EDMUND G. BROWN JR.
GOVERNOR

MARK S. GHILARDUCCI
DIRECTOR

Cal OES
GOVERNOR'S OFFICE
OF EMERGENCY SERVICES

February 26, 2018

Sheryl Bratton
County Administrator
575 Administration Drive, Suite 104A
Santa Rosa, CA 95403

Dear Administrator Bratton:

Attached, please find our limited-scope, independent assessment that you requested via letter on November 27, 2017, regarding the emergency notification process and response to the devastating wildfires that affected Sonoma County.

Every major disaster affords us all the opportunity to examine what worked and where improvements can be achieved. This specific assessment is meant to be a primer and help guide your After Action review of response actions taken, modifications to plans and procedures, training needs, and recovery activities as required by the Emergency Services Act (California Government Code section 8550, et seq.) and Title 19, Section 2450 of the California Code of Regulations.

It is important to understand that this assessment was prepared in good faith by two of our alert and warning technical staff who are guided by the state's Standardized Emergency Management System, State of California Emergency Plan, and Cal OES best practices. Their focus was to better understand Sonoma County's automated warning systems and, generally, what decisions were made as described by those who voluntarily offered their perspective.

This assessment should not be considered an investigation that evaluates the specific decisions made with regard to emergency notifications during the wildfires, nor should this assessment be construed as providing conclusive findings regarding the actions of any individuals interviewed or involved in the process of emergency response and management during the wildfires. Rather, this assessment provides a high-level review of the emergency notification systems that are in place in Sonoma County and that were in place at the time of the wildfires.

We look forward to continuing to work with you as the complex recovery process continues in many areas of Sonoma County.

Sincerely,

MARK S. GHILARDUCCI
Director

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Public Alert and Warning Program Assessment for Sonoma County

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Executive Summary

On the night of October 8, 2017, fires broke out that would have catastrophic effects on Sonoma County. Throughout the night and early into the next morning, the multiple fire events in the region expanded and converged. Though not unprecedented, the extreme fire weather, high winds, extensive fuel, and growth of residential and commercial construction led to one of the most hazardous conditions in recent decades. As these wildfires grew, an estimated 100,000 people were evacuated, more than 5,000 structures burned, and 25 lives were lost making the event the most destructive wildfire in California history.

While the official review on the cause and origin of the Tubbs, Nuns, and Pocket fires continues, on November 27, 2017, Sonoma County Administrator Sheryl Bratton requested that the California Governor's Office of Emergency Services (Cal OES) perform an independent assessment of Sonoma County's emergency alert and notification system. At Cal OES Director Mark Ghilarducci's direction, an Assessment Team from Cal OES, consisting of Response Operations and Public Safety Communications Specialists, traveled to Sonoma County to review the alert and warning systems, conduct in-person interviews, and subsequently conducted additional interviews via telephone.

The Assessment Team determined that, during the critical time period, Sonoma County had in place an established public alert and warning capability with the means to alert a wide range of County residents and visitors. Additionally, the Assessment Team confirmed that Sonoma County began issuing emergency alerts and notifications to the public as early as 10:51 p.m. the night the fires broke out, and continued to issue alerts as the fire progressed. However, the Team found that specific procedures for using those alert and warning capabilities were uncoordinated and included gaps, overlaps, and redundancies with regard to capabilities in various County departments. Further, the Assessment Team found that, during the early hours of the disaster, the County lacked reliable, timely, and coordinated situational awareness as to the scale, size, and scope of the fires' growth, character, and movement. Lastly, the Assessment Team determined that procedures and policies identified during this assessment, which had been utilized during flood events, were misunderstood or not directly applicable to this fast-moving, complex fire situation.

The Assessment Team also reviewed the County Emergency Manager's decision not to utilize the federal Wireless Emergency Alert (WEA) System to notify residents and visitors of conditions and/or evacuations. Based on interviews and a review of documented procedures, the Assessment Team determined that this decision was the Emergency Manager's judgment call based on experience, previous policy discussions, and *perceived* knowledge of the situation. The Assessment Team learned that the Emergency Manger's decision was also influenced by a limited awareness and understanding of the WEA System and outdated information regarding WEA's technical capabilities.

Because planning for, and management of, evacuations such as those forced by the October 2017 wildfires is a complex, multi-disciplinary undertaking, there must be clear

protocols and rapid, coordinated decision making. The County would benefit from additional training, exercises, and awareness, with emphasis on coordinated communications and more preparation and analysis associated with these rapidly evolving evacuation scenarios. Training for circumstances with gradual evacuation scenarios, such as those triggered by slow-rise river flooding or incoming storms, is insufficient. This is a topic the Assessment Team believes requires further, in-depth attention at all levels of government.

Independent Review Request

During the night of October 8, 2017, wildfires erupted and rapidly spread throughout several Northern California counties, including Sonoma County. One of these fires, the Tubbs Fire, swept through heavily populated areas of Sonoma County, during which time the County issued certain emergency notifications. On November 27, 2017, Sonoma County Administrator, Sheryl Bratton, requested that Cal OES conduct an independent review of the County's "emergency notification process and response to the recent fires."

Methodology and Limitation

A team from Cal OES visited Sonoma County to inquire about the County's emergency alert and notification process and response to the recent fires. The Cal OES Assessment Team spoke with individuals from public safety agencies within the Sonoma County region that had knowledge of the events that transpired during the fire or systems and capabilities in place. The Cal OES Assessment Team was also provided key emergency plans and evaluated the coordination of those plans between the various agencies within Sonoma County. This review is limited in scope, focuses on Sonoma County's notification and alerting capability as it related to the October 2017 wildfires, and is based solely on the voluntary responses provided by individuals interviewed.

The Sonoma County Fires of October 2017

Days prior to the wildfires, the National Weather Service began issuing red flag warnings throughout much of Northern California as conditions were expected to become extremely volatile, with winds expected to be gusting between 25 and 35 miles per hour from the north to the south.

As expected, the night of Sunday, October 8, 2017 was windy and dry with the predicted Northern California "Diablo wind" weather pattern materializing. At 9:29 p.m., a wind gauge in northern Santa Rosa indicated gusts of up to 30 miles per hour. An hour later, the gusts had

intensified to 41 miles per hour. At 11:56 p.m., a gust of 79 miles per hour was reported near Geyserville, approximately 20 miles north of Santa Rosa.[1]

The first fire to impact parts of Sonoma County was the Tubbs Fire. This blaze started in adjacent Napa County, near the town of Calistoga, at approximately 9:45 p.m.

Driven by increasingly stronger winds, which by 4:00 a.m. were reported at more than 60 miles per hour, the fire quickly traveled westward across a range of hills and toward the edges of the City of Santa Rosa. Fire conditions were exacerbated by extensive fuel traced to rains early in 2017, followed by a long rainless period continuing through May. The relative humidity on the first night of the fires was in the single digits.[2]

The Tubbs Fire, which ultimately burned 37,000 acres, rapidly pushed through mountainous wildland down through residential and commercial areas in northern Santa Rosa and across Highway 101, was only one of several other fires threatening Sonoma County that night.

