



The CZU Lightning Complex Fire – Learn...or Burn?

Board Oversight – An Obligation to our Community

“Those who fail to learn from history are doomed to repeat it”

- Winston Churchill



Summary

We investigated the county government's response to the needs and concerns of victims of the August-September 2020 CZU Lightning Complex Fire.

We focused on the accountability of the Board of Supervisors and county administration leadership to our citizens. We investigated the county's support to the community in the aftermath of the loss of life, loss of property, and stress and anxiety felt by so many. The communities of Bonny Doon, Davenport, Last Chance, and Boulder Creek were hit hard in this fire. Have we taken advantage of all the experiences and learnings to maximize our ability to weather the next, inevitable, disaster event?

Background

In the early morning of August 16, 2020, a thunderstorm occurred that produced thousands of lightning strikes, resulting in hundreds of fires throughout California. There were over 300 lightning strikes in Santa Cruz and San Mateo Counties which, combined with dangerous drought conditions, resulted in the largest fire in Santa Cruz County history. This massive wildfire, dubbed the CZU Lightning Complex Fire, had devastating consequences for many of the residents of Santa Cruz Supervisorial Districts 3 and 5. The fire consumed 63,754 acres, destroyed 1,431 structures of which 911 were single family homes, and caused the tragic death of Santa Cruz County resident Tad Jones.^{[1] [2]} Mr. Jones attempted to leave when evacuation orders came in but the one lane road out was already blocked by the fire. He went to a clearing where Cal Fire had told residents to gather in case of a fire in order to keep the roads cleared for their trucks. When it appeared no one was coming to help, Mr. Jones tried to get out toward Big Basin. His body was found a few days later near his burnt out car. Mr. Jones had been right in one respect; no rescue vehicle made it to that clearing.^{[2] [3] [4]}

Over 70,000 people were evacuated during this event, and nearly all of Big Basin Redwoods State Park was lost.^{[1] [5]}

Thirty-seven days after the fires began, on September 22nd, Cal Fire reported it had gotten its “arms” around the CZU Lightning Complex Fire.^[6] Four months later, on December 23, 2020, Cal Fire CZU Unit Chief Ian Larkin announced it was fully controlled.^[7] By the end, the cost to fight this fire reached over \$68 million.^[8]

The damage, loss of life, disruption from evacuation, and efforts to support the victims of the fire were well publicized during the event. On October 6, 2020 the Board of Supervisors (BoS) voted to create the Office of Response, Recovery and Resilience (OR3) to respond to not only the CZU August Lightning Complex fire, but also future disasters.^{[9] [10]} An ad hoc committee led by Supervisors Ryan Coonerty and Bruce McPherson was established to monitor and oversee the implementation of the county’s recovery work over the next calendar year. There has been positive resident feedback regarding this program. The county patterned its recovery program after Sonoma County’s successful plan in the wake of their own fire disaster in October 2017.^[11]

Nothing is yet published about the performance of our government leadership in holding Cal Fire accountable for past actions and ensuring readiness for the next event.

The Grand Jury received complaints from residents angry over not fully understanding how everything went so wrong, and frustrated about feeling unheard by their local government leaders.^{[12] [13]} Many are afraid that the county is unprepared for the next event.^[14]

This disaster began in mid-August, was contained by late September, yet it took until mid-March 2021 before Cal Fire held two information sessions via Zoom.^{[1] [15]} This delay, per Cal Fire, was due to the COVID-19 pandemic and the challenges created by the stay-in-place order.^[1] Yet, the use of virtual meetings such as Zoom, was a common practice months prior to these presentations.

There was one presentation for each affected district, although the second presentation was a repeat of the first. Their purpose was to answer residents' questions, provide

in-depth information about the beginning of the fires, the progression, and the events that led to so much destruction. They included a “chat” feature for residents’ comments and questions throughout, and Q&As with the viewers after the presentations. Six weeks later, there was another Zoom townhall for San Mateo County residents.

These were Cal Fire presentations, but it was announced that the Board Supervisor for that particular district was online and listening, as well as some other county personnel. Neither district’s supervisor commented during the presentations, nor spoke at the Q&As that followed.

There were themes to the questions asked at these events, mostly surrounding the concerns about what didn’t work and what is being done to prepare for the next event. People are extremely grateful for the work done by our county fire districts, volunteer firefighting agencies, and Cal Fire. But many are also angry, and need information. All of us need to know what our county is doing to secure needed state resources to ensure that our contract with Cal Fire provides us with the protection needed in proportion to the dangers that will certainly come our way. We all need answers to the residents’ questions: when we did the preparations recommended, when we followed the recommendations made by our district supervisors’ offices and fire agencies, why were we left to burn? And how do we know the same thing will not happen again?

The CZU Fire, and the increasing risk of more fires, represents an inescapable priority for responsible representation of our community needs.

Scope and Methodology

The function of the civil grand jury is to examine aspects of city and county governments, and special districts. Cal Fire is a state agency that contracts with the county of Santa Cruz.^[16] During fire season (May through October), Cal Fire operates as a state agency. Therefore, Cal Fire is outside the purview of the Grand Jury for the purposes of this investigation.

The scope of this report encompasses the effectiveness of the leadership of the county in their responsibility to represent county residents. We sought to answer these key questions about leadership, strategy, and communications:

- What are the concerns of the community, particularly the victims and evacuees, and do these concerns persist?
- How has the BoS communicated with our citizens and responded to the community’s concerns and complaints?
- How has the BoS stepped up and demonstrated oversight and accountability?
- How has the BoS, in turn, represented the community and held Cal Fire accountable?
- How has the BoS assured that sufficient resources are funded and available for recovery and rebuilding as well as off-season fire prevention and preparation?
- Have the lessons learned and improved preparations for the future been documented and verifiably implemented?

For this investigation, the Grand Jury performed multiple interviews of county officials and residents, reviewed resident complaints, and attended three virtual Community Meeting events. We also requested and examined several documents provided by the many county agencies involved in the CZU Lightning Complex Fire and its aftermath. We researched media articles, online publications, and we examined the practices of other counties that have also experienced devastating wildfire events.

Due to a possible conflict of interest, one juror was recused from all parts of this investigation.

This Grand Jury investigated, and now reports on, the representation of residents' concerns regarding the aftermath of the CZU Lightning Complex Fire. We respectfully recognize and commend the dedication of all firefighters who took great personal risk to attend to the safety and well-being of the community during this extraordinary and dangerous event. Thank you all.

Investigation

Our government has an obligation to serve its citizens by assuring that risks are understood and managed, that resources are maximized within financial constraints to actively mitigate foreseeable risks, and that the needs and concerns of the public are recognized and satisfied. These are the subjects of this report.

Residents' Complaints

The Grand Jury received complaints from residents of Santa Cruz County concerning Cal Fire's handling of the CZU Lightning Complex Fires.^[12]^[13] These complaints motivated the Grand Jury to investigate the BoS and County Administration leadership to determine if they (BoS) adequately represented the county residents and their needs before, during, and after the CZU Fire. These complaints were received prior to Cal Fire's Virtual Community Meetings on March 15 and 16, 2021.

From Grand Jury interviews with residents that were affected by the fires and additional complaints received, the following are questions, statements, and comments that were insufficiently addressed during the Cal Fire Santa Cruz County virtual community meetings:^[17]^[18]

Residents' Questions

- Given the lightning forecast, drought, and limited resources, "Why did CalFire not request (on standby) additional resources from out of state before the lightning, or immediately after?"
- Some residents lost all communication - phone, wifi, power - how would they have known if they needed to evacuate or not?
- Did backfires get out of control?
- Why was there a disproportionate impact of the fire between Santa Cruz County and San Mateo County in terms of structure loss? How does this inform lessons learned for Santa Cruz County?

- Why weren't members of volunteer companies allowed to protect their neighborhoods?
- What will Cal Fire do better next time?
- What have the county supervisors been doing to get clarity for our community?

Residents' Statements and Comments

- Information from Cal Fire on the location of the fires was lacking at the start of the fire.
- Some residents enrolled in Code Red did not receive information to evacuate early on. Cal Fire did not have a good look at the fire in the Last Chance area and delayed evacuation until they could see the fire which resulted in late evacuation orders. Residents need clear guidelines to know when to leave vs advised to leave if they feel unsafe. Evacuations need to be phased for management of traffic since there may be only a one lane road in and out of an area.
- Residents had to rely on community Facebook or NextDoor websites to get fire location and general information. There was more updated information concerning the fire obtained from the Cal Fire San Mateo Division than Cal Fire Santa Cruz Division. Twitter was the best way of getting official updates. Some residents listened to Cal Fire on emergency radio. There was no centralized resource for information before evacuations started, such as where to go and whom to call. The whole process for getting information was an overwhelming challenge.
- The county did a better job of communicating debris flow risk with Zonehaven. The maps are an asset. (Zonehaven is an evacuation platform providing first responders and the community with critical evacuation updates.)^[19]
- Use and management of volunteer firefighters was confusing and chaotic.
- Provide a 4-8 hour CERT (Community Emergency Response Team) training course on site for citizens to help agencies manage needs that are required besides fighting fires.
- Use more planes for surveillance, and make airdrops early on with the proper technology to "see" through smoke.
- The Federal Emergency Management Agency (FEMA) at the Kaiser Center was organized and provided good assistance.
- The Office of Recovery, Response & Resilience (OR3) evolved over time and provided better resources and support.
- The BoS doesn't take oversight of Cal Fire seriously. Once the money is authorized, the BoS feels that's the end of its responsibility.

Correspondence to the Board of Supervisors

Numerous emails concerning the CZU Lightning Complex Fire were sent to the BoS. Correspondence was exchanged from the start, during, and after the fires were fully contained.^[20] When the fires first started communications between residents and BoS centered on getting accurate location of the fire and evacuation information. Some

community members who had signed up for CodeRed still needed to get fire information by emergency weather radio because of limits with cell service. The BoS heard that more firefighters were needed in the Boulder Creek and Ben Lomond areas. During the fire, residents were concerned about evacuations and wanted to know what housing was available. After the fire, the communications centered on having safe water, removal of debris to rebuild, the rebuilding process, and the need for a post fire performance report by Cal Fire.

The BoS offices usually responded to correspondence from its constituents in a prompt manner. Responses were usually sent the same or the following day. Follow-up emails were sent with updated information as long as one to two months later. There was correspondence from groups wanting to help, as well as state and federal elected representatives obtaining California National Guard help, getting the mail service returned to Boulder Creek, and ensuring the state was aware of local needs.

Events Timeline

The progression and impact of the CZU Lightning Complex Fire, as set forth in the background section, is summarized in Figure 1. Table 1 shows the pertinent key events and communications sessions following the fire event.

