



Operation Know Your Zone

#KnowYourZoneMendo

2021 Mendocino County Operational Area Public Alert & Warning Exercise

After Action Report

7 June 2021



EXERCISE OVERVIEW

Exercise Name	Operation Know Your Zone (#KnowYourZoneMendo)
Exercise Dates	Nixle/WEA – Primary: Wednesday, May 26, 2021 (12:00 pm) Nixle/WEA – Alternate: Wednesday, June 2, 2021 (12:00 pm)
Scope	This is a Full Scale Exercise (FSE) was conducted 26 May 2021 in the Mendocino County Operational Area. This FSE tested updated Mass Notification policies, procedures, and equipment (evacuation zone map solution and website stability) during a live test utilizing Wireless Emergency Alert (WEA) messaging.
Mission Area(s)	Planning, Preparation, Public Education
Core Capabilities	Planning Public Information & Warning
Objectives	<ul style="list-style-type: none"> • Test mass notification procedures and policies directly related to evacuation map editing and public messaging activations. • Enhance public awareness and understanding of Wireless Emergency Alerts (WEA), online digital resources, and preplanned evacuation zones throughout the Operational Area. • Test newly developed website scalability and functionality prior to 2021 fire season.
Threat or Hazard	All Hazards
Scenario	No scenario required.
Sponsor	Mendocino County Office of Emergency Services (OES) 951 Low Gap Rd, Ukiah CA 95482
Points of Contact	<p>Brentt L. Blaser Emergency Services Coordinator oes@mendocinocounty.org</p> <p>CPT Gregory VanPatten Sheriff- Coroner/Public Information Officer vanpatg@mendocinocounty.org</p>

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GENERAL INFORMATION

Exercise Summary

Mendocino County Office of Emergency Services (OES) completed its first live test of the Wireless Emergency Alert (WEA) system May 26, 2021 at 12:00 pm. This was a Full Scale Exercise (FSE), which began with staff drills the week prior and finished with a live test of the Integrated Public Alert Warning System (IPAWS) on May 26, 2021. While previous drills focused on internal policies and procedure updates, Mendocino County's live test was executed with only the Wireless Emergency Alert System. Opt-in Systems, along with social media and traditional media advertising, were utilized to warn the public of the pending test as part of a comprehensive advertising campaign. The live test encompassed the entire county. Strategically, the intent of this exercise was to ensure the organizations alert & warning readiness and the community's preparedness prior to the 2021 wildfire season.

The scope of this exercise was to validate compliance with state and federal alert and warning guidance's and assess assorted alert and warning tools and their effectiveness within the county. Additionally, The Mendocino County Sheriff's Office and Office of Emergency Services (OES) released newly developed online resources and conducted public education reference newly developed pre-established evacuation zones.

Background

Over the past few years, Northern California has been ravaged by multiple large wildfires devastating Mendocino County. In 2020 alone the Mendocino County Operational Area was impacted by two federally declared fires. One of which, The August Complex Fire, was the largest fire in California's history. The fire impacted 6 counties and threaten thousands of rural residents in areas where residents have limited communication resources. Additionally Pacific Gas & Electric, the primary electrical power utility company throughout Mendocino County, has initiated the Public Safety Power Shutoff (PSPS) Program in order to mitigate future complex wildfires during times of extreme fire weather. Since its 2018 inception, Mendocino County has experienced multiple PSPS events each season. Planned power outages have lasted more than seven (7) days and left communities and alerting authorities with degraded communication capabilities during times of extreme fire potential.

The purpose of conducting this live test is to ensure that alerting authorities in Mendocino County validate new alert protocols and equipment and to enhance public education prior to the 2021 fire season.

Methodology

Mendocino County OES used descriptive research design methodology to conduct this test. Multiple research techniques were used to support the results and findings found within this report. Quantitative and qualitative information was extracted from surveys, social media sites, webpages, mass notification systems, and community engagement.

Several obstacles materialized during the development and assessment of this exercise. Primarily weather conditions expedited the onset of the 2021 fire season. Also, various COVID-19 response efforts created assorted staffing shortfalls and competing Operational Area demands.