A torrent of radio reports by firefighters and telephone calls from residents reported fire and smoke at numerous locations around Sonoma County and in the City of Santa Rosa. Some of those reports were erroneous, but many were valid. Operators and duty officers at the County's integrated fire/medical dispatch facility (REDCOM) struggled to digest the multitude of reports into the integrated situational awareness assessment needed to better understand the dynamics of the situation and its trends. Not counting innumerable small spot fires, at least nine significant blazes ultimately merged into three major fires.

Further to the south near the town of Sonoma, a handful of separate fires, individually named Adobe, Norrborn, Partrick, Pressley, and Oakmont, combined over the following days into a giant 57,000 acre complex fire designated jointly as the Nuns incident or, alternatively, as the Southern LNU Complex. That fire ultimately threatened parts of the City of Rohnert Park.

North of Santa Rosa, near Geyserville, the Pocket fire[3] began at approximately 3:30 a.m. on October 9th, ultimately burning 17,357 acres. Concurrently, the California Department of

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[1] California Department of Forestry and Fire Protection (CAL FIRE). Tubbs Fire (Central LNU Complex) Incident Information. http://www.fire.ca.gov/current_incidents/incidentdetails/Index/1867. Retrieved December 15, 2017.

[2] Griggs, Troy; Lai, K. K. Rebecca; Park, Haeyoun; Patel, Jugal K.; White, Jeremy (October 12, 2017). "Minutes to Escape: How One California Wildfire Damaged So Much So Quickly". The New York Times. ISSN 0362-4331. https://www.nytimes.com/interactive/2017/10/12/us/california-wildfire-conditions-speed.html Retrieved October 12, 2017.

[3] California Department of Forestry and Fire Protection (CAL FIRE). Pocket Fire (Central LNU Complex) Incident Information. http://www.fire.ca.gov/current_incidents/incidentdetails/Index/1883. Retrieved December 15, 2017.

Forestry and Fire Protection (CAL FIRE), the department with firefighting responsibility for much of unincorporated Sonoma County, battled the Atlas Fire[4] in Napa and Solano counties, which itself burned 51,624 acres and destroyed 481 structures. Firefighting resources were stretched thin and were in constant movement.

Complete information regarding the concurrent fires and limited resources was not immediately available to responders during the first few hours of the fire. This gap was a factor in the lack of coordinated decision-making. Based on incomplete reports and speculation, the County raced against the advancing flames to initiate the evacuations of more than 100,000 people from neighborhoods and facilities, including hospitals. Some media reports claimed the evacuation took the form of headlong flight with people abandoning their cars and proceeding on foot or by bicycle through the jammed traffic, while other sources questioned whether traffic congestion was a problem.

At least four local government operation/coordination hubs faced challenges with good situational awareness and intra-agency communication in tracking and coordinating the explosive fire situation in Sonoma County:

- Sonoma County Fire & EMS Dispatch Center (REDCOM)
- City of Santa Rosa Emergency Operations Center (SREOC)
- CAL FIRE Dispatch Center in St. Helena
- Sonoma County Emergency Operations Center (SCEOC)

The investigation of the causes and details of all those various fires is ongoing. As of October 23rd, two weeks after the start of what came to be known as the Wine Country wildfires, the aggregate toll was set to at least 8,900 homes, businesses, and other buildings destroyed, and tragically took 42 lives.[5]

Sonoma County's Public Alert and Warning Capabilities

Sonoma County has four technical systems for public alert and warning dissemination:

- **SoCoAlert** – Based on a commercial telephone, text, and email notification system, SoCoAlert is promoted as County residents' best option for emergency notifications. It is also used for list-driven notifications such as volunteer callouts. For emergency alerts,

[4] California Department of Forestry and Fire Protection (Cal Fire). Atlas Fire (Central LNU Complex) Incident Information. http://www.fire.ca.gov/current_incidents/incidentdetails/Index/1866. Retrieved December 15, 2017.

[5] Vives, Ruben and Winton, Richard (October 23, 2017) "Fire loss total surges to 8,400 structures in Northern California." The Los Angeles Times. http://beta.latimes.com/local/lanow/la-me-wildfires-devastation-20171023-story.html. Retrieved December 15, 2017.

SoCoAlert is an **opt-in system**, which means individuals have to sign up for the system in order to receive warning messages.

- **Nixle®** – A competing commercial notification product that offers a free baseline service, Nixle® has been adopted by the Sonoma County Sheriff's Office and other local law enforcement agencies. Nixle® is also an **opt-in system** with multiple uses in addition to emergency alerting. There are different registration processes for Nixle® and for SoCoAlert, and there is no built-in mechanism for coordination between the two systems.

- **IPAWS** – The Integrated Public Alert and Warning System, operated by the Federal Emergency Management Agency (FEMA), is the gateway to activation of the two national public warning systems, EAS and WEA:

    - The **Emergency Alert System** (EAS) is a national public warning system that requires broadcasters, cable television systems, wireless cable systems, satellite digital audio radio service (SDARS) providers, and direct broadcast satellite (DBS) providers to provide the communications capability. The system may be used by state and local authorities to deliver important emergency information to the public. EAS enables County agencies to interrupt broadcasts with a message up to two minutes in length. The EAS is neither an opt-in nor an opt-out system.

    - **Wireless Emergency Alerts** (WEA), best known for their use for AMBER Alerts, can send a brief text message to all operating cellphones in a specified area. WEA is available to cities as well as counties. WEA is an **opt-out system**. At the time of purchase, all cellular phones have WEA messaging activated, but owners can choose to disable it for local alerts. The advantage is that WEA alerts will generally reach individuals who both live in and are visiting Sonoma County and will not have registered for one of the opt-in services.

IPAWS is accessed over the Internet using alert origination tools provided as an option by various commercial systems. Sonoma County accesses IPAWS via an add-on module to their SoCoAlert system.

In addition to these technical systems, Sonoma County can dispatch police and/or fire personnel into at-risk areas to alert people via their sirens and public-address speakers. As the ultimate step in notification, public safety personnel can be sent door-to-door to spread alerts and encourage protective actions by the public. These last methods can be slower and of higher risk, but they generally obtain relatively high rates of public compliance with evacuation orders.

Assessment of Sonoma County's Public Alert and Warning System

Overall, Sonoma County's public alert and warning program appears to align with the state and federal alert and warning framework. The County has written plans and general procedures in

place, and personnel have been trained. There are a variety of redundant warning dissemination systems with the ability to serve the diverse population of Sonoma County.