CZU LIGHTNING COMPLEX SUMMARY

- 112 INFORMATION RELEASES THROUGHOUT THE INCIDENT
- 1 CIVILIAN FATALITY (LAST CHANCE AREA)
- 77,000+ PEOPLE EVACUATED
- FINAL ACREAGE: 86,509 ACRES (63,754 ACRES IN SANTA CRUZ COUNTY & 22,755 ACRES IN SAN MATEO COUNTY)
- 1,490 STRUCTURES DESTROYED (1431 IN SANTA CRUZ COUNTY / 911 SINGLE FAMILY)
- PEAK OVER 2,400 FIREFIGHTERS ASSIGNED
- LARGEST FIRE IN SANTA CRUZ COUNTY HISTORY
- MULTIPLE BRIDGES AND INFRASTRUCTURE DESTROYED
- WILL REMAIN ON THE INCIDENT FOR MONTHS
- OVER \$68 MILLION COST TO FIGHT THIS FIRE
- EXHAUSTED REQUESTS FOR LOCAL RESOURCES



Figure 1. **Cal Fire Summary of the CZU Lightning Complex Fire^[1]**

Table 1. Post-CZU Complex Fire Communications Events

Date	Event
September 22, 2020	CZU Lightning Complex Fire fully contained ^[21]
September 28, 2020	Debris Flow presentation to BoS ^[22]
October 6, 2020	BoS establishes ad hoc committee and approval for an Office of Recovery and Resiliency ^[9]
November 14, 2020	Debris Flow Town Hall to District 5 ^[23]
November 16, 2020	Debris Flow Town Hall to District 3 ^[24]
December 2020	BoS created the Office of Response, Recovery, and Resilience (OR3) ^[10]
January 25-26, 2021	Debris Flow Press Conference in Advance of Debris Flow Announcing Evacuation Orders ^{[25] [26]}
January 26-27, 2021	Debris Flow Storm ^[27]
February 3-4, 2021	5th District & 3rd District Debris Flow Town Halls ^{[27] [28] [29]}
February 8 and 11, 2021	Recovery and Rebuilding Permitting Town Halls ^{[30] [31] [32] [33]}
March 9, 2021	Last Chance Neighborhood Recovery Meeting ^{[34] [35]}
March 15, 2021	CAL FIRE CZU Lightning Complex District 3 after-action virtual community meeting ^[36]
March 16, 2021	CAL FIRE CZU Lightning Complex District 5 after-action virtual community meeting ^[37]
April 16, 2021	Press Release: RESPONSE, RECOVERY AND RESILIENCE WEBSITE LAUNCHES ^[38]
April 27, 2021	CAL FIRE CZU Lightning Complex San Mateo County Lessons Learned virtual community meeting ^[39]

Source: Provided with each table entry.

This timeline reflects a genuine effort by the Santa Cruz County government, after the CZU Complex Fire, to inform and serve the community with useful resources which focus on recovery and resiliency. The after-action virtual community meetings for Districts 3 and 5 were held by Cal Fire six months after the CZU Complex Fire. The county held virtual town halls within one week of the debris flow events and evacuations.^{[27] [28] [29]}

Cal Fire Presentation and Community Engagement

We looked at how Cal Fire reports on its contract performance and its preparation for extreme fire seasons to come. While we did not investigate Cal Fire (see [Scope and Methodology](#)), we used its performance and community response as a lens to evaluate our local government's engagement and representation of the county's residents. We looked at the interactions Cal Fire and government officials had with the residents of the county. Did Cal Fire provide accurate and sufficient information to the residents? How was this information received? And how has the leadership of the county, from the BoS on down, served the needs of the residents and advocated on their behalf to the state agencies who are accountable?

Community Engagement

Cal Fire's CZU unit held Virtual Community Meetings for Santa Cruz County via Zoom, about six months after full containment of the CZU Lightning Complex Fire. They presented to county supervisorial District 3 on March 15 and District 5 on March 16, 2021.^{[1][15]} Sheriff Jim Hart and Director of General Services Department Michael Beaton attended and spoke on the District 3 Zoom call. Santa Cruz County residents had not received much information about any outcomes of the CZU Lightning Complex Fire nor were they asked to give any input of their concerns prior to these virtual community meetings.

Each of the Santa Cruz presentations included a detailed review of each of the first seven days of the fire. Many photos, maps, and explanations of the fire's rapid growth were displayed. These sections averaged over 50 minutes and ended with their summary analysis (see Figure 1 above). Table 2 shows the times of each section to document the relative weight and importance given to each of these topics.

Table 2. Communication Events: Key Section Duration

Location & Date	SC District 3 3/15/2021	SC District 5 3/16/2021	San Mateo 4/28/2021
Video Section	Duration		
Intro	0:04:02	0:03:40	0:04:18
Detailed Fire Review	0:48:10	0:53:01	0:36:05
Lessons learned	0:08:56	0:09:04	0:42:10
Q&A Preamble	0:01:49	0:03:25	0:02:37
Questions	0:58:07	0:51:32	0:06:30
Overall	2:01:04	2:00:42	1:31:40

Source: *Cal Fire Webinar Presentations*^{[1][15][40]}

The San Mateo Division spent more time on lessons learned with 20 items and a slide for each item. That explains the longer time spent by Santa Cruz County in Q&A.

Lessons Learned

Figure 2 below summarizes Cal Fire Santa Cruz Unit's "Lessons Learned" with 10 items listed.

CZU LIGHTNING COMPLEX LESSONS LEARNED

- Fuel Conditions –
- Lightning events -
- Evacuations –
- Infrastructure failures –
- Code Red – Reverse 911 system -
- California's Fire Mutual Aid System –
- Evacuation platform –
- Fuel reduction efforts –
- Individual property owner Defensible Space Inspection (LE-100)
- Fire Prevention messaging -



Figure 2. **Cal Fire Lessons Learned slide^[1]**

These items were discussed for an average of nine minutes. In contrast, the San Mateo County presentation included 20 lessons learned, each presented on their own slide, with the total being discussed for over 40 minutes.^[40] This contrast in tone and content was remarked upon during the San Mateo presentation by participants. (See [Virtual Community Meeting Comments](#).) Of the items discussed at the Santa Cruz County virtual community meetings, most were talked about in the passive voice and only two were presented with information on how Cal Fire CZU would handle it differently in the future.

The community heard these statements during the virtual community meetings. The Supervisor for each respective district attended. The quotes below are from Chief Larkin at the March 15th presentation. Grand Jury observations are added in highlighted boxes after the quotes.

Conditions

1. “Our fuel conditions have never presented us with this type of fire condition that we experienced during the CZU lightning complex.” Larkin also talked about how our area has been known as “the asbestos unit” because fires don’t grow large due to the prevalence of redwood trees and moist marine air. Larkin noted that

due to years of drought and climate change, this is no longer the case. “We’re having to revisit how we look at those conditions of our fuels and how we address those specific fuel types when we’re making decisions on fires.”

2. “This lightning event gave us an opportunity to evaluate our lightning coordination plan. That plan was fully implemented as it was designed, but due to the lack of resources we weren’t able to actually execute that.” This lightning event was different from past events due to the “remoteness of the fires” and “increased changes in our fuel conditions.”
3. “Due to the increased changes in our fuel conditions and how the rates of spreads are changing in these fuel types, . . . it really changed the mindset of how we look at evacuations. Evacuations are going to need to be considered much more in advance and conducted much earlier.”

What can the BoS do to assure better planning and preparation in light of the increasing danger in fuel conditions?

Infrastructure for Evacuation

4. Damage from the lightning storm took out power lines and poles. PG&E was in the midst of making those repairs when the fire grew. “One of the things that wasn’t really realized is the impacts that prior to the fire (phone lines and power lines down, systems on backup power), those systems fail over time.” Larkin also said “Not all those systems are being maintained at the level that they should be.” These factors “hampered our ability to...get information out to the public via different methods.”
5. Code Red, the county’s reverse 911 system, is a service for which residents are required to register. Messages only go out to those that have asked to receive them. This necessitated “physically” notifying residents to evacuate. The reverse 911 system also had a throttle in place which limited the number of outgoing messages. This was identified early and fixed quickly.
6. “California has one of the most robust fire mutual aid systems, but in times like these where you have 12,000 lightning strikes occur in the state... which depleted that system beyond its capabilities.”
7. When the fire started they were using an “evacuation management platform developed after the Summit, Martin, Trabing, and Lockheed fires in 2008-2009.” Larkin said that they initiated their evacuations using that system, but then transitioned to the Zonehaven evacuation platform during the fire. “Those platforms that we used provided for the safe, successful evacuation of 58,000 residents in Santa Cruz county.”

What will the BoS do to advertise and harden the evacuation platform and improve the resiliency of our county’s communications infrastructure?

Vegetation Management and Fuel Reduction

8. “We have not been able to achieve our goals of fuel reduction. It is a difficult topic in Santa Cruz County. A lot has been done, but there is a lot more work that needs to be done. Moving forward this is going to be a monumental task that is going to require a cooperative effort by all . . . to really push this effort.”
9. “I’ll be the first to say that our defensible space inspection program is probably not where it should be. We need to increase that, which we will be doing. But we need to increase it with a greater emphasis on gathering and gaining compliance from the property owner. It’s easy to go out and do a couple of inspections, gain some compliance; but we really need to have that defensible space around these structures so it makes it more defendable when we have resources to defend them.”
10. “Fire prevention messaging is another area that we are looking to improve . . . We need to be better at it and we need to get more involved with communities.”

How can the BoS ensure resources are allocated for the needed fuel reduction projects, inspections, and messaging to the community to improve our county’s resilience to fire danger?

Chief Larkin summarized the presentation with a reiteration that “one of the elements we will not be able to overcome is the sheer fact of the lack of resources.” The supervisor who attended each presentation did not comment.

See [Appendix A](#) for Cal Fire presentation extract from March 15-16 reviews for Districts 3 & 5.

Virtual Community Meeting Comments

In the Grand Jury’s review of the after-action virtual community meetings, we captured verbatim comments from attendees which were made in the “chat” page of the virtual meetings.

Many topics were not discussed by Cal Fire. Our inference is that this is out of a concern for future liability; backfires were specifically mentioned in this context. Many residents returned to each subsequent event to ask the same question again.

The questions below as well as the questions posed earlier in the report, are directed to the BoS to answer for their constituents.

Themes noted in the questions asked, and summarized below include:

- not allowing members of the Bonny Doon Volunteer FD to protect their neighborhoods,
- Cal Fire taking a “watch it burn” posture,
- loss of volunteer firefighters,
- how to handle the lack of resources, and
- poor management of the Last Chance evacuation.

Santa Cruz - March 15, 2021 (District 3 - Coonerty)^[41]

- “When will we all agree that ‘defensible space’ only matters if fire crews will come defend, and since they won’t in a fire like this, we need to switch to either ‘houses that can protect themselves’ or ‘we’ll just watch them burn’. I can’t tell you how many thousands I spent on ‘defensible space’ only to watch on video as crews left my neighborhood and let it burn.”
- “If you were so understaffed why are there reports of Cal Fire forcing local volunteers to leave the areas or blocking their access??”
- “Would you say there was a missed opportunity due to lack of resources to contain these fires within the first 2 days? Are there changes in resource allocation strategies based on the 2020 fire?”
- “I am so disturbed by what happened. My problem is not with Cal Fire not being out on Last Chance to help us, it is with the lack of evacuation orders!!! No one called us until it was too late. Tad died needlessly!!”
- “We already voted to increase your funding. Why can’t you say where those funds will go.”
- “The fire was spotting on Aug. 18th and closest to the Last Chance community, a typical NW wind was forecast which would push it into a populated area and was threatening to close the sole ingress/egress point and yet no evacuations were called, why not? In years past we were instructed by CALFIRE to meet at our community clearing, in the event a major fire broke out and yet no welfare checks and/or recovery actions were taken. In fact, it was to this area that Tad Jones drove through. Point of fact, a photo during the presentation was shown of a structure at 2am and purported to be in the last chance community. No CALFIRE personnel went into Last Chance the night of the 18th, that photo was taken from a paved section and that home survived.”

