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Bay Area Urban Areas Security Initiative (UASI)
Public Information & Warning Workgroup

MASS NOTIFICATION SEMINAR

SUMMARY REPORT

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OVERVIEW

Name	**Bay Area Urban Areas Security Initiative Mass Notification Seminar**
Date	Wednesday and Thursday, March 14 & 15, 2018
Scope	The scope of the seminar included the examination of best practices, lessons learned, and challenges in using mass notification and emergency alerts during emergency incidents.
Mission Areas	Prevention, Protection, Mitigation, Response, Recovery
Core Capability	Public Information and Warning
Purpose	The purpose of the seminar was to share lessons learned, best practices, and improve regional coordination for mass notification and emergency alerts before, during, and after emergency incidents.
Objectives	• Share mass notification experiences from recent disasters, including Bay Area emergencies. • Gain a deeper understanding of Bay Area communications infrastructure and capabilities related to mass notification. • Identify best practices for designing effective alert messages that reach broad audiences with diverse communications needs.
Threat or Hazard	All-hazards
Sponsor	Bay Area UASI
Participants	The full list of participants can be found in ***Appendix A***.
Points of Contact	Corey Reynolds, PMP Regional Project Manager Bay Area Urban Areas Security Initiative Email: Corey.Reynolds@sfgov.org Office: 415-353-5231 Scott MacKay General Manager Constant Associates Office: (424) 320-2587 Email: scott@constantassociates.com

EXECUTIVE SUMMARY

The Bay Area Urban Areas Security Initiative (UASI) Public Information and Warning Work Group's Mass Notification Seminar was designed as a platform for mass notification system operators, PIOs, and emergency managers to share best practices and lessons learned in mass notification emergency alerting, particularly those that emerged from experiences in recent disasters across California.

Key topics areas included:

- Mass notification communications infrastructure
- Organizational processes and structures
- Techniques for designing effective emergency alert messages
- Reaching the whole community
- Regional coordination for emergency messaging

High-level takeaways identified:

- Coordination is an essential component of effective mass notification/emergency alerting. Alert and warning agencies must coordinate with all relevant sectors (fire, law, public health, PIOs, etc.), as well as neighboring jurisdictions and all levels of government, to ensure that the information they disseminate is clear and consistent and does not contradict the information sent by partners. Coordination is best accomplished by establishing strong relationships and clear lines of communication with partners during steady state times, and by keeping partners informed of decisions to send alert messages during emergencies.
- There are many different emergencies alerting mechanisms, ranging in their purpose, method of delivery, and functionality. As a general best practice, emergency alert messages should be delivered through all available messaging platforms to ensure maximum reach.
- Alert and warning agencies should understand the importance of marketing, branding, and public education surrounding their messaging systems. The public needs to be constantly reminded and re-educated about how messaging systems work, the availability of opt-in alerts, what types of messages to expect during emergencies, and the importance of heeding emergency warnings from the government. Quality branding and public education will increase the effectiveness of alerting systems as well as the total number of individuals registered to receive alerts.
- Alert and warning agencies should conduct frequent exercising and training of their warning systems to verify their functionality and to improve messaging procedures during real-world emergencies.
- Emergency alert messages should be rooted in evidence-based social science research. Alert and warning agencies should be aware of message design best practices, such as effective usage of graphics, proper order of information, appropriate length and timing of messages, personalization methods, and other research-backed strategies.
- As is true in all aspects of emergency preparedness planning, the unique needs and perspectives of individuals with Access and Functional Needs (AFN) should be considered when planning for and sending emergency alert notifications.

Recommended next steps:

- The Public Information and Warning Work Group hosts quarterly meetings for the region to provide updates and information on emergency public notification. The Work Group should continue to host these meetings to ensure there are ongoing opportunities for improving coordination amongst regional partners. A suggested format for these meetings is a one-hour webinar that teaches participants about recent case studies, legislative updates, successful examples of trainings and exercises, etc.
- During the conduct of the next regional exercise, testing public notification should be a priority and the UASI should consider conducting a test of the Wireless Emergency Alerts (WEA) and Emergency Alert System (EAS) during exercise play. Exercise participants would be able to report their location and time they received the WEA or EAS alert to begin evaluating the potential throughput and effectiveness of this system.
- The UASI should consider sending recommendations to the California Office of Emergency Services (Cal OES) and their local elected official regarding pending legislation related to mass notification.
- Jurisdictions should establish a monthly schedule and written process for testing and exercising their alert systems. This should not only be a test of the technical system but the process of requesting, creating, approving, and sending messages.
- The Public Information and Warning Work Group should continue to work with the Bay Area Joint Information System (JIS) to provide messaging templates, resources, and other mass notification material to jurisdictions.
- Building upon the success of this seminar the UASI should consider hosting another Mass Notification Seminar in the year 2019.

The development of this seminar was carefully guided by the Bay Area UASI and the Public Information and Warning Work Group. The Work Group meets on a quarterly basis to address issues such as those discussed at the seminar. Pertinent resources, to include several of the resources discussed at the seminar, are available via the following Google drive links:

Day 1 Materials: https://drive.google.com/open?id=1QdPLG9-SJBYMZnYxXCQZ1XaNjW0jVv3_
Day 2 Materials: https://drive.google.com/open?id=1fp5UlGMQJTzcDatmx7qVDwEIXhShx5mz

The materials are part of shared resources and tools maintained by the JIS, for access to the JIS virtual coordination platforms, including the shared folder on Google Drive, email bayareajis@gmail.com.

Support for this seminar was provided by:

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DAY ONE SUMMARY

Welcome and Opening Remarks

Corey Reynolds, Bay Area UASI Program Manager, gave opening remarks. Corey outlined the purpose and scope of the Mass Notification Seminar and provided an overview of the seminar agenda. Corey also thanked the Seminar Planning Committee, the City of Campbell, the Campbell Police Department, and the Orchard City Banquet Hall for their partnership in hosting the inaugural Mass Notification Seminar.

IPAWS Overview

Panelists for this session:

- Wade Witmer, Deputy Director of IPAWS – Department of Homeland Security (DHS)
- Brian Garcia, Warning Coordination Meteorologist – National Weather Service Bay Area
- Gregory M. Cooke, Deputy Chief, Policy & Licensing Division – Public Safety & Homeland Security Bureau, Federal Communications Commission (FCC) *via conference call.*

Mr. Wade Witmer provided a high-level overview of the Integrated Public Alert & Warning System (IPAWS) system. He summarized that IPAWS is a national system for local alerting that delivers targeted emergency alert and warning messages to the public by means of Emergency Alert System (EAS) broadcasts (via radio and television), by Wireless Emergency Alerts (WEA), NOAA Weather Radio, and other public alerting systems from a single interface. The panelists then discussed IPAWS/WEA capabilities and limitations, national-local coordination practices, and upcoming changes to the IPAWS system.

Best Practices & Lessons Learned

- A major advantage of WEA is that it does not require the public to opt-in to the system. Instead, WEA messages are automatically pushed through cellphones in an interruptive and attention-grabbing manner, ensuring that in an emergency, more members of the public will receive messages even if they have not elected to “opted-in” to a particular system.
- Unlike WEA, if a person is not actively watching television or listening to the radio when an EAS message is broadcast, he or she may not see or hear the message in a timely manner.
- Use of the WEA system is limited by the placement of cell towers. If there is no cell tower in the designated geographic area, generally the WEA message will not be received by recipients in the target area.
- Use of the EAS requires coordination and partnership with local broadcast stations since stations are not required to send local emergency messages. Stations are only obligated to issue alerts messages about national emergencies from the President of the United States. How stations will deploy that message and what they will broadcast is important for local jurisdictions to understand.
- WEA character limits will increase from 90 characters to 365 characters by May 1, 2019. All participating wireless carriers must support this change by that deadline. This deadline may be extended. Because it will take time (possibly several years) for the technology upgrades to become ubiquitous, WEA may need to support both the 90-character and the 360-character limit at the same time to accommodate all users.
- There is no ability to send messages in specific languages to individuals using WEA.
- There is no method for determining if a WEA message was successfully delivered.

Recommendations & Next Steps

- The Bay Area may want to consider a live WEA and EAS test in its region to test its capability of reaching 8 million people via emergency alerts. This could be done in conjunction with the Urban Shield/Yellow Command exercise.
- Local emergency managers need to coordinate and partner with EAS participants in advance to ensure they have a working relationship and process established for sending alerts.
- Local emergency managers can learn who is designated as your Primary Entry Point Station for EAS in the State of California Emergency Alert System Plan.
- Given the limited amount of information that can be sent using WEA it should be used more as a "bell ringer" that drives individuals to seek out additional information via news media or a website.

Key Takeaways

- Redundancy in emergency alerting is important; messages should be sent via more than one platform whenever possible to maximize reach.
- The ability to geo-target with WEA is limited and you can expect the message to bleed into other areas.
- Sending a WEA message is a high consequence, low frequency event that has irreversible implications and if not done properly can lead to additional problems - "You can't unwring the bell."
- If a single individual is charged with sending a WEA alert they are less likely to do so given the sole burden of any negative consequences. If a WEA alert is reviewed and approved by a small group, they are more likely to be sent due to the shared burden.

WEA Coordination During Recent Disasters

Panelists for this session:

- Woody Baker-Cohn, Emergency Services Coordinator, Marin County Sheriff's Office
- Thomas Chin, Emergency Services Coordinator, San Francisco Department of Emergency Management
- Jody Smith, IT Specialist, IPAWS Engineering, DHS
- Justin Cain, Deputy Chief, Operations and Emergency Management Division, Public Safety and Homeland Security Bureau, FCC *via conference call*.

In this session, participants heard from mass notification administrators who have used WEA to alert the public during recent disasters. The panelists recapped their individual experiences with the system and addressed the complexity, benefits, and difficulties of using the WEA system to send emergency alerts. The panelists then answered questions from the moderator and from audience members, with some participants sharing their own experiences and lessons learned relating to WEA. Additionally, Jody Smith provided a presentation outlining best practices from across the country for coordination of alerts across jurisdictions.

Best Practices & Lessons Learned

- When designing WEA alerts during disasters, alert originators need to be clear and succinct in developing their messages and should consider the following questions:
    - What - What do you want to include in the message?
    - Where - Where is the event/incident occurring?
    - Action - What actions do you want the public to take?

- Limitations of the WEA system discussed during this session include:
    - The current 90-character message limit restricts the amount of information that can be relayed in a single WEA message.
    - There is no mechanism for confirming that a WEA message was received by the intended recipients.
    - Failure to send unified, effective messages, or sending too many messages (over-notification) may result in people opting-out of the WEA system.
- A comprehensive map that indicates the locations of cell towers will help alert originators more effectively and accurately draw geographic boundaries when sending alerts. Telecommunications companies have refused to offer this information and that is unlikely to change in the future
- The FCC has mandated that wireless carriers support the 1/10th of a mile geo-fencing by November 2019. However, it will probably be later than that because it must be done in coordination with the roll out of 5G, which will be a slow process.

Recommendations & Next Steps

- It is critical that agencies establish and maintain relationships with neighboring jurisdictions. This includes creating joint jurisdictional operational plans, sharing information and message templates, developing Memoranda of Understanding (MOUs) for sending alerts for other agencies, and maintaining clear and constant lines of communication with partners.
- The public must be constantly reminded and re-educated. Awareness campaigns are needed to help educate the public about the system and about the importance of opting-in and heeding emergency alert messages.
- The BAUASI should consider creating a network for "alerting the alerters." This would be a system wherein all neighbors and partners are notified simultaneously when one partner is going to send an alert.

Key Takeaways

- Follow the "highest hierarchy" approach, which dictates that if an incident/event necessitates a WEA, the alert should also be sent through all other alert platforms (e.g., reverse 911, text message, email, EAS, etc.).
- When sending emergency alerts, it is important to ensure that messages do not conflict with those from other jurisdictions; coordinate with partners to ensure messages are unified and information is consistent; and notify your neighbors if and when you send a message.

Organizing Mass Notification: Examining Different Processes & Structures

This session explored different approaches to staffing alert notification functions in local agencies, including models, responsibilities, coordination, authorities, and training. The discussion also covered suggestions for recruiting and training back-up staff. Each of the three panelists shared anecdotes, best practices, and lessons learned about mass notification processes and structures in their respective jurisdictions and then answered questions from the moderator and audience. An organizational matrix for Contra Costa County and the City and County of San Francisco Emergency is available in Appendix F - Organizing Mass Notification Systems

Panelists for this session:

- Heather Tiernan, Community Warning System Manager - Contra Costa County

- Thomas Chin, Emergency Services Coordinator - San Francisco Department of Emergency Management
- Pat Moore, Emergency Services Planner / Alert & Warning Coordinator - Monterey County Office of Emergency Services.

Best Practices & Lessons Learned

Contra Costa County – Employs a manager, two emergency planners, and three sworn staff within the Emergency Services Division who are trained on how to activate the county's dedicated Public Alert & Warning System Community Warning System (CWS). All six personnel are also authorized to activate IPAWS when necessary. The county also created a step-by-step instructional guide for just-in-time training on how to activate IPAWS. The county's process for incident alert activations is as follows:

- Incident Commander (IC) requests CWS activation via the county's dispatch center
- The county's dispatch center contacts the duty officer
- Duty officer receives all information collected thus far and directly contacts the IC
- Final approval for any message that goes out comes from the IC
- Duty officers have authority to activate all tools that are necessary for alerting without seeking additional approval

- By default, when the county sends an alert/warning, it pushes out the message through basic phone, email, and text modalities. It can always scale up (send through more channels) but has never chosen to scale down (send through fewer channels).
- Having the alerting authority for the entire Operational Area (OA) bolsters the county's coordination efforts.
- Templates are used more like questionnaires for dispatchers to ask the IC what is happening on the ground rather than for drafting messages.
- Best practices for information verification: repeat information back to person over the phone to make sure it was properly understood; read messages out loud to at least one person before sending.

San Francisco Department of Emergency Management (SFDEM) – The day-to-day emergency managers are responsible for messaging, but rotating duty officers are also on-call at all times for backup. The Police or Fire Chief and SFDEM authorize the release of emergency messages through IPAWS. Emergency notifications are kept simple (e.g., "avoid the area of X due to X activity").

- Alerts for protective action (e.g., "shelter in place") are always initiated in the field; the duty officer takes that information received from the Incident Commander to create notification messages.
- During day-to-day operations, the duty officer pushes out messages. During a major event, the Joint Information Center (JIC) is responsible for sending follow on alert and warning messages.
- SFDEM is limited in the type of information it can send to the public. It does not send messages warning people to avoid areas for first amendment activities (e.g., protests). Currently, it can only send information about activity related to police and fire activity.

- SFDEM usually sends alert/warning messages via text and email only, given the city's tech-savvy population.
- Best practice for information verification: Someone from the team is sent into the field to meet with the IC; that person then reports back to the duty officer or the Emergency Operations Center (EOC).

Monterey County Office of Emergency Services (OES) – Utilizes two mass notification systems: standard opt-in Reverse 9-1-1 and IPAWS. The dispatch center has the authority to push out messages, but they tend to defer to the duty officer because they lack the capacity. As soon as OES is stood up, 9-1-1 hands off messaging responsibilities. The county is still training on IPAWS and uses Everbridge as a backup.

- OES has a single dispatch center that gathers information and reaches out to the duty officer. The duty officer has full authority, including to send messages through IPAWS. One caveat is that the county must notify the Emergency Manager.
- One of the county's biggest strengths is its ability to coordinate. County OES is co-located in the same building as 9-1-1, which makes coordination easy.
- Best practice for information verification: information that comes directly from the IC is considered verified/fact-checked. During fast-moving incidents, the County works directly with the dispatcher, who speaks directly to the IC, to gather information while the Emergency Manager develops messaging. Otherwise, the Public Safety Answering Point (PSAP) vets incoming information from the field.
- OES does not rely heavily on message templates but instead sends incident-specific messages. The department requests very clear descriptions of evacuation locations to be included in its alert messages.

Recommendations & Next Steps

- Ensure multiple individual have the ability to send messages in an emergency.
- Consider using templates to guide message development rather than pre-scripted messages.

Key Takeaways

- Experiences in recent evacuations have revealed that pre-scripted message templates are not always useable because they are not specific enough to the actual incidents that occurred.
- In terms of sending WEA/EAS alerts, a tsunami is the scenario of greatest concern for the Bay Area, as it would require reaching more than 10,000 people along the coastline very quickly. The concern is not rooted in the often-misunderstood belief that WEA is sent via SMS (text message) when it is in fact a broadcast message. These should be no concerns regarding speed of deliver and a test would help address this concern.
- Coordination of protective action messages is extremely important. For instance, in the event of a gas leak, contradictory information (e.g., shelter in place vs. evacuate), can lead to chaos, confusion, and can put people in danger.
- Having direct contact with IC or sending staff to the incident site provides a better option for the accuracy and development of the message.

Including VoIP Numbers in Your Mass Notification System

Woody Baker-Cohn, Emergency Services Coordinator for the Marin County Sheriff's Office, gave a brief presentation on the benefits, trends, and challenges of including Voice over IP (VoIP) in mass notification systems.

Best Practices & Lessons Learned

- One challenge is the Global VoIP market growth which is expected to grow by 28% 2016-2018. This means that more homes have cell phones than landlines and landline usage is falling every year. The change in the type of phone systems means that emergency managers must take into the account the channels used for message dissemination.
- It is important to get within an area from VoIP line providers (e.g. Comcast) because VoIP lines will continue to comprise a significant portion of residential contacts and thus the way residents will be contacted.

Recommendations & Next Steps

- Emergency managers should reach out to their local telecommunications providers to determine the number of individuals in their region that are using VoIP phone lines.

Key Takeaways

- Emergency managers need to consider VoIP lines, and the number of individuals using those lines, when counting the reach of their mass notification system

Methods and Best Practices for Coordinating Alerts – An Interactive Breakout Session

This session began with a review, provided by Woody Baker-Cohn, of common Bay Area mass notification alerting mechanisms and their capabilities. Mr. Baker-Cohn offered brief descriptions of each mechanism and explained the hierarchy of these mechanisms, from least frequently used/most severe threat, to most frequently used/least severe threat, as follows:

- Emergency Alert System (EAS): National public warning system used to send emergency warnings that interrupt broadcast television, radio, cable, and satellite transmissions.
- Wireless Emergency Alert (WEA): Short emergency messages broadcast from cell towers to smart phones within cell tower cover range.
- Reverse 911 (wireline phone): Voice calls to a database of phone numbers from landline phone companies (now typically also includes self-registration for cell, email, and multiple locations).
- Reverse 911 (wireless phone): Voice calls/messages (text, email, etc.) to a database of phone numbers.
- Nixle: A community information service that delivers primarily text-based, geographically relevant alerts to cellphones via text message, email, and the internet.
- Sires/Horns and Outdoor Speakers: Used to alert recipients of imminent dangers, typically followed by a message using another mechanism offering specific instructions.
- Social Media: Platforms for disseminating information to those who subscribe/follow (e.g. Facebook, Twitter, Nextdoor, etc.).

Following this overview, participants formed small breakout groups, each assigned to specific altering and notification systems, and discussed the following questions:

Strengths/Limitations:

- What are the strengths of this system?
- What are the system's uncertainties or limitations?

Thresholds for Sending Alerts:

- When would you use this system?
- What is your threshold for sending an alert via this system?
- Would you sometimes use this system with other alert methods?
- If so, under what circumstances?

Coordinating Alerts and Systems

- Are there any general practices you follow to coordinate alerts across agencies within your jurisdiction or organization?

Best Practices & Lessons Learned

- Coordinating with school districts when sending out messages to ensure information is consistent and accurate. This is particularly important because often school districts use different language than emergency managers/alert originators.
- Coordinating with large employers (e.g., Kaiser Permanente, California Department of Public Health, Social Security Administration). Coordination with school districts and large employers should involve establishing relationships and lines of communication with these entities in advance.
- Creating an internal group to notify all emergency managers, law, and fire personnel in the county during an event (especially for red flag alerts, smaller events, etc.).
- Sending joint press releases every month and leveraging public health/hospital Public Information Officers (PIOs) to reach all other PIOs in a given area in a short amount of time.

Recommendations & Next Steps

- Emergency managers should establish a schedule and system for testing and exercising their alert systems regularly. This should not only be a test of the technical system but the process of requesting, creating, approving, and sending messages.

Key Takeaways

- For opt-in notification systems it's important to build your brand in order to increase your reach and gain your constituents' trust. This can be accomplished through regular messaging, public awareness/education campaigns, a strong social media presence, and by having your content shared broadly/go viral, and so on. A strong reputation will increase the likelihood that the public considers you a source of official authority to be trusted during emergencies.
- The key takeaways from this session were compiled into a single, comprehensive Alerting Matrix (see Attachment E – Notification System Matrix).

DAY TWO SUMMARY

Mass Notification Lessons Learned from Bay Area Emergencies

This session began with a brief video highlighting news coverage of the 2017 North Bay and Santa Cruz Fires. The panelists shared their experiences and lessons learned relating to mass notification during these fires. After recounting their experiences, panelists answered questions from the moderator and the audience.