Variables tested throughout the exercise included human error, web hosting limitation, and message saturation/delivery.

The exercise was conducted in three phases:

Phase	Description
1	Planning and coordinating the alert and warning exercise.
2	Execution phase: A live WEA message sent to the entire Operational Area on May 26, 2021 at 12:00 pm. The live test WEA message read: <i>Test message Mendocino County. Go to MendoReady.org for more info. No other action needed.</i> This message was compliant with current IPAWS standards. Additional messaging was developed within the 360 character limitations and translated to Spanish.
3	Evaluation and improvement phase: commenced May 26, 2021 at 1 pm PST. It concludes following the June 9, 2021 After Action Meeting.

Exercise Objectives and Core Capabilities

The table below lists the exercise objectives and core capabilities. Exercise objectives outline the key components that Mendocino County OES evaluated for strengths, weaknesses, opportunities, trends, and threats. The objectives and aligned core capabilities identified by the Department of Homeland Security have been developed by drawing on previous exercise results, incorporating input by elected and appointed officials, the Mendocino County Alert & Warning Subcommittee, and the Exercise Planning Team.

Exercise Objective	Core Capability
Test mass notification procedures and policies directly related to evacuation map editing and public messaging activations.	Planning
Enhance public awareness and understanding of Wireless Emergency Alerts (WEA), online digital resources, and preplanned evacuation zones throughout the Operational Area.	Preparedness
Test newly developed website scalability and functionality prior to 2021 fire season.	Public Information & Warning

Table 1. Exercise Objectives and Associated Core Capabilities

PUBLIC INFORMATION

The Mendocino County Sheriff's Office and Mendocino County Office of Emergency Services initiated a comprehensive communication outreach campaign leading into the live WEA test in order to keep local partners informed and the public aware. This campaign focused on social media post and radio broadcast of exercise information. The communication outreach campaign was executed in accordance with the Exercise Plan..

The exercise team created a Frequently Asked Questions document (Appendix H), press releases, social media post templates, and a public communications plan.

The County's Public Information Hotline was not activated. Media inquiries were directed to OES and the Sheriff PIO. General public inquiries were directed to County OES.

Live code test information was published on the Sheriff's social media sites and website. The site also hosted information about WEA and the Frequently Asked Questions (FAQs). The website information was updated throughout the test. The Public Survey was posted via social media following the exercise execution and available in English and Spanish.

EXERCISE EXECUTION/RESULTS

Public Information

Mendocino County dispatch experience a mild increase in call volume after the live test. None of the neighboring jurisdiction PSAPs reported experiencing an increase in call volume. Mendocino County OES received eight (8) phone inquiries, eleven (11) email inquiries, and one (1) letter from the public following the live test.

The following themes were identified within the inquiries:

- Received warning of the test (Nixle), but not the test message (WEA) at 12:00 pm
- Did not receive the test message (WEA)
- How do I register for MendoReady.org
- Could not identify their evacuation zone from their mobile device
- Did not have a mobile device in order to receive the WEA message

The Mendocino County Sheriff Public Information Officer advertised the pending exercise on Facebook and Twitter leading into the exercise. The frequency of the posts and corresponding analytics for each post can be found in table 1.

Table 1: Facebook and Twitter Advertising Analytics

Date	Facebook				Twitter	
	Reach	Engagement	Reactions		Impressions	Engagements
May 17	22,100	4,200	622		1,679	38
May 19	6,000	92	61		3,708	162
May 21	13,000	373	107		5,566	85
May 23	6,100	92	39		3,081	133
May 25	11,200	442	192		3,748	154
May 26	5,200	164	30		1,116	26
May 26	8,700	668	121		1,947	102
May 26	14,100	1,900	540		3,102	319

A Nixle advisory message was sent prior to the execution of the exercise at 8:30 am.

Overall opt-in registration increased by a total of 226 registrations between May 17, 2021 and June 6, 2021.

The communication outreach campaign was determined to be successful based on the limited number of public inquires, the responses indicated within the inquires, the level of social media public engagement, and the volume of survey responses.

Strengths

- The communications outreach campaign was effective in reaching diverse populations throughout Mendocino County.
- Operational Area partners successfully collaborated in order to disseminate communication outreach campaign messaging.