Santa Cruz - March 16, 2021 (District 5 - McPherson)^[42]

- “What will you do better the next time we have widespread fires and resources are spread too thin? How will you know what to do differently if you don’t do an after incident report? Not doing an after-incident report implies Cal Fire did everything perfectly and has no need to review and reflect on what you did well and what mistakes you made.”
- “What have the county supervisors been doing to get clarity for our community? Are they working with you to plan for the next fire? Are they doing ANYTHING?”
- “Why did you tell the volunteer firefighters not to stay and protect – you took resources away – you tried but luckily they didn’t listen to you.”

San Mateo - April 27, 2021^[43]

- “Thank you for this presentation. It is quite refreshing to get an actual list of lessons learned. I wish that Santa Cruz County could be as good as San Mateo in this regard.”

- “Can you please address the disproportionate impact of the fire between the 2 counties in terms of structure loss (i.e. 60 in San Mateo versus 1431 in Santa Cruz) and how this informs lessons learned for Santa Cruz County?”
- “The talk you mentioned by Chief Larkin did not lay out lessons learned like this session does. This is the source of my disappointment that this session is also not addressing Santa Cruz County. The take-home message in that earlier session included a detailed history of the fire (like that you gave tonight) and a detailed accounting of how short resources were. We, the residents of Santa Cruz County, would like to understand steps underway to minimize these same events from occurring in the future, how the agency (and other agencies at multiple levels of government) are working to reduce risk of wildfire, plus anything that the public can do (besides the ready, set, go talk items) to further wildfire risk reduction and response.”
- “San Mateo County was far better than Santa Cruz at getting messages out. I was using both.”^[40]

Cal Fire After Action Reports

In the presentation on March 15, Chief Larkin said “This is not meant to be an after action review.” He elaborated later by saying:

Cal Fire {California State} will be doing an after action review and the local unit {his unit} is not doing an after action review of this incident. ... We went back and looked at some of the key elements that we felt were contributing factors to this fire and our one key element and factor was the sheer lack of resources. So doing a full after action review based on that specifically really isn't going to generate any change in what is there other than there was a total dynamic that drained the available resources down to a minimum drawdown level statewide where we had to enact EMAC {Emergency Management Assistance Compact} to go for resources that are out of state.^{[1] [36]}

Will the results be different if another lightning storm came through this year? The same factors that led to a “sheer lack of resources” haven’t changed. There was no discussion of how the mutual aid system could be changed. There was no specific response by Cal Fire to numerous questions and comments about the deployment of volunteers, and no mention of volunteers in the one Lessons Learned slide shared above.

[Appendix B](#) and [Appendix C](#) contain more detail of the Lessons Learned for Santa Cruz and San Mateo County.

Board of Supervisors Oversight

Recapitulation of 2020 Findings and Responses

In July 2020 the Grand Jury published its report entitled “Ready? Aim? Fire! Santa Cruz County on the Hot Seat,” on the risks and issues of fire in Santa Cruz County.^[16] The BoS, and many others, were asked to respond to the Findings and Recommendations which covered the topics of

- Risks and Mitigation,
- Emergency Response,
- Alerts and Evacuation,
- Education, and
- Governance and Transparency.

Specifically, the BoS was required to respond to Findings and Recommendations which mostly fell into the category of Governance and Transparency.^[44] The details of selected responses of interest are shown in [Appendix D](#).

The original Findings and Recommendations are shown here in italics. The BoS responses are shown as a sub-bullet. Underlines are added for emphasis by the Grand Jury. The Grand Jury commentary is added in a text box under each topic’s findings, recommendations, and responses.

Vegetation Management

- ❖ **F1:** *Vegetation/fuel management and abatement are not receiving the attention nor funding needed from the County of Santa Cruz Board of Supervisors, and therefore are not adhering to California Government Executive Order 1.8.19-EON-05-19.*^[45]
- **BoS:** *PARTIALLY DISAGREE – Vegetation/fuel management and abatement is the responsibility of the property owner not the County of Santa Cruz. The County could do more to improve the clearing or removal of vegetation along County maintained roadways, more than just the sight line clear that may or may not occur annually. The removal of vegetation is expensive and labor intensive for a county that provides many services to the community. Funding is available through different grant opportunities to assist with fuel reduction and the County has benefited from such grants. An example of such grant funding is the fuel reduction project that was approved as part of the 35-statewide project as outline {sic} in Governor Newsom’s 45-day report and the Executive Order 1.8.19-EO-N-05-19 that was issued regarding fuel reduction in California. This project is in the unincorporated area of the County within CSA 48 area of Aptos Creek and Buzzard Lagoon roads near Corralitos. The project consisted of treating 225 acres to improve existing and create additional fuel breaks to protect vulnerable communities. Of the 225 treated acres, 150 acres is a shaded fuel break and has allowed for the use of prescribed fire to be used to help clear and maintain the area.*^[46]

- ❖ **F2:** Santa Cruz County residents are at increased risk of fire danger due to the lack of risk management for wildfire. Specific risks are not formally identified, tracked, assessed for impact, nor is progress reported by fire departments in the County. Therefore, leaders responsible for budgets and accountability are left unprepared to manage risk, impact, or performance.^[45]
- **BoS:** PARTIALLY DISAGREE – Responsibility for wildfire fire management is held with each fire agency within Santa Cruz County. Each jurisdiction monitors and tracks wildfire risk within its own jurisdiction. The approach and extent of this work is managed within each jurisdiction. The State responsibility area, which includes the majority of the rural area within the County, is controlled and managed by CAL FIRE.^[47]
- ❖ **R9:** Each year, during the budget presentation, the County Board of Supervisors should require County Fire to provide a vegetation management plan, including a priority list of projects and a timeframe for their completion.^[48]
- **BoS:** REQUIRES FURTHER ANALYSIS – There is currently no funding for a vegetation management plan for the County Fire Department. We currently coordinate with CAL FIRE on a priority list of projects that have timeline {sic} related to available funding. In order to implement such and {sic} process will require additional analysis and potential funding.^[49]

As important as fuel management and abatement are, will the BoS review fuel and vegetation management and demand progress?^{[1] [36] [37]}

Risk Management

- ❖ **F4:** Most of Santa Cruz County in addition to the City of Santa Cruz with its large eucalyptus groves are not being monitored by the ALERTWildfire Imaging Surveillance system and would be well served by the installation of cameras capable of monitoring coastal areas occupied by eucalyptus groves in areas harboring potential sources of ignition.CZU-1a]
- **BoS:** PARTIALLY DISAGREE – Eucalyptus groves are a problem in general due to the abundant fuel loading they provide, but one fuel type in the county should not be singled out. Fires occur in areas of redwood forest as well, example, {sic} the Rincon Fire in 2018. The use of the ALERTWildfire camera system is a great way to provide for early confirmation of wildfire in the county. CAL FIRE/County Fire is working with ALERTWildfire and PG&E to determine locations to install cameras to provide a system for early confirmation of wildfires.^[50]
- ❖ **F5:** Santa Cruz County would greatly benefit if steps were taken to implement the CAL FIRE, San Mateo - Santa Cruz Unit 2018 recommendation of developing detailed, site specific Community Wildfire Protection Plans for communities throughout the County.^[45]
- **BoS:** AGREE.^[51]

- ❖ **F26:** Reporting data, statistics, and formats utilized by fire agencies throughout the County are highly inconsistent, uncoordinated, and therefore not readily evaluated and compared. The standard Insurance Services Office (ISO) rating system would be useful to adopt. Response time data are not well described or consistently reported by the jurisdictions, making accurate assessment difficult, especially by other agencies or by the public.^[52]

➤ **BoS:** AGREE.^[53]

When will the BoS take up these opportunities to improve wildfire protection and performance standards?

Data Analysis

- ❖ **F24:** The annual report to the County Board of Supervisors and the County Administrative Office by County Fire/CAL FIRE does not provide data or analysis of resources, response times, code enforcement, inspection, or education. This information is necessary to show what gaps exist between current performance and community needs in order for informed budget decisions to be made. Without adequate background information, the Board of Supervisors is unable to hold CAL FIRE accountable for the specific responsibilities specified in their contract.^[54]

➤ **Cal Fire:** AGREE.^[55]

➤ **BoS:** DISAGREE – The County Fire/CAL FIRE Chief gave a State of the State presentation to the Board during Budget Hearings, which provided both data and analysis of resources, response times, code enforcement, inspection, and education. This is aligned with the budget process. This presentation is also given to the Fire Dept Advisory commission (FDAC), holds {sic} responsibility to provide oversite {sic} of these.^[56]

- ❖ **R2.** The Santa Cruz County Board of Supervisors should require CAL FIRE and County Fire to provide quarterly and annual reports to the County General Services Department with specified data and success metrics for each of the contract requirements, beginning with the current fiscal year.^[52]

➤ **BoS:** HAS BEEN IMPLEMENTED – CAL FIRE/County Fire will continue to work with the Santa Cruz County Director of General Services in weekly meetings, as well as the Fire Department Advisory Commission (FDAC) to determine a reasonable reporting structure and timeline for the reporting.^[57]

How will the BoS verify that performance delivered by Cal Fire under contract is data-driven?^{[58] [59]}

- ❖ R17: *The County Office of Emergency Services should evaluate, quantify, and report to the County Board of Supervisors on the specifics of the public state of preparedness for a large-scale emergency such as wildfire by June, 2021.*^[60]
- BoS: REQUIRES FURTHER ANALYSIS – *An after-action review is conducted after every major incident and disaster response. Due to the CZU Lightning Complex Fire, these areas will also be addressed during the after-action review, identifying operational effectiveness as well as areas for improvement.*^[61]

Will the BoS hold a hearing to review results, recommendations for improvement, and allow the public to comment?

Evacuation Management

When the CZU Lightning Fire Complex was declared to be an emergency on August 18, 2020, Cal Fire, as is its practice, established its incident command.^[1] When this occurs, as the term implies, Cal Fire takes command of the response to the fire and other agencies follow the lead of Cal Fire.

In a similar vein, the Santa Cruz County Sheriff's Department, under the direction of Sheriff Jim Hart, coordinates evacuations. As learned in grand jury interviews, resources were provided by Sheriff's Departments from other counties to alert residents and manage evacuations; one such department was the Alameda County Sheriff's Department.^[62] The Santa Cruz County Office of Emergency Services played a coordinating role for agencies and departments in the county providing emergency services and information.