Panelists for this session:

- Catherine Spaulding, Assistant General Manager - Bay Area UASI
- Rosemary Anderson, Emergency Services Manager - Santa Cruz County
- Chris Reilly, Emergency Services Manager - Marin County Sheriff's Office
- Jorge Anaya, Program Specialist III - County of Los Angeles - Office of Emergency Management

Discussion Overview

- *Pre-emptive messaging can be effective, but only if used appropriately.*
    - Santa Cruz County – While the county successfully sent multiple pre-emptive messages during the 2017 winter storms, some city partners were not happy with the amount messages sent because it generated too many calls to OES from the public.
        - **Lesson Learned:** The county needs to more effectively educate citizens about ways they can access information after receiving a warning, such as how to sign up for emergency alerts and utilize 2-1-1. These practices may prevent the public from overwhelming OES with inquiries.
        - **Lesson Learned:** The county wants to improve its pre-scripted messaging and GIS maps to make messaging during emergencies more expedient.
    - Marin County – The county successfully sent pre-emptive messages in advance of flooding, including to warn people to leave low-lying areas and move their cars. The county received positive feedback from public partners and the public for its pre-emptive messaging. An interesting takeaway from this experience is that the alerting response included both modern and old-fashioned mechanisms (sirens and horns and Everbridge). This resulted in a policy that brought alert generators from multiple communities together to first coordinate their siren blasts and then their follow-up messaging via Everbridge.
        - **Best Practice**: Setting creek levels as potential trigger points for messaging (e.g., once creek water rose to a certain level, a message would be automatically sent).
        - **Best Practice**: Having pre-drafted message templates and shape files ready to go in advance. The county wants to build more of these for all types of threats (e.g., dam inundation zone, mutual threat zones, tsunami inundation zones).

- **Best Practice**: Having a PIO in the EOC (which was activated several times) to help push out messages via Nixle, website posts, social media, etc.

- Los Angeles County - During the 2017 fires, the City of Los Angeles sent pre-emptive messaging, but the County of Los Angeles did not. The county conducted a great deal of door-to-door warnings for people in impacted areas, but sent fewer pre-emptive messages through electronic or telephone systems.
    - **Lesson Learned:** The County wants to use more pre-scripted messages, templates, and shape files in the future.
    - **Lesson Learned:** County residents did not respond well to Cal OES's five-county WEA notification about the fires, which read 'extreme fire danger, please keep an eye on the media.' This message was not actionable, so people did not know what to do, specifically, which caused was social media backlash. It is important to keep messages informative and actionable. That being said, the alert did serve to raise awareness.

- *Message coordination is critical to prevent the dissemination of conflicting information.*
    - Santa Cruz County –
        - **Lesson Learned:** The county wants to utilize WebEOC to enhance their operational picture, and to train city partners so that everyone uses the same platform to enhance coordination.
    - Los Angeles County – There are 88 cities in Los Angeles County, which can cause messaging to be fragmented and inconsistent.
        - **Lesson Learned:** The county needs to improve its coordination not just within the county but also the region, including with other counties, such Orange, San Bernardino, and Ventura, as well as the State Regional Emergency Operations Center (REOC).

- *It is important to build relationships with high-risk and immigrant populations to increase your ability to reach them during emergencies.*
    - Los Angeles County – The county has a high immigrant population that is not well represented in the system.
        - **Best Practice:** Utilizing tailored community outreach to reach diverse populations, as well as deploying education and marketing/branding campaigns to familiarize people with the messaging system, build trust, and increase alert sign-ups.
        - **Best Practice**: Work with law enforcement, social services, aging services, Community Emergency Response Teams (CERT), non-governmental organizations (NGOs), community-based organizations (CBOs), and other partners to help build relationships with high-risk populations. These entities often have stronger, more established relationships with these populations, who sometimes mistrust the government, and the county should leverage those relationships.

Using Evidence to Create Effective Alert Messages

In this session, leading social science researcher, Dr. Michele Wood, Associate Professor and Chair of the Department of Health Science at the California State University, Fullerton, shared her recommendations for creating effective, actionable alert messages. Dr. Wood also discussed recent conversations surrounding Earthquake Early Warning message content, as well as the effects of "over-alerting" and "messaging fatigue." This session served as a primer for the following session, wherein participants applied the information they learned about effective alert messaging to craft their own messages for hypothetical emergency situations.

Best Practices & Lessons Learned

- Fear is not motivating; telling people what to do (actionable instruction) is motivating
- It is important to include information about how long the recipient has to act/the timeframe of the event
- Longer messages do a better job in terms of increased interpretation, decreased milling, and enhanced public protective action-taking responses
    - In other words, longer messages help people better understand what they should do/what protective action they should take
- There was a favorable response to sequential messaging (e.g., sending multiple messages in a row)
- Both long and sequential messages are equally more effective than shorter single messages
- Visualization (of the hazard, location, and action) can help counteract language barriers
- Other recommendations for creating effective messages:
    - Use all caps sparingly
    - Work with the disabled and Access and Functional Needs (AFN) communities
    - Use specific and certain language
    - Assume a low reading level
- Map literacy is a problem; many people cannot read a map, particularly when they are panicked
    - A mitigation step for poor map literacy is to use simple maps that depict recognizable landmarks, shaded areas, and the message "you are in the area of risk"
    - A poorly drawn map is worse than no map at all
- Tweaking generic messages slightly to make them more personal led to stronger responses

Recommendations & Next Steps

- Only 1/3 of people know what WEA is; WEA has not been branded in a way that creates a positive relationship with the community
    - A national public education campaign to familiarize the public with the WEA system is strongly encouraged
    - This campaign should help people understand messaging by connecting to their values (e.g., WEA is a tool for protecting families and communities)
- Future research in this field should focus on:

- Order of information for longer messages
- Public information campaign
- Figuring out how to best visualize hazards and locations in maps
- Most effective size, color, and style of message
- Public education to help improve public response

Key Takeaways

- For building effective emergency alert messages, the most effective order of information is: 1. source, 2. protective action, 3. hazard location, 4. time
  - Including the source of the information up front in a message is effective because it adds to the message's authority and authenticity
  - At the same time, citing a source with an unfamiliar acronym is not useful; it is best to use local and familiar sources
  - Guidance and the hazard are most important and should be stated immediately following the source of the information
  - Messages that use "in this area" as the location are not interpreted by the receiver as directed at them
- While people responded more positively to 140 character "mid-range" length messages, longer messages were proven to be most effective
- People were found to check local media after receiving WEAs, evidence that the system can be a tool for motivating people to take action
- Using peer role models and social marketing is an effective tool for getting people to take action for an event that has not yet happened
- People need three things: to think their actions will work, to know what actions to take, and to know someone else who has taken said actions

Creating Your Messages - An Interactive Workshop

In this session, participants drew on the information and best practices presented by Dr. Wood to craft and refine alert messages for active shooter and hazmat spill incidents. Participants used this session as an opportunity to share message ideas and templates, and to discuss best practices for crafting messages, based on their newfound knowledge as well as their individual experiences in alert messaging during real-world emergencies.

Panelists for this session:

- Jenny Thamer, Director, Nusura
- Kristine Jourdan, Public Information Officer, Napa County
- Heather Tiernan, Community Warning System Manager, Contra Costa County

Participants were divided into groups and were asked to consider the following ideas when crafting their sample messages:

- Focus on telling people what to do in a clear and concise manner
- Keep messages simple: avoid jargon and acronyms
- Consider how a variety of people will personalize the message

- Understand the impact your message will have on other stakeholders (e.g., schools)
- Note that preparedness and warning messages should be treated differently

A representative from each group read their sample messages for the rest of the audience. Dr. Wood and the moderators gave feedback to participants and highlighted the positive elements of their messages, including:

- Incident/event start times ("effective as of," "until further notice," etc.)
- Information for people who are in the area about what they can do to stay alive and notice to people who are out of the area to stay away
- URL link with more information
- Definition of "shelter in place" (e.g., stay indoors, go inside the nearest building, etc.)
- Key landmarks and short and clear descriptions of locations
- Use of more specific terms (e.g., "active shooter" instead of "police activity")

Best Practices & Lessons Learned

- When possible include Start time – "Effective as of now", "Until you hear further"
- Make sure to include information for individuals in the impacted area and outside. For example: Telling people who are in the area what they can do to stay alive; people who are out of the area to stay away

Recommendations & Next Steps

- If possible include a URL link with more info
- Shorter sequential messages are equally effective as longer messages
- Do not use vague information, a statement of "Police activity" is not specific enough
- Define the course of action you wish them to take, "Shelter-In-Place" is not clear. Tell them specifically "Stay indoors" or "Go inside the nearest building

Key Takeaways

- Examples of group messages
    - "Due to an active shooter at 6th Street and 10th Avenue, avoid the area. Police are responding.
    - There is an active shooter at Marin County Sherriff's office. Streets at are closed between X and X due to activity in the area."

Reaching the Whole Community with Mass Notification

Panelists for this session:

- Vance Taylor, Office of Access and Functional Needs at the California Governor's Office of Emergency Services (Cal OES)
- Suzanne Rosen Singleton, Chief of the Disability Rights Office, FCC *via conference call.*

During this session, participants heard creative ideas, best practices, and lessons learned from panelists who have developed approaches to reach diverse populations in their communities with unique communications needs. Mr. Taylor facilitated the discussion and shared best practices from his own experiences. Ms. Singleton provided an update on her office's efforts. This panel addressed language translations and highlighted the partnership between Everbridge and Alameda County to sign up residents with sight impairment as an example of a successful case study.

Best Practices & Lessons Learned

- The United States has not done a good job of considering the needs of AFN populations. One striking example of this is Hurricane Katrina: 70% of those who perished in that disaster were individuals with AFN.
- Another more local example: During the 2017 California wildfires, a deaf woman was awoken at 3 am by a firefighter bursting into her room. The woman's neighborhood had been warned five hours earlier about the approaching fires via telephone calls, but she was unaware given her deafness. Additionally, news broadcasts about the fires did not include closed captioning, so deaf individuals did not receive information on what to do or where to go.
- Another example: During the Oroville Dam incident, only six of the 42 shelters stood up were fully accessible to those with AFN. As such, many individuals with AFN arrived to shelters that could not accommodate their needs. This oversight was a direct result of ineffective communication and messaging to the AFN population.
- Accessible emergency notifications should include:
    - Easily readable font style, size, and color
    - Plain, simple language
    - Visualization when possible (e.g., use of pictures that symbolize the emergency)
    - Actionable information
- In an effort to consider the needs of those with AFN, the federal government currently does not use Periscope, YouTube Live, or Facebook Live because these platforms do not have closed captioning capabilities at the moment. The federal government is required by Section 508 to ensure all information it produces for the public is fully accessible.

Recommendations & Next Steps

- Resources for emergency communications planning for individuals with AFN include:
    - Cal OES Website's AFN Library (includes section on AFN notifications)
    - FCC white paper on best practices for planning for those with cognitive disabilities related to technology

- OAFN Webmap (created to assist emergency managers in developing a better understanding of the AFN specific assets and resources they should plan for during all phases of emergencies)
- OAFN's Newsletter, *Rolling Perspective*
- Given recent advances in technology the Text Telephone (TTY) system is not commonly used

- FEMA is developing a "dictionary" of pictures that symbolize disasters/emergencies.
- There is currently no "silver bullet" for reaching a wide range of non-English speakers. The ideal goal is a 24/7, 365 days-a-year verified translation system shared across the region. However, this is currently not possible. As such, an approach that allows alert generators to reach as many of these individuals as possible is necessary. Two such approaches are:
  - Establish relationships with trusted partners who represent diverse populations that during a disaster can translate and forward on your message. For example, a church that reaches a large population of individuals for whom English is not a primary language can translate and distribute an emergency message.
  - Use of a main landing (website) page that has links to translated versions of the message in all relevant languages.

Key Takeaways

- Public alert and warning agencies need to adopt and act on a whole community approach, one that includes persons with AFN in the planning and decision-making process in order better understand their needs and avoid incorrect assumptions.
- Consider using a system such as Deaf Link as part of your mass notification system.

Can I Get Your Number? Best Practices to Drive Mass Notification Sign-Ups

The focus of this session was an examination of the challenges, lessons learned, and potential solutions for encouraging the public to sign up for emergency alerts. Presenters discussed how to set clear expectations for what alert systems will and will not do, vehicles for marketing, and strategies for avoiding public fatigue around receiving alerts messages.

The New York City Department of Emergency Management shared an audio story relating to its mass notification platform, NotifyNYC. A link to the audio story is included here: https://www.dropbox.com/s/c2y5wbdg2ewvhk5/Case%20Study_Notify%20NYC_04.mp3?dl=0.

Panelists for this session:

- Jeff Norris, Emergency Services Coordinator, San Mateo County Sheriff's Office - Office of Emergency Services;
- Mary Jo Flynn, Emergency Operations Coordinator, Sacramento County - Office of Emergency Services
- Rebecca Baudendistel, Deputy Program Manager - Notify NYC, NYC Emergency Management *via conference call.*
- Allison Pennisi, Director of Communications - NYC Emergency Management *via conference call.*

Best Practices & Lessons Learned

- Marketing, promotion, and press coverage: Take advantage of press coverage immediately following an emergency to educate the public about messaging systems and encourage them to register for notification systems.
    - Marketing technique for opt-in systems: Use phrases such as "This information may save your life" or "In times of emergency, we cannot tell you what you need to do to stay safe if we cannot reach you."
- Tried and true methods: Flyers, brochures (e.g., placed in local libraries and community information centers), and word-of-mouth can all help spread the word about your message system.
- Consider your population: For example, New York City does not have a lot of drivers, so the city avoids sending traffic messages to most people.
- Be familiar: Educate the public that calls/text messages from numbers starting with "XXX" are authentic and should not be ignored. Encourage residents to save the number in their phone as a trusted contact.
- Consider transient populations: To reach individuals who do not live in your jurisdiction but work or travel there, build relationships with large employers who can encourage their staff to register for your notifications. Attend company health and safety fairs and ask to be included in company newsletters to advertise your system.

Recommendations & Next Steps

- Carefully timed messages: Poorly-timed messages can lead to message fatigue, opt-outs, and complaints. Avoid sending messages between 10 pm and 7 am.
- Take advantage of analytics and technology, research and understand the data behind the reach and effectiveness of your messaging. Consider analytics such as opt-out and block rate, demographic information, GIS mapping, and heat maps to see how populations move and change over time.
- Solicit customer feedback: Reach out to customers (via surveys, social media, etc.) and ask how they prefer to receive messages to better tailor your approach.
    - In general, only emails are acceptable to send after 10 pm.

Key Takeaways

- The main takeaway for driving mass notification sign-ups is the importance of branding and marketing. The more you educate your community about the importance of signing up for alert messaging (using the techniques described above) and the more you market your specific system to the public, the more enrollees you will generate. The first step in generating mass notification sign-ups is raising the community's awareness and familiarity with your system.
- Having a single webpage with all notification resources in a region would allow for individuals to easily sign up for all relevant systems.
- Use the one sentence rule: Message should state where the problem is, what the problem is, what the person should do, and how long the problem is expected to last.
- Leverage force multipliers: Establish community ambassadors who can forward your message on to their networks to increase reach. Local offices of the National Weather Service are happy to do this.
- Consider high-risk populations: Identify ways you can work effectively with high-risk populations. For example, Sacramento County uses "navigators" to help reach homeless populations. Through their outreach, the county learned that a large percentage of

homeless individuals have cell phones, so they have tailored their outreach towards encouraging homeless individuals to download Everbridge on their phones to receive emergency notifications

PARTICIPANT FEEDBACK

A total of 93 participants attended the seminar. The following information was extracted from 58 Participant Feedback Forms over both days of the seminar. Feedback provided by participants was very positive – many commenting that the presentations and discussions brought to light new information for them and enhanced knowledge of key concepts. Participants felt they left the seminar with a better understanding of topics such as mass notification best practices and structures and techniques for crafting effective emergency alert messages. The majority of participants noted that they would like to attend this seminar again in the future, ideally next year.

Table 1. Rating Satisfaction of Seminar: Day One

Assessment Factor	Strongly Disagree		Strongly Agree		
After today's seminar, I am more familiar with IPAWS & WEA.	8%	0%	12.5%	41.5%	38%
After today's seminar, I am more familiar with WEA coordination.	8%	0%	17%	40%	35%
After today's seminar, I have a better understanding of the necessary organizational structures and staffing necessary for effective mass notifications.	5%	5%	23%	36%	31%
After today's seminar, I am more familiar with the methods for delivering alerts and best practices for coordinating emergency alerts.	10%	0%	10%	50%	30%

Table 2. Rating Satisfaction of Seminar: Day Two

Assessment Factor	Strongly Disagree		Strongly Agree		
After today's seminar, I am more familiar with lessons learned from recent emergencies.	3%	3%	9.5%	47%	37.5%
After today's seminar, I am more familiar with creating alert messages.	3%	0%	3%	32.5%	61.5%
After today's seminar, I have improved my ability to create emergency alert messages.	6.5%	3%	6.5%	48.5%	35.5%
After today's seminar, I am better prepared to reach the whole community with mass notification.	3%	3%	20%	37%	37%
After today's seminar, I have improved my understanding on how to generate sign-ups for mass notification.	4%	4%	22%	30%	30%

Select Participant Comments

The following is an assortment of comments received in response to the additional questions on the seminar feedback form.

1. What did you find most helpful about today's seminar?

- "Understanding WEA better."
- "I enjoyed the variety of people in the room; good diverse perspectives from the city/county/state/federal levels."
- "Opportunities to network with other alerting officials and learning local best practices."
- "Break down of IPAWS structure and processes. I had no idea how much it's really contingent on local agencies leading the efforts and coordinating."
- "Sharing lessons learned, best practices, learning about requirements updates."
- "Sharing practices between jurisdictions – clarification from FEMA's FCC on updates; integrating PIOs in emergency alerting – the need for the state to be more involved."
- "I loved Dr. Wood's and Vance Taylor's discussions!"
- "Keeping notifications short but containing the proper information. The importance of not forgetting about disabled, elderly, etc. during emergencies."
- "Interactive work, more relationships formed, and information shared."
- "Practicing with matrix of alert methods and crafting messages was great."
- "Vance Taylor was a compelling speaker and advocate for AFN, I am reminded of the challenges of reaching this demographic."
- "The need for engagement in the community in order to advertise correctly."
- "Day 2 was better than Day 1 – more relevant information for my role."

2. What would you like to see in a future mass notification seminar?

- "Templates used by jurisdictions."
- "We need to determine the best approach to educate the public and elected officials. This must be accomplished to level the expectations of both."
- "More information about high level information/toolkits to share with elected and executives who don't need detailed technical information, but useful policy templates."
- "I think the state needs to speak to mass notification at the State Warning Center level."
- "Develop a 'toolbox' jointly."
- "When they are able to, I'd love to hear about Sonoma's experiences with alerting."
- "Best practices for mapping in emergency alerts."
- "Possible review of actual activation reports and what worked and what didn't."
- "Involving special districts (Golden Gate Bridge districts, water districts, etc.). We're under the radar in this effort and our OES structure is so much different than county/city Police Department. We don't work with dispatch centers."
- "More of the same format, experts/panels, updates on regional coordination efforts/exercise/tests."
- "Introductions of attendees at the beginning (30 seconds, name, organization, title)."
- "More varied speakers."
- "Service providers (AT&T, Verizon, Comcast) where we depend on their cooperation with the government."
- "Updates to the sessions we talked about these two days."
- "Demonstrations of top three software platforms."
- "Continued legislative updates."

- "Maybe a follow up on the 'Methods and Best Practices' session. We can do a session where people share challenges, interesting experiences, etc. of notification methods."
- "I would like to see more breakout sessions."
- "More hands-on/group exercises."
- "Include residents from recent local disasters to get their reactions/lessons learned."
- "How agencies drill or run exercises to test notifications and simulated responses."
- "The role (and obstruction) of elected officials in sending notifications and tips for how to deal with then. At the end of the day, it's about public safety, not egos."
- "More examples of local jurisdictions' direct use of communication tools and more emphasis on coordination directly between local/county/state, rather than a single focus on county."
- "Can we do a notification method/message creation session with AFN representatives to see what is going right and what needs to be addressed/improved within our own systems?"
- "Cal OES engagement/participation regarding mass notification coordination."
- "Would like to look at the promised materials for after the seminar to see what there is – this is the tangible stuff I would like to have at my fingertips throughout the 2 days."

3. Are there any other comments/observations you wish to share?

- "It is important to coordinate with regional partners."
- "This was long overdue! Very worthy effort on the part of UASI."
- "There were a lot of highly technical aspects that were not geared toward this audience."
- "It seems as though the same people keep presenting, maybe add more speakers. Also, the afternoon seemed more like a sales pitch."
- "I wish I knew where everyone was from/what/who they were representing. Maybe placards for the tables, name plates in addition to name tags. Also assigned seats to force people to get out of their silo! Then we could have table-based meet and greets."
- "Now time to develop the regional notification tool."
- "Great training opportunity. It was obvious that a lot of time and energy was put into these last two days, I appreciate all of the committee's hard work."
- "Some speakers did not really address this audience/ weren't relevant."
- "I enjoyed this opportunity but developing a notification algorithm as a semi-standard would be great."
- "Great panelists, great topics and resources."
- "Hotel prices in this area were expensive. Can you locate future events where pricing is mid-range ($90-150)?"
- "Slides should be made available before seminar."
- "Great location/venue."
- "Temperature control in the room was lacking."
- "Need to have tower shapefiles."
- "Having FEMA/Cal OES here was a huge plus and learning experience."
- "Some PPT slide fonts were too small or had too much information to read."
- "Visuals: presenters need to use light backgrounds."
- "Some sessions were too long. Having more moderations for some sessions would have helped. I understand wanting to include SMEs, but conference call capabilities were not really engaging without a PowerPoint. Would have been more effective with a webinar. Thanks to sponsors for the food!"

APPENDIX A – SEMINAR ATTENDEES

Note: Full contact information for all seminar participants is available on the JIS drive.