That said, and upon closer review, particularly in light of the extreme stress-test provided by the October fires, there are gaps in the County's alert and warning program:

1. **Roles and Responsibilities**: Roles and responsibilities in the alert and warning process appear, in some cases, to have been assigned incrementally over time without clear, corresponding policy direction. This created confusion. In particular, the roles of the **alert originator**, authorized to direct the issuance of public alerts and warnings in accordance with policy and available doctrine, and that of the **alert operator**, trained in the technical operation of the warning tools, were sometimes unofficially conflated. As a result, several individuals interviewed for this assessment reported a lack of clarity with regard to the authority to make reporting decisions. Personnel inferred that those individuals who had received technical training were, at least de-facto, authorized to make alerting decisions. Under the pressure of a fast-moving and complex emergency situation, this ambiguity could lead to delays and inconsistency in alert and warning issuance.

2. **Social Science Training**: Both warning decision-makers and operators in Sonoma County reported having little or no training in the social science aspect that defines best practices on the thresholds and criteria guiding public warning issuance, the composition of warning messages, and the operational complexities of coordinating warnings. These best practices should include pre-designated evacuation route planning, traffic control or check points, and shelter/reception center information. Several County individuals reported that the multiple complexities of the technical tools associated with the various systems had monopolized almost all of the available training time.

3. **Documentation of Procedures and Templates**: The availability of detailed operational checklists or procedural guides was inconsistent. Several subjects reported having created their own operational guides to help them through the details of activating their available systems. Checklists or detailed procedures for deciding what warnings to issue, when, and in what form appeared to be almost entirely absent, except for a widely-shared understanding that the basic required criterion was "imminent threat to life, health or property." Likewise, the alert-message templates that were available were largely focused on flood emergencies or evacuation, leaving alert originators, and especially alert operators, to improvise alert message content. Having pre-scripted or pre-designated/scenario-based message templates could have been useful in the hasty evacuation scenario as a rapid tool to assist message originators in composing effective messages.

4. **Multiple Alert Systems**: The overlapping roles of law-enforcement notification systems (primarily Nixle®) and the County's SoCoAlert system appear to have resulted in duplication, inconsistency, and some confusion in messages transmitted to the public.

Additionally, the failure to clearly articulate roles and responsibilities on the issuance of alert and warning between and among departments in such a rapidly developing situation left a number of individuals in the position of assuming responsibility for framing evacuation messages without adequate training, information, or in coordination with other elements of government. In essence, each individual department was acting in a silo.

5. **Communication and Coordination**: The technical systems for alert and warning dissemination appear to have functioned adequately, especially considering the severe impacts of the event on telecommunications infrastructure, such as cellular and radio repeater sites, and interconnecting fiber cables. Standard tactical operational practices in some cases appear to have exacerbated alerting challenges. For example, the County has only three radio channels equipped with automatic repeater functionality to enhance radio coverage. It is standard practice for firefighters at an individual incident to switch off the repeater channels and go to local tactical frequencies, the range of which is limited by distance and terrain. As a result, while personnel at REDCOM and the City and County Emergency Operation Centers could hear the initial dispatch of fire units, they were unable to monitor the progress of each individual firefight and, in some cases, temporarily lost track of resources that were reassigned by Incident Commanders in the field. This further impacted overall situational awareness. In addition, since an Incident Commander is generally not empowered or trained to issue public alert and warning messages and Incident Commander to Emergency Operation Center communications were hampered in this fast moving situation, it fell on personnel at the dispatch and Emergency Operations Centers to decide which areas should receive evacuation warning messages without fully informed guidance.

6. **Knowledge of Warning Options**: Because public alert and warning is a rapidly developing field, responsible officials need to make a special effort to stay abreast of changes in the available technologies and products. It is not sufficient to rely on commercial warning system vendors as government's primary or only source of such information. Agencies with public warning responsibilities need to actively seek out training and other independent information and resources.

Assessment of Sonoma County's Public Alert and Warning Response to the October Fires

Although urban growth and development have created a much greater vulnerability to wildland/urban interface fire scenarios, the events of October 2017 were not altogether unprecedented in Sonoma County. For example, this fire mirrored the events of the September 1964 Hanley Fire, which started in St. Helena in Napa County. It similarly burned westward across the rugged hills to the east of Santa Rosa and threatened the heart of the City and the

County. That event burned more than 52,000 acres, damaged more than 300 buildings, and lead to the rapid mobilization to evacuate hospitals.[6]

It is also worth noting that public expectations for emergency information from government have risen in recent years. The availability social media, 24-hour news services, and personal wireless devices have led citizens to assume that they will receive prompt and useful information about current events, including disasters. In some cases, this heightened expectation may have exceeded actual government capabilities.

Sonoma County's emergency evacuation planning has been largely influenced by storm situations and the periodic flooding of the Russian River to the west. This recurring threat poses many of the same challenges as the October 2017 fires: timely public notifications; evacuation management; rescue, care, and shelter; and sheltering of medically-fragile individuals, including those with access or functional needs. "Riverine" floods, however, are more gradual in onset and usually follow after a scientific forecast to a specific geographic area. The October 2017 fires were a much faster-moving, extreme, and hard-to-evaluate hazard. Consequently, they highlighted various shortcomings noted in the preceding section.

Whether rapid or gradual, mass evacuations are among the most complex of public safety operations, and the public alert and warning requirements reflect that complexity. A complete evacuation message specifies when people should leave, by what route and what mode of transportation they should proceed, to what destination they should go, and often also includes reminders about things to take along. In an actual rapid evacuation, that message may be abbreviated where some of the information is either obvious or simply not known. A timely abbreviated message is preferable to a thorough message delivered too late.

In the first 24 hours of the October fires, it is reported that the County targeted 55,091 telephone numbers over SoCoAlert, of which 27,456 were successfully reached, and the County sent additional 3,558 text messages and 2,782 emails. Through the Nixle® system, the Sheriff's Department sent 16,300 emails and 21,284 text messages.[7] Messages were issued as early as 10:51 p.m. the night the fires broke out, providing advisory notices to the public. These alerts and warnings ranged from threat alerts and fire warnings to evacuation notices and related information. The extent to which the same email addresses and telephone numbers were registered in both SoCoAlert and Nixle® systems is unknown.

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[6] Sonoma County Historical Society. (2014, No.4). "Sonoma County 1964—Year of Fire and Floods." The Journal of the Sonoma County Historical Society. http://www.sonomacountyhistory.org/media/SCHS_2014-4-Fire-only.pdf. Retrieved December 15, 2017.

[7] Rahaim, Nick. (December 15, 2017) "Most SoCo Alert calls failed to connect in first hours of Sonoma County wildfires." The Press Democrat (Santa Rosa). http://www.pressdemocrat.com/news/7769979-181/most-soco-alert-calls-failed?sba=AAS. Retrieved December 16, 2017.