As stated in the March 15 and 16, 2020 Virtual Community Meetings, the mapping intelligence which designated resident locations and map sectors was changed to Zonehaven during the CZU Complex Fire.^{[1] [15]}

This report underlines the necessity to explore these facts, and the consequences to the community. The BoS can step up to this responsibility and learn from all parties involved in order to develop robust response, recovery, and resilience plans for the future.

Budget Review & Contract

Each year the BoS conducts budget reviews to approve the fiscal year budget for the county.^[58] The county signs a contract with Cal Fire for services during non-fire season months delivered as County Fire.^{[63] [64]} For the 2020-21 fiscal year, the presentation to the BoS was given on June 23, 2020 by Michael Beaton, Director, General Services Department and Ian Larkin, Chief, Cal Fire CZU.^[65] While Chief Larkin is chief of the combined San Mateo County-Santa Cruz County CZU region, this presentation of the budget is specific to Santa Cruz County.

A few observations from the 6/23/2020 BoS budget review with Cal Fire:

- The budget shows a \$1.6M increase for incremental Cal Fire staff as approved by the voters, plus an analyst.^[66]

- The data presented and pictures shown were about the state of the state, i.e., rainfall, measures of water/snowpack.
- No data was presented on volumetrics (calls, call types, etc.). A data slide on volumetrics was presented in 2019.
- No data was presented on response times etc. (resources, response times, code enforcement, inspection, or education as outlined in F24 from the 2020 report noted above).
- Supervisor McPherson praised Chief Larkin for preparation for the fire season.
- The budget passed.

Role of the Office of Response, Recovery & Resilience (OR3)

"In order to improve our community's emergency response, elevate our disaster awareness and prepare for increases in extreme weather due to climate change, the BoS created the OR3 in December 2020."^[67] The OR3 was modeled after the County of Sonoma's Office of Recovery and Resiliency which was created after the October 2017 Sonoma Complex Fires.^[11] The OR3 website has resources and links for each of its three focuses making available further information and support.^[67]

The purpose of OR3 is threefold:

- **Response:** Serve as the emergency management office or the prior Office of Emergency Services (OES), which includes preparing for disasters, responding to current disasters, and performing evacuations.^[68]
- **Recovery:** Coordinate recovery efforts for disasters that have occurred, which includes the Long Term Recovery Group, Recovery Permit Center, debris flow and removal.^[69]
- **Resilience:** Build the county's resilience for future disasters, which includes sustainability and climate change.^[70]

Much of OR3's focus has been on recovery due to the CZU Lightning Complex Fires and getting residents who lost their homes resettled and rebuilt as soon as possible.

- Based on recommendation from Sonoma County, Santa Cruz County contracted with 4LEAF, Inc. to manage the Permit Recovery Center to make it easier to obtain building permits, creating a 1-stop shop and streamlining the process. 4LEAF, Inc specializes in engineering, design, inspections, plan check, environmental consulting, and construction management.^[71]
- Debris removal is required prior to rebuilding and OR3 provides information about state and federal programs that can be used, or, if using a private contractor, what rules must be followed.
- The OR3 offers events to help with emotional support as well as tax implications and insurance information.

- The Long Term Recovery Group is a collaboration of nonprofit, faith-based, local, state and national organizations that work together to share information and resources to help address the needs of individuals and families affected by the CZU Lightning Complex Fires.

The OR3 office has received high praise from the community. In particular, the Permit Recovery Center has been spoken of highly, with good staff interactions. The Recovery and Rebuild portion of the website has useful information for those going through the rebuilding process.

The Director of OR3 position is still in the process of being filled. An interim Director was hired in April 2021 to take on projects that are related to Santa Cruz County's readiness for the upcoming fire season.^[72] The number one priority is to update the Emergency Operation Center's (EOC) manual with a focus on Wildland Fire Activation Guide. The goal is to be completed by mid-June. Other documents that are being updated include the 2015-2020 Local Hazard Mitigation Plan which is now in draft form and Operational Area Emergency Management Plan (EMP) which has been in draft format since 2015.^[73]^[74]

The OR3 management meets with Board Supervisors Ryan Coonerty and Bruce McPherson twice monthly with the focus being on CZU Lightning Complex Fire recovery.

After-Action Reports by Santa Cruz County Departments

The CZU Fire After Action Report Summary for Santa Cruz County Departments is currently in draft format. This report states successes and failures before, during and after the fire and recommended improvement actions. The summaries are from the EOC Operations, Medical/Health, Planning, Shelter and Care and Logistics Departments.^[75] The draft is expected to be completed by the end of May but some improvements are already being implemented.^[72]

Conclusion: Case for a Greater Board of Supervisors Communication and Advocacy Role

We recognize and commend the bravery of the many firefighters who put their bodies on the line fighting this horrible fire.

A life was lost and property was destroyed by the CZU Lightning Complex Fire. The residents whose lives have been devastated were, and are, justifiably indignant over the lack of leadership from their elected leaders. Our county's residents rightly continue to express doubt and dismay about their devastating experiences and the ability to withstand future fires.

The BoS has the obligation to serve the public interest by conducting a thorough review of Cal Fire, as well as contributing county departments, and producing a comprehensive lessons learned document. The BoS should allow time and energy for the necessary commitment to listen to the public, and they should collaborate and advocate for a higher state of preparedness for the inevitable fires in the coming seasons.

The BoS' interest and focus on fire risk must intensify. These discussions must elicit and rely on facts and data, as well as opinions and sentiments. The BoS is in the position to advocate for the community to hold Cal Fire accountable and to prepare for an uncertain and dangerous future.

Findings

- F1.** Residents are still concerned about response, evacuation, and future preparation in the aftermath of the CZU Lightning Complex Fire. They are understandably irate. The supervisors, elected to their positions by our community, fail to recognize that they are responsible to adequately address these concerns.
- F2.** There was a marked difference in content and depth of analysis between Cal Fire's Virtual Community Meeting presentation given to San Mateo County and the two given to Santa Cruz County. The discrepancy is disappointing and not acceptable.
- F3.** The Board of Supervisors did not adequately respond to their constituents' concerns and questions.
- F4.** The Board of Supervisors has not held Cal Fire accountable for their lack of analysis of their performance in the CZU Lightning Complex fire.
- F5.** No provision exists in the current contract between the county and Cal Fire to develop after-action reports during the non-fire season.
- F6.** The Board of Supervisors' responses to the Findings and Recommendations of the 2020 *Ready? Aim? Fire!* report show a lack of engagement with the material and a lack of understanding of their role as advocates for the county.
- F7.** The adequacy of resources for firefighting in the future is questioned due to uncertainty of mutual aid assistance, deployment and management of volunteer companies, and availability of funding.

Recommendations

- R1.** In the next 30 days the Board of Supervisors should conduct an investigation to challenge Cal Fire on their preparation for future fire events, Cal Fire's response to the CZU Complex Fire, and give satisfactory answers to all residents' questions and concerns as documented in this report. (F1, F2, F3)
- R2.** In the next six months the Board of Supervisors should adopt a formal policy for handling and logging resident complaints and requests for information. (F1, F3)
- R3.** Within the next six months, the Board of Supervisors should require that Cal Fire produce timely after-action reports for all major incidents. (F1, F2, F4, F5)
- R4.** In the next 90 days the Board of Supervisors should direct staff to produce a lessons-learned document for the public summarizing their investigation of Cal Fire and an action plan detailing how preparation for future fire events and response will be improved. (F1, F2, F4, F5)

- R5.** The Board of Supervisors should revisit its responses to the Grand Jury's 2020 *Ready? Aim? Fire!* Report, and rewrite their responses by December 31, 2021 in a document posted on their website to demonstrate hands-on engagement and better preparation for the next fire season. (F6)
- R6.** Within six months the Board of Supervisors should direct staff to advocate for additional funding for fire preparation and prevention resources from the state of California. (F7)

Commendations

- C1.** The County Office of Response, Recovery, & Resilience has done an excellent job of providing information and resources on the website.
- C2.** The County Office of Response, Recovery, & Resilience has developed an excellent capability for expediting permitting and rebuilding.

Required Responses

Respondent	Findings	Recommendations	Respond Within/ Respond By
Santa Cruz County Board of Supervisors	F1–F7	R1–R6	90 Days September 22, 2021
Fifth District Supervisor Bruce McPherson	F1-F4	R1-R4	60 days August 23, 2021
Third District Supervisor Ryan Coonerty	F1-F4	R1-R4	60 days August 23, 2021

Definitions

4LEAF, Inc: An independent company hired by the county to manage rebuilding, permits, and inspections.^[71]

Backfire: a fire set intentionally to arrest the progress of an approaching fire by creating a burned area in its path, thus depriving the fire of fuel

CERT: Community Emergency Response Team, a program which educates volunteers about disaster preparedness.^{[76] [77]}

Code Red: The community notification system used by Santa Cruz Regional 9-1-1 to send important messages to residents, businesses, and visitors within Santa Cruz and San Benito Counties in the event of emergency situations or critical community alerts.^[78]

EMAC: Emergency Management Assistance Compact, a program used to obtain resources from other agencies outside of California.^[79]

EOC: Emergency Operations Center, a central command facility responsible for carrying out the principles of emergency management.^[80]

FEMA: Federal Emergency Management Agency. Their mission is to help people before, during, and after disasters, usually preceded by Presidential disaster declaration.^[81]

OES: Office of Emergency Services.^[82]

OR3: Santa Cruz County Office of Response, Recovery, & Resilience established in response to the needs created by the CZU Complex Lightning Fire, as well as to build the county's resilience for future disasters.^[67]

Volumetrics: Of, relating to, or involving the measurement of volume.^[83]

Zonehaven: A third-party commercial service to manage evacuation information.^[19]

Sources

References

1. CAL FIRE CZU San Mateo-Santa Cruz. March 15, 2021. "CAL FIRE CZU (Santa Cruz Division) Presents CZU Lightning Complex: Lessons Learned," *YouTube*. Accessed May 15, 2021.
<https://www.youtube.com/watch?v=8jR50CwHfgM>
2. Thomas Fuller, Nicholas Bogel-Burroughs. August 31, 2020. "A vow of silence, a cabin in the woods, and a terrible wildfire," *New York Times*. Accessed May 24, 2021.
<https://www.nytimes.com/2020/08/31/usfires-california-monk-tad-jones-last-chance-santa-cruz.html>
3. Grand Jury Document request.
4. Grand Jury Interview.
5. Ashley Harril. March 4, 2021. "More than six months after the fire started, Big Basin is still burning," *SF Gate*. Accessed May 26, 2021.
<https://www.sfgate.com/california-parks/article/Big-Basin-redwoods-fire-still-burning-california-15995457.php>
6. Jessica A. York. September 23, 2020. "Santa Cruz CZU fire fully contained, work remains," *Santa Cruz Sentinel*. Accessed May 26, 2021.
<https://www.santacruzsentinel.com/2020/09/23/santa-cruz-czu-fire-fully-contained-work-remains>
7. Katie Evans. January 8, 2021. "CZU Lightening Fire Fully Controlled Four Months After Start," *Good Times*. Accessed May 15, 2021.
<https://goodtimes.sc/santa-cruz-news/czu-lightning-complex-fire-fully-controlled/>
8. Hanna Hagemann. March 16, 2021. "\$68 million price tag to fight CZU Lightning Complex fire." *East Bay Times*. Accessed May 26, 2021.
<https://www.eastbaytimes.com/2021/03/16/68-million-price-tag-to-fight-czu-lightning-complex-fire/>