#	Last Name	First Name	Agency / Organization
1.	Adam	Carl	Everbridge
2.	Adinoff	Zack	Contra Costa County
3.	Adriano	Gina	Santa Clara Valley Water District
4.	Anaya	Jorge	County of Los Angeles Office of Emergency Management
5.	Anderson	Rosemary	Santa Cruz
6.	Anderson, Sr.	Ken	South San Francisco Fire Department
7.	Andrews	Arn	Town of Los Gatos
8.	Arroyo	Leslie	City of South San Francisco
9.	Baker	Abigail	FirstNet built by AT&T
10.	Baker-Cohn	Woody	Marin Sheriff's Office
11.	Bartshire	Corinne	Bay Area UASI
12.	Beerman	Katie	Sonoma State University
13.	Beltram	Jose	Contra Costa Sheriff's Department
14.	Blaser	Brent	Sonoma County Fire & Emergency Services
15.	Blount	Terry	City of Monte Sereno
16.	Boland	Jim	Pleasanton Police Department
17.	Burkhart	Betsy	City of Walnut Creek
18.	Cabrera	Domingo	Alameda County Sheriff's Office Of Emergency Services

#	Last Name	First Name	Agency / Organization
19.	Cali	Gina	Santa Clara County Fire
20.	Cary	Cy	City of Palo Alto OES
21.	Chin	Tom	San Francisco
22.	Co	Christine	San Mateo County Sheriff's Office/OES
23.	Cresta	Dave	San Bruno Fire
24.	Crum	Spencer	Sonoma County Sheriff's Office
25.	Daza	Nelson	Everbridge
26.	Delay	Ari	La Honda Fire Brigade
27.	Dunbar, II	Nathaniel	U.S. Environmental Protection Agency (EPA)
28.	Durand	Michelle	County of San Mateo
29.	Eaton	Patty	Santa Clara County OES
30.	Ecks	Mike	Everbridge
31.	Edwards	Erin	Everbridge
32.	Ehrhardt	Britt	County of Santa Clara Public Health Department
33.	Eleccion	Gina	Benicia Fire Department
34.	Elvert	Catherine	City of Palo Alto Utilities
35.	Ericksen	Ken	Cupertino OES
36.	Flynn	Mary Jo	Sacramento
37.	Garcia	Brian	NOAA/NWS
38.	Gerhardt	Meredith	Contra Costa County

#	Last Name	First Name	Agency / Organization
39.	Ghiorso	Dan	Woodside Fire Protection District
40.	Gonzalez	Randy	Cal OES
41.	Green	Mitchell	Emergency Management Services Department/ Oakland Fire Department
42.	Guthlein	Pete	Golden Gate Bridge, Highway and Transportation District
43.	Guzzardi	Joe	Santa Clara County Fire/OES
44.	Halchin	Judy	Cupertino ARES
45.	Hawkins	Matthew	Sacramento County Office of Emergency Services
46.	Hogan	Kristin	San Francisco Department of Emergency Management
47.	Holm	Lars Eric	Eden I&R
48.	Holsapple	Nick	Nusura
49.	Hoppin	Jason	Santa Cruz County
50.	Hunter	Emma	San Mateo County Emergency Medical Services
51.	Iger	Heather	Bay Area UASI
52.	Ives	Kevin	Solano County Sheriff's Office - OES
53.	Jennings	Elaine	Constant Associates
54.	Jones	Chris	Golden Gate Bridge Highway & Transportation District
55.	Jordan	Kristine	Napa County
56.	Kearney	Brendan	Sonoma County Fire & Emergency Services
57.	Ketell	Victoria	Sunnyvale Department of Public Safety
58.	Kunze	Jeremiah	Everbridge

#	Last Name	First Name	Agency / Organization
59.	LaSota	Bryan	San Benito County OES
60.	Lazo	Jennifer	City of Berkeley
61.	Lieberman	Dan	SamTrans
62.	Lightfoot	Charleton	City of Oakland Fire Department
63.	MacKay	Scott	Constant Associates
64.	Malais	Gerry	Monterey County OES
65.	Martinez	Cindy	Santa Clara Valley Water District
66.	Martinez	Ricardo	City of Union City
67.	Masterson	Janelle	City of San Mateo and City of Foster City
68.	McGehee	Stewart	Oakland Fire Department
69.	McTigue	Bret	Marin County Fire/ North Bay IncidentManagement Team
70.	Modeste	Tya M.	Alameda County Sheriff's Office
71.	Moore	Christie	Santa Clara County Fire Department
72.	Moore	Patrick	Monterey County Office of Emergency Services
73.	Murphy	Bill	Santa Clara County Fire Department
74.	Nida	Kevin	FirstNet built by AT&T
75.	Norem	Tammy	County of Santa Clara OES
76.	Norris	Jeff	San Mateo County Office of Emergency Services
77.	Pastor-Cohen	Genevieve	City of Richmond
78.	Pop	Livia	Contra Costa County Office of Emergency Services/ Community Warning System

#	Last Name	First Name	Agency / Organization
79.	Powers	Kate	Constant Associates
80.	Preminger	Steve	County of Santa Clara
81.	Rapport	Luisa	Santa Clara County Fire Department
82.	Ray	Erica	City of Los Altos
83.	Reed	Rick	San Mateo County Sheriff
84.	Reilly	Chris	Marin County Sheriff
85.	Reynolds	Corey	Bay Area UASI
86.	Robinson Pinon	Angela	Oakland Fire Department
87.	Salvador	Reggie	Cal OES
88.	Scanlon	Kelsey	Monterey County Office of Emergency Services
89.	Schoenthal	Lisa	City of Santa Clara OES
90.	Sierer Wooden	Rachel	Cal OES
91.	Simon	Cindy	NASA Ames Fire Department
92.	Smith	Jody	U.S. Department of Homeland Security
93.	Spaulding	Catherine	Bay Area UASI
94.	Spencer	Bart	Central County Fire Department
95.	Ta	Nancy	Constant Associates
96.	Tamm	Penelope	Pleasanton Police Department
97.	Taylor	Vance	Cal OES
98.	Terrin	Stephen	Metropolitan Transportation Commission

#	Last Name	First Name	Agency / Organization
99.	Thamer	Jenny	Nusura
100.	Thomsen	Tina	Petaluma Police Department
101.	Tiernan	Heather	Contra Costa County Office of Emergency Services
102.	Tobin	Maureen	City of Morgan Hill
103.	Torres	Charlene	Hayward Police and Fire Communications
104.	Tucker	Jen	NASA Ames Research Center/Moffett Field
105.	Tucker	Daniel	San Jose Office of Emergency Management
106.	Tunnel	Grady	Cal OES
107.	Vallejo	Mario	City of Union City
108.	Valverde	Gilbert	County of Santa Clara – Social Services Agency
109.	Vollmer	Eric	Hayward Fire Department
110.	Von Glahn	Amanda	San Mateo Police Department
111.	Widjojo	Irma	Benicia Police Department
112.	Winkler	Taylor	NYC Emergency Management
113.	Witmer	Wade	FEMA IPAWS
114.	Wong	Stephen	University of California, Berkeley
115.	Wood	Michele	California State University, Fullerton
116.	Zamora	Alma	San Mateo County Sheriff's Office HSD/OES
117.	Zaroor	Josh	BlackBerry AtHoc

APPENDIX B – AGENDA DAY ONE

Wednesday, March 14, 2018
9:00 AM to 5:00 PM
Orchard City Banquet Hall
1 W. Campbell Ave., Campbell, CA 95008

Time	Activity	Speakers & Moderators
7:30 – 8:30	Registration	
8:30 – 8:45	Welcome and Opening Remarks	Corey Reynolds, Bay Area UASI, and Mass Notification Seminar Planning Committee
8:45 – 9:30	IPAWS (WEA/EAS) Overview	• Wade Witmer, Deputy Director of IPAWS - Department of Homeland Security • Brian Garcia, Warning Coordination Meteorologist - National Weather Service Bay Area • Gregory M. Cooke, Deputy Chief, Policy & Licensing Division - Public Safety & Homeland Security Bureau, Federal Communications Commission
09:30 – 10:40	WEA Coordination During Disasters	• Woody Baker-Cohn, Emergency Services Coordinator - Marin County Sheriff's Office • Justin Cain, Federal Communications Commission • Thomas Chin, Emergency Services Coordinator - San Francisco Department of Emergency Management • Jody Smith, IT Specialist, IPAWS Engineering - Department of Homeland Security
10:40 – 11:00	Break	
11:00 – 12:15	Organizing Mass Notification: Examining Different Processes	• Heather Tiernan, Community Warning System Manager - Contra Costa County • Thomas Chin, Emergency Services Coordinator - San Francisco Department of Emergency Management • Patrick Moore, Emergency Services Planner / Alert & Warning Coordinator - Monterey County Office of Emergency Services
12:15 – 1:30	Networking Lunch	
1:30 – 1:45	AT&T FirstNet - The First Nationwide Public Safety Broadband	Kevin Nida, *Region 9 CONUS Consultation Co-Lead* - First Responder Network Authority
1:45 – 2:00	Including VoIP Numbers in Your Mass	Woody Baker-Cohn, Emergency Services Coordinator - Marin County Sheriff's Office
2:00 – 2:15	AtHoc - Creating Targeted Organization and Business Mass Notifications	Heather Tiernan, Community Warning System Manager - Contra Costa County Office of the Sheriff
2:15 – 2:35	Break	

Time	Activity	Speakers & Moderators
2:35 – 4:45	Methods and Best Practices for Coordinating Alerts - An Interactive Breakout Discussion	Woody Baker-Cohn, Emergency Services Coordinator - Marin County Sheriff's Office
4:45 – 5:00	Day 1 Closing Remarks	Corey Reynolds, Bay Area UASI, and Mass Notification Seminar Planning Committee
5:00 – 730	Informal Networking Reception	

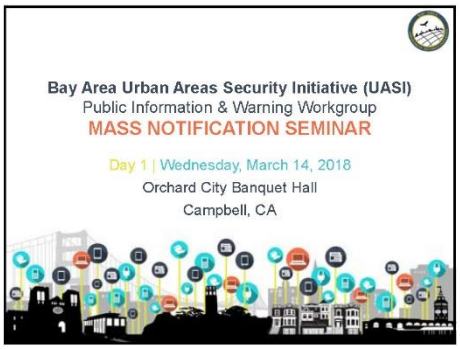
APPENDIX C – AGENDA DAY TWO

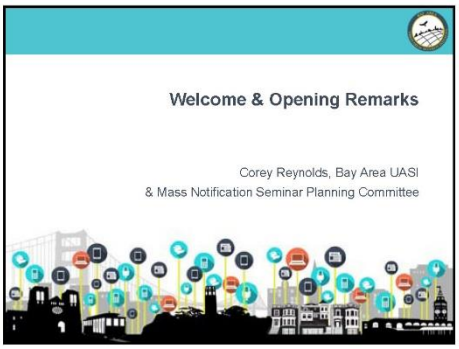
Thursday, March 15, 2018
9:00 AM to 5:00 PM
Orchard City Banquet Hall
1 W. Campbell Ave., Campbell, CA 95008

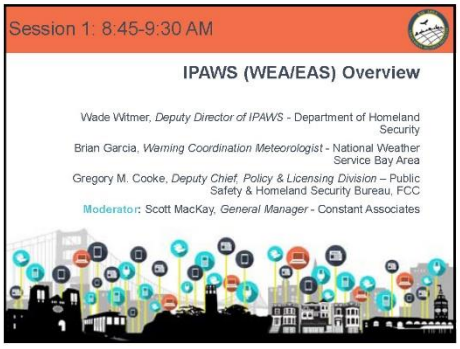
Time	Activity	Speakers & Moderators
7:30 – 8:30	Registration	
8:30 – 8:45	Welcome and Opening Remarks	Corey Reynolds, Bay Area UASI, and Mass Notification Seminar Planning Committee
8:45 – 9:45	Mass Notification Lessons Learned from Bay Area Emergencies	• Catherine Spaulding, Assistant General Manager, Bay Area UASI • Rosemary Anderson, Emergency Services Manager - Santa Cruz County • Chris Reilly, Emergency Services Manager - Marin County Sheriff's Office • Jorge Anaya, Count of Los Angeles Office of Emergency Management
9:45 – 10:45	Using Evidence to Create Effective Alert Messages	Michelle Wood, PhD, Associate Professor and Vice Chair - Department of Health Science, California State University, Fullerton
10:45 – 11:00	Break	
11:00 – 12:15	Creating Your Messages - An Interactive Workshop	• Kristine Jordan, Public Information Officer - Napa County • Jenny Thamer, Director - Nusura • Heather Tiernan, Community Warning System Manager - Contra Costa County
12:15 – 1:15	Lunch and Learn: Alert & Warning Legislative Update	Reggie Salvador, Chief of Legislative and External Affairs - CalOES
1:15 – 2:45	Reaching the Whole Community with Mass Notification	• Vance Taylor, Chief, Office of Access and Functional Needs - Cal OES • Suzanne Rosen Singleton, Chief, Disability Rights Office - Federal Communications Commission
2:45 – 3:00	Everbridge - Mobilizing Cross Jurisdictional Collaboration for Effective Critical Event Management	Jeremiah Kunze, MS, CEM, Practice and Adoption Manager - Everbridge
3:00 – 3:15	Break	
3:15 – 4:25	Can I Get Your Number? Best Practices that Drive Mass Notification Sign-Ups	• Corey Reynolds, Regional Project Manager - Bay Area UASI

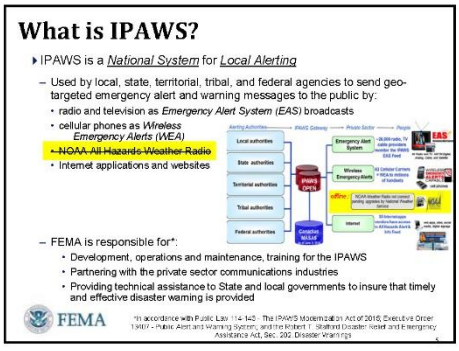
		• Jeff Norris, Emergency Services Coordinator - San Mateo County Sheriff's Office, Office of Emergency Services • Mary Jo Flynn, Emergency Operations Coordinator - Sacramento County Office of Emergency Services • Rebecca Baudendistel, Deputy Program Manager - Notify NYC, NYC Emergency Management • Allison Pennisi, Director of Communications - NYC Emergency Management
4:25 – 4:55	But What About…? An Open Session for Lingering Questions and Future Seminar Topic Suggestions	Corey Reynolds, Regional Project Manager - Bay Area UASI
4:55 – 5:00	Day 2 Closing Remarks	

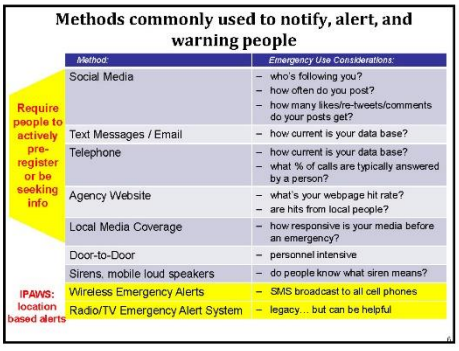
APPENDIX D – PRESENTATION DECK DAY ONE





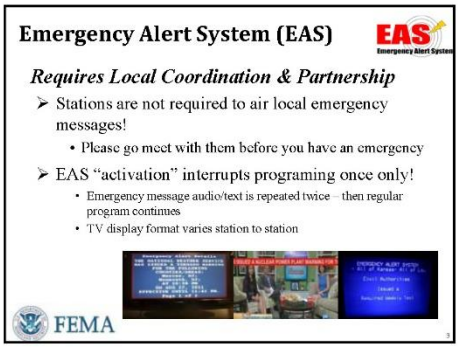


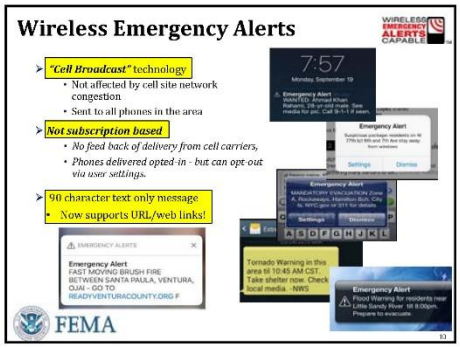


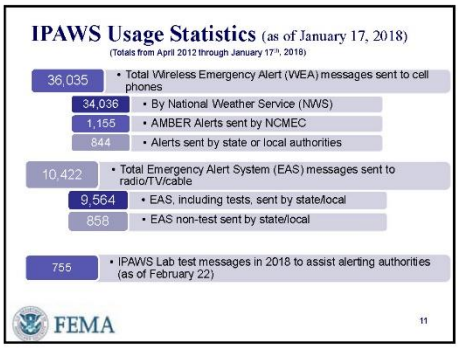


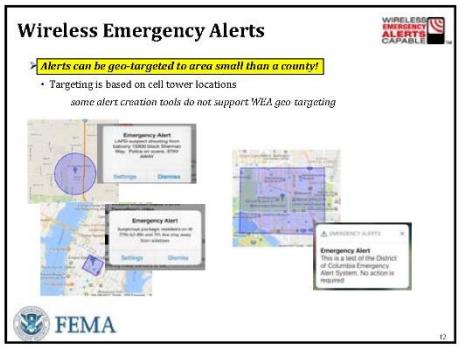

How does an Alerting Authority use IPAWS? ...via one of more than 40 vendors with IPAWS interoperability...
CODE RED
everbridge
Comlabs EMnet
alertstudio
AlertSense
WENS
Hyper-Reach
WebEOC
NC4 E Team®
DisasterLAN
NIXLE
RAVE
On-The-Go Alerting
Digital Alert Systems
BlackBerry AtHoc
SWIFTREACH
Swift911™
CIVICREADY
FIRSTCALL
FEDERAL SIGNAL
Blackboard
7

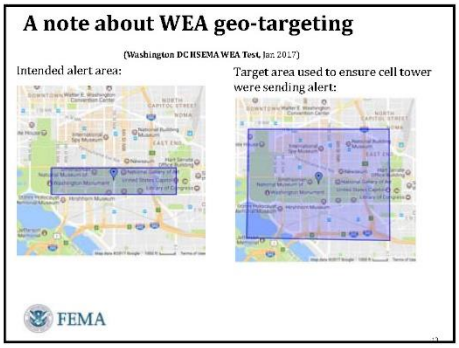

How do people get alerts sent via IPAWS? ... as Emergency Alert broadcasts on Radio/TV and WEA messages on cell phones!
EAS
Emergency Alert System
WIRELESS EMERGENCY ALERTS CAPABLE
FEMA

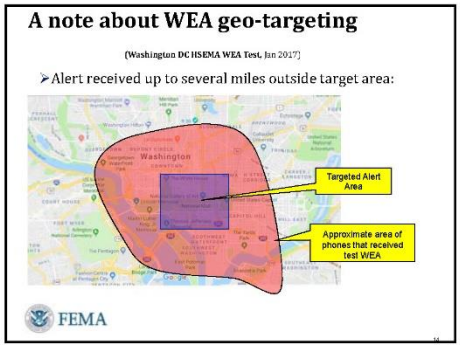

Emergency Alert System (EAS)
EAS
Emergency Alert System
Requires Local Coordination & Partnership
Stations are not required to air local emergency messages!
Please go meet with them before you have an emergency
EAS "activation" interrupts programing once only!
Emergency message audio/text is repeated twice – then regular program continues
TV display format varies station to station
FEMA

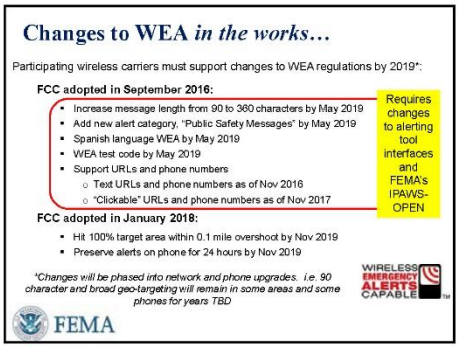

Wireless Emergency Alerts
WIRELESS EMERGENCY ALERTS CAPABLE
"Cell Broadcast" technology
Not affected by cell site network congestion
Sent to all phones in the area
Not subscription based
No feed back of delivery from cell carriers,
Phones delivered opted-in - but can opt-out via user settings.
90 character text only message
Now supports URL/web links!
FEMA

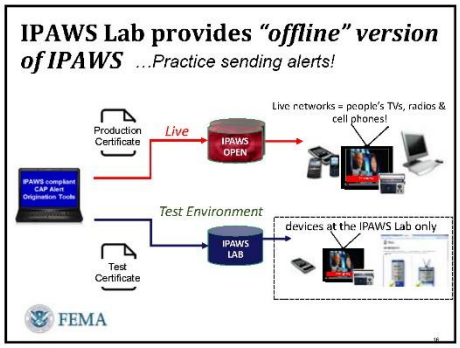

IPAWS Usage Statistics (as of January 17, 2018)
(Totals from April 2012 through January 17th, 2018)
36,035 • Total Wireless Emergency Alert (WEA) messages sent to cell phones
34,036 • By National Weather Service (NWS)
1,155 • AMBER Alerts sent by NCMEC
844 • Alerts sent by state or local authorities
10,422 • Total Emergency Alert System (EAS) messages sent to radio/TV/cable
9,564 • EAS, including tests, sent by state/local
858 • EAS non-test sent by state/local
755 • IPAWS Lab test messages in 2018 to assist alerting authorities (as of February 22)
FEMA
11

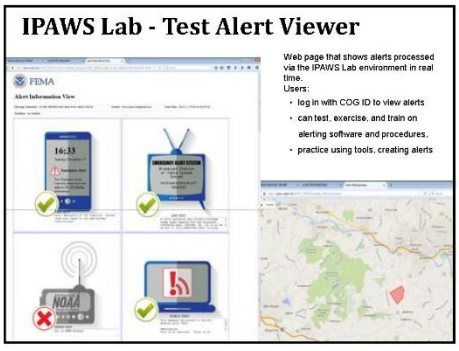

Wireless Emergency Alerts
WIRELESS EMERGENCY ALERTS CAPABLE
Alerts can be geo-targeted to area small than a county!
Targeting is based on cell tower locations
some alert creation tools do not support WEA geo-targeting
FEMA


