Expo. The Rebuild Green Expo held a number of classes on a variety of green rebuilding topics. BayREN also sponsored a Zero Net Energy Training at The Redwood Empire Construction Specifications Institute (CSI) Building Technologies Expo.

A coordinated effort by PG&E, SCP, County of Marin, County of Sonoma Energy and Sustainability Division, and RCPA brought trainings for high performance residential design and construction to Sonoma County. This included the Integrated Design and Construction: Rebuilding for Comfort, Efficiency and Affordability (5-part series), MI-BEST (Mobile Integrated Building Energy Science Training) (5-part series), as well as Advanced Building Science for Residential Enclosures - continuous external insulation and moisture management. These classes were well attended and were being offered again later in the rebuilding process.

Certified Energy Analysts were in particularly high demand since the Advanced Energy Rebuild program requires working with one. To help address this, SCP held a Certified Energy Analyst workshop ahead of the CEA exams in June 2018. In addition, SCP offered a $100 discount off the exam price.
Resource: Certified Energy Analyst class flyer

Hold listening sessions or discussions.

The City of Santa Rosa and the County of Sonoma held at least two joint "all hands" meetings with developers, architects, engineers and contractors 3-4 months after the fires to give updates on debris cleanup and permitting requirements, and to answer questions from the building community. This provided an opportunity for the local governments to hear questions and feedback from the community and also provided a central space to disseminate information.

Outreach to the Resiliency Permit Centers

BayREN learned that in-person visits to the Resiliency Permit Centers were the best way to check on energy code resources and talk to the permit counter employees. Regional ICC meetings were also a helpful networking opportunity.

Incentives are helpful!

There was strong political will (from multiple governmental agencies) to provide and/or increase incentives for energy efficiency features instead of mandating them. The difficulty is bringing them all together quickly enough, in a way that is simple enough for applicants. See the case studies of the Advanced Energy Rebuild Program on the following pages.

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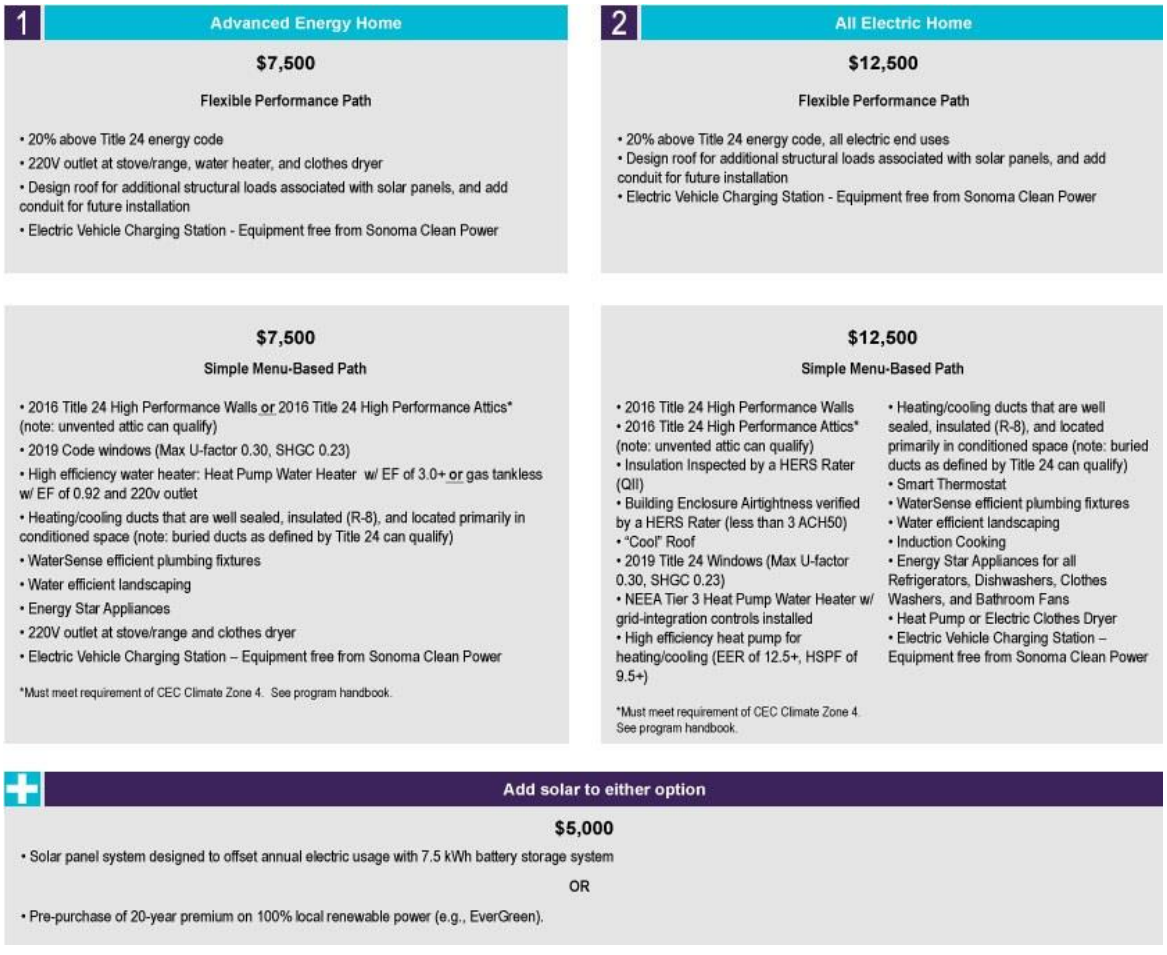
Case Study: Advanced Energy Rebuild in Sonoma and Mendocino Counties