9. Sentinel staff. October 6, 2020. "Santa Cruz County creates Office of Recovery, Resilience after fire devastation," *Santa Cruz Sentinel*. Santa Cruz Sentinel. Accessed May 7, 2021.
<https://www.santacrus sentinel.com/2020/10/06/santa-cruz-county-creates-office-of-recovery-resilience-after-fire-devastation/>
10. County of Santa Cruz. 2021. "The Board of Supervisors, created the Office of Response, Recovery & Resilience (OR3) in December 2020." Accessed May 7, 2021.
<http://www.santacruzcounty.us/OR3/About.aspx>
11. Sonoma County Office of Response and Resilience. 2021. Accessed May 20, 2021.
<https://sonomacounty.ca.gov/CAO/Policy-Grants-and-Special-Projects/Recovery-and-Resiliency/>
12. Complaint submitted to the Grand Jury.
13. Complaint submitted to the Grand Jury.
14. Grand Jury Interview.
15. CAL FIRE CZU San Mateo-Santa Cruz. March 16, 2021. "CAL FIRE CZU (Santa Cruz Division) Presents CZU Lightning Complex: Lessons Learned," *YouTube*. Accessed May 15, 2021.
<https://www.youtube.com/watch?v=jsuukH3n4NI>
16. Santa Cruz County Grand Jury. July 3, 2020. "Ready? Aim? Fire! Santa Cruz County on the Hot Seat." Accessed May 4, 2021.
http://www.co.santa-cruz.ca.us/Portals/0/County/GrandJury/GJ2020_final/FireRisks_Report.pdf
17. Complaint submitted to the Grand Jury.
18. Complaint submitted to the Grand Jury.
19. Zonehaven Inc. 2021. Accessed May 25, 2021.
<https://www.zonehaven.com>
20. Grand Jury Document Request.
21. 90.3 KAZU NPR Radio News staff. August 22, 2020. "CZU Lightning Complex Fire - Santa Cruz County." Accessed May 15, 2021.
<https://www.kazu.org/post/czu-lightning-complex-fire-santa-cruz-county#stream/0>
22. Board of Supervisors Presentation. September 29, 2020. "Post CZU Lightning Complex Fire Debris Flow Hazards." Accessed May 7, 2021.
<https://www.santacruzcounty.us/Portals/0/County/FireRecovery/videos/9.29%20Debris%20Flow%20Presentation.mp4>
23. Santa Cruz County. November 14, 2020. "District Five Debris Flow Town Hall," *YouTube*. Accessed May 7, 2021.
<https://www.youtube.com/watch?v=IF8VPwMnMQU>

24. Santa Cruz County. November 30, 2020. "November 17 Debris Removal Town Hall," *YouTube*. Accessed May 7, 2021.
<https://www.youtube.com/watch?v=ZCALPbwLRtU>
25. Santa Cruz County Office of Response, Recovery, and Resilience. January 25, 2021 "Press Conference Prior to the Debris Flow." Accessed May 24, 2021.
[https://m.facebook.com/countyofsantacruz/videos/1795275527294084/?refsrc=https%3A%2F%2Fm.facebook.com%2Fwatch%2F&_rdr](https://m.facebook.cohttps://www.youtube.com/watch?v=kA69mrwJz24m/countyofsantacruz/videos/1795275527294084/?refsrc=https%3A%2F%2Fm.facebook.com%2Fwatch%2F&_rdr)
26. Santa Cruz County Office of Response, Recovery, and Resilience. January 26, 2021. "Press Conference Prior to the Debri Flow." Accessed May 24, 2021.
https://m.facebook.com/countyofsantacruz/videos/1585842338278471/?refsrc=https%3A%2F%2Fwww.santacruzcounty.us%2F&_rdr
27. Santa Cruz County Office of Response, Recovery, and Resilience. February 4, 2021. "Debris Flow Hazards Update." Accessed May 19, 2021.
<http://www.co.santa-cruz.ca.us/Portals/0/County/firerecovery/pdfs/final%20DebrisFlowPresentation.pdf>
28. Press Release. February 1, 2021. DEBRIS FLOW TOWN HALLS. Accessed May 12, 2021.
<http://www.santacruzcounty.us/Portals/0/County/CAO/press%20releases/2021/DebrisFlowTownHalls.02012021.pdf>
29. Santa Cruz County Office of Response, Recovery, and Resilience. February 4, 2021. "Debris Flow Hazards Update." Accessed May 19, 2021.
https://www.youtube.com/watch?v=W_ORV_Clfs
30. Santa Cruz County Office of Response, Recovery, and Resilience. February 8, 2021. "Recovery and Rebuilding Town Hall. Rebuild Non-Coastal Presentation." Accessed May 20, 2021.
<http://www.santacruzcounty.us/Portals/0/County/firerecovery/pdfs/Rebuild%20TH%202.21.v2.pdf>
31. Santa Cruz County Office of Response, Recovery, and Resilience. February 11, 2021. "Recovery and Rebuilding Town Hall. Rebuild Coastal Presentation." Accessed May 20, 2021.
<http://www.santacruzcounty.us/Portals/0/County/firerecovery/pdfs/Rebuild%20TH%202.21.v2.pdf>
32. Santa Cruz County Office of Response, Recovery, and Resilience. February 8, 2021. "Recovery and Rebuilding Town Hall. Rebuild Non-Coastal Presentation." Accessed May 20, 2021.
<https://www.youtube.com/watch?v=kA69mrwJz24>
33. Santa Cruz County Office of Response, Recovery, and Resilience. February 11, 2021. "Recovery and Rebuilding Town Hall. Rebuild Coastal Presentation." Accessed May 20, 2021.
<https://www.youtube.com/watch?v=1S3fQt7qxo4>

34. Santa Cruz County Office of Response, Recovery, and Resilience. March 9, 2021. "Last Chance Neighborhood Recovery Meeting." Accessed on May 20, 2021.
<http://www.santacruzcounty.us/Portals/0/County/firerecovery/pdfs/K-Code%20community%20mtg%203-9-21.pdf>
35. Santa Cruz County Office of Response, Recovery, and Resilience. March 9, 2021. "Last Chance Neighborhood Recovery Meeting." Accessed May 20, 2021.
<https://www.youtube.com/watch?v=R4-LNpNPUHs>
36. Cal Fire. CZU Lightning Complex District 3 Lessons Learned. Virtual Community Meeting, focusing on Bonny Doon, Davenport, and the North Santa Cruz County Coast, conducted on March 15, 2021. Accessed May 12, 2021.
https://www.facebook.com/watch/live/?v=275597420848705&ref=watch_permalink
37. Cal Fire. CZU Lightning Complex District 5 Virtual Community Meeting, focusing on the San Lorenzo Valley including Felton, Ben Lomond, Boulder Creek, Zayante and Scotts Valley, conducted on March 16, 2021. Accessed May 12, 2021.
https://www.facebook.com/watch/live/?v=2871043753177972&ref=watch_permalink
38. Press Release. April 16, 2021. Reponse, Recovery and Resilience Website Launches. Accessed May 12, 2021.
<http://www.santacruzcounty.us/Portals/0/County/CAO/press%20releases/2021/OR3Website.04162021.pdf>
39. Cal Fire. April 27, 2021. "CZU Lightning Complex San Mateo County Lessons Learned. Virtual Community Meeting." Accessed May 20, 2021.
<https://twitter.com/CALFIRECZU/status/1387425884538216448>
40. CAL FIRE CZU San Mateo-Santa Cruz. April 28, 2021. "Wildfire Awareness Webinar: CZU Lightning Complex: Lessons Learned," YouTube. Accessed May 15, 2021.
<https://www.youtube.com/watch?v=bWp0G28ZGCY>
41. Ian Larkin, Nate Anderson, Jonathan Cox. March 15, 2021. "CAL FIRE CZU (Santa Cruz Division) Presents CZU Lightning Complex: Lessons Learned (March 15, 2021)," Zoom. Accessed June 11, 2021.
<https://www.youtube.com/watch?v=8jR50CwHfgM>
42. Ian Larkin, Nate Anderson, Jonathan Cox. March 16, 2021. "CAL FIRE CZU (Santa Cruz Division) CZU Lightning Complex: Lessons Learned (March 16, 2021)," Zoom. Accessed June 11, 2021.
<https://www.youtube.com/watch?v=8jR50CwHfgM>
43. Cecile Juliette. April 27, 2021. "CAL FIRE CZU San Mateo Division CZU Lightning Complex: Lessons Learned," Zoom. Accessed June 11, 2021.
<https://www.youtube.com/watch?v=bWp0G28ZGCY>

44. Santa Cruz County Board of Supervisors. October 20, 2020. "Response to the Findings and Recommendations Specified in the Report Titled 'Ready? Aim? Fire! - Santa Cruz County on the Hot Seat'." Accessed May 10, 2021.
http://www.co.santa-cruz.ca.us/Portals/0/County/GrandJury/GJ2020_final/10aR_FireRisks_BoS_Response.pdf
45. Santa Cruz County Grand Jury. July 3, 2020. "Ready? Aim? Fire! Santa Cruz County on the Hot Seat," page 56. Accessed May 27, 2021.
http://www.co.santa-cruz.ca.us/Portals/0/County/GrandJury/GJ2020_final/FireRisks_Report.pdf#page=56
46. Santa Cruz County Board of Supervisors. October 20, 2020. "Response to the Findings and Recommendations Specified in the Report Titled 'Ready? Aim? Fire! - Santa Cruz County on the Hot Seat'," page 3. Accessed May 27, 2021.
http://www.co.santa-cruz.ca.us/Portals/0/County/GrandJury/GJ2020_final/10aR_FireRisks_BoS_Response.pdf#page=6
47. Santa Cruz County Board of Supervisors. October 20, 2020. "Response to the Findings and Recommendations Specified in the Report Titled 'Ready? Aim? Fire! - Santa Cruz County on the Hot Seat'," page 4. Accessed May 27, 2021.
http://www.co.santa-cruz.ca.us/Portals/0/County/GrandJury/GJ2020_final/10aR_FireRisks_BoS_Response.pdf#page=7
48. Santa Cruz County Grand Jury. July 3, 2020. "Ready? Aim? Fire! Santa Cruz County on the Hot Seat," page 60. Accessed May 27, 2021.
http://www.co.santa-cruz.ca.us/Portals/0/County/GrandJury/GJ2020_final/FireRisks_Report.pdf#page=60
49. Santa Cruz County Board of Supervisors. October 20, 2020. "Response to the Findings and Recommendations Specified in the Report Titled 'Ready? Aim? Fire! - Santa Cruz County on the Hot Seat'," page 35. Accessed May 27, 2021.
http://www.co.santa-cruz.ca.us/Portals/0/County/GrandJury/GJ2020_final/10aR_FireRisks_BoS_Response.pdf#page=38
50. Santa Cruz County Board of Supervisors. October 20, 2020. "Response to the Findings and Recommendations Specified in the Report Titled 'Ready? Aim? Fire! - Santa Cruz County on the Hot Seat'," page 5. Accessed May 27, 2021.
http://www.co.santa-cruz.ca.us/Portals/0/County/GrandJury/GJ2020_final/10aR_FireRisks_BoS_Response.pdf#page=8
51. Santa Cruz County Board of Supervisors. October 20, 2020. "Response to the Findings and Recommendations Specified in the Report Titled 'Ready? Aim? Fire! - Santa Cruz County on the Hot Seat'," page 6. Accessed May 27, 2021.
http://www.co.santa-cruz.ca.us/Portals/0/County/GrandJury/GJ2020_final/10aR_FireRisks_BoS_Response.pdf#page=9
52. Santa Cruz County Grand Jury. July 3, 2020. "Ready? Aim? Fire! Santa Cruz County on the Hot Seat," page 59. Accessed May 27, 2021.
http://www.co.santa-cruz.ca.us/Portals/0/County/GrandJury/GJ2020_final/FireRisks_Report.pdf#page=59