The decision by the County Emergency Manager not to use the federal WEA System to push text alerts to all cellular phones in the warning area has become a subject of scrutiny, especially in media coverage during and after the fires. Multiple interview subjects reported that this was not a decision made in haste or under pressure. Rather, it reflected discussions that occurred when the County contracted for the commercial messaging services they now refer to as "SoCoAlert," which included an option for activating WEA.

These discussions and decisions must be assessed in light of the information available to local emergency managers about WEA during that period. A major limitation of WEA is that, since its inception in 2012, WEA only permits brief English-language text messages up to 90 characters long. For comparison, standard Twitter messages, or tweets, can be up to 140-280 characters long. A length of 90 characters is only slightly longer than a single line of this document. Under the original 2012 Federal Communications Commission (FCC) rules for WEA, wireless carriers were only required to restrict the broadcast of a warning to within its entire County of origin.

From 2012 through 2016, emergency management professionals expressed concern regarding the character limitation and requested improvements to the character functionality of WEA. In late 2016, the FCC updated its WEA rules to expand the message text and require the carriers to limit alert delivery to their best approximation of the outline provided by the sender. However, those new rules would not take effect until 36 months later, in mid-2019.

At the time the County contracted for the SoCoAlert service, and continuing through the time of the October 2017 fires, potential users were uncertain as to how WEA would perform in any given instance. In addition, most government officials' primary sources of training and technical information about warning systems were the vendors of commercial warning products themselves.

Interview subjects recounted deliberations during the SoCoAlert procurement as to whether WEA capacity was worth the added cost given its current limited and uncertain performance. One consideration in particular was the risk of sending a short, less detailed alert to people near, but not actually in, a designated evacuation area. The fear was that this would exacerbate traffic congestion and disrupt evacuations. Ultimately, the County opted to make the additional investment in hope that WEA service would improve in the future. However, they also decided that WEA would not be used until it could be relied upon to deliver messages only to the intended population.

It is worth noting that the same SoCoAlert add-on feature also provided the County with a new digital channel for activating the broadcast Emergency Alert System (EAS). Both WEA and EAS can be activated through IPAWS. For many years, Sonoma County has been included in the Bay Counties EAS Operational Area, which stretches from Sonoma County to the north to Santa Clara County in the south and includes all the broadcasters in the Bay Area media market. Thus, EAS created a "warning spillover" dilemma on a much larger scale. Given the speed with which alerts were being composed and issued, interview subjects said they never seriously considered EAS during the October fires.

The planning decision described by interview subjects was not based on fear of panic, but rather on a judgment of the capacity of roadways and the risk of exacerbating traffic jams during the evacuation. The decision not to use WEA and EAS was the result of previous policy discussions and on the availability of information regarding their capabilities.

Recommendations

Based on this assessment of Sonoma County's public alert and warning system, Cal OES offers the following recommendations:

1. Update and expand existing written public alert and warning plans within the County Emergency Public Information Plan and incorporate those plans into the overall all-hazard Operational Area Emergency Operations Plan. The updated plan should address how each of the County's warning capabilities will and will not be used and should be reviewed and discussed in workshops with a broad representation of public safety and community stakeholders.

2. Train and authorize potential public safety Incident Commanders in the County to order public warnings and evacuations when necessary. Such training should focus on the science of effective warning and the "when, why, and how" of alerting. With regard to evacuation orders, authority for which is vested in law enforcement agencies, the County must ensure rapid coordination between incident commanders in the field, from whichever discipline, and law enforcement.

3. Train alert operators and personnel at dispatch centers and Emergency Operation Centers to compose effective emergency alert messages and transmit them using available systems.

4. Develop pre-scripted message templates, and also operational procedures for managing short-notice evacuations, including coordination of message details with law enforcement, transportation, and care and shelter authorities, both when an Emergency Operations Center is active and at times when one is not.

5. Develop pre-scripted "fill-in-the-blank" message templates for other common protective action patterns including prepare-to-evacuate, area re-entry, shelter-in-place, boil-water, and hazard-awareness/be-on-the-lookout.

6. Establish a documented program of refresher training and practice sessions for alert authorizers and alert operators. Operators should practice sending alerts over various systems at least every six months unless they have performed an actual system activation in the preceding six months. Potential Incident Commanders and other officials authorized to order public alerts should review their responsibilities and resources for alerting and receive a refresher briefing on best warning practices at least annually.

7. Establish detailed procedures for coordinating alert and warning message delivery between multiple platforms including Nixle® and SoCoAlert. Conversely, eliminate one system or the other from public alert and warning plans. Regardless of which system is picked, it is important to also utilize an opt-out system to ensure the message is delivered to as many potentially impacted individuals as possible. Additionally, there should be a public outreach campaign to ensure the community knows about the county's alert system and the process by which individuals can sign up to receive these alerts.

8. Specify the use of WEA for all critical public alert and warnings based on the following considerations:

    a. WEA goes to all wireless telephones in the affected area, not only those that have pre-registered.

    b. People who are deaf, hearing-impaired, or have other access and functional needs tend to rely heavily on wireless devices.

    c. People who are visiting a local area, such as tourists, are unlikely to have enrolled in a local service but will still be reached by WEA.

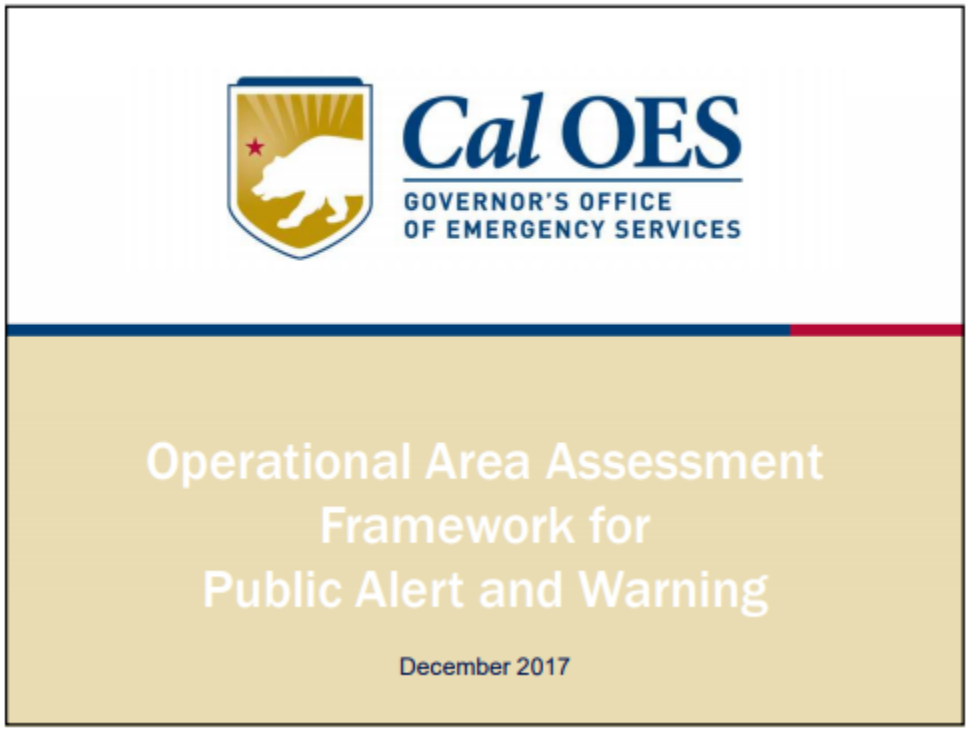
    d. WEA alerts use the wireless network more efficiently and are less exposed to network congestion effects.