A note about WEA geo-targeting
(Washington DC HSEMA WEA Test, Jan 2017)
Intended alert area:
Target area used to ensure cell tower were sending alert:
FEMA

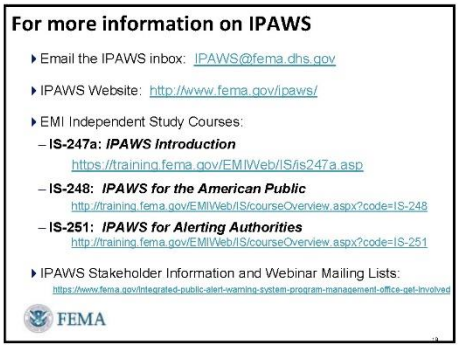

A note about WEA geo-targeting
(Washington DC HSEMA WEA Test, Jan 2017)
Alert received up to several miles outside target area:
Targeted Alert Area
Approximate area of phones that received test WEA
FEMA

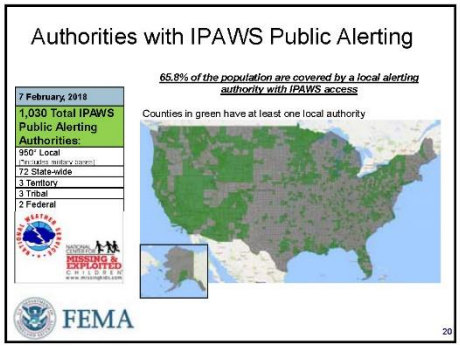

Changes to WEA in the works…
Participating wireless carriers must support changes to WEA regulations by 2019*:
FCC adopted in September 2016:
Increase message length from 90 to 360 characters by May 2019
Add new alert category, "Public Safety Messages" by May 2019
Spanish language WEA by May 2019
WEA test code by May 2019
Support URLs and phone numbers
Text URLs and phone numbers as of Nov 2016
"Clickable" URLs and phone numbers as of Nov 2017
Requires changes to alerting tool interfaces and FEMA's IPAWS-OPEN
FCC adopted in January 2018:
Hit 100% target area within 0.1 mile overshoot by Nov 2019
Preserve alerts on phone for 24 hours by Nov 2019
*Changes will be phased into network and phone upgrades. i.e. 90 character and broad geo-targeting will remain in some areas and some phones for years TBD
WIRELESS EMERGENCY ALERTS CAPABLE
FEMA

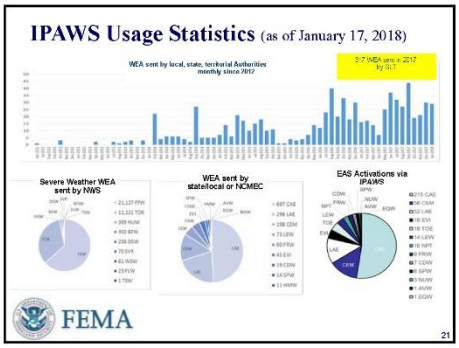

IPAWS Lab provides "offline" version of IPAWS …Practice sending alerts!
Production Certificate
Live
IPAWS OPEN
Live networks = people's TVs, radios & cell phones!
IPAWS-compliant CAP Alert Origination Tools
Test Environment
IPAWS LAB
Test Certificate
devices at the IPAWS Lab only
FEMA

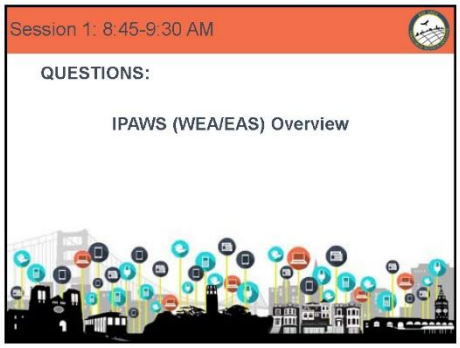

IPAWS Lab - Test Alert Viewer
Web page that shows alerts processed via the IPAWS Lab environment in real time.
Users:
log in with COG ID to view alerts
can test, exercise, and train on alerting software and procedures,
practice using tools, creating alerts
FEMA
NOAA


Thank you!
IPAWS@fema.dhs.gov
IPAWS
Integrated Public Alert and Warning System
FEMA


For more information on IPAWS
Email the IPAWS inbox: IPAWS@fema.dhs.gov
IPAWS Website: http://www.fema.gov/ipaws/
EMI Independent Study Courses:
– IS-247a: IPAWS Introduction
https://training.fema.gov/EMIWeb/IS/is247a.asp
– IS-248: IPAWS for the American Public
http://training.fema.gov/EMIWeb/IS/courseOverview.aspx?code=IS-248
– IS-251: IPAWS for Alerting Authorities
http://training.fema.gov/EMIWeb/IS/courseOverview.aspx?code=IS-251
IPAWS Stakeholder Information and Webinar Mailing Lists:
https://www.fema.gov/integrated-public-alert-warning-system-program-management-office-get-involved
FEMA


Authorities with IPAWS Public Alerting
65.8% of the population are covered by a local alerting authority with IPAWS access
7 February, 2018
1,030 Total IPAWS Public Alerting Authorities:
950* Local
72 State-wide
3 Territory
3 Tribal
2 Federal
Counties in green have at least one local authority
FEMA
20


IPAWS Usage Statistics (as of January 17, 2018)
WEA sent by local, state, territorial Authorities monthly since 2012
Severe Weather WEA sent by NWS
WEA sent by state/local or NCMEC
EAS Activations via IPAWS
FEMA
21


Session 1: 8:45-9:30 AM
QUESTIONS:
IPAWS (WEA/EAS) Overview


Session 2: 9:30 – 10:40 AM
WEA Coordination During Recent Disasters
Woody Baker-Cohn, Emergency Services Coordinator - Marin County Sheriff's Office
Thomas Chin, Emergency Services Coordinator - San Francisco Department of Emergency Management
Jody Smith, IT Specialist, IPAWS Engineering - Department of Homeland Security
Justin Cain – Deputy Chief, Operations and Emergency Management Division - Public Safety and Homeland Security Bureau, FCC
Moderator: Scott MacKay, General Manager - Constant Associates


FEMA
Integrated Public Alert and Warning System
Jody Smith
IPAWS Engineering
Jody.smith@fema.dhs.gov
March 14, 2018

Alert and Warning Coordination

- Best Practices
  - The key = Communication
  - Build relationships with your warning partners
    - SECC & State Broadcast Assoc. involvement
    - Bridge the gap between broadcasters and emergency management
    - Build a level of trust and understanding with neighbors
  - Memorandum of Understanding
    - Set guidelines -- identify situations
    - Prior notification, if possible

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Alert and Warning Coordination

- Best Practices
  - Proper Plans and Procedures
    - Establish joint/jurisdictional operational plans
    - Identify hazards
    - Understand event types
    - Share information
    - Assign roles and responsibilities
    - Create checklists
    - Update and revise

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Alert and Warning Coordination

- Best Practices
  - Training and education
    - Be willing to use your tool
    - Use the IPAWS Lab
    - Educate the public on capabilities
  - Practice and exercise
    - Regularly
    - Involve the public; solicit feedback

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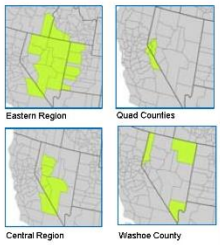
Regional Jurisdictions

- Nevada
  - 3 Regions
    - Eastern Region
      - 8 Nevada; 5 Utah; 1 Oregon; 2 Idaho; 1 California
    - Quad Counties
      - 4 Nevada; 2 California
    - Central Region
      - 5 Nevada; 1 California
  - Washoe County
    - State back-up
    - Washoe, Clark, Elko



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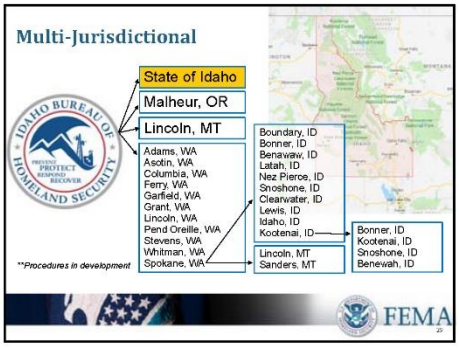
Multi-Jurisdictional



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Inter-Jurisdictional

- Pentagon Force Protection Agency & Arlington County, VA
  - Memorandum of Understanding
    - Arlington County Office of Emergency Management
    - Pentagon Force Protection Agency
    - Virginia Department of Emergency Management
  - Defined criteria
    - When PFPA may activate WEA
    - Message criteria:
      - WEA with a polygon
      - Message text will clearly define that incident is on the grounds of the Pentagon
      - PFPA will notify Arlington County OEM before sending the WEA, if possible
      - Follow a 6-step procedure

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Cross-Jurisdictional

- New York Port Authority of NY and NJ
  - 6 counties in each state
  - Infrastructure-specific
  - Emphasis on including facility in the WEA text

Facility Name	Zip Code	NJ / FIPS Code
Atlantic City International Airport	08234	Atlantic 34,001
George Washington Bridge	07024	Bergen 34,003
Teterboro Airport	07608	Bergen 34,003
Newark Liberty International Airport	07114	Essex 34,013
New Jersey Marine Terminals	07114	Essex 34,013
Holland Tunnel	07310	Hudson 34,017
Journal Square Transportation Center	07306	Hudson 34,017
Lincoln Tunnel	07087	Hudson 34,017
2 Montgomery	07302	Hudson 34,017
Port Authority Technical Center	07310	Hudson 34,017
PATH	07306	Hudson 34,017
Bayonne Bridge	10302	Hudson 34,017
Outerbridge Crossing	10309	Middlesex 34,023
Elizabeth PA Marine Terminal	07201	Union 34,039
Goethals Bridge	10303	Union 34,039

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Agency Coordination

- Pennsylvania EMA and PENNDOT
  - Collaborative relationship with PEMA, PA Department of Transportation and the PA Turnpike
  - Goal: reduce the number of folks trapped on the turnpike
  - SOP in place
    - PEMA sends WEA
    - Trapped travelers directed to 511paconnect.com
    - Travelers register information (medical issues, type of vehicle, cell number)
    - Situational awareness provided by preferred method
    - All info deleted when incident is cleared
- PEMA Local Area Emergency to 3 counties
  - *"I-84 East and West experiencing multiple traffic incidents Go to 511paconnect.com."*

Actual Examples

WEA best-practice: What? Where? Action?

- Hurricane Irma – Florida DEM
  - EVI - "*Jefferson County has issued a voluntary evacuation order of mobile homes and low lying areas effective immediately.*"
  - LAE – *"Orange Co Gov issued Mandatory Evacuation Order for Mobile Homes effective immediately."*
  - LAE via EAS – *"Sent on behalf of Hendry County Emergency Management – Hurricane force windes expected in the next hour – seek shelter."*

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Actual Examples

- CalOES Fire Warning to 7 counties
  - FRW - "*Strong winds over night creating extreme fire danger. Stay alert. Listen to authorities.*"
- Washoe County, NV State back-up to 6 counties
  - CDW – *"Due to outage ATT cell phones cannot dial nine one one. Use three three four 2121 or land."*

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Actual Examples

- New York State Police Law Enforcement Warning to 5 counties
  - LEW - *"SP looking for 2 fugitives from TN pos armed last in Bloomingburg. Nyspnews.com for info."*

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ipaws@fema.dhs.gov

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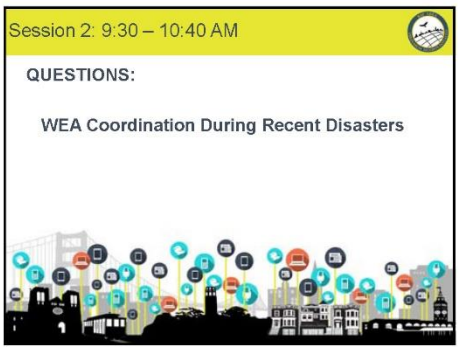
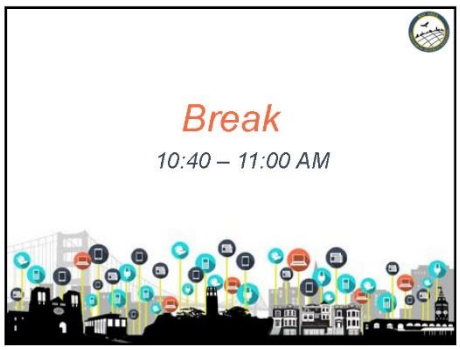
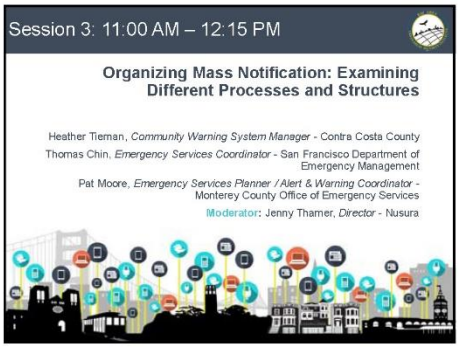
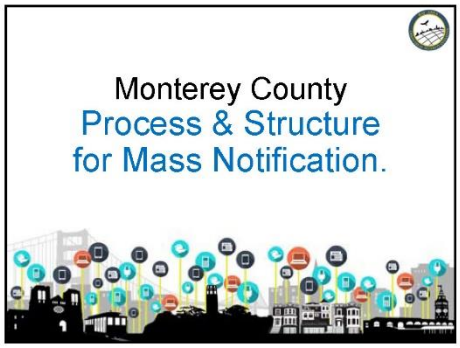
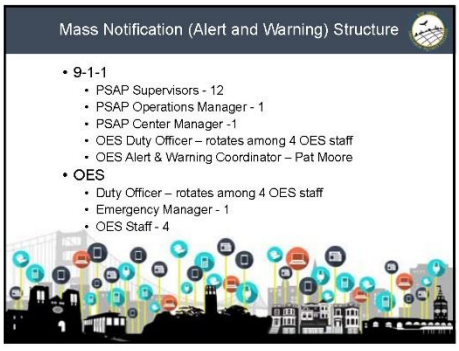
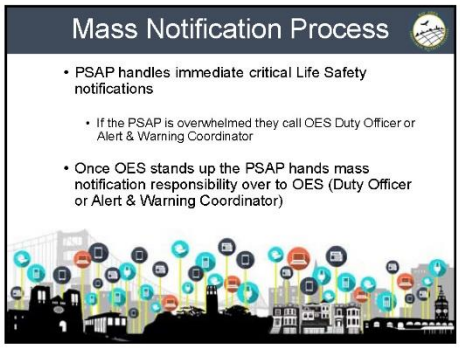

Session 2: 9:30 – 10:40 AM
QUESTIONS:
WEA Coordination During Recent Disasters


Break
10:40 – 11:00 AM

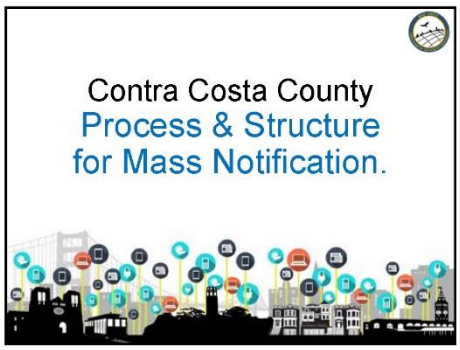

Session 3: 11:00 AM – 12:15 PM
Organizing Mass Notification: Examining Different Processes and Structures
Heather Tiernan, Community Warning System Manager - Contra Costa County
Thomas Chin, Emergency Services Coordinator - San Francisco Department of Emergency Management
Pat Moore, Emergency Services Planner / Alert & Warning Coordinator - Monterey County Office of Emergency Services
Moderator: Jenny Thamer, Director - Nusura

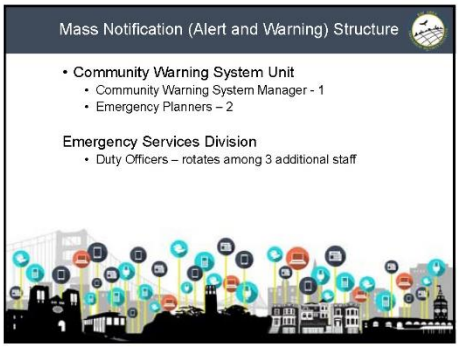

Monterey County
Process & Structure
for Mass Notification.


Mass Notification (Alert and Warning) Structure
• 9-1-1
• PSAP Supervisors - 12
• PSAP Operations Manager - 1
• PSAP Center Manager -1
• OES Duty Officer – rotates among 4 OES staff
• OES Alert & Warning Coordinator – Pat Moore
• OES
• Duty Officer – rotates among 4 OES staff
• Emergency Manager - 1
• OES Staff - 4


Mass Notification Process
• PSAP handles immediate critical Life Safety notifications
• If the PSAP is overwhelmed they call OES Duty Officer or Alert & Warning Coordinator
• Once OES stands up the PSAP hands mass notification responsibility over to OES (Duty Officer or Alert & Warning Coordinator)

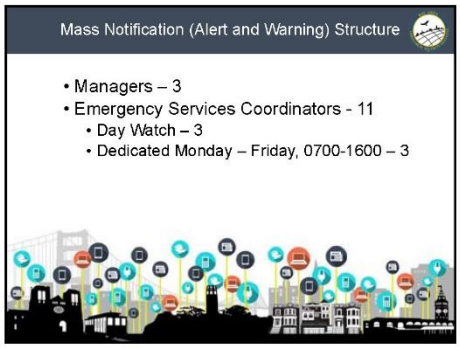

IPAWS
• Only the PSAP Operations and Center Managers and OES staff have the ability to push a WEA or EAS message.

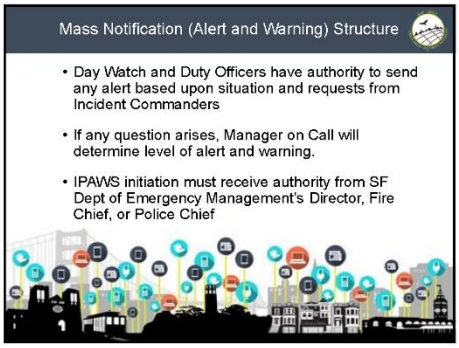

Contra Costa County
Process & Structure
for Mass Notification.

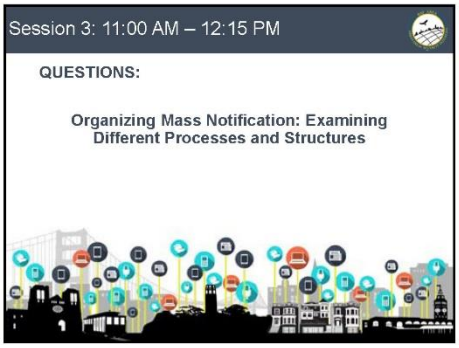

Mass Notification (Alert and Warning) Structure
• Community Warning System Unit
• Community Warning System Manager - 1
• Emergency Planners – 2
Emergency Services Division
• Duty Officers – rotates among 3 additional staff


Mass Notification Process
• Duty Officer handles immediate critical Life Safety notifications
• During business hours, duty officer is on call, though CWS staff handles requests
• CWS staff continues to manage mass notification responsibility throughout the incident

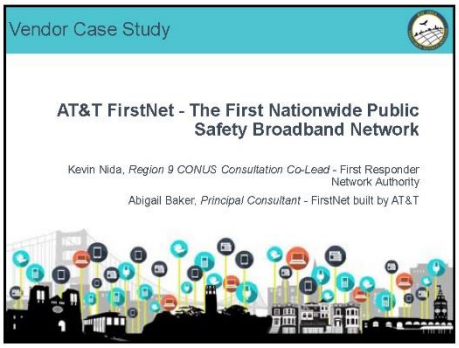

San Francisco
Process & Structure
for Mass Notification.