53. Santa Cruz County Board of Supervisors. October 20, 2020. "Response to the Findings and Recommendations Specified in the Report Titled 'Ready? Aim? Fire! - Santa Cruz County on the Hot Seat,'" page 24. Accessed May 27, 2021.
http://www.co.santa-cruz.ca.us/Portals/0/County/GrandJury/GJ2020_final/10aR_FireRisks_BoS_Response.pdf#page=27
54. Santa Cruz County Grand Jury. July 3, 2020. "Ready? Aim? Fire! Santa Cruz County on the Hot Seat," page 58. Accessed May 27, 2021.
http://www.co.santa-cruz.ca.us/Portals/0/County/GrandJury/GJ2020_final/FireRisks_Report.pdf#page=58
55. Santa Cruz County Fire Department. October 20, 2020. "Response to the Findings and Recommendations Specified in the Report Titled 'Ready? Aim? Fire! - Santa Cruz County on the Hot Seat,'" page 19. Accessed May 27, 2021.
http://www.co.santa-cruz.ca.us/Portals/0/County/GrandJury/GJ2020_final/10tl_FireRisks_CountyFD_Response.pdf#page=23
56. Santa Cruz County Board of Supervisors. October 20, 2020. "Response to the Findings and Recommendations Specified in the Report Titled 'Ready? Aim? Fire! - Santa Cruz County on the Hot Seat,'" page 23. Accessed May 27, 2021.
http://www.co.santa-cruz.ca.us/Portals/0/County/GrandJury/GJ2020_final/10aR_FireRisks_BoS_Response.pdf#page=26
57. Santa Cruz County Board of Supervisors. October 20, 2020. "Response to the Findings and Recommendations Specified in the Report Titled 'Ready? Aim? Fire! - Santa Cruz County on the Hot Seat,'" page 30. Accessed May 27, 2021.
http://www.co.santa-cruz.ca.us/Portals/0/County/GrandJury/GJ2020_final/10aR_FireRisks_BoS_Response.pdf#page=33
58. Santa Cruz County. Board of Supervisors Budget Hearings Agenda Packet. June 22, 2020 et al. Accessed May 24, 2021.
<https://santacruzcountyca.iqm2.com/Citizens/FileOpen.aspx?Type=1&ID=1426&Online=True>
59. Santa Cruz County Fire Department. October 20, 2020. "Response to the Findings and Recommendations Specified in the Report Titled 'Ready? Aim? Fire! - Santa Cruz County on the Hot Seat.' Accessed May 9, 2021.
http://www.co.santa-cruz.ca.us/Portals/0/County/GrandJury/GJ2020_final/10tl_FireRisks_CountyFD_Response.pdf
60. Santa Cruz County Grand Jury. July 3, 2020. "Ready? Aim? Fire! Santa Cruz County on the Hot Seat," page 61. Accessed May 27, 2021.
http://www.co.santa-cruz.ca.us/Portals/0/County/GrandJury/GJ2020_final/FireRisks_Report.pdf#page=61
61. Santa Cruz County Board of Supervisors. October 20, 2020. "Response to the Findings and Recommendations Specified in the Report Titled 'Ready? Aim? Fire! - Santa Cruz County on the Hot Seat,'" page 40. Accessed May 27, 2021.
http://www.co.santa-cruz.ca.us/Portals/0/County/GrandJury/GJ2020_final/10aR_FireRisks_BoS_Response.pdf#page=43
62. Grand Jury Interview.

63. Santa Cruz County Board of Supervisors. Approved September 8, 2020. "Cooperative Fire Programs Fire Protection Reimbursement Agreement, July 1, 2020 through June 30, 2023," obtained by Grand Jury document request.
64. Santa Cruz County Board of Supervisors. June 2, 2020. "Adopt resolution authorizing execution of agreement with CAL FIRE, approve the operational plan and reimbursement agreement during Fiscal Years 2020-21 through 2022-23 in the amount of \$18,469,174 with CAL FIRE for fire protection services in County Service Areas 48 and 4, and take related actions, as recommended by the Director of General Services," obtained by Grand Jury document request.
65. County of Santa Cruz Board of Supervisors Continued BUDGET HEARINGS (Tuesday) 6/23/2020 9:00 AM. Accessed June 11, 2021.
http://santacruzcountyca.iqm2.com/Citizens/Detail_Meeting.aspx?ID=1806
66. Santa Cruz County. Fire Protection Services Revised Budget FY 2020-21. June 23, 2020.
https://sccounty01.co.santa-cruz.ca.us/prop_budget2020-21/201-208.pdf
67. Santa Cruz County Office of Response, Recovery, and Resilience. 2021. Accessed May 20, 2021.
<http://www.santacruzcounty.us/OR3/About.aspx>
68. Santa Cruz County Office of Response, Recovery, and Resilience. 2021. "Response." Accessed May 20, 2021.
<http://www.santacruzcounty.us/OR3/Response.aspx>
69. Santa Cruz County Office of Response, Recovery, and Resilience. 2021. "Recovery." Accessed May 20, 2021.
<http://www.santacruzcounty.us/FireRecovery.aspx>
70. Santa Cruz County Office of Response, Recovery, and Resilience. 2021. "Resilience." Accessed May 20, 2021.
<http://www.santacruzcounty.us/OR3/Resilience.aspx>
71. 4LEAF, Inc. 2015. Accessed May 24, 2021.
<https://www.4leafinc.com>
72. Grand Jury Interview.
73. Santa Cruz County Local Hazard Mitigation Plan 2015-2020. Accessed May 20, 2021.
<http://www.co.santa-cruz.ca.us/Portals/0/Local%20Mitigation20%Plan20%202015-2020.pdf>
74. Santa Cruz County Office of Emergency Services. Operational Area Emergency Management Plan. Draft October 2015. Accessed May 20, 2021.
<http://www.co.santa-cruz.ca.us/Portals/0/County/OES/pdfs/DRAFTOPERATIONA%20AREA%20EMERGENCY%20MANAGEMENT%20PLAN%20%28EMP%29%202015pdf.pdf#:~:text=The%20Santa%20Cruz%20Operational%20Area%20Emergency%20Management%20Plan.Area%20is%20an%20intermediate%20level%20of%20the%20state>

75. Grand Jury Document Request.
76. United States Government. April 12, 2021. "Ready." Accessed May 28, 2021.
<https://www.ready.gov/cert>
77. Santa Cruz County CERT. 2021. Accessed May 28, 2021.
<https://santacruzcountycert.org/resources/>
78. Santa Cruz Regional 911. Accessed May 28, 2021.
<https://www.scr911.org/general/page/sign-reverse-9-1-1-notifications-coded>
79. EMAC. 2021. "What is EMAC?". Accessed May 28, 2021.
<https://www.emacweb.org/index.php/learn-about-emac/what-is-emac>
80. Wikipedia. "Emergency operations center." Accessed May 30, 2021.
https://en.wikipedia.org/wiki/Emergency_operations_center
81. United States Government. FEMA. Accessed May 28, 2021.
<https://www.fema.gov/>
82. Governor's Office of Emergency Services (Cal OES) website. 2021. Accessed June 1, 2021.
<https://www.caloes.ca.gov/>
83. Merriam-Webster Dictionary. "Definition of Volumetric." Accessed May 28, 2021.
<https://www.merriam-webster.com/dictionary/volumetric>

Websites

<http://www.buttecounty.net/Department%20Contacts.aspx>
<http://www.slocounty.ca.gov/site4.aspx>

Site Visits

Superior Court of California, County of Santa Cruz

**Appendix A – Selection of Slides
from Cal Fire Virtual Community Meetings
conducted March 15 and 16, 2021 for districts 3 and 5^{[41][42]}**