9. Explore the potential of community 2-1-1 services as a supporting resource to Public Safety Answer Points (9-1-1 centers) as 2-1-1 centers may be able to process some of the large number of information-seeking calls received during emergencies.

10. Review and expand planning for rapid evacuations due to fires, chemical releases, active shooters, or other immediate hazards. In cooperation with law enforcement and public works personnel, form objective estimates of evacuation traffic from neighborhoods and via key traffic corridors, toward likely shelter locations. Develop checklists and procedures for the management of evacuation traffic flow. Review County highway planning in light of these studies of evacuation capacity.

11. Review and expand procedures for achieving accurate situational awareness of incidents, relationships between incidents, and trends in incidents during rapidly-developing emergencies. Pay special attention to the means by which Incident Commanders in the field can observe and communicate the full scope of the incident, including its boundaries and trends.

Attachment A – Cal OES Operational Area Warning Assessment Framework



Policy and Organization

1. Warning plan is in writing and current.
2. Operating procedures are written and current.
3. Warning thresholds / criteria are in place.
4. Warning duties and responsibilities are specified.
5. Authority to issue warnings is clearly defined.

Human Factors and Training

1. Alert issuers are trained regularly in the social science of public alert and warning and the provisions of the Operational Area Public Warning Plan and the State Warning Plan.
2. Warning system operators are trained regularly in the use of all available warning systems.
3. Drills and exercises are conducted frequently and consistently.
4. Authorized issuers and operators are available for timely alerting 24/7.

Procedures

1. Warning procedures and activation thresholds are clearly documented.
2. Warning system activation procedures are documented in checklist or step-by-step format.
3. Message templates are in place for common protective action patterns (evacuation, prepare to evacuate, shelter in place, etc.)
4. Interagency and interjurisdictional coordination follows documented rules and procedures.

Technology

1. Multiple means of rapidly disseminating public warnings are in place.
2. Technical means are in place to deliver alerts to the entire population, including out-of-town visitors.
3. Means are in place to alert and warn people with access or functional needs, or with limited English proficiency.
4. FEMA IPAWS access is in place for use with cellular Wireless Emergency Alerts (WEA).
5. All warning systems are tested regularly.

Obstacles and Challenges

1. Topic for discussion: "What actions or resources would help us make our warnings more effective, timely and reliable?"

Resources

1. **California State Warning Plan** (2016)
   http://caloes.ca.gov/cal-oes-divisions/warning-center/california-state-warning-plan
2. **Calalerts.org**, informational website, California Governor's Office of Emergency Services (2012)
3. **"First Alert or Warning Issuance Time** Estimation for Dam Breaches, Controlled Dam Releases and Levee Breaches or Overtopping," Mileti, D. and Sorenson, J., U.S. Army Corps of Engineers (2014)
4. **"Effective Disaster Warnings,"** National Science and Technology Council, Washington, D.C. (2000)

Attachment B – Methodology

This assessment was conducted by Mr. Art Botterell, Cal OES Response Operations Division, and Mr. Hank O'Neill, Cal OES Office of Public Safety Communications. Interviews were conducted with the following individuals:

Aaron Abbott, Executive Director, Redwood Empire Dispatch Communications Authority (REDCOM)

Brentt Blaser, Emergency Coordinator, Sonoma County Fire and Emergency Services

Sheryl Bratton, Sonoma County Administrator

Neil Bregman, Emergency Preparedness Coordinator, City of Santa Rosa Fire Department

Jim Colangelo, Acting Director, Sonoma County Fire and Emergency Services

Zach Hamill, Emergency Coordinator, Sonoma County Fire and Emergency Services

Christopher Helgren, Sonoma County Emergency Manager

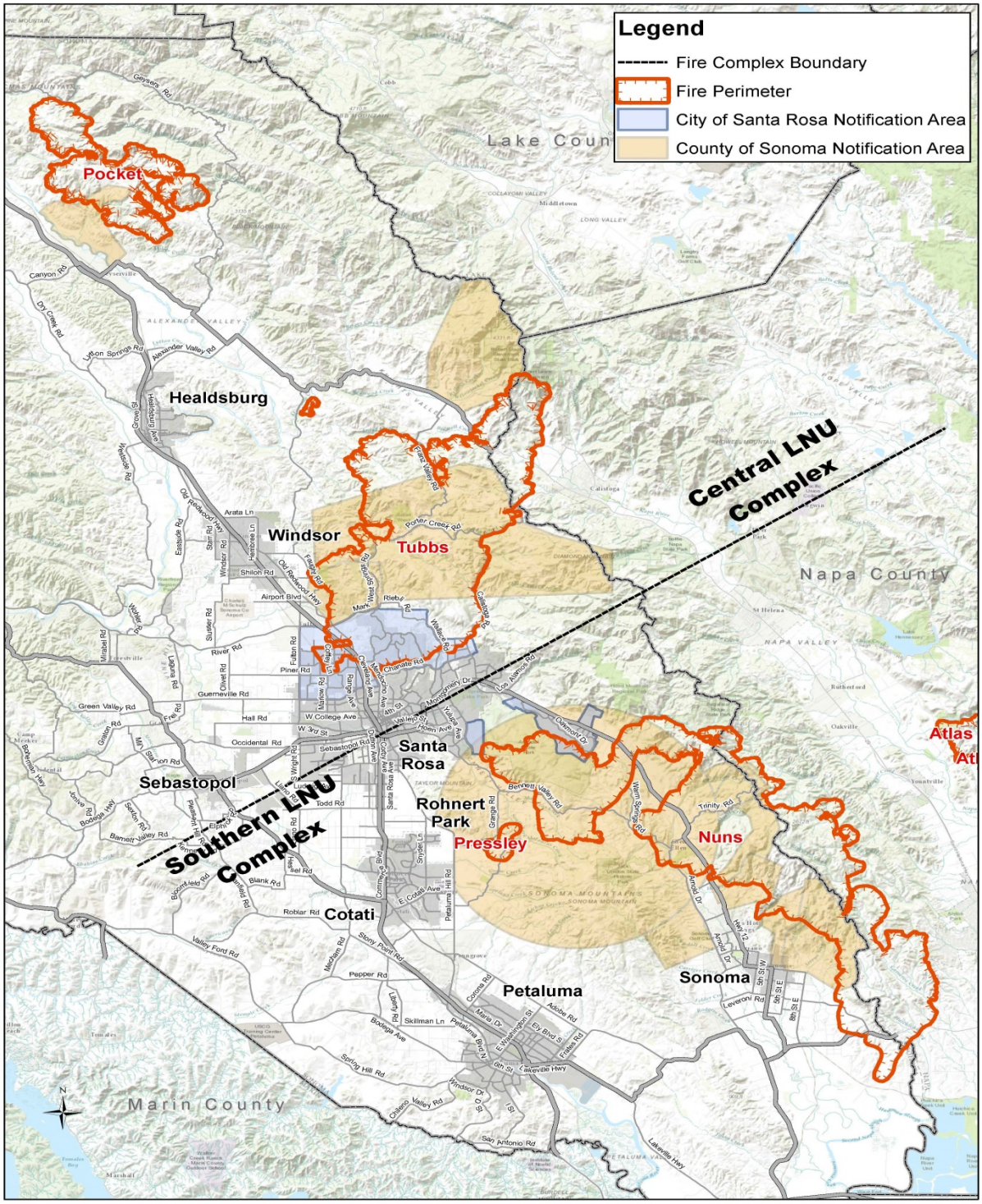
Don Jones, Dispatch Supervisor, Sonoma Sheriff's Office Dispatch Center