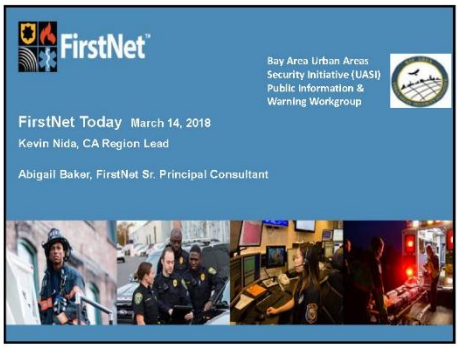

Mass Notification (Alert and Warning) Structure
• Managers – 3
• Emergency Services Coordinators - 11
• Day Watch – 3
• Dedicated Monday – Friday, 0700-1600 – 3

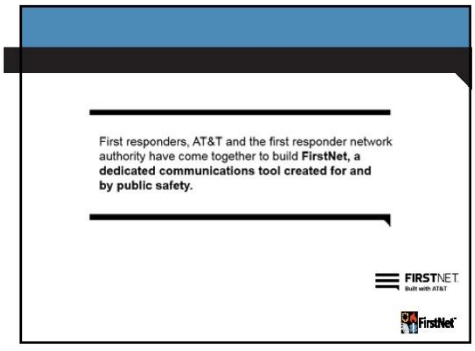

Mass Notification (Alert and Warning) Structure
• Day Watch and Duty Officers have authority to send any alert based upon situation and requests from Incident Commanders
• If any question arises, Manager on Call will determine level of alert and warning.
• IPAWS initiation must receive authority from SF Dept of Emergency Management's Director, Fire Chief, or Police Chief

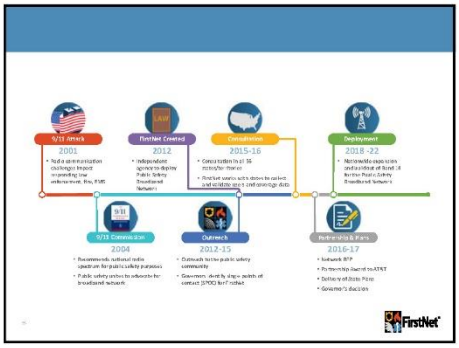

Session 3: 11:00 AM – 12:15 PM
QUESTIONS:
Organizing Mass Notification: Examining Different Processes and Structures


Networking Lunch
12:15 – 1:15 PM

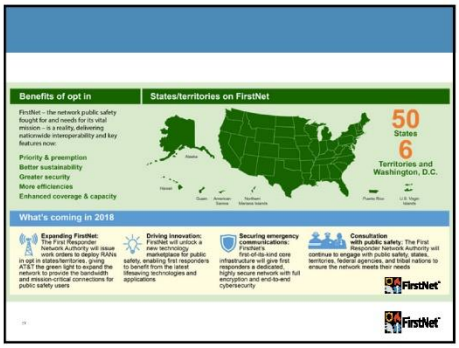

Vendor Case Study
AT&T FirstNet - The First Nationwide Public Safety Broadband Network
Kevin Nida, Region 9 CONUS Consultation Co-Lead - First Responder Network Authority
Abigail Baker, Principal Consultant - FirstNet built by AT&T

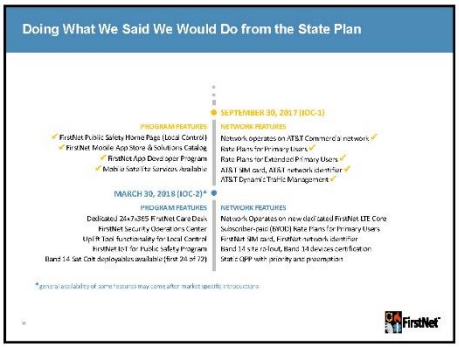

FirstNet
Bay Area Urban Areas Security Initiative (UASI) Public Information & Warning Workgroup
FirstNet Today March 14, 2018
Kevin Nida, CA Region Lead
Abigail Baker, FirstNet Sr. Principal Consultant


First responders, AT&T and the first responder network authority have come together to build FirstNet, a dedicated communications tool created for and by public safety.
FIRSTNET
FirstNet

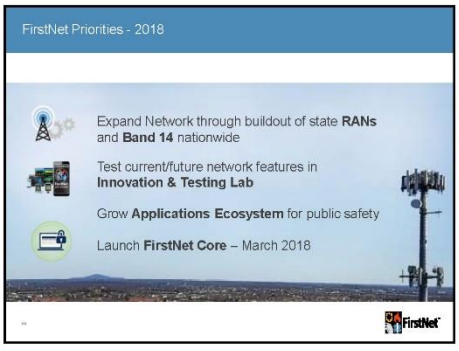

9/11 Attacks
2001
FirstNet Created
2012
Consultation
2015-16
Deployment
2018 - 22
9/11 Commission
2004
Outreach
2012-15
Partnership & Plans
2016-17
FirstNet

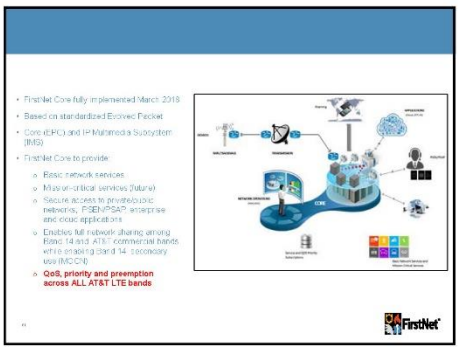

Innovative public-private partnership
Customer experience
20MHz Spectrum
$100B Infrastructure
Technology & Innovation
FirstNet
AT&T
Program management
Public safety
Secured Network
Telecom Expertise
Creating an infrastructure dedicated to public safety
FirstNet

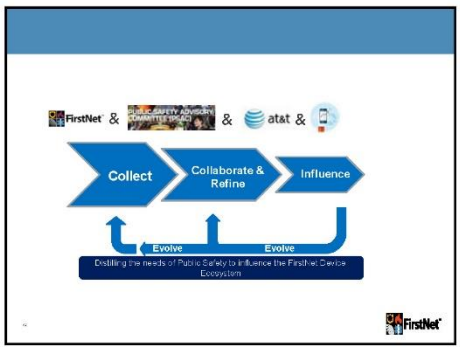

Benefits of opt in
States/territories on FirstNet
50 States
6 Territories and Washington, D.C.
Priority & preemption
Better sustainability
Greater security
More efficiencies
Enhanced coverage & capacity
What's coming in 2018
Expanding FirstNet:
Driving innovation:
Securing emergency communications:
Consultation with public safety:
FirstNet

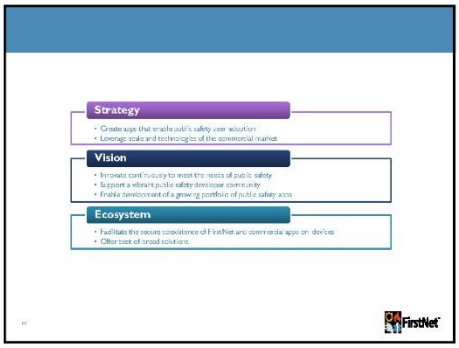

Doing What We Said We Would Do from the State Plan
SEPTEMBER 30, 2017 (IOC-1)
PROGRAM FEATURES
NETWORK FEATURES
FirstNet Public Safety Home Page (Local Control)
FirstNet Mobile App Store & Solutions Catalog
FirstNet App Developer Program
Mobile Satellite Services Available
Network operates on AT&T Commercial network
Rate Plans for Primary Users
Rate Plans for Extended Primary Users
AT&T VM card, AT&T network identifier
AT&T Dynamic Traffic Management
MARCH 30, 2018 (IOC-2)*
PROGRAM FEATURES
NETWORK FEATURES
Dedicated 24x7x365 FirstNet Care Desk
FirstNet Security Operations Center
Opt-in Test functionality for Local Control
FirstNet IoT for Public Safety Programs
Band 14 Sat Cell deployables available (first 26 of 72)
Network Operates on new dedicated FirstNet LTE Core
Subscriber-pac (SPOC) Rate Plans for Primary Users
FirstNet SIM card, FirstNet network identifier
Band 14 site cutout, Band 14 devices certification
Static QPP with priority and preemption
*general availability of some features may come after market specific introductions
FirstNet

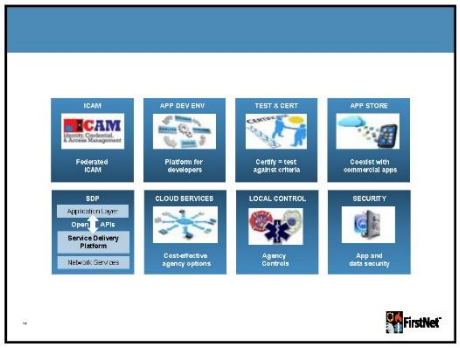

Public Safety Priorities
Delivering on what public safety asked for
• Public safety always gets priority
• Highly secure network to meet public safety's data requirements
• Controlled access by public safety agencies for their users
• Coverage where public safety operates
• Enhanced user experience
FirstNet


FirstNet Priorities - 2018
Expand Network through buildout of state **RANs** and **Band 14** nationwide
Test current/future network features in **Innovation & Testing Lab**
Grow **Applications Ecosystem** for public safety
Launch **FirstNet Core** – March 2018
FirstNet

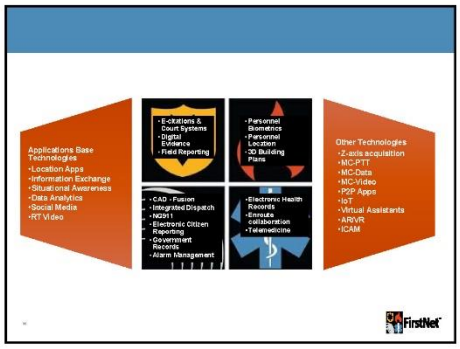

FirstNet Core fully implemented March 2018
Based on standardized Evolved Packet
Core (EPC) and IP Multimedia Subsystem (IMS)
FirstNet Core to provide:
Basic network services
Mission-critical services (future)
Secure access to private/public networks, PSEN/PSAP, enterprise and cloud applications
Enables full network sharing among Band 14 and AT&T commercial bands while enabling Band 14 "secondary" use (MOCN)
QoS, priority and preemption across ALL AT&T LTE bands
FirstNet

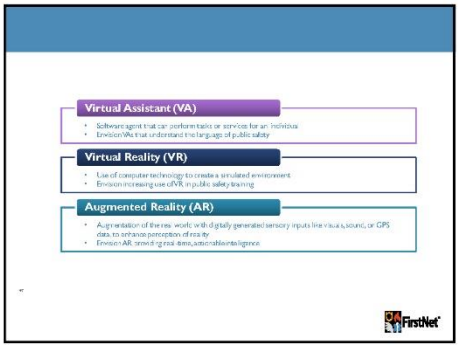

FirstNet & & at&t &
Collect
Collaborate & Refine
Influence
Evolve
Evolve
Distilling the needs of Public Safety to influence the FirstNet Device Ecosystem
FirstNet

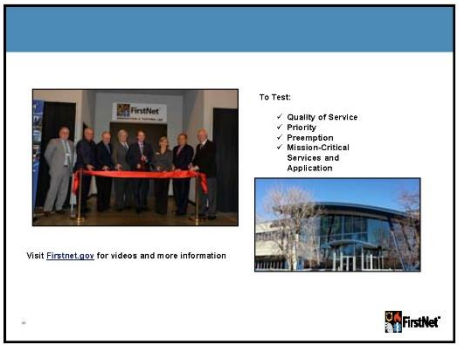

Strategy
Create app that enable public safety user adoption
Leverage scale and technologies of the commercial market
Vision
Innovate continuously to meet the needs of public safety
Support a vibrant public safety developer community
Enable development of a growing portfolio of public safety apps
Ecosystem
Facilitate the secure coexistence of FirstNet and commercial apps on devices
Offer best of breed solutions
FirstNet

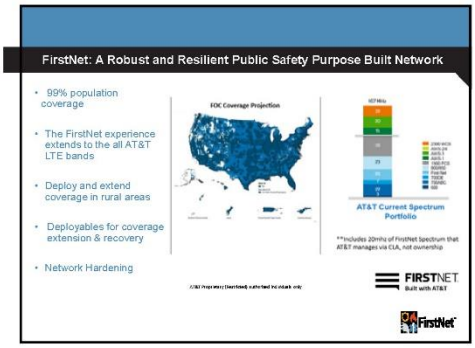

ICAM
Federated ICAM
APP DEV ENV
Platform for developers
TEST & CERT
Certify + test against criteria
APP STORE
Coexist with commercial apps
SDP
Application Layer
Open APIs
Service Delivery Platform
Network Services
CLOUD SERVICES
Cost-effective agency systems
LOCAL CONTROL
Agency Controls
SECURITY
App and data security
FirstNet


Pillars for Driving Standards
Technical
Drive adoption of existing standards, or the creation of new ones
Drive economies of scale
Improve user experience
Minimize interop challenges
Marketing
Create strategies to encourage development and use of apps that employ standards
Lower barriers to entry for new public safety application developers
Legislative
Advocate changes to grant programs encouraging (requiring) selection of apps that employ standards
Stakeholders
Include PSAC, PS users, agencies, developers, AT&T, academia, associations, and federal partners
FirstNet


Applications Base Technologies
•Location Apps
•Information Exchange
•Situational Awareness
•Data Analytics
•Social Media
•RT Video
•E-citations & Court Systems
•Digital Evidence
•Field Reporting
•Personnel Biometrics
•Personnel Location
•3D Building Plans
•CAD - Fusion
•Integrated Dispatch
•NG911
•Electronic Citizen Reporting
•Government Records
•Alarm Management
•Electronic Health Records
•Enroute collaboration
•Telemedicine
Other Technologies
•Z-axis acquisition
•MC-PTT
•MC-Data
•MC-Video
•P2P Apps
•IoT
•Virtual Assistants
•AR/VR
•ICAM
FirstNet


Virtual Assistant (VA)
Virtual Reality (VR)
Augmented Reality (AR)
FirstNet

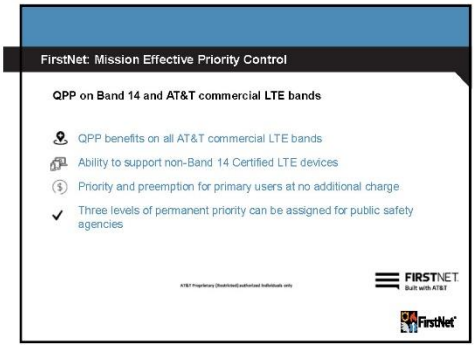

To Test:
✓ Quality of Service
✓ Priority
✓ Preemption
✓ Mission-Critical Services and Application
Visit Firstnet.gov for videos and more information
FirstNet


FirstNet: A Robust and Resilient Public Safety Purpose Built Network
99% population coverage
The FirstNet experience extends to the all AT&T LTE bands
Deploy and extend coverage in rural areas
Deployables for coverage extension & recovery
Network Hardening
AT&T Current Spectrum Portfolio
FIRSTNET
FirstNet


DEPLOYABLE ASSETS AVAILABLE TO PUBLIC SAFETY
Existing Assets
120+
LTE Deployables
*Potential to Use Your Own Entity Assets
Dedicated FirstNet Assets
72
FirstNet dedicated SatCOLTs
FIRSTNET
FirstNet


In-Building Solutions
•Access to existing in-building AT&T LTE network architecture
•FirstNet Priority access will be available on AT&T LTE in-building network architecture
•6,000 Existing Distributed Antenna Systems (DAS) distributed across the FirstNet footprint
FIRSTNET
FirstNet


What is QPP, And Why Does Public Safety Need It
Quality of Service (QoS): establishes minimum/maximum service quality parameters
Priority: Gives users preferred access to network resources
Preemption: Terminates or relocates lower priority users to provide primary users with access
FBI
FIRSTNET
FirstNet


FirstNet: Mission Effective Priority Control
QPP on Band 14 and AT&T commercial LTE bands
QPP benefits on all AT&T commercial LTE bands
Ability to support non-Band 14 Certified LTE devices
Priority and preemption for primary users at no additional charge
Three levels of permanent priority can be assigned for public safety agencies
FIRSTNET
Built with AT&T
FirstNet


FirstNet Security: Protecting the Network that Protects America
24x7 SOC dedicated to FirstNet
End-to-end encryption
ICAM integration
Ruggedized to withstand outages and threats
Aligned policies to meet FirstNet objectives
FIRSTNET
Built with AT&T
FirstNet


ICAM: Secure User Experience for Public Safety
One touch mobile Single Sign-On
Federated Single Sign-On
Biometric or other multi-factor authentication
End user authentication with advanced encryption
Identity Management (IdM)
Derived Credentials for Common Access Card (CAC) and Personal Identity Verification (PIV) card solutions
Public Safety Benefits:
BYOD to FirstNet
Attribute/Role Based Access Control
Federated Identity Management - Bring Your Own Credentials (BYOC)
End User Benefits:
Easy and secured ecosystem to internal applications, FirstNet Ecosystem, and relevant public safety applications
Look and feel of application based user identity
Working with Public Safety users to add new solutions
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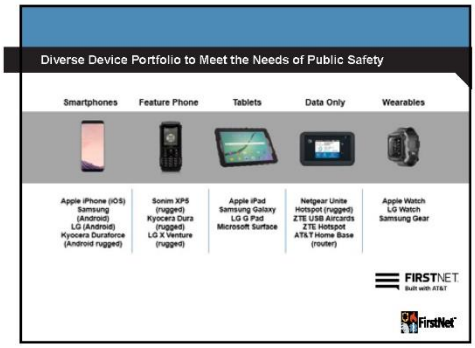
Diverse Device Portfolio to Meet the Needs of Public Safety
Smartphones
Feature Phone
Tablets
Data Only
Wearables
Apple iPhone (iOS)
Samsung (Android)
LG (Android)
Kyocera Duraforce (Android rugged)
Sonim XP5 (rugged)
Kyocera Dura (rugged)
LG X Venture (rugged)
Apple iPad
Samsung Galaxy
LG G Pad
Microsoft Surface
Netgear Unite Hotspot (rugged)
ZTE USB Aircards
ZTE Hotspot
AT&T Home Base (router)
Apple Watch
LG Watch
Samsung Gear
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FirstNet


Diverse Device Portfolio to Meet the Needs of Public Safety
Trunk-Mounted Modem
Internet of Things Connectivity
Ruggedized Tablets & Laptops
PTT Devices & Accessories
Enables connectivity to a wide variety of connected devices
Connects and enables smart devices
Highly secure in-vehicle access to critical applications and services
Efficient wireless connectivity to existing LMR Radio systems
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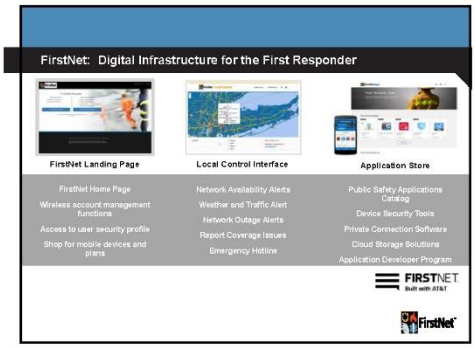
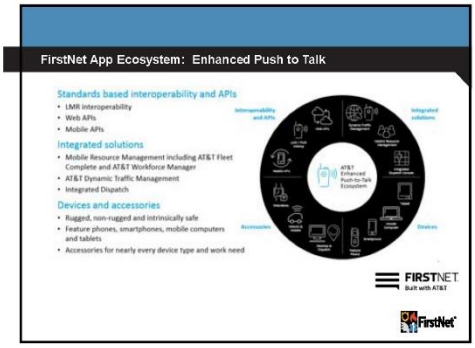
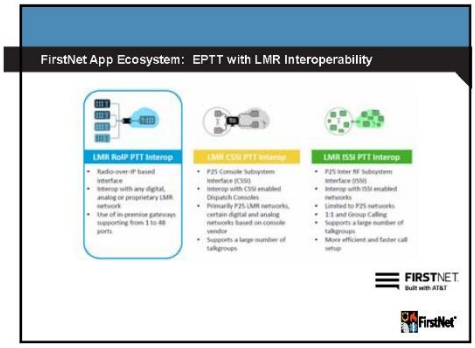
FirstNet


FirstNet: Digital Infrastructure for the First Responder
FirstNet Landing Page
Local Control Interface
Application Store
FirstNet Home Page
Wireless account management functions
Access to user security profile
Shop for mobile devices and plans
Network Availability Alerts
Weather and Traffic Alert
Network Outage Alerts
Report Coverage Issues
Emergency Hotline
Public Safety Applications Catalog
Device Security Tools
Private Connection Software
Cloud Storage Solutions
Application Developer Program
FIRSTNET
Built with AT&T
FirstNet


FirstNet App Ecosystem: Enhanced Push to Talk
Standards based interoperability and APIs
• LMR interoperability
• Web APIs
• Mobile APIs
Integrated solutions
• Mobile Resource Management including AT&T Fleet Complete and AT&T Workforce Manager
• AT&T Dynamic Traffic Management
• Integrated Dispatch
Devices and accessories
• Rugged, non-rugged and intrinsically safe
• Feature phones, smartphones, mobile computers and tablets
• Accessories for nearly every device type and work need
FIRSTNET
Built with AT&T
FirstNet


FirstNet App Ecosystem: EPTT with LMR Interoperability
LMR RoIP PTT Interop
LMR CSSI PTT Interop
LMR ISSI PTT Interop
FIRSTNET
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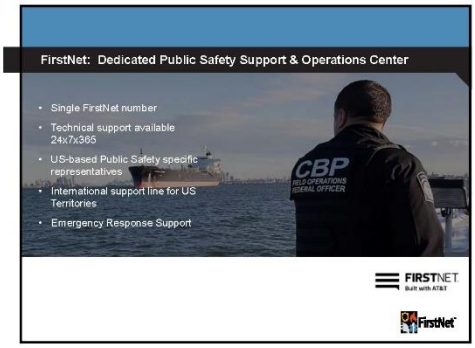
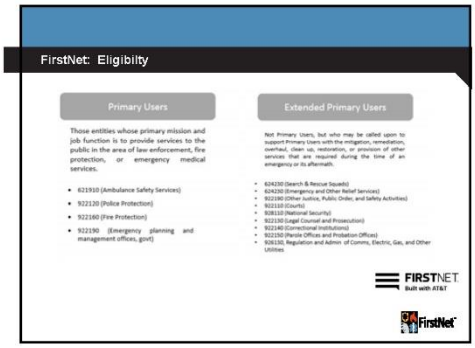
FirstNet


FirstNet: Dedicated Public Safety Support & Operations Center
• Single FirstNet number
• Technical support available 24x7x365
• US-based Public Safety specific representatives
• International support line for US Territories
• Emergency Response Support
CBP
FIELD OPERATIONS
FEDERAL OFFICER
FIRSTNET
Built with AT&T
FirstNet