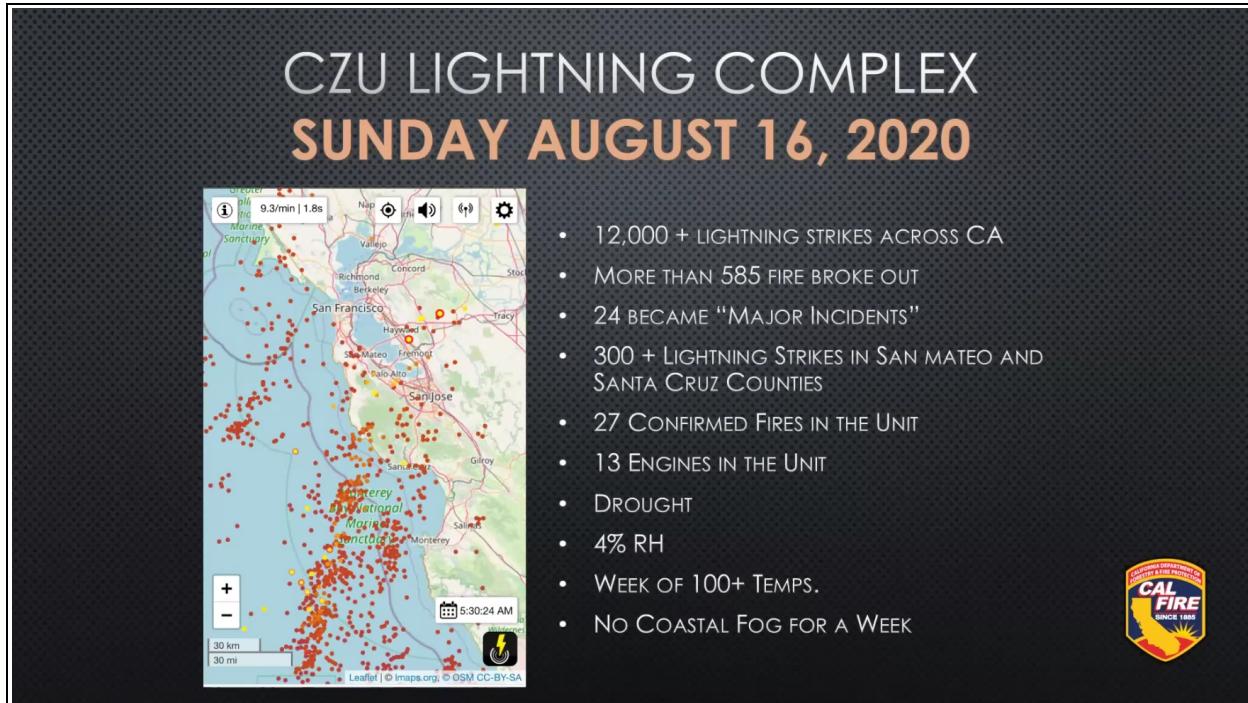


Figure A1. Overview

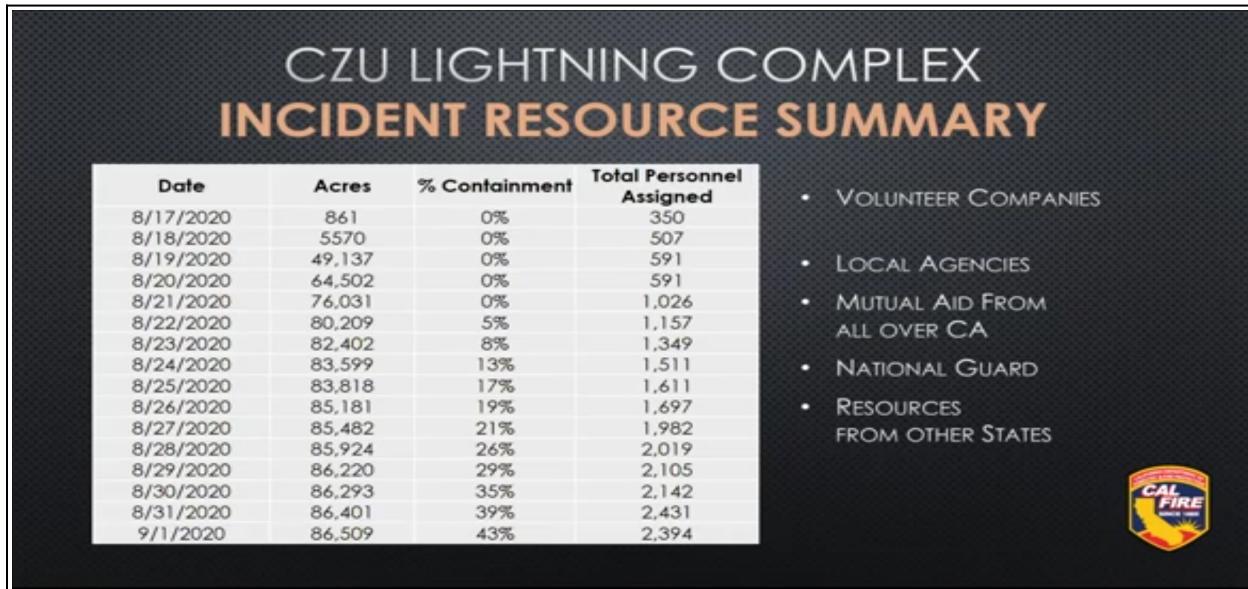


Figure A2. Resource Summary Timeline

Fire	August 16	August 17	August 18	August 19	August 20
CZU August Lightning	300 Acres 1 Dozer 20 Engines 4 Crews 0 Helicopters 2 Water Tenders	861 Acres 1 Dozer 20 Engines 2 Crews 2 Helicopters 3 Water Tenders	5,570 Acres 2 Dozers 20 Engines 7 Crews 5 Helicopters 10 Water Tenders	49,137 Acres 10 Dozers 20 Engines 8 Crews 7 Helicopters 12 Water Tenders	64,502 Acres 12 Dozers 30 Engines 10 Crews 7 Helicopters 26 Water Tenders
SCU Lightning Complex	400 Acres 2 Dozers 5 Engines 0 Crews 1 Helicopter 1 Water Tender	3000 Acres 1 Dozer 5 Engines 2 Crews 0 Helicopters 0 Water Tenders	35,000 Acres 1 Dozers 5 Engines 8 Crews 0 Helicopters 1 Water Tender	102,000 Acres 3 Dozers 10 Engines 6 Crews 2 Helicopters 2 Water Tenders	157,475 Acres 3 Dozers 20 Engines 6 Crews 2 Helicopters 2 Water Tenders
LNU Lightning Complex				124,100 Acres 2 Dozers 20 Engines 4 Crews 5 Helicopters 2 Water Tenders	215,000 Acres 9 Dozers 30 Engines 12 Crews 18 Helicopters 12 Water Tenders
River (Monterey)	2000 Acres 2 Dozers 15 Engines 4 Crews 1 Helicopter 1 Water Tender	3800 Acres 2 Dozers 20 Engines 4 Crews 1 Helicopter 3 Water Tender	4509 Acres 2 Dozers 20 Engines 4 Crews 2 Helicopters 3 Water Tenders	15,050 Acres 2 Dozers 30 Engines 8 Crews 2 Helicopters 3 Water Tenders	33,974 Acres 2 Dozers 25 Engines 6 Crews 2 Helicopters 2 Water Tenders

Figure A3. Resource Disposition, August 16-20, 2020

Appendix B – Cal Fire CZU Lessons Learned
Santa Cruz County after-action virtual community meetings
March 15 and 16, 2021 [\[36\]](#) [\[37\]](#)

Lessons Learned	Details	Summary of Actions Taken or To Be Taken
Fuel Conditions	<ul style="list-style-type: none"> Previously fires didn't grow to be large fires due to coastal moisture and Redwood trees "asbestos unit" Never seen in the history of SC Co. Now drought and climate change the fuel conditions not the same 	<ul style="list-style-type: none"> Changed how look at fuel conditions Will make different decisions
Lightning Events	<ul style="list-style-type: none"> Implemented coordination plan as designed Started with Volunteer FF to put out small fires Lack of resources so unable to fully execute as designed because of so many fires Usually can keep small 3-5 acres but due to # of fires and remoteness fire grew large 	
Evacuations	<ul style="list-style-type: none"> Fuel - rate of spread much faster than expected need mindset change Warning too late for Last Chance area Narrow mountain roads so hard to get a large number of people out at the same time 	<ul style="list-style-type: none"> Need to evacuate much earlier with warning notifications and evacuations than before
Infrastructure failures	<ul style="list-style-type: none"> Downed trees caused PG&E power down, phone impact, backup battery failed, hard to get information out using internet, social media, Reverse 911 Old systems, increased demands, decreased information flow 	

<i>Cal Fire CZU Lessons Learned, Santa Cruz County, Continued</i>		
<i>Lessons Learned</i>	<i>Details</i>	<i>Summary of Actions Taken or To Be Taken</i>
Code Red - Reverse 911 System	<ul style="list-style-type: none"> • CodeRed is opt-in system • only 17,000 SC residents signed up • Reverse 911 dispatch center uses net.com which initially had throttle that limited the number of calls 	<ul style="list-style-type: none"> • Notified vendor of net.com for reverse 911 calls and throttle problem resolved quickly to increase number of calls
California's Fire Mutual Aid System	<ul style="list-style-type: none"> • Usually robust system • Too many simultaneous fires - limited help • Taxed beyond capability • Exhausted requests for local resources 	
Evacuation platform	<ul style="list-style-type: none"> • Initially used SC County evacuation management system developed after 2008-2009 fires 	<ul style="list-style-type: none"> • Transitioned to Zonehaven platform midstream due to having public facing side so residents can see in real time if need to evacuate, • Need internet to see if your home is in zone or need to know your zone number • Evacuated 58,000 SC residents
Fuel reduction efforts	<ul style="list-style-type: none"> • Not reached goal • More work to do • Cooperative effort by all - Property owners, FireSafe Council, Cal Fire, Resource Conservation Network, etc to decrease fuel 	<ul style="list-style-type: none"> • Work on getting funding and grants to increase fuel reduction projects • Grant money for community thru FireSafe Council

<i>Cal Fire CZU Lessons Learned, Santa Cruz County, Continued</i>		
<i>Lessons Learned</i>	<i>Details</i>	<i>Summary of Actions Taken or To Be Taken</i>
Individual Property owner Defensible Space Inspection (LE-100)	<ul style="list-style-type: none"> • Need home to have defensible space • Need to increase number of inspections • Need compliance - can't enforce • Ideally home can stand alone and not need to be protected 	<ul style="list-style-type: none"> • Owner needs to clear property before next fire
Fire Prevention Messaging	<ul style="list-style-type: none"> • Need to improve messaging - what to be prepared for, to go bag, • Consistent msg before fire season • Not enough prevention information 	<ul style="list-style-type: none"> • Looking at methods to increase community involvement • Improve community meetings • Be more involved <p>Example Cal Fire program: WILDFIRE AWARENESS: 3 seminars:</p> <ul style="list-style-type: none"> - Ready, Set, Go and Zonehaven - Home Hardening & Defensible Space Webinar 4/20/2021 - CZU lessons learned - Sending out comprehensive evacuation checklist on NextDoor
From FDAC meeting on 11/18/20	<ul style="list-style-type: none"> • Unable to fight fire thru air due to poor visibility/smoke • Mountainous terrain adds extra challenge to FF 	<ul style="list-style-type: none"> • Goal is to evacuate earlier and use Zonehaven evacuation tracking system purchased thru grant

Appendix C – Cal Fire CZU Lessons Learned

San Mateo County Virtual Community Meeting April 27, 2021^[39]

#	Lessons Learned	Summary of Actions taken or to be taken
1.	<p>Changes in Weather and fuel conditions are changing the frequency, size and behavior of fires locally.</p> <ul style="list-style-type: none">• 5 hottest years in past 5 years• 5 hottest night-time temps - statewide - little fuel moisture recovery• Size of fires growing bigger	
2.	<p>The LCA (Lightning Coordination Area) Plan was an important framework when faced with a historic lightning event and additional enhancements to the plan are being considered based on our experience.</p> <ul style="list-style-type: none">• Supervisor in charge of each separate geography fire area	<ul style="list-style-type: none">• Expand plan to notify additional agencies in the 2 counties• Include what to request from each branch/agency instead of saying as needed• SM received FEMA grant for drone program for early recon• Use volunteer air squadron from Sheriff office for recon early on• If capacity, Cal Fire officer to work as liaison with local public safety communication center• Started linking 2 dispatch computer system Redwood City and Felton

<i>Cal Fire CZU Lessons Learned, San Mateo County, Continued</i>		
#	Lessons Learned	Summary of Actions taken or to be taken
3.	<p>When hundreds of fires occur simultaneously, the local response system is even more important.</p> <ul style="list-style-type: none"> • Northops - requested resources unavailable in < 1 day • EMAC (Emergency Management Assistance Compact) - Out of state resources limited availability - only private trained companies equipment available • Federal resource ordering system - IROC problem with software unable to handle capacity • Mutual aid agreements - nothing available in NCA 	<ul style="list-style-type: none"> • Dependent on local resources - used local government strike team • Created Wildland engine task force - used to hold local roads
4.	<p>Strong pre-existing relationships and frequent communication between Cal Fire, San Mateo County OES, County Manager Office and San Mateo County Sheriff's Office made for efficient, effective and professional decision making.</p>	<ul style="list-style-type: none"> • Worked with these agencies due to COVID for a couple of weeks so good relationship
5.	<p>Coordination and management was made easier because of strong relationships, pre-planned zones, and an innovative new on-line evacuation management platform.</p> <ul style="list-style-type: none"> • BoS in 2019 approved funding for Zonehaven • Public was to be notified 6 weeks after CZU fire but Immediately went live with the start of fire • Can use in remote areas • Fire, law, and OES developed zones together and use same map and zones 	<ul style="list-style-type: none"> • Brought in SC County later so all working from same map and zones
6.	<p>The SMCAAlert System is a valuable and effective tool for getting targeted messages to the affected areas.</p> <ul style="list-style-type: none"> • Used to alert areas before lightning strikes, during and after • Multiple languages 	<ul style="list-style-type: none"> • If not good cell service need emergency weather radio • Encourage public to sign up