Steve Mosiurchak, Fire Marshal, Sonoma County Fire and Emergency Services

Kelsey Scanlon, Former Dispatcher, Sonoma County Fire and Emergency Services

Marshall Turbeville, Battalion Chief, CAL FIRE

Attachment C – Summary Fire Map and Statistics

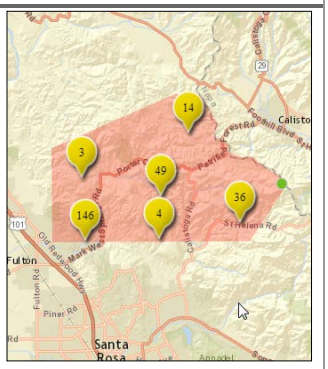
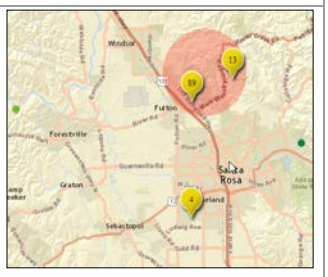


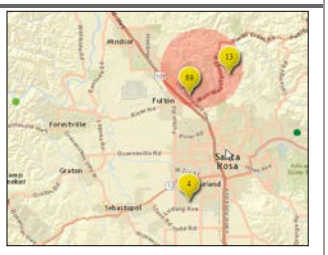
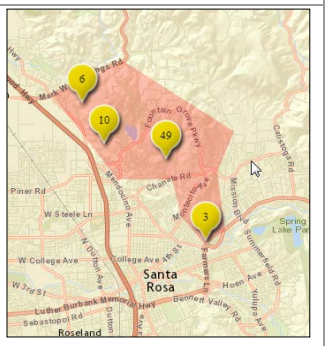
Attachment D – Sonoma County Tabulation of Alerts Issued

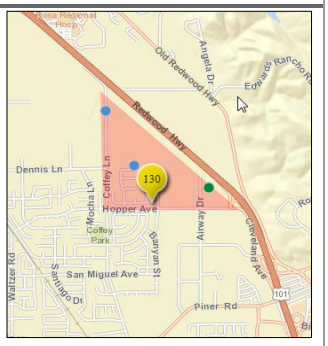
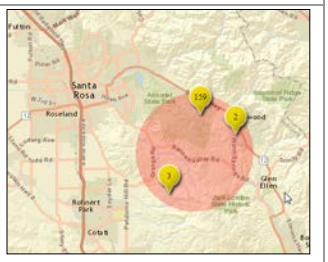
Activations of the SoCoAlert system for October 9, 2017, as provided by Sonoma County Fire and Emergency Services.

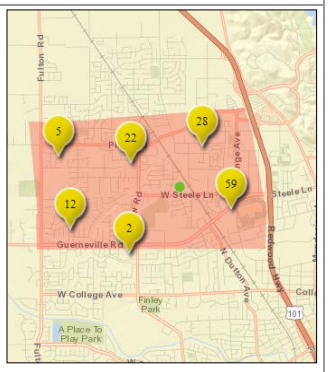
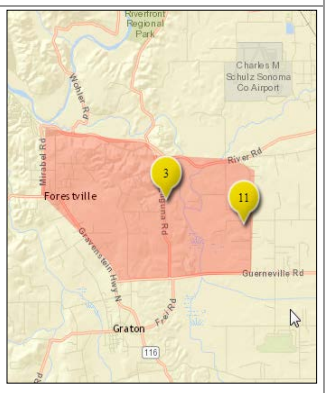
Activations of Nixle®and SoCoAlert for October 8th and 9th, 2017. The SoCoAlerts as provided by Sonoma County Fire and Emergency Services.*

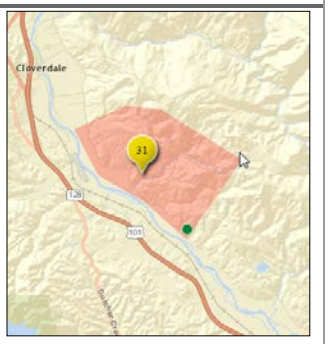
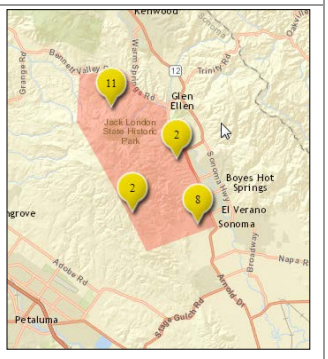
Nixle®= N **SoCoAlert= S**	**Time**	**Sender**	**SoCoAlert** **Completed/Called** **(Success Rate) **** **Nixle® Alert** **Type and Message**	**Target Area Map**
N	2251	Sonoma Co Sheriff's Office	Email: 16330 SMS: 21284 Advisory: Multiple fires reported around Sonoma County	
N	2305	Sonoma Co Sheriff's Office	Email: 2320 SMS: 4496 Alert: Mandatory evacuation ordered due to wildfire at Porter Creek and Petrified Forrest Rd.	
N	2314	Sonoma Co Sheriff's Office	Email: 16344 SMS: 21246 Advisory: Evacuations Ordered near Calistoga, new fire in Kenwood.	