FirstNet: Eligibilty
Primary Users
Those entities whose primary mission and job function is to provide services to the public in the area of law enforcement, fire protection, or emergency medical services.
• 621910 (Ambulance Safety Services)
• 922120 (Police Protection)
• 922160 (Fire Protection)
• 922190 (Emergency planning and management offices, govt)
Extended Primary Users
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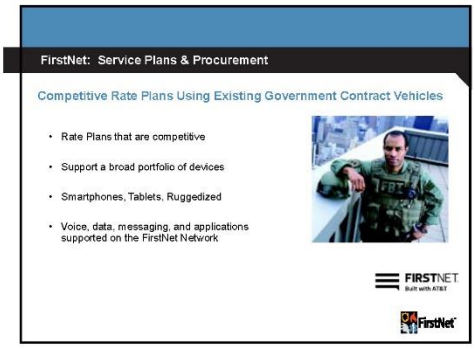
FirstNet: Service Plans & Procurement
Competitive Rate Plans Using Existing Government Contract Vehicles
• Rate Plans that are competitive
• Support a broad portfolio of devices
• Smartphones, Tablets, Ruggedized
• Voice, data, messaging, and applications supported on the FirstNet Network
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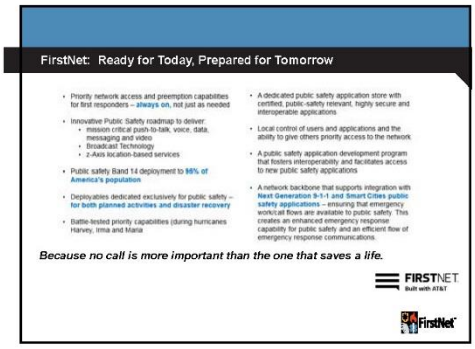
FirstNet


FirstNet: Ready for Today, Prepared for Tomorrow
• Priority network access and preemption capabilities for first responders – always on, not just as needed
• Innovative Public Safety roadmap to deliver:
• mission critical push-to-talk, voice, data, messaging and video
• Broadcast Technology
• z-Axis location-based services
• Public safety Band 14 deployment to 98% of America's population
• Deployables dedicated exclusively for public safety – for both planned activities and disaster recovery
• Battle-tested priority capabilities (during hurricanes Harvey, Irma and Maria
• A dedicated public safety application store with certified, public-safety relevant, highly secure and interoperable applications
• Local control of users and applications and the ability to give others priority access to the network
• A public safety application development program that fosters interoperability and facilitates access to new public safety applications
• A network backbone that supports integration with Next Generation 9-1-1 and Smart Cities public safety applications – ensuring that emergency work/call flows are available to public safety. This creates an enhanced emergency response capability for public safety and an efficient flow of emergency response communications
Because no call is more important than the one that saves a life.
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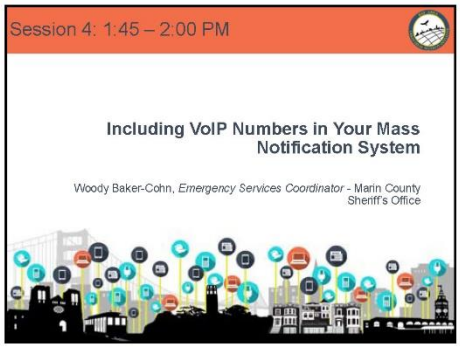
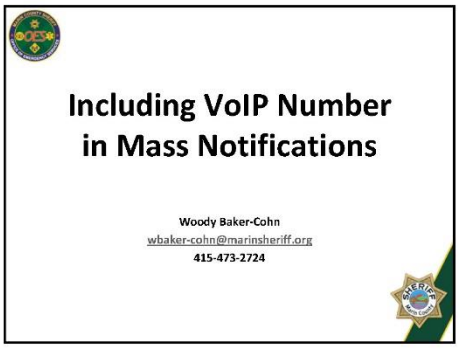
Built with AT&T
FirstNet

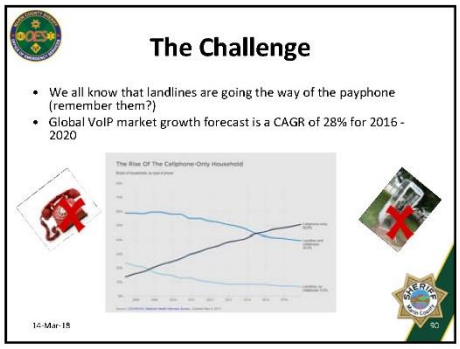

Where to go for FirstNet info
Two sites provide you complete information about this first-of-its-kind initiative:
.gov
.com
FirstNet program, activities and the First Responder Network Authority
On this site:
FirstNet network products and services and advantages for public safety
On this site:
FirstNet

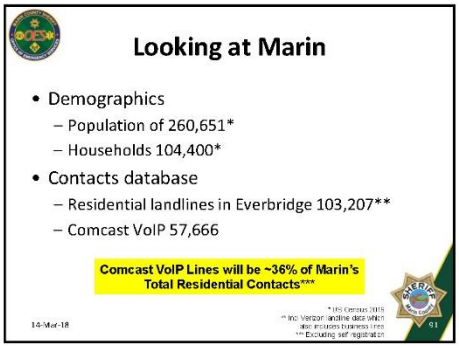

FirstNet News & Information
Stay Connected
Visit our Website
www.firstnet.gov
Blogs
FAQs
Fact Sheets
Presentations
Reports
Calendar of Events
Contact your State, Territory or Association Representatives
State Single Points of Contact (SPOC):
www.firstnet.gov/consultation
Public Safety Advisory Committee (PSAC):
Engage with us on Social Media
Facebook
(FirstNetGov)
Twitter
(@FirstNetGov)
Google+
(+FirstNetGov)
YouTube
(FirstNetGov)
Flickr (FirstNetGov)
LinkedIn
FirstNet

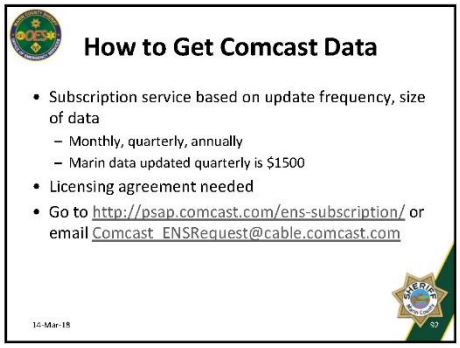

FirstNet
Q&A and Contact Information
Kevin Nida, CA Region Lead (202) 868-7670
Kevin.Nida@Firstnet.gov
Abigail Baker, FirstNet Sr. Principal Consultant (415) 609-6473
ab196a@att.com

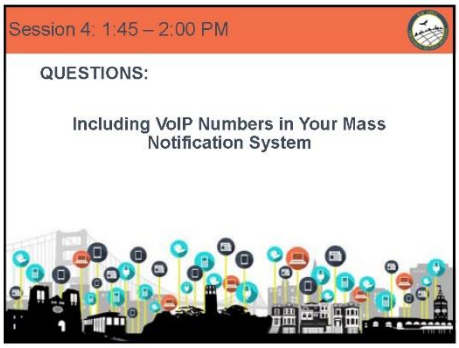

Session 4: 1:45 – 2:00 PM
Including VoIP Numbers in Your Mass Notification System
Woody Baker-Cohn, Emergency Services Coordinator - Marin County Sheriff's Office


Including VoIP Number in Mass Notifications
Woody Baker-Cohn
wbaker-cohn@marinsheriff.org
415-473-2724


The Challenge
We all know that landlines are going the way of the payphone (remember them?)
Global VoIP market growth forecast is a CAGR of 28% for 2016 - 2020
14-Mar-18

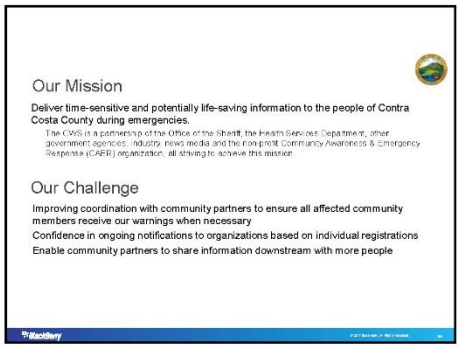

Looking at Marin
• Demographics
– Population of 260,651*
– Households 104,400*
• Contacts database
– Residential landlines in Everbridge 103,207**
– Comcast VoIP 57,666
Comcast VoIP Lines will be ~36% of Marin's Total Residential Contacts***
14-Mar-18


How to Get Comcast Data
• Subscription service based on update frequency, size of data
– Monthly, quarterly, annually
– Marin data updated quarterly is $1500
• Licensing agreement needed
• Go to http://psap.comcast.com/ens-subscription/ or email Comcast_ENSRequest@cable.comcast.com
14-Mar-18


Session 4: 1:45 – 2:00 PM
QUESTIONS:
Including VoIP Numbers in Your Mass Notification System


Vendor Case Study
AtHoc - Creating Targeted Organization and Business Mass Notifications
Heather Tiernan, Community Warning System Manager - Contra Costa County Office of the Sheriff
Josh Zaroor, Director Product Marketing - BlackBerry AtHoc


Contra Costa County Community Warning System
Building a Community Information Sharing Network
Heather Tiernan
Community Warning System Manager
Contra Costa County Office of the Sheriff

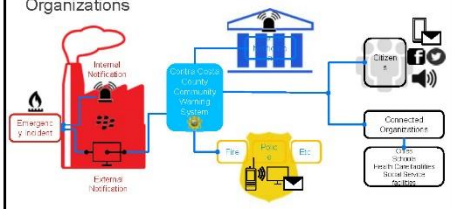

Our Mission
Deliver time-sensitive and potentially life-saving information to the people of Contra Costa County during emergencies.
The CWS is a partnership of the Office of the Sheriff, the Health Services Department, other government agencies, industry, news media and the non-profit Community Awareness & Emergency Response (CAER) organization, all striving to achieve this mission.
Our Challenge
Improving coordination with community partners to ensure all affected community members receive our warnings when necessary
Confidence in ongoing notifications to organizations based on individual registrations
Enable community partners to share information downstream with more people

Solution:

Leverage BlackBerry's AtHoc Connect to Build a Network

- By focusing on organizations, rather than end user registration, Connect provides a secure and trusted way to relay critical information to businesses and agency partners.
- Many of our connected organizations have direct contact with members of the public and can relay information within their organization.
- Relying on manual calls and texts to individuals without proper documentation or full confidence of message delivery is challenging.
- With our heavy industrial footprint, providing health and safety information in a timely fashion to the public is critical.

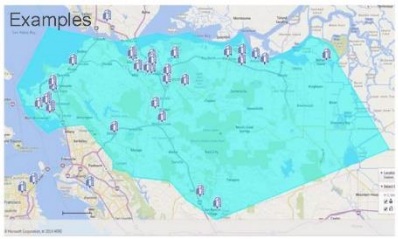
"Smart County" Notifications Enabled by Connected Organizations



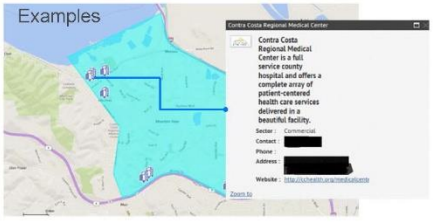
Benefits of BlackBerry AtHoc's Connect - Interoperable Communication Solution

Key Capabilities	Solution Approach
• Global directory of agencies facilitates easy discovery • Removes manual phone trees / email chains which lack security & reliability on delivery • Seamless "LinkedIn" like process to establish connection • Secure sharing of messages and geo-based information • Rule engine governs message delivery avoids need to expose users externally • Geo-based approach to collaborating with organizations	

Examples



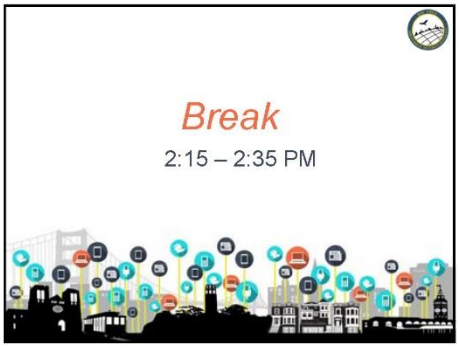
Examples

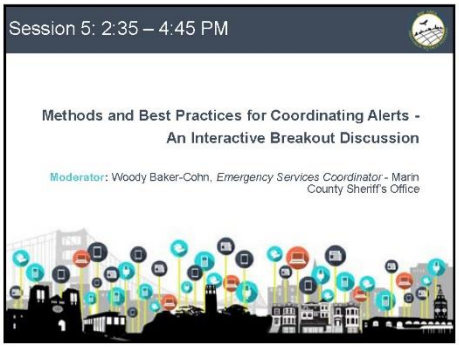


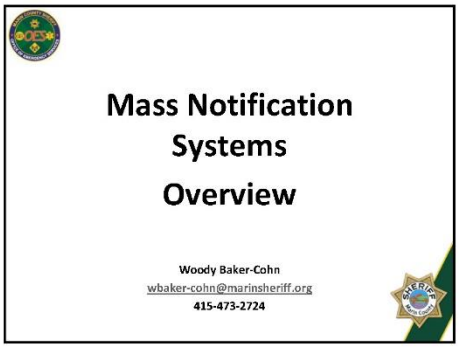
Thank You!

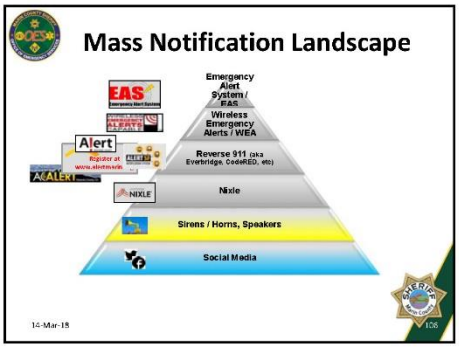
www.athoc.com

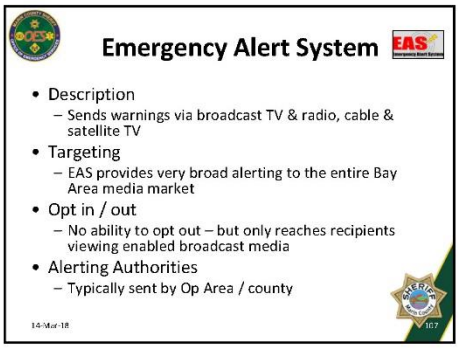
BlackBerry AtHoc

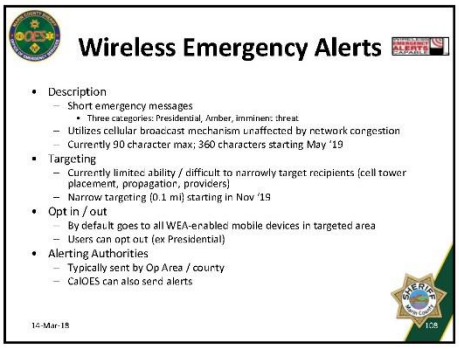

Break
2:15 – 2:35 PM


Session 5: 2:35 – 4:45 PM
Methods and Best Practices for Coordinating Alerts - An Interactive Breakout Discussion
Moderator: Woody Baker-Cohn, Emergency Services Coordinator - Marin County Sheriff's Office


Mass Notification Systems Overview
Woody Baker-Cohn
wbaker-cohn@marinsheriff.org
415-473-2724


Mass Notification Landscape
Emergency Alert System / EAS
Wireless Emergency Alerts / WEA
Reverse 911 (aka Everbridge, CodeRED, etc)
Nixle
Sirens / Horns, Speakers
Social Media
14-Mar-18


Emergency Alert System
• Description
– Sends warnings via broadcast TV & radio, cable & satellite TV
• Targeting
– EAS provides very broad alerting to the entire Bay Area media market
• Opt in / out
– No ability to opt out – but only reaches recipients viewing enabled broadcast media
• Alerting Authorities
– Typically sent by Op Area / county
14-Mar-18


Wireless Emergency Alerts
• Description
– Short emergency messages
• Three categories: Presidential, Amber, imminent threat
– Utilizes cellular broadcast mechanism unaffected by network congestion
– Currently 90 character max; 360 characters starting May '19
• Targeting
– Currently limited ability / difficult to narrowly target recipients (cell tower placement, propagation, providers)
– Narrow targeting (0.1 mi) starting in Nov '19
• Opt in / out
– By default goes to all WEA-enabled mobile devices in targeted area
– Users can opt out (ex Presidential)
• Alerting Authorities
– Typically sent by Op Area / county
– CalOES can also send alerts
14-Mar-18

Reverse 911

- Description
  - Historically, voice calls to landline phones in targeted area (listed & unlisted residential & business)
  - Now typically also includes self-registration for cell phones (voice & text), email, smartphone apps, multiple locations
  - Also possible to include Comcast VoIP customers
- Targeting
  - Very precise down to the dwelling
- Opt in / out
  - Wireline phones (a rapidly shrinking category) are included & can not opt out
  - Wireless recipients need to register / opt in
- Alerting Authorities
  - Op Area / county, sometimes cities / towns

14-Mar-18

Nixle

- Description
  - Primarily a text based alerting tool, now owned by Everbridge
- Targeting
  - Generally down to the zip code
- Opt in / out
  - Recipients need to register / opt in
- Alerting Authorities
  - Op Area / county, cities / towns, state

14-Mar-18

Sirens / Horns, Outdoor Speakers

- Description
  - Sirens & horns alert recipients to an imminent danger, typically followed by a message using another mechanism to give specific instructions (i.e. shelter in place, evacuate)
  - Outdoor speakers can directly provide instructions
- Targeting
  - Narrow – but affected by topography, weather conditions; bleed over can be problematic
- Opt in / out
  - N/A
- Alerting Authorities
  - Typically cities / towns

14-Mar-18

Social Media

- Description
  - Can be used to assist in further disseminating information to the public – but not well suited as a primary alerting tool
- Targeting
  - Can be very broad, depending on the agency's following
- Opt in / out
  - Follow / friend
- Alerting Authorities
  - Any agency / jurisdiction

14-Mar-18

Mass Notification Landscape

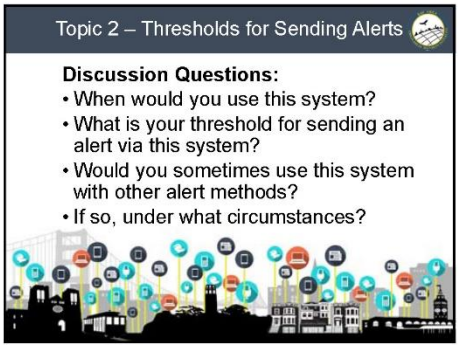
14-Mar-18

* Sirens / Horns, Speakers excepted

Topic 1 – Strengths/Limitations

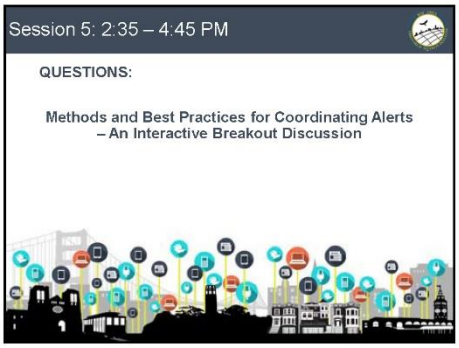
Discussion Questions:

- What are the strengths of this system?
- What are the system's uncertainties or limitations?

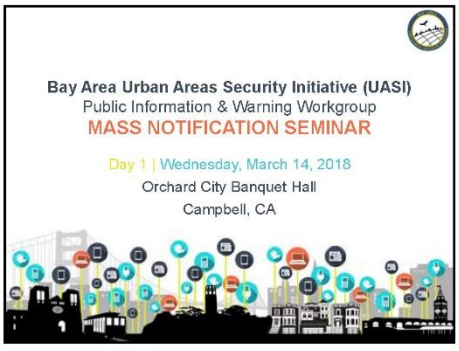

Topic 2 – Thresholds for Sending Alerts
Discussion Questions:
• When would you use this system?
• What is your threshold for sending an alert via this system?
• Would you sometimes use this system with other alert methods?
• If so, under what circumstances?


Topic 3 - Coordinating Alerts and Systems
Discussion Questions:
• Are there any general practices you follow to coordinate alerts across agencies within your jurisdiction or organization?