<i>Cal Fire CZU Lessons Learned, San Mateo County, Continued</i>		
#	<i>Lessons Learned</i>	<i>Summary of Actions taken or to be taken</i>
7.	San Mateo County Measure A/K funded fire apparatus (engine) was useful in the incident. <ul style="list-style-type: none">● Smaller off-road wildland engines	<ul style="list-style-type: none">● Locally funded, local volunteer, for local fire were assigned for 14 days to help Cal Fire
8.	Need to invest in additional wildland fire apparatus locally that can be cross staffed by structural firefighting crews. <ul style="list-style-type: none">● Staff can man these instead of structural fire engines for fighting wildland fires	<ul style="list-style-type: none">● Increase capacity and flexibility locally with additional wildland fire engines
9.	Infrastructure failures in remote areas can result in communications systems being negatively impacted and making resiliency and redundancy necessary. <ul style="list-style-type: none">● Radio repeater towers went down during fire - lost cameras also● Cell towers also can go down in fire	<ul style="list-style-type: none">● Need radio resiliency when lose reception
10.	Keeping the community informed is paramount, especially through social media engagement and updates.	<ul style="list-style-type: none">● Hired SM County Fire Department Public Information Officer as part of BoS 6 yr plan to address WUI risk● Position dedicated to keep the public informed and advocate for community information <p>** Noted: In SC virtual community meetings the only way some people were receiving information about the fire was on the community Facebook page</p>

<i>Cal Fire CZU Lessons Learned, San Mateo County, Continued</i>		
#	Lessons Learned	Summary of Actions taken or to be taken
11.	Non-fire public agencies can assist in innovative ways.	<ul style="list-style-type: none"> Used Parks Dept and contractor to help fortify fire break roads - worked with Cal Fire for 2 weeks, created new evacuation routes, downed trees removed, water brought in
12.	Staffing additional firefighters including a Chief Officer at Skylonda Station 58, proved important when implementing the LCA.	<ul style="list-style-type: none"> Needed additional staff to meet LCA requirements
13.	<p>It's important to have a robust firefighting workforce when many of them immediately returned to work to fight the fires.</p> <ul style="list-style-type: none"> Employees stepped up Long hours, little relief until additional staff could be brought in 	
14.	<p>Local volunteer fire companies played an important role; need to continue to formalize how to incorporate them into large scale incidents.</p> <ul style="list-style-type: none"> SM has 3 volunteer fire companies Helped suppress many of 22 fires started by lightning 	<ul style="list-style-type: none"> Add to LCA plan to bring in volunteers earlier Provide more support and training to the volunteers to work on larger incidents
15.	<p>Additional resources were needed to address the COVID prevention measures that were necessary throughout all aspects due to concurrent emergencies.</p> <ul style="list-style-type: none"> Briefings, feeding, sleeping, socially distanced, everything had to be handled differently to prevent outbreak 	

<i>Cal Fire CZU Lessons Learned, San Mateo County, Continued</i>		
#	Lessons Learned	Summary of Actions taken or to be taken
16.	Countless community organizations stepped up to fill in some critical gaps. (Ag Dept, CERT, Puente, Ham Radio Operators, OES, Large Animal Rescue, and many more)	
17.	Non-affiliated spontaneous volunteers who wanted to enter the evacuation zones to fight the fire caused confusion challenging public agencies policies and state law.	<ul style="list-style-type: none"> ● No system in place to manage spontaneous volunteers - caused frustration ● Requires 100's of hours of training and protective gear - by law
18.	Pre-fire project work during winter months helped: need to expand the scope and scale of this work.	<ul style="list-style-type: none"> ● Need to continue to clear trails, have escape routes or safety zones during no-fire season ● 2 engines designated for vegetation management - SC Co does as well ● Focus - preparedness and mitigation
19.	Locating lightning fires in remote areas is made easier with new technology: expansion of such technology continues. <ul style="list-style-type: none"> ● Cameras locate and look at conditions ● Technosylva provides advanced GIS-enabled software solutions for wildfire protection planning, operational response & firefighter and public safety. 	<ul style="list-style-type: none"> ● Cameras installed during the fire ● Added 2 more since fire ● Installing more cameras - see value ● Technosylva uses camera information to make informed decisions and determine resource allocations
20.	Defensible space and personal fire preparedness measures were more important than ever.	<ul style="list-style-type: none"> ● Increase information to public - has huge impact on home protection

Appendix D

Report Findings and Recommendations

with Responses from the Board of Supervisors^[44]

<i>Report Findings</i>	<i>BoS Responses</i>
<p>F1. Vegetation/fuel management and abatement are not receiving the attention nor funding needed from the County of Santa Cruz BoS, and therefore are not adhering to California Government Executive Order 1.8.19-EO-N-05-19.</p>	<p>X PARTIALLY DISAGREE – Vegetation/fuel management and abatement is the responsibility of the property owner not the County of Santa Cruz. The County could do more to improve the clearing or removal of vegetation along County maintained roadways, more than just the sight line clear that may or may not occur annually. The removal of vegetation is expensive and labor intensive for a county that provides many services to the community. Funding is available through different grant opportunities to assist with fuel reduction and the County has benefited from such grants. An example of such grant funding is the fuel reduction project that was approved as part of the 35-statewide project as outline {sic} in Governor Newsom's 45-day report and the Executive Order 1.8.19-EO-N-05-19 that was issued regarding fuel reduction in California. This project is in the unincorporated area of the County within CSA 48 area of Aptos Creek and Buzzard Lagoon roads near Corralitos. The project consisted of treating 225 acres to improve existing and create additional fuel breaks to protect vulnerable communities. Of the 225 treated acres, 150 acres is a shaded fuel break and has allowed for the use of prescribed fire to be used to help clear and maintain the area.</p>

<i>Report Findings, continued</i>	<i>BoS Responses, continued</i>
F2. Santa Cruz County residents are at increased risk of fire danger due to the lack of risk management for wildfire. Specific risks are not formally identified, tracked, assessed for impact, nor is progress reported by fire departments in the County. Therefore, leaders responsible for budgets and accountability are left unprepared to manage risk, impact, or performance.	X PARTIALLY DISAGREE – Responsibility for wildlife fire management is held with each fire agency within Santa Cruz County. Each jurisdiction monitors and tracks wildfire risk within its own jurisdiction. The approach and extent of this work is managed within each jurisdiction. The State responsibility area, which includes the majority of the rural area within the County, is controlled and managed by CAL FIRE.
F4. Most of Santa Cruz County in addition to the City of Santa Cruz with its large eucalyptus groves are not being monitored by the ALERTWildfire Imaging Surveillance system and would be well served by the installation of cameras capable of monitoring coastal areas occupied by eucalyptus groves in areas harboring potential sources of ignition.	X PARTIALLY DISAGREE – Eucalyptus groves are a problem in general due to the abundant fuel loading they provide, but one fuel type in the county should not be singled out. Fires occur in areas of redwood forest as well, example, {sic} the Rincon Fire in 2018. The use of the ALERTWildfire camera system is a great way to provide for early confirmation of wildfire in the county. CAL FIRE/County Fire is working with ALERTWildfire and PG&E to determine locations to install cameras to provide a system for early confirmation of wildfires.
F5. Santa Cruz County would greatly benefit if steps were taken to implement the CAL FIRE, San Mateo - Santa Cruz Unit 2018 recommendation of developing detailed, site specific Community Wildfire Protection Plans for communities throughout the County.	X AGREE

<i>Report Findings, continued</i>	<i>BoS Responses, continued</i>
F24. The annual report to the County BoS and the County Administrative Office by County Fire/CAL FIRE does not provide data or analysis of resources, response times, code enforcement, inspection, or education. This information is necessary to show what gaps exist between current performance and community needs in order for informed budget decisions to be made. Without adequate background information, the BoS is unable to hold CAL FIRE accountable for the specific responsibilities specified in their contract.	X DISAGREE – The County Fire/CAL FIRE Chief gave a State of the State presentation to the Board during Budget Hearings, which provided both data and analysis of resources, response times, code enforcement, inspection, and education. This is aligned with the budget process. This presentation is also given to the Fire Dept Advisory commission (FDAC), holds {sic} responsibility to provide oversite {sic} of these.
F26. Reporting data, statistics, and formats utilized by fire agencies throughout the County are highly inconsistent, uncoordinated, and therefore not readily evaluated and compared. The standard Insurance Services Office (ISO) rating system would be useful to adopt. Response time data are not well described or consistently reported by the jurisdictions, making accurate assessment difficult, especially by other agencies or by the public.	X AGREE

<i>Report Recommendations</i>	<i>BoS Responses</i>
R2. The Santa Cruz County BoS should require CAL FIRE and County Fire to provide quarterly and annual reports to the County General Services Department with specified data and success metrics for each of the contract requirements, beginning with the current fiscal year.	X HAS BEEN IMPLEMENTED – CAL FIRE/County Fire will continue to work with the Santa Cruz County Director of General Services in weekly meetings, as well as the Fire Department Advisory Commission (FDAC) to determine a reasonable reporting structure and timeline for the reporting.
R3. The Santa Cruz County BoS should require CAL FIRE, in conjunction with the General Services Department, to provide annual operations reviews with performance metrics and annual improvement objectives, beginning with the current fiscal year.	X HAS BEEN IMPLEMENTED – CAL FIRE/County Fire will continue to work with the Santa Cruz County Director of General Services in weekly meetings, as well as the Fire Department Advisory Commission (FDAC) to determine a reasonable reporting structure and timeline for the reporting.
R9. Each year, during the budget presentation, the County BoS should require County Fire to provide a vegetation management plan, including a priority list of projects and a timeframe for their completion.	X REQUIRES FURTHER ANALYSIS – There is currently no funding for a vegetation management plan for the County Fire Department. We currently coordinate with CAL FIRE on a priority list of projects that have timeline {sic} related to available funding. In order to implement such and {sic} process will require additional analysis and potential funding.
R17. The County Office of Emergency Services should evaluate, quantify, and report to the County BoS on the specifics of the public state of preparedness for a large-scale emergency such as wildfire by June, 2021.	X REQUIRES FURTHER ANALYSIS – An after-action review is conducted after every major incident and disaster response. Due to the CZU Lightning Complex Fire, these areas will also be addressed during the after-action review, identifying operational effectiveness as well as areas for improvement.