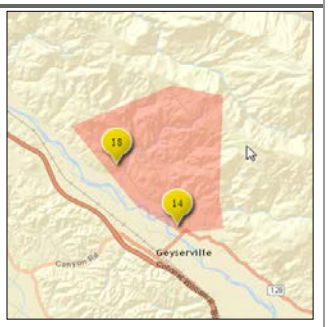
Nixle®= N SoCoAlert= S	Time	Sender	**SoCoAlert** **Completed/Called** **(Success Rate) **** **Nixle® Alert** **Type and Message**	**Target Area Map**
S	2337	Sheriff's Dispatch	1305/2096 (62%)	
S	0021	Santa Rosa EOC	261/266 (98%)	
S	0107	REDCOM	1898/2772 (68%)	
N	0123	Sonoma Co Sheriff's Office	Email: 16640 SMS: 21731 Advisory: Santa Rosa fire spreading quickly.	
N	0137	Sonoma Co Sheriff's Office	Email: 16672 SMS: 21828 Advisory: More Fire Information	
S	0144	REDCOM	614/1162 (53%)	

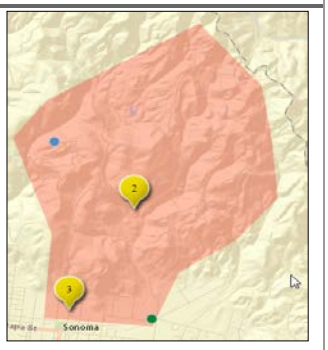
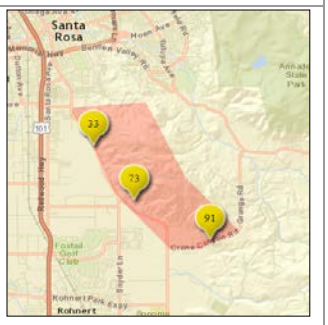
Nixle®= N SoCoAlert= S	Time	Sender	**SoCoAlert** **Completed/Called** **(Success Rate) **** **Nixle® Alert** **Type and Message**	**Target Area Map**
S	0151	REDCOM	18/548 (3%)	
S	0155	Santa Rosa EOC	2814/5381 (53%)	
S	0205	Santa Rosa EOC	86/2567 (3%)	
N	0210	Sonoma Co Sheriff's Office	Email: 16819 SMS: 22207 Advisory: Fire Update	
S	0216	Santa Rosa EOC	259/266 (97%)	
S	0227	Santa Rosa EOC	158/300 (53%)	

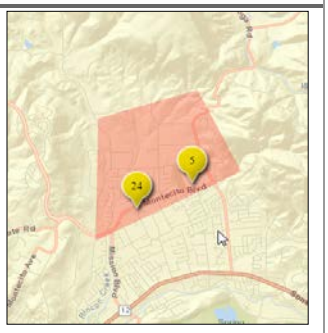
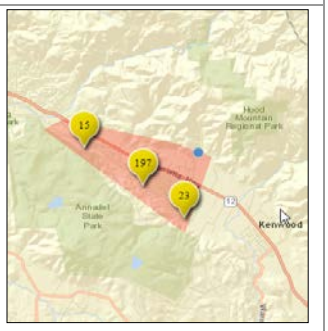
Nixle®= N SoCoAlert= S	Time	Sender	**SoCoAlert** Completed/Called (Success Rate) ** **Nixle® Alert** Type and Message	Target Area Map
S	0233	Santa Rosa EOC	3/142 (2%)	
S	0318	REDCOM	1931/3468 (56%)	
S	0322	Santa Rosa EOC	3709/7967 (47%)	
S	0326	REDCOM	88/1537 (6%)	
S	0336	Santa Rosa EOC	144/4258 (3%)	
S	0340	Santa Rosa EOC	4321/8907 (48%)	

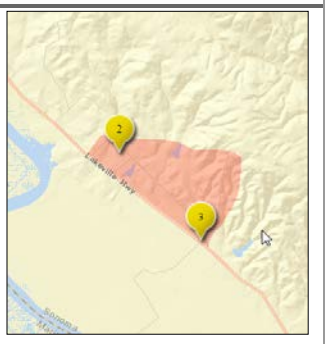
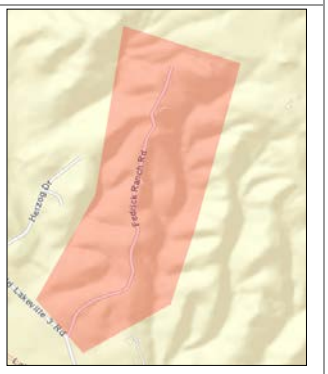
Nixle®= N SoCoAlert= S	Time	Sender	**SoCoAlert** **Completed/Called** **(Success Rate) **** **Nixle® Alert** **Type and Message**	**Target Area Map**
N	0349	Sonoma Co Sheriff's Office	Email: 17288 SMS: 25086 Advisory: Evacuation Shelter update	
S	0353	Santa Rosa EOC	172/4586 (4%)	
S	0355	Sonoma Co EOC	1082/1753 (62%)	
N	0400	Sonoma Co Sheriff's Office	Email: 17337 SMS: 25611 Advisory: Additional mandatory evacuations	

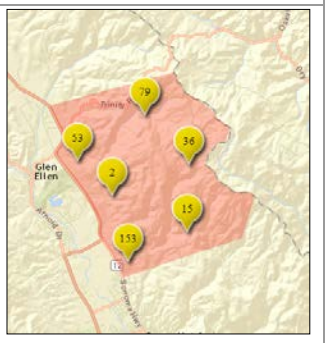
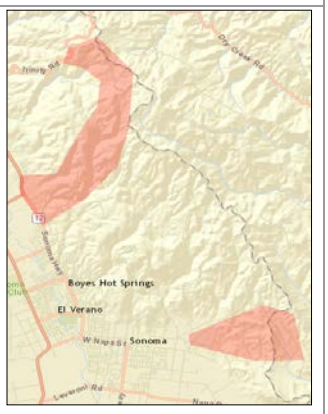
Nixle®= N SoCoAlert= S	Time	Sender	**SoCoAlert** **Completed/Called** **(Success Rate) **** **Nixle® Alert** **Type and Message**	**Target Area Map**
S	0418	Sonoma Co EOC	79/181 (44%)	
S	0428	Sonoma Co EOC	853/1777 (48%)	
N	0512	Sonoma Co Sheriff's Office	Email: 17765 SMS: 30472 Advisory: More evacuations and evacuation centers open	
S	0542	Sonoma Co EOC	87/189 (46%)	