Sonoma Clean Power (SCP), Pacific Gas and Electric Company (PG&E), and Bay Area Air Quality Management District joined efforts to help homeowners affected by the October 2017 firestorms rebuild energy-efficient, sustainable homes. Based on conversations with stakeholders, Sonoma Clean Power and PG&E outlined a program that could expand upon and streamline PG&E's existing California Advanced Homes Program (CAHP) and create a stretch goal option for totally carbon free homes. The program is an enhancement to PG&E's long-standing California Advanced Homes Program, and offers two incentive packages tailored to Sonoma and Mendocino Counties. Each package has a flexible performance pathway or a simple prescriptive menu. A streamlined one-page application was developed, with 50% of incentives to be paid upon issuance of a building permit and the remaining 50% to be paid upon a successful site inspection within 60 days of issuance of an occupancy permit. **Resources:**

[SCP's Advanced Energy Rebuild Website]

[SCP's Meeting and Documents]



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Case Study: Advanced Energy Rebuild in Napa County

The Advanced Energy Rebuild Napa program provides incentives for energy efficiency measures to homeowners in Napa County who are rebuilding due to the fires. The Advanced Energy Rebuild Napa Program was developed based on the Advanced Energy Rebuild program offered by Sonoma Clean Power in Sonoma and Mendocino counties. Funding for the incentives (up to $12,540/house) comes from PG&E and the Bay Area Air Quality Management District. MCE Clean Energy (MCE) and BayREN are funding technical assistance, while MCE and Napa County are working together to conduct outreach. Staff hopes to achieve 10% participation (50-60 homes).

Resource:

MCE's Advanced Energy Rebuild Website

Choose your level of energy efficiency above current energy code requirements

Receive up to **$4,900**

Percentage above energy code	20%	30%	40%
Incentive for new rebuilt homes:	$2,800	$3,700	$4,900

As an example, a 20 percent above energy code home could include:

- High performance walls or attics
- Advanced windows
- Insulation inspection
- High efficiency water heater: Heat Water Pump with EF of 3.0+ or gas tankless with EF of .92
- Ducts in conditioned space
- ENERGY STAR® Appliances (see **mcecleanenergy.org/rebuildnapa** for full list)

Receive additional incentives by choosing the following electric technologies

Receive up to **$7,640**

+$40 for a smart thermostat
+$500 for an electric vehicle charging station
+$800 for induction cooking
+$800 for a heat pump clothes dryer
+$1,000 for an electric heat pump hot water heater
+$1,500 for an electric heat pump HVAC system
+$3,000 for a solar panel systems with battery storage

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What We Learned That Did Not Work Well

Anything that increased time/cost of rebuilding

During recovery, an electrification reach code was discussed, but there was a lot of push back on the time and cost impact to residents who had been displaced and were already faced with the daunting task of rebuilding.

Communications with building permit staff

It was difficult to get in touch with rebuilding permit center staff via email. In-person meetings were more successful. Understandably, the resilient permit centers and staff were extremely busy. BayREN services were offered to building departments, including energy code classes and providing Certified Energy Analysts at permit centers, although the offers were not responded to.

Questions

These questions came up during discussion in the North Bay Fires Recovery and Rebuild. While we do not have answers, we think this information might be useful.

- With the emphasis on speed for permit reviews, are energy code requirements being fully addressed? How does energy code compliance compare between structures built just before the fire and similar structures built during the recovery?
- With the rebuild and upgrade to current code, it would also be interesting to compare total energy use (and breakdown by gas/electricity) for newly rebuilt areas and existing areas that are similar to the areas that were destroyed.
- Everyone was very quick to jump on the “rebuild better” bandwagon.
    - What does “better” mean? More fire resistant, more energy efficient, bigger, more comfortable?
    - Disaster is an opportunity to make significant changes to infrastructure, although that is difficult because everyone wants things to get back to normal. Was there discussion of changing road layout, lot configuration, electric lines/infrastructure/grid, etc.? Opportunities to build microgrids?