Lessons Learned

- Regular updates to social media content will increase online engagement and the effectiveness of mass notification messaging during actual emergencies.
- Legacy Nixle subscriptions generate a text message with Advisory and Community messaging.
- Everbridge application does not have the ability to attach WAVE files to Emergency Alert System (EAS) messaging.¹
- EAS message volume is controlled by broadcasters and cannot be impacted by OES message originators.
- Additional rumor control and various FAQ efforts will mitigate misinformation and enhance public education.

¹ Lessons learned reference EAS were outside the scope of this exercise, however the findings are worth noting for future improvement planning efforts.

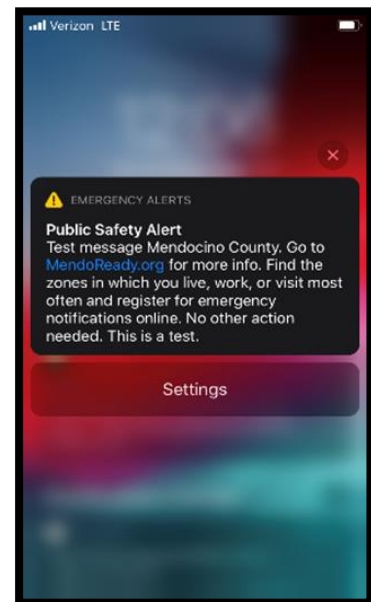
Live Code Test

On May 26, 2021 Mendocino County was targeted for a live mass notification test. The test area consisted of the entire county utilizing the county's Federal Information Processing Standard code rather than a map shape. Only the Wireless Emergency Alert system was activated. WEA 90 character messages (English and Spanish) and WEA 360 character messages (English and Spanish) were distributed. WEA messages were set to expire within 60 minutes of origination. Online resource information was integrated into the messaging content (MendoReady.org). The intent was to determine the overall effectiveness of WEA message reception within Mendocino County and to integrate online resource information into message content for increased public awareness. WEA messaging encouraged recipients to visit MendoReady.org in order to learn more about newly developed pre-established evacuation zones and other online resources.

Overall, system activators were able to successfully input and send Nixle messaging and WEA messaging in accordance with established protocols. Message formatting remained stable during delivery and response personnel were able to update various aspects of the interactive evacuation map. Online resources reflected the operational changes in near real time.

Following the test public survey was circulated via social media (Appendix F). 411 survey responses were submitted. 59.5% of the respondents indicated that they received the WEA notification. 44.5% of people who received the WEA message were able to find their Evacuation Zone on MendoReady.org. 24% of people who did not receive a WEA message were still able to visit the website and find their evacuation zone.

The live code test was considered to be a success based on the accuracy of the department protocols and processes, federal acknowledgement of the message distribution, and various reports of message reception throughout various communities. Digital map functions, albeit limited compared to ESRI GIS products, functioned as designed.



Strengths

- Message origination instructions were accurate and facilitated timely messaging for both Nixle and WEA messaging.
- The hyperlink MendoReady.org remained stable without the use of https or www preceding the text.
- Monthly testing protocols align with current alert & warning application capabilities.

Lessons Learned

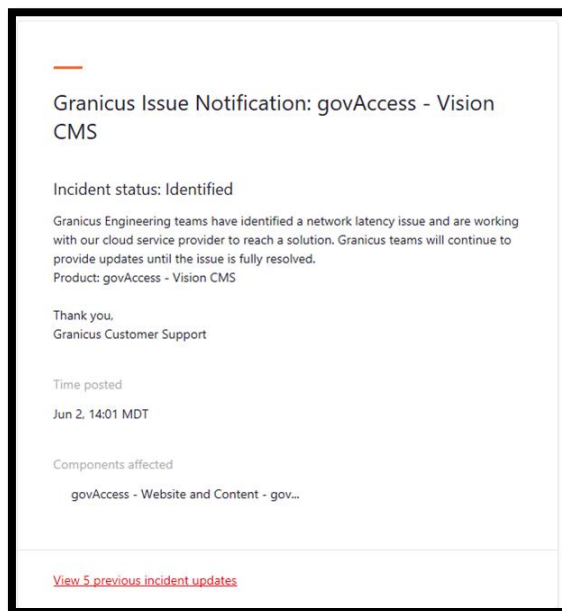
- Some participants struggled to utilize the KnowYourZoneMendo Google Map product from their mobile device depending on the make and model of their handset and/or the navigation application being used on the mobile device.
- Customized ESRI GIS services/products would expedite map updates, be easier to use for message originators, and remain stable across assorted mobile devices.²
- Although some residence did receive the WEA message, it disappeared quickly and participants had difficulty finding MendoReady.org online.