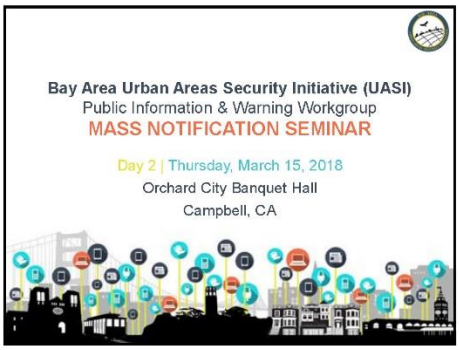

Follow up Resources
• Updated matrix will be available Bay Area Joint Information System shared folder on Google Drive
• Email bayareajis@gmail.com for access to the folder

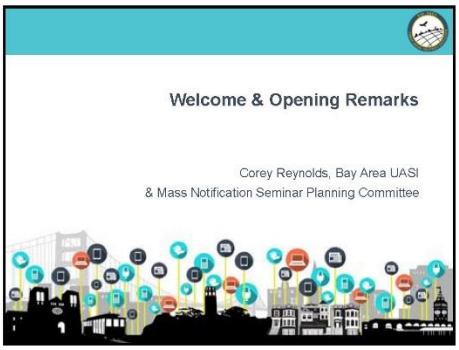

Session 5: 2:35 – 4:45 PM
QUESTIONS:
Methods and Best Practices for Coordinating Alerts – An Interactive Breakout Discussion

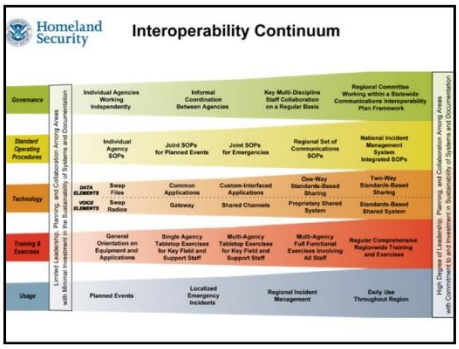

Closing Remarks

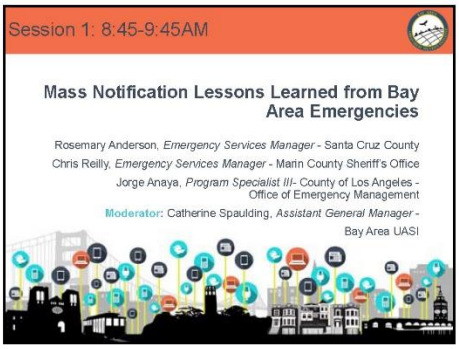

Bay Area Urban Areas Security Initiative (UASI)
Public Information & Warning Workgroup
MASS NOTIFICATION SEMINAR
Day 1 | Wednesday, March 14, 2018
Orchard City Banquet Hall
Campbell, CA

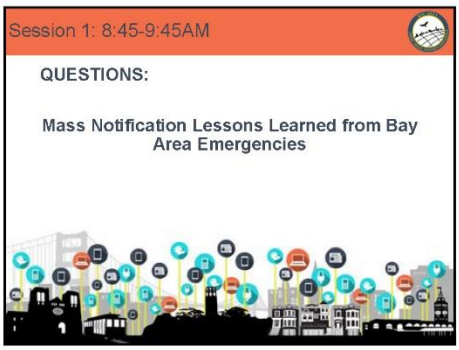
APPENDIX E – PRESENTATION DECK DAY TWO

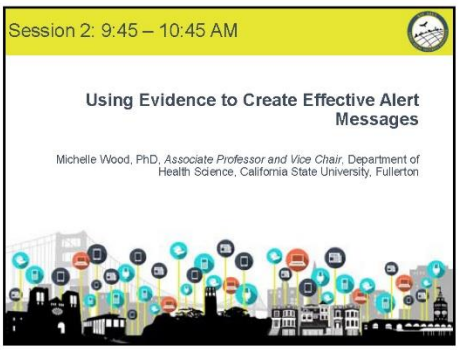


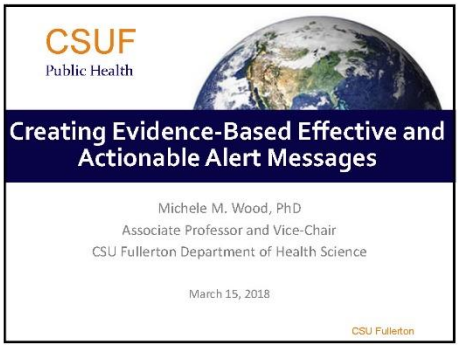











CSUF
Public Health
Creating Evidence-Based Effective and Actionable Alert Messages
Michele M. Wood, PhD
Associate Professor and Vice-Chair
CSU Fullerton Department of Health Science
March 15, 2018
CSU Fullerton


There are two fundamental questions that inform our discussion today...
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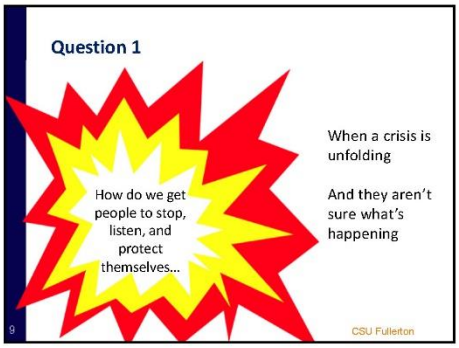
Question 1
How do we get people to stop, listen, and protect themselves...
When a crisis is unfolding
And they aren't sure what's happening
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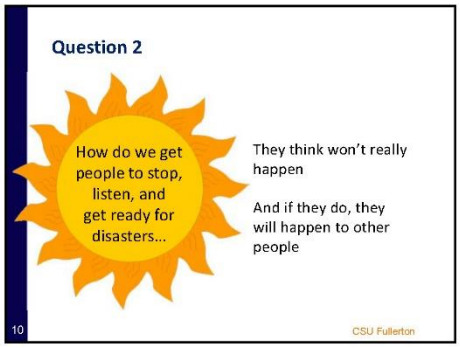
Question 2
How do we get people to stop, listen, and get ready for disasters...
They think won't really happen
And if they do, they will happen to other people
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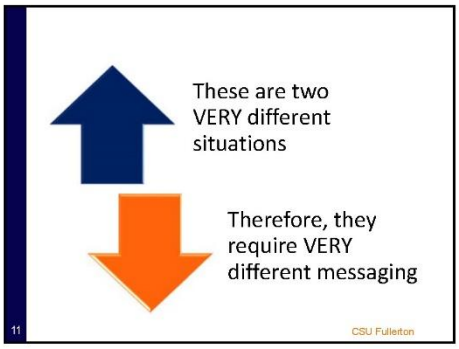
These are two VERY different situations
Therefore, they require VERY different messaging
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The Role of FEAR
Preparedness
Warning
Fear IS motivating
People need to believe they are at risk
Fear is NOT motivating
People need to believe the message is intended for them
Telling people what to do IS motivating
People need to PERSONALIZE the message
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OPTIMIZING IMMINENT THREAT MOBILE ALERTS TO MOTIVATE PROTECTIVE ACTION
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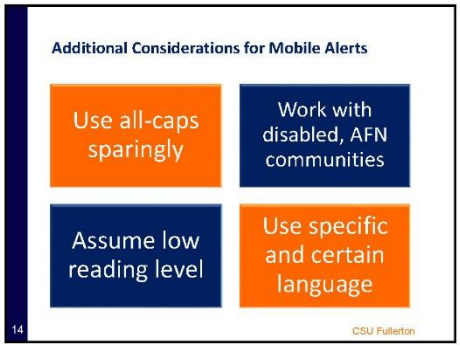
Additional Considerations for Mobile Alerts
Use all-caps sparingly
Work with disabled, AFN communities
Assume low reading level
Use specific and certain language
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THE FUTURE OF ALERT AND WARNING SYSTEMS: OPPORTUNITIES & CHALLENGES
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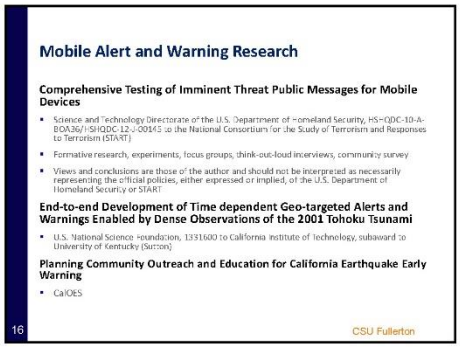
Mobile Alert and Warning Research
Comprehensive Testing of Imminent Threat Public Messages for Mobile Devices
Science and Technology Directorate of the U.S. Department of Homeland Security, HSHQDC-10-A-BOA36/HSHQDC-12-J-00145 to the National Consortium for the Study of Terrorism and Responses to Terrorism (START)
Formative research, experiments, focus groups, think-out-loud interviews, community survey
Views and conclusions are those of the author and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the U.S. Department of Homeland Security or START
End-to-end Development of Time dependent Geo-targeted Alerts and Warnings Enabled by Dense Observations of the 2001 Tohoku Tsunami
U.S. National Science Foundation, 1331600 to California Institute of Technology, subaward to University of Kentucky (Sutton)
Planning Community Outreach and Education for California Earthquake Early Warning
CalOES
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How does research inform the future of alert and warning systems?
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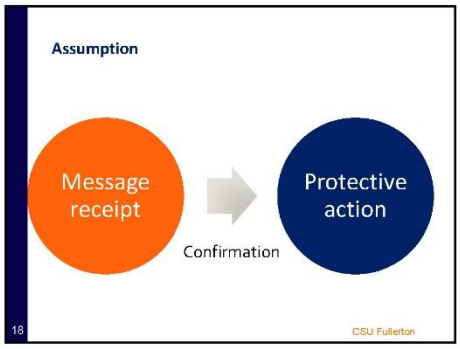
Assumption
Message receipt
Confirmation
Protective action
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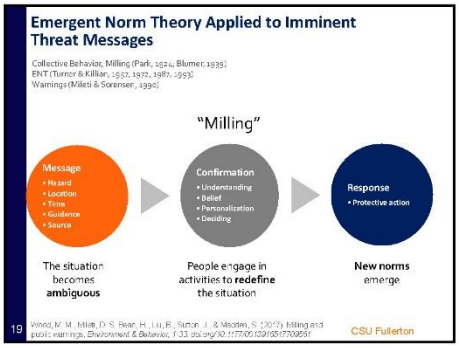
Emergent Norm Theory Applied to Imminent Threat Messages
Collective Behavior, Milling (Park, 1924; Blumer, 1939)
ENT (Turner & Killian, 1957, 1972, 1987, 1993)
Warnings (Mileti & Sorensen, 1990)
"Milling"
Message
• Hazard
• Location
• Time
• Guidance
• Source
Confirmation
• Understanding
• Belief
• Personalization
• Deciding
Response
• Protective action
The situation becomes ambiguous
People engage in activities to redefine the situation
New norms emerge
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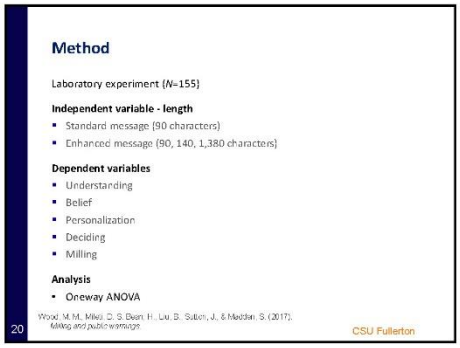
Method
Laboratory experiment (N=155)
Independent variable - length
Standard message (90 characters)
Enhanced message (90, 140, 1,380 characters)
Dependent variables
Understanding
Belief
Personalization
Deciding
Milling
Analysis
Oneway ANOVA
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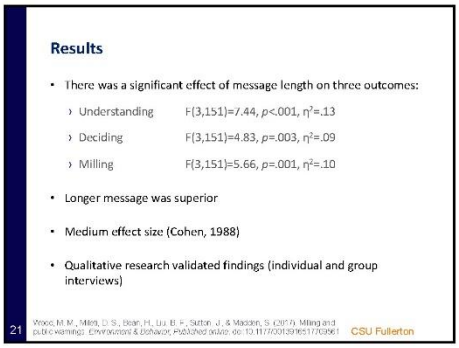
Results
There was a significant effect of message length on three outcomes:
Understanding F(3,151)=7.44, p<.001, η²=.13
Deciding F(3,151)=4.83, p=.003, η²=.09
Milling F(3,151)=5.66, p=.001, η²=.10
Longer message was superior
Medium effect size (Cohen, 1988)
Qualitative research validated findings (individual and group interviews)
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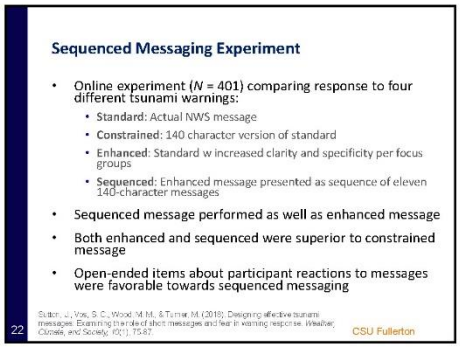
Sequenced Messaging Experiment
Online experiment (N = 401) comparing response to four different tsunami warnings:
Standard: Actual NWS message
Constrained: 140 character version of standard
Enhanced: Standard w increased clarity and specificity per focus groups
Sequenced: Enhanced message presented as sequence of eleven 140-character messages
Sequenced message performed as well as enhanced message
Both enhanced and sequenced were superior to constrained message
Open-ended items about participant reactions to messages were favorable towards sequenced messaging
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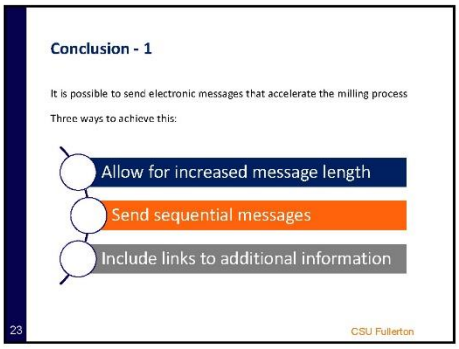
Conclusion - 1
It is possible to send electronic messages that accelerate the milling process
Three ways to achieve this:
Allow for increased message length
Send sequential messages
Include links to additional information
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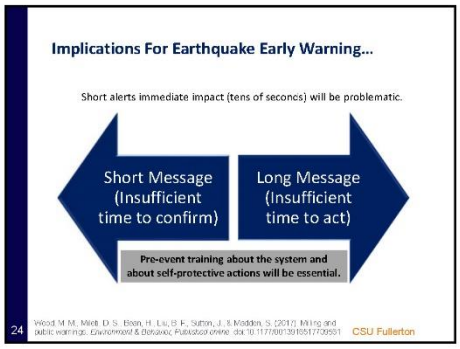
Implications For Earthquake Early Warning...
Short alerts immediate impact (tens of seconcs) will be problematic.
Short Message (Insufficient time to confirm)
Long Message (Insufficient time to act)
Pre-event training about the system and about self-protective actions will be essential.
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Risk Visualization

Experiment (*N*=201)

Independent variable – amount of visual risk information

- Standard condition (no map)
- Enhanced conditions (low information map, high information map)

Dependent variables

- Understanding
- Belief
- Personalization
- Deciding
- Milling

High information map was best; low information map was worst

Bean, H., Liu, B. F., Madden, S., Mileti, D. S., Sutton, J., & Wood, M. M. (2014). Comprehensive testing of tsunami threat public messages for mobile devices. College Park, MD: National Consortium for the Study of Terrorism and Responses to Terrorism (START).

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Conclusion - 2

Including a map is not necessarily helpful

- Facilitating risk visualization may accelerate the milling process
- Including a bad map can lead to worse outcomes than including no map
- More research on risk visualization is needed

Liu, B. F., Wood, M. M., Egnoto, M., Bean, H., Sutton, J., Mileti, D., & Madden, S. (2017). Is a picture worth a thousand words? The effects of maps and warning messages on how publics respond to disaster information. *Public Relations Review*, *43*(3), 498-508. doi:10.1016/j.pubrev.2017.04.008

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Warning Literacy Qualitative Findings

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Warning Literacy Qualitative Findings

Lack of acronym knowledge

- "Isn't USDHS how they grade the quality of meat in stores?"
- "Does MDT have something to do with time?"

Rare exceptions may exist

- "NWS" in tornado alley
- *Does "shelter-in-place" mean drive to a shelter?*

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Conclusion - 3

- Familiarity with warning systems and literacy with warning language should not be assumed
- Warning systems should:
  - Increase familiarity with warnings and systems
  - Define terms and acronyms used
  - Build warning literacy among members of public

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What are some of the technical gaps in alert and warning systems?

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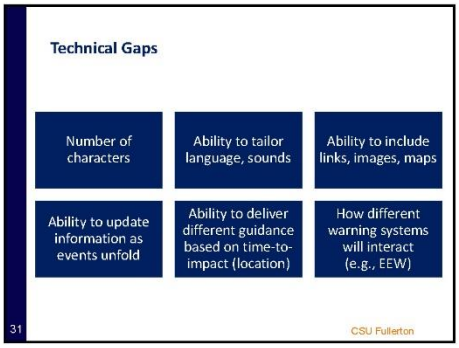
Technical Gaps
Number of characters
Ability to tailor language, sounds
Ability to include links, images, maps
Ability to update information as events unfold
Ability to deliver different guidance based on time-to-impact (location)
How different warning systems will interact (e.g., EEW)
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What might a future alert and warning system look like?
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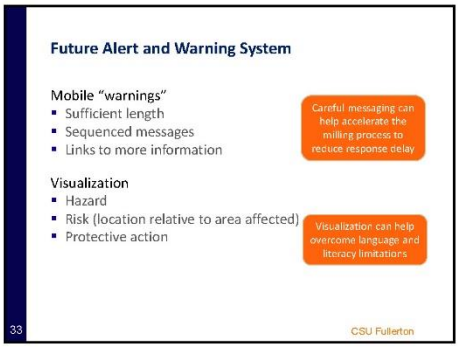
Future Alert and Warning System
Mobile "warnings"
Sufficient length
Sequenced messages
Links to more information
Careful messaging can help accelerate the milling process to reduce response delay
Visualization
Hazard
Risk (location relative to area affected)
Protective action
Visualization can help overcome language and literacy limitations
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Integrated Approach
Coordinated social media and mobile messaging
Branding
Message writing practitioner training
Warning system public education
Social marketing
Incorporation of preparedness messages
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What are opportunities and challenges in achieving this vision?
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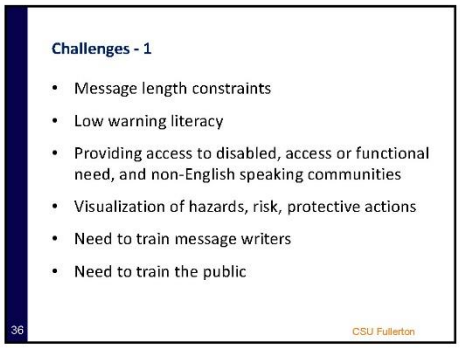
Challenges - 1
Message length constraints
Low warning literacy
Providing access to disabled, access or functional need, and non-English speaking communities
Visualization of hazards, risk, protective actions
Need to train message writers
Need to train the public
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Challenges - 2

- Not really sure how much training will help
- What is most effective way to roll out new systems, e.g., ShakeAlert
- How will ShakeAlert (and other systems) interact?
- Maintaining a sense of integration across different platforms
- Integrating systems that warn for events with short, medium, and long time to impact
- Limited use of theory
- Impact of system error (false positives)

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Opportunities - 1

Use new and emerging technology to distribute warnings with **sufficient information** to:

- Accelerate redefinition of the situation and emergence of new norms
- Reduce warning response delay
- Reduce morbidity, mortality, cost

Use **visualization** to increase access to hazard, risk, and guidance information

Use **theory** to guide warning research; move beyond "mid-range" theory

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Opportunities - 2

Public Outreach and Education

- Warnings systems
- Warning literacy
- Common language
- Engage public
- Social marketing (values)
- Branding (relationship)

Training for message writers

Partnering with existing drill and preparedness efforts (e.g., ShakeOut)

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Motivating Household Preparedness

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Why is it so hard to get people to take action to prepare for future disasters?