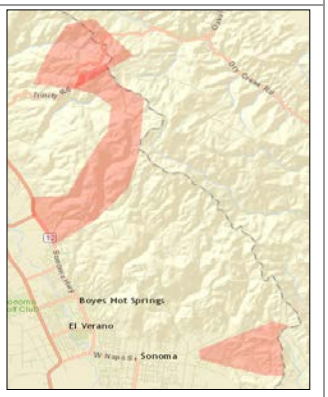
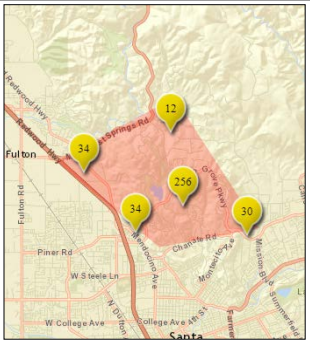
Nixle®= N SoCoAlert= S	Time	Sender	**SoCoAlert** **Completed/Called** **(Success Rate) **** **Nixle® Alert** **Type and Message**	**Target Area Map**
S	0548	Sonoma Co EOC	2/102 (2%)	
S	0611	Santa Rosa EOC	253/265 (95%)	
N	0638	Sonoma Co Sheriff's Office	Email: 18293 SMS: 41782 Advisory: Evacuation update	
S	0655	Santa Rosa EOC	257/266 (97%)	
N	0716	Sonoma Co Sheriff's Office	Email: 18604 SMS: 48795 Advisory: Evacuation update	
S	0722	Sonoma Co EOC	4969/6848 (73%)	
S	0935	Sonoma Co EOC	433/794 (55%)	

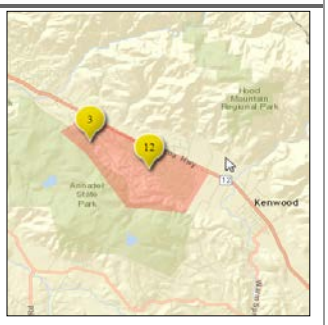
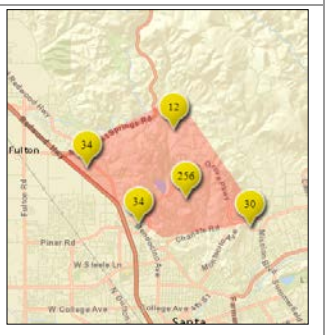
Nixle®= N SoCoAlert= S	Time	Sender	**SoCoAlert** **Completed/Called** **(Success Rate) **** **Nixle® Alert** **Type and Message**	**Target Area Map**
S	0942	Sonoma Co EOC	47/361 (13%)	
S	0945	Sonoma Co EOC	1052/1960 (54%)	
S	0952	Sonoma Co EOC	40/908 (4%)	
S	0956	Sonoma Co EOC	112/200 (56%)	
S	1002	Sonoma Co EOC	2/88 (2%)	
S	1016	Santa Rosa EOC	622/1722 (36%)	

Nixle®= N SoCoAlert= S	Time	Sender	**SoCoAlert** **Completed/Called** **(Success Rate) **** **Nixle® Alert** **Type and Message**	**Target Area Map**
S	1023	Santa Rosa EOC	23/1100 (2%)	
N	1042	Sonoma Co Sheriff's Office	Email: 20515 SMS: 82539 Advisory: How to stay safe during the fires	
S	1046	Santa Rosa EOC	1757/4318 (41%)	
S	1055		65/2561 (3%)	
N	1136	Sonoma Co Sheriff's Office	Email: 21129 SMS: 91300 Advisory: Evacuation update	

Nixle®= N SoCoAlert= S	Time	Sender	**SoCoAlert** **Completed/Called** **(Success Rate) **** **Nixle® Alert** **Type and Message**	**Target Area Map**
S	1305	Sheriff's Dispatch	17/25 (68%)	
N	1336	Sonoma Co Sheriff's Office	Email: 21803 SMS: 104528 Advisory: Resources for evacuees	
S	1356	Sonoma Co EOC	97/124 (25%)	
S	1431	Sheriff's Dispatch	10/14 (71%)	
S	1435	Sonoma Co EOC	1 / 4 (25%)	
S	1637	Sonoma Co EOC	78/343 (23%)	

Nixle®= N SoCoAlert= S	Time	Sender	**SoCoAlert** **Completed/Called** **(Success Rate) **** **Nixle® Alert** **Type and Message**	**Target Area Map**
N	1639	Sonoma Co Sheriff's Office	Email: 22690 SMS: 118065 Advisory: Seven confirmed fatalities form Sonoma County fires	
S	1643	Sonoma Co EOC	3/265 (1%)	
S	1738	Sonoma Co EOC	77/343 (22%)	
S	1803	Sonoma Co EOC	129/422 (31%)	
S	1810	Sonoma Co EOC	8/293 (3%)	

Nixle®= N SoCoAlert= S	Time	Sender	**SoCoAlert** **Completed/Called** **(Success Rate) **** **Nixle® Alert** **Type and Message**	**Target Area Map**
N	2009	Sonoma Co Sheriff's Office	Email: 23337 SMS: 127808 Advisory: Unlawful entry into evacuation zones.	
S	2027	Sonoma Co EOC	15/337 (4%)	
S	2303	Santa Rosa EOC	1712/4210 (41%)	
S	2305	Santa Rosa EOC	1803/4789 (38%)	

Nixle®= N SoCoAlert= S	Time	Sender	**SoCoAlert** **Completed/Called** **(Success Rate) **** **Nixle® Alert** **Type and Message**	**Target Area Map**
S	2311	Santa Rosa EOC	45/2498 (2%)	
S	2314	Santa Rosa EOC	42/2986 (1%)	

*SoCoAlert operated in parallel with the Nixle® system used by various law enforcement agencies.

**The variability in calling success rates is common to this sort of system. A number of causes for call failures are possible: household already evacuated, cellular telephone turned off, number not reachable due to network congestion or damage to infrastructure, call went to answering machine, etc.

Attachment E – Request from Sonoma County

OFFICE OF THE COUNTY ADMINISTRATOR

COUNTY OF SONOMA
575 ADMINISTRATION DRIVE – ROOM 104A
SANTA ROSA, CALIFORNIA 95403-2888
TELEPHONE (707) 565-2431
FAX (707) 565-3778

SHERYL BRATTON
CHRISTINA RIVERA
PETER RUMLEY
REBECCA WACHSBERG

November 27, 2017

VIA E-MAIL ONLY
mark.ghilarducci@CalOES.ca.gov

Mark S. Ghilarducci, Director
Governor's Office of Emergency Services
3650 Schriever Ave.
Mather, CA 95655

Dear Director Ghilarducci,

I am interested in having an independent review of the County of Sonoma's emergency notification process and response to the recent fires and wanted to find out if CalOES could provide such an assessment. The County is committed to obtaining a complete and independent written assessment so that we can learn from this event in order to improve our emergency operational response in the future. If you are able to provide qualified personnel to conduct the assessment, I would like to have the review start as soon as possible. My goal is to have the assessment completed before the end of the calendar year.

I look forward to hearing from you.

Very truly yours,

Sheryl Bratton
County Administrator

SB/lh