Web Service Analysis

MendoReady.org was hosted on a single Vultr cloud server (physically located in Houston, Texas) with 6 CPU cores, 16 GB of RAM and 320 GB of storage. The vendor tuned the instance heavily prior to live testing in order to mirror typical county web capabilities³. Due to tight timelines and miscommunications external CDN / WAF (web application firewall) / traffic direction layer were not implemented. Once the test started the system ran into a limit with its kernel buffer settings. This prevented it from handling all the incoming traffic for 3 minutes. The vender support team identified the specific issue and adjusted/applied appropriate values. Some visitors would have seen timeout errors during this time, and others no issue at all. Once this new value was applied the server handled all traffic going to it with minimal load, not breaking more than 15% CPU utilization.

The New Website generated 8,241 page views, despite 3 minutes of limited performance. Visitors from Ukiah, San Francisco, Roseville, Fort Bragg, Willits, Medford, San Jose, Santa Rosa, Lakeport, and Windsor viewed the site during the live test. 91.9% of site visitors utilized a mobile device. The Website was viewed in 10 different languages.

On June 2, 2021, one week after MendoReady.org was launched, the Mendocino County website crashed. Web services were unavailable the entire day. No disaster was evident and county staff were available to respond to the service interruption, unlike during emergencies that take place outside normal business hours. MendoReady.org maintained a working status and was fully functional during this time.



Map supported over 1 million views during the 2020 August/Oak Fires within 10 days.

² GIS services had been identified as a resource limitation during assorted response efforts and during the production of these online services. GIS support would be needed for any additional planning or product enhancements.

³ Planning team member's believed the county infrastructure could withstand increased traffic demands following WEA messaging and could host various embedded content currently found of MendoReady.org.

Strengths

- New website meets several Access and Functional Needs (AFN) requirements previously unachievable with the county's web content management system.
- Dynamic content such as interactive maps, Twitter feeds, and Nixle feeds can be supported with the new website, but not with the county's organic content management network
- Utilizing a secondary web host provides additional cyber-security (redundant or alternate) during times in which county resources become unavailable.
- New online resource provide residents with hazard identification tools and emergency preparedness planning tools specific to Mendocino County.

Lessons Learned

- MendoReady.org should require 24/7 day a week tech support that will be there and be ready to restore this website to get the critical emergency information out to the community.
- Redundant out of county servers (hosting) should be selected in order to maintain serves during large local disasters such as wildfires and/or earthquakes.
- Some residence had trouble finding the maps and searching for their address based on their device, map applications, and browser.

CONCLUSION

This exercise successfully met all of the objectives outlined above and identified areas of improvement for alerting partners and online resources. Most notability, this exercise identifies the need for additional and ongoing education and training for alerting authorities, response partners, and the public. These essential needs are a result of maturing state and federal alert and warning guidelines and ever-evolving technological advances.

Planning and executing this exercise highlighted the many interagency dependencies needed to disseminate effective alter and warning messaging. It also highlighted assorted limitations of the alerting tools tested. Response partners acknowledge the need to collaborate while developing messages, leverage common alerting applications, and to utilize multiple alerting tools to ensure alerts penetrate various remote areas of the county and diverse portions of the population.

Once again public feedback proved to be invaluable to local alerting authorities and emergency response partners. Additionally, the information provided insight pertaining to our community's preparedness efforts and needs.

Unfortunately there are still significant system limitations, which our residents and alerting authorities need to be aware of. Local alerting authorities rely heavily on private communication utility companies, various commercial alerting software applications, and external response partners to activate Electronic Notification Systems (Nixle/Everbridge), WEA, EAS, and NOAA Weather Radio communication system. Mendocino County Sheriff's Office and the Office of Emergency Services are committed to exceptional service, however this test demonstrates the

need for a multifaceted approach to alert and warning systems. By adding enhanced web resources (MendoReady.org) and preplanned evacuation zones we've closed assorted communication gaps empowered the population so they can make informed decisions reference their personal safety and the safety of their families.

Appendix A: Analysis of Core Capabilities

Aligning exercise objectives and core capabilities provides a consistent taxonomy for evaluation that transcends individual exercises to support preparedness reporting and trend analysis. Table 2 includes the exercise objectives, aligned core capabilities, and performance ratings for each core capability as observed during the exercise and determined by the evaluation team.

Table 2: Summary of Core Capability Performance

Objective	Core Capability	Performed without Challenges (P)	Performed with Some Challenges (S)	Performed with Major Challenges (M)	Unable to be Performed (U)
Test mass notification procedures and policies directly related to evacuation map editing and public messaging activations.	Planning	(P)			
Enhance public awareness and understanding of Wireless Emergency Alerts (WEA), online digital resources, and preplanned evacuation zones throughout the Operational Area.	Preparedness	(P)			
Test newly developed website scalability and functionality prior to 2021 fire season.	Public Information & Warning			(M)	

Ratings Definitions:

Performed without Challenges (P): The targets and critical tasks associated with the core capability were completed in a manner that achieved the objective(s) and did not negatively impact the performance of other activities. Performance of this activity did not contribute to additional health and/or safety risks for the public or for emergency workers, and it was conducted in accordance with applicable plans, policies, procedures, regulations, and laws.

Performed with Some Challenges (S): The targets and critical tasks associated with the core capability were completed in a manner that achieved the objective(s) and did not negatively impact the performance of other activities. Performance of this activity did not contribute to additional health and/or safety risks for the public or for emergency workers, and it was conducted in accordance with applicable plans, policies, procedures, regulations, and laws. However, opportunities to enhance effectiveness and/or efficiency were identified.

Performed with Major Challenges (M): The targets and critical tasks associated with the core capability were completed in a manner that achieved the objective(s), but some or all of the following were observed: demonstrated performance had a negative impact on the performance of other activities; contributed to additional health and/or safety risks for the public or for emergency workers; and/or was not conducted in accordance with applicable plans, policies, procedures, regulations, and laws.

Unable to be Performed (U): The targets and critical tasks associated with the core capability were not performed in a manner that achieved the objective(s).

The following sections provide an overview of the performance related to each exercise objective and associated core capability, highlighting strengths and areas for improvement.

Appendix B: Improvement Plan

[The improvement plan is currently being developed. It is anticipated to be completed mid July 2021.]

Appendix C: Exercise Schedule

[This exercise was conducted in accordance with the exercise schedule found within the final exercise plan.]

Appendix D: Exercise Participants

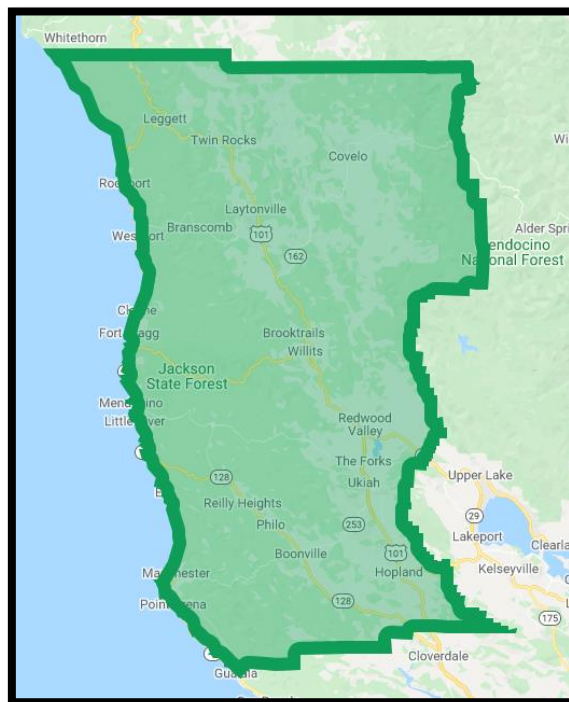
Participating Organizations
Federal Partners
Federal Communication Commission (FCC)
Department of Homeland Security – FEMA IPAWS Lab
State Partners
California Office of Emergency Services (CalOES)
County Departments
Mendocino County Executive Office
Mendocino County Sheriff’s Office
Mendocino County Office of Emergency Services
Mendocino County Office of Education
Local Partners
City of Ukiah
City of Fort Bragg
City of Willits
City of Point Arena

Appendix E: Maps

Control Group within Target Area	Total
Addresses	All Mendocino county addresses
Target Area Description (AFN/ADA - webcontent)	
This picture is a map of Mendocino County. The image identifies the test area. The test area encompasses 3,878 square miles of incorporated and unincorporated lands within Mendocino County. The test area encompasses all county zip codes. It is estimated that here are 87,000 residence registered within the target area.	

Figure D.2: May 26, 2021 – (Scenario)


Test Area – Map



Appendix F: Public Surveys

Public Survey: English

Mendocino County Sheriff's
Office of Emergency Services



Mendocino County Alert and Warning Exercise

This survey has been developed in order to objectively evaluate the 2021 countywide alert and warning exercise (#KnowYourZoneMendo).

Please take a moment to answer the 7 questions below.

All submissions are confidential

* Required

Did you receive a Wireless Emergency Alert Test between 12 pm and 1 pm on Wednesday, May 26, 2021? *

☐ Yes
☐ No

Were you physically in Mendocino County between 12 pm and 1 pm on Wednesday May 26, 2021? *

☐ Yes
☐ No

Are you a resident of Mendocino County? *

☐ Yes
☐ No

Are you more aware of Wireless Emergency Alerts as a result of this exercise? *

☐ Yes
☐ No

Are you more aware of the evacuation zones established throughout Mendocino County as a result of this exercise? *

☐ Yes
☐ No

Have you made preparations for emergency situations? *


☐ Yes
☐ No

Could you find your evacuation zone? *

☐ Yes
☐ No

Public Survey: Spanish

**Mendocino County Sheriff's
Office of Emergency Services**



Alerta y ejercicio de advertencia del condado de Mendocino

Esta encuesta ha sido desarrollada con el fin de evaluar objetivamente el ejercicio de alerta y advertencia del condado de 2021 (#KnowYourZoneMendo).

Por favor, tómese un momento para responder a las 7 preguntas a continuación.

Todas las presentaciones son confidenciales

*** Required**

¿Recibió una prueba de alerta de emergencia inalámbrica entre las 12 pm y la 1 pm del miércoles 26 de mayo de 2021? *

☐ Sí

☐ No

¿Estaba físicamente en el condado de Mendocino entre las 12 pm y la 1 pm del miércoles 26 de mayo de 2021? *

☐ Sí

☐ No

¿Eres residente del condado de Mendocino? *

☐ Sí

☐ No

¿Está más al tanto de las alertas de emergencia inalámbricas como resultado de este ejercicio? *

☐ Sí

☐ No

¿Es usted más consciente de las zonas de evacuación establecidas en todo el condado de Mendocino como resultado de este ejercicio? *

☐ Sí

☐ No

¿Ha hecho preparativos de emergencia para situaciones de emergencia? *

☐ Sí

☐ No

¿Podría encontrar su zona de evacuación? *

☐ Sí

☐ No

Appendix G: IPAWS / CAP Channels

Delivery Details
CAP Channels
Settings

IPAWS Information: WEA

Mode: Live

Publishing Status: WEA 600 - Message successfully sent to WEA

IPAWS Polygon(s): 0/0

CAP Fields

Message Status : Actual

Message Type : Alert

Source : Mendocino County Sheriff's Office OES

Scope : Public

Restriction : none

Addresses :

Message Category : Safety

Event Name : Local Area Emergency

Event Type : LAE

WEA Handling : Public Safety

Urgency : Immediate

Severity : Extreme

Certainty : Observed

Expires : 1 hour(s)

Sender Agency Name : MENDOCINO COUNTY SHERIFF

Headline : Test message Mendocino County. Go to MendoReady.org for more info. No other action needed.

Instruction :

Web Link :

Web Link :

U.S. Time Zones : Pacific Time Zone

Area Description : Mendocino County

Affected Areas : 006045

WEA - English 90 : Test message Mendocino County. Go to MendoReady.org for more info. No other action needed.

WEA - English 360 : Test message Mendocino County. Go to MendoReady.org for more info. Find the zones in which you live, work, or visit most often and register for emergency notifications online. No other action n...

WEA - Spanish 90 : Mensaje de prueba del condado de Mendocino. Vaya a MendoReady.org para obtener mas informa

WEA - Spanish 360 : Mensaje de prueba del condado de Mendocino. Vaya a MendoReady.org para obtener mas informacion. Encuentre las zonas en las que vive, trabaja o visita con mas frecuencia y regístrese para r...

Print

Verizon LTE

EMERGENCY ALERTS

Public Safety Alert
Test message Mendocino County. Go to [MendoReady.org](https://mendorady.org) for more info. Find the zones in which you live, work, or visit most often and register for emergency notifications online. No other action needed. This is a test.

Settings

Appendix H: Frequently Asked Questions

Primary source for information:

- FCC website: <https://www.fcc.gov/consumers/guides/wireless-emergency-alerts-wea>
- FEMA website: <https://www.fema.gov/frequently-asked-questions-wireless-emergency-alerts>

FAQ (English)

What is the WEA message?

Wireless Emergency Alerts (WEA) are emergency messages sent by authorized government alerting authorities through your mobile carrier.

What is the difference between WEA and Nixle?

Nixle is an “opt-in” system, meaning that users sign up to receive text messages. WEA is a national emergency alert system and does not require registration. This means that a message will be sent to any compatible cell phone in the service area that is in range of an active cell phone tower.

Mendocino County has the ability to link WEA messages to the Nixle system. As a result, Nixle subscribers may receive the message twice.

Will the WEA text message be bilingual?

Currently, the WEA system allows messages to be sent in English and Spanish, however the service is limited by the make and model of your personal cell phone. Mendocino County will send the WEA message in English and Spanish. Additionally, MendoReady.org has translation feature in order to assist with various translation needs.

What will the message say?

The WEA message sent in English will say, *“Test message Mendocino County. Go to [MendoReady.org](https://mendo-ready.org) for more info. No other action needed.”*

What if I don’t receive the WEA message?

This is a county wide test, however some portions of Mendocino County have poor cell reception. Additionally you might be out of county during the test, so not everyone will receive the test message. If you feel you should have received the test message, then please go to Sheriff’s Social media sites and complete the survey that’s been posted.

In addition, some cellular phones allow emergency alerts to be turned off in the phone’s settings. Please check your phone’s settings or contact your service provider for additional information.

Do I need to respond to the WEA message?

We encourage taking a moment to explore the MendoReady.org website and to become familiar with your evacuation zone. There is also a survey to assist with improving our service to the public, emergency responses, and emergency planning efforts.

If you do not receive the WEA message, then we encourage you to identify your evacuation zone name and description by going to MendoReady.org. Once there, click on “KnowYourZoneMendo” or the interactive map and identify your home, place of work, or areas you visit most often.

Otherwise, no other response is necessary.

What if I don’t have a mobile phone?

While WEA alerts require the use of a mobile device (including some prepaid phones), during actual emergencies officials send notifications through other sources such as home phones, emails, mobile apps, NOAA Weather Radio, news broadcasts and the Emergency Alert System on radio and TV.

Media inquiries can be directed to oes@mendocinocounty.org

Appendix I: Acronyms

Acronym	Term
AAM	After Action Meeting
AAR	After Action Review
EAS	Emergency Alert System
HSEEP	Homeland Security Exercise and Evaluation Program
IPAWS	Integrated Public Alert and Warning System
NOAA	National Oceanic and Atmospheric Administration
OA	Operational Area
OES	Office of Emergency Services
WEA	Wireless Emergency Alert