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Fear-based appeals are appealing, but not effective for preparedness

Red Cross Study

- Preparedness increased for those who saw "what to do" images but decreased for those who saw disaster images

Southern California Study

- Preparedness increased in a subset who felt up to the task
- For all others, preparedness decreased

Lopes, 1992
Duval and Mulilis, 1999

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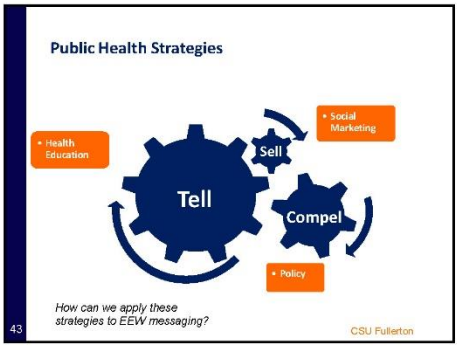
Public Health Strategies
• Health Education
• Social Marketing
Sell
Tell
Compel
• Policy
How can we apply these strategies to EEW messaging?
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Social Marketing
"Sell it like they sell Coca Cola."
Coca-Cola
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The "Get Ready" Pyramid
Cost
Safeguard Finances
Protect Building Structure
Secure Building Contents
Organize Supplies & Equipment
Train & Practice
Plan What to Do
Learn How to Be Prepared
California Case Study of Preparedness Messages
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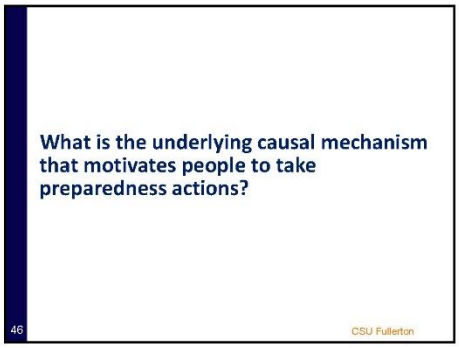
What is the underlying causal mechanism that motivates people to take preparedness actions?
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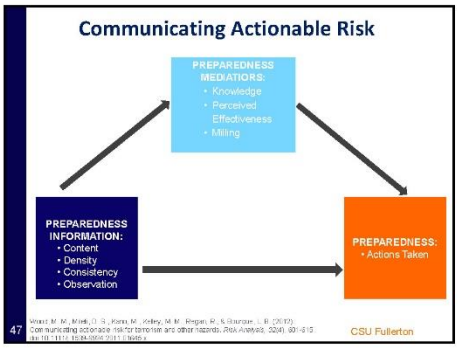
Communicating Actionable Risk
PREPAREDNESS MEDIATORS:
• Knowledge
• Perceived Effectiveness
• Milling
PREPAREDNESS INFORMATION:
• Content
• Density
• Consistency
• Observation
PREPAREDNESS:
• Actions Taken
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What Things Matter in Motivating Preparedness?
Things that don't matter much
Things that matter
Indirect & weak
Perceived risk (increased probabilities, fear)
Demographics (tiny effects)
Information observed/heard (cues)
Information content (what actions to take, how actions cut losses, consistent)
Information density (multiple sources, channels)
Can still impact action-taking by influencing affordability & information pathway effectiveness
48
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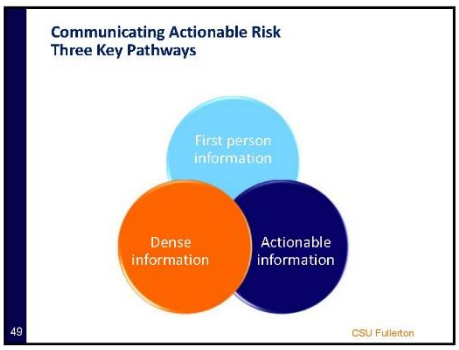
Communicating Actionable Risk
Three Key Pathways
First person information
Dense information
Actionable information
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People will take action when they...
1. Know what to do
2. Think it would work
3. Know someone who did it
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A Shift in Practice
Traditionally, we've communicated "risk" to the public and hoped people "infer action"
Results suggest that we communicate "actions" to the public and let people "infer risk"
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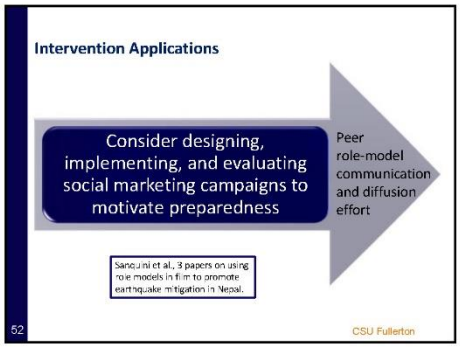
Intervention Applications
Consider designing, implementing, and evaluating social marketing campaigns to motivate preparedness
Peer role-model communication and diffusion effort
Sancuni et al., 3 papers on using role models in film to promote earthquake mitigation in Nepal.
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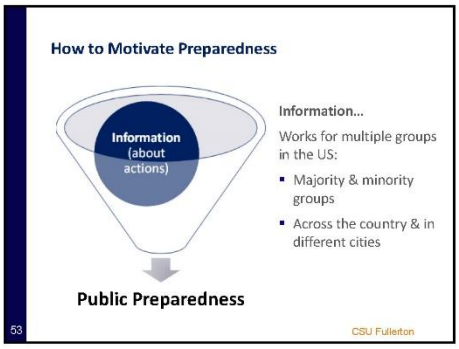
How to Motivate Preparedness
Information (about actions)
Information...
Works for multiple groups in the US:
Majority & minority groups
Across the country & in different cities
Public Preparedness
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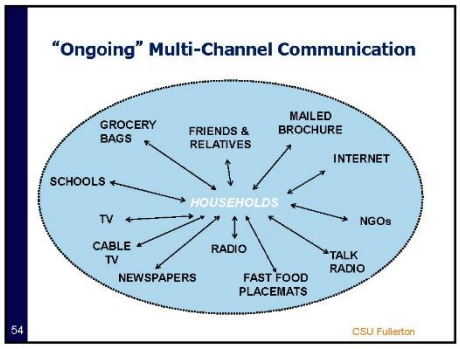
"Ongoing" Multi-Channel Communication
GROCERY BAGS
FRIENDS & RELATIVES
MAILED BROCHURE
INTERNET
SCHOOLS
HOUSEHOLDS
TV
NGOs
CABLE TV
RADIO
TALK RADIO
NEWSPAPERS
FAST FOOD PLACEMATS
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Implications for Risk Communicators
Use evidence-based approaches
Stop doing things that don't work
Use multiple information sources
Standardize the message
Use multiple information channels
Communicate over the long haul
Focus the message on actions
Explain consequence reduction
Give people "cues"
Conduct consequence-based evaluation
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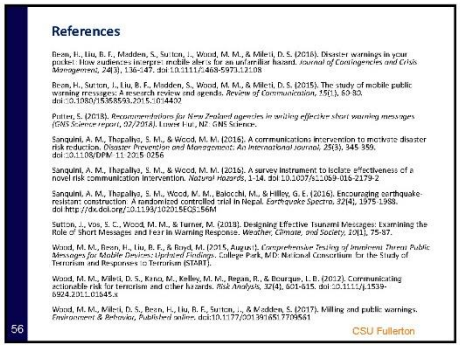
References
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Thank You!
mwood@fullerton.edu
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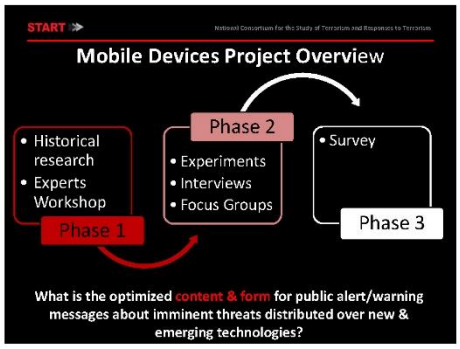
START
Optimizing imminent threat mobile alerts to motivate protective action
Michele M. Wood, PhD
Associate Professor and Vice Chair,
CSU Fullerton Department of Health Science


START
Research Team
Hamilton Bean
Univ of CO Denver
Brooke Liu
Univ of MD
Stephanie Madden
Univ of MD
Dennis Mileti
Univ of CO Boulder
Jeannette Sutton
Univ of KY
Michele Wood
CA State Univ Fullerton


START
Mobile Devices Project Overview
Historical research
Experts Workshop
Phase 1
Phase 2
Experiments
Interviews
Focus Groups
Survey
Phase 3
What is the optimized content & form for public alert/warning messages about imminent threats distributed over new & emerging technologies?

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WEA message

- 90-character first alert message
- Content topics & order is set:
  Hazard, location, time, protective action, source
- Example:
  Radiological Hazard Warning in this area until 12:00AM PDT Take shelter now US DHS

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Message Lengths Tested

90-character	140-character	1,380-character
• Current WEA	• Social media (i.e., Twitter) • Future WEA?	• Current EAS/IPAWS/CAP • Future WEA?

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Methods

Experiments	Think-Out-Loud Interviews
• Internet & lab • Eight total • Simple regression • Multiple regression	• 50 conducted • Read one message to interviewee • Asked for initial reaction

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Methods

Focus Groups	Survey

• 7 conducted (6-8 participants each); emergency manager group
• One message per focus group
• Questions followed research topics
	• Test in a real-world event
	• 9/13 Boulder, CO flood
	• Telephone interview
	• Two samples:
	  • WEA Recipients: 496 adult city residents who received WEA message(s)
	  • General Population: 597 adult city residents

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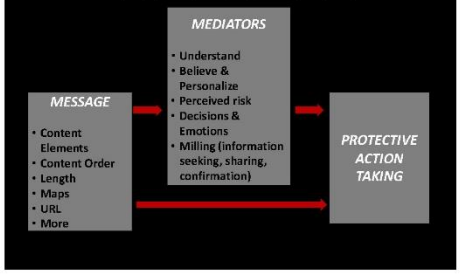
Protective Action Behavior




START
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Research Topics
• Prime message elements tested:
1. Order: Message contents
2. Source: Local, state, federal
3. Maps: None, impact area, receiver location
4. Content elements: Relative importance
5. Generalizability: Across hazard types & message lengths
6. Length effectiveness: Comparisons


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Research Topics
• Additional topics examined:
7. URL: Use if available
8. WEA System: Familiarity
9. Acronyms: Words like "CDC" and "NWS"
10. Time: Best way to express
11. Location: Best way to express
12. Fear arousal: Optimum level
13. Understanding: Words like "warning" & "shelter", etc.
14. Diffusion curve: WEA messages
15. Mobilization curve: Checking local media


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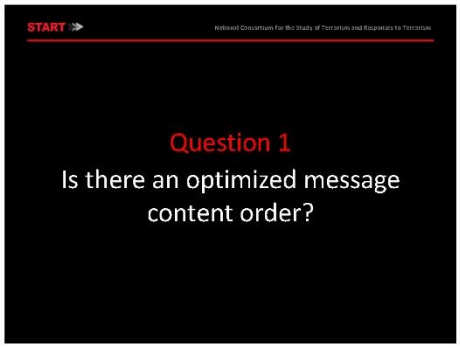
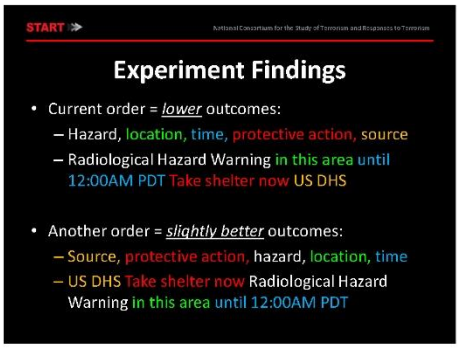
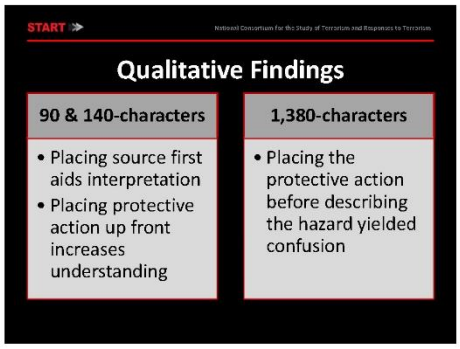
Research Findings


START
National Consortium for the Study of Terrorism and Responses to Terrorism
Question 1
Is there an optimized message content order?


START
National Consortium for the Study of Terrorism and Responses to Terrorism
Experiment Findings
• Current order = lower outcomes:
– Hazard, location, time, protective action, source
– Radiological Hazard Warning in this area until 12:00AM PDT Take shelter now US DHS
• Another order = slightly better outcomes:
– Source, protective action, hazard, location, time
– US DHS Take shelter now Radiological Hazard Warning in this area until 12:00AM PDT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National Consortium for the Study of Terrorism and Responses to Terrorism
Qualitative Findings
90 & 140-characters
• Placing source first aids interpretation
• Placing protective action up front increases understanding
1,380-characters
• Placing the protective action before describing the hazard yielded confusion

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Conclusions

- A different content order would *slightly* improve public response outcomes:
  - For short messages (90 & 140-characters)
  - Not for longer messages (1,380-characters)
- Current short messages order:
  - Hazard, location, time, protective action, source
- Revised short messages order:
  - Source, protective action, hazard, location, time

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Question 2

Is there an optimized single source?

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Experiment Findings

- ***Historical research concludes***:
  - No credible source for everyone, use multiple sources
- ***One source worked "best" but not for everyone***:
  - A "*local & familiar*" source enhanced interpretation (understanding, believing, deciding) & personalization
  - But the relationship is *weak* and *unstable*

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Qualitative Findings

Source challenges for diverse publics:

- Different sources viewed as credible & believable
- Lack of understanding of source acronyms

If you have to pick one source:

- A "local & familiar" source works best

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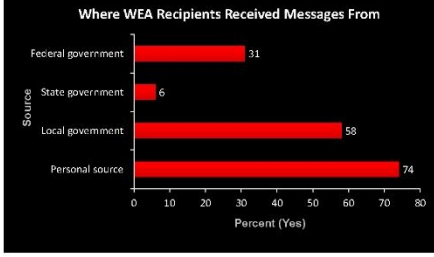
Survey Findings



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Conclusions

Local & familiar sources work best

Source acronyms generally unknown

Public education about WEA needed

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Question 3

Would a map optimize outcomes?

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Maps Tested

- **No map compared to:**

Low Information Map | High Information Map

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Experiment Findings

All outcomes were affected positively:

- Increased interpretation & personalization
- Decreased milling

Rank of alternatives based on outcomes:

- Best: High information map
- Middle: No map
- Worst: Low information map

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Qualitative Findings

Confirmed that a high information map would:

- Enhance interpretation
- Increase personalization

Clarified that a high information map would:

- Not completely eliminate milling

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Survey Findings

For those who reported having seen a map as part of 1 or more flood messages, there was a **statistically significant relationship between reported map effectiveness & personalization**

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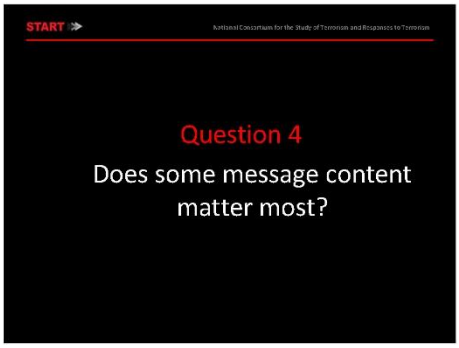
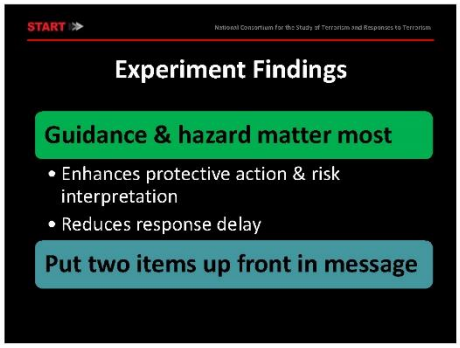
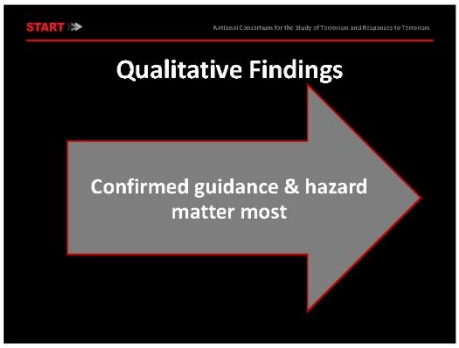
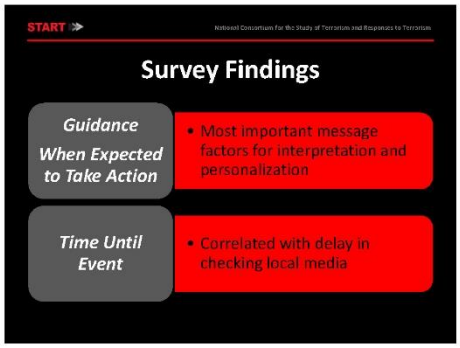
Conclusions

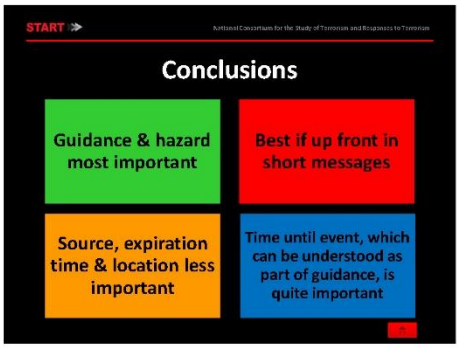
Include	Not include
• High information maps	• Low information maps

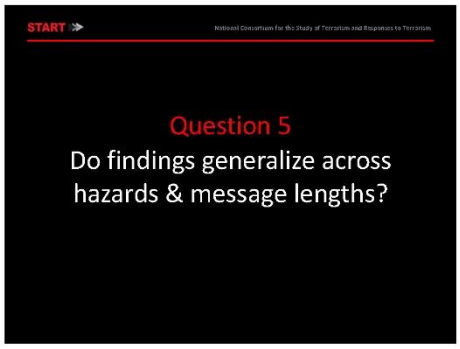

START
Question 4
Does some message content matter most?

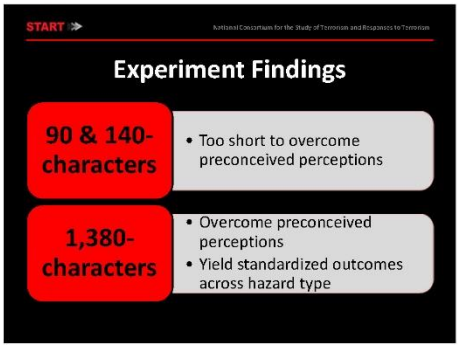

START
Experiment Findings
Guidance & hazard matter most
• Enhances protective action & risk interpretation
• Reduces response delay
Put two items up front in message

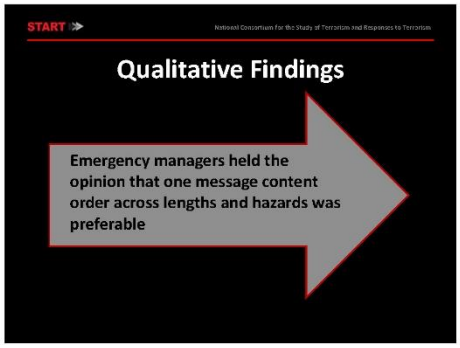

START
Qualitative Findings
Confirmed guidance & hazard matter most

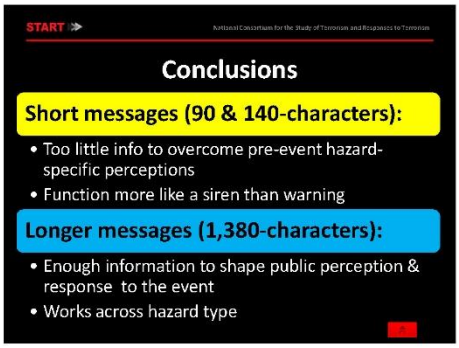

START
Survey Findings
Guidance When Expected to Take Action
• Most important message factors for interpretation and personalization
Time Until Event
• Correlated with delay in checking local media

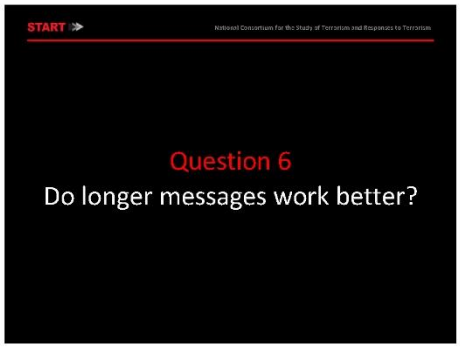

START
Conclusions
Guidance & hazard most important
Best if up front in short messages
Source, expiration time & location less important
Time until event, which can be understood as part of guidance, is quite important

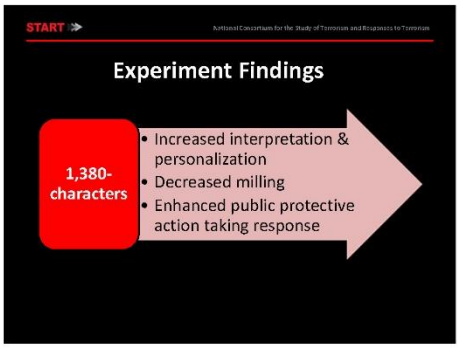

START
Question 5
Do findings generalize across hazards & message lengths?

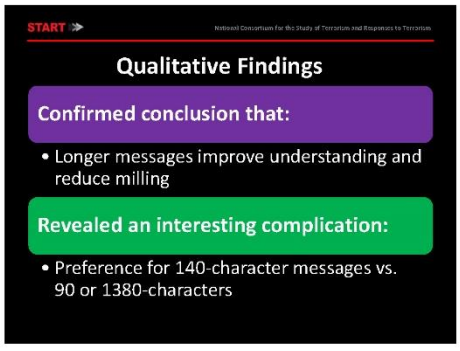

START
Experiment Findings
90 & 140-characters
• Too short to overcome preconceived perceptions
1,380-characters
• Overcome preconceived perceptions
• Yield standardized outcomes across hazard type

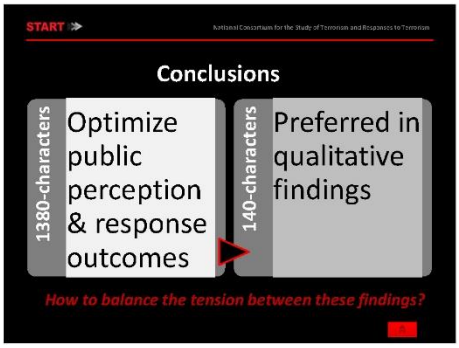

START
Qualitative Findings
Emergency managers held the opinion that one message content order across lengths and hazards was preferable

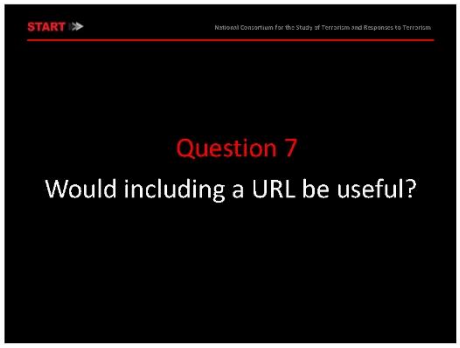

START
Conclusions
Short messages (90 & 140-characters):
• Too little info to overcome pre-event hazard-specific perceptions
• Function more like a siren than warning
Longer messages (1,380-characters):
• Enough information to shape public perception & response to the event
• Works across hazard type

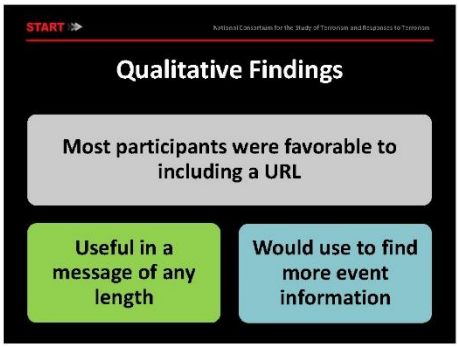

START
Question 6
Do longer messages work better?

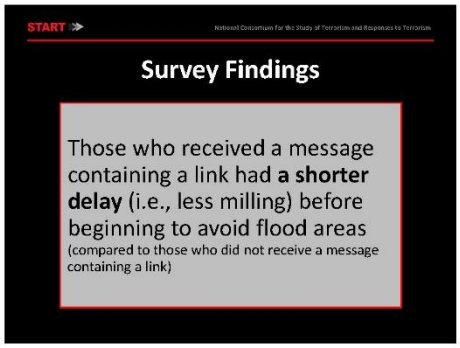

START
Experiment Findings
1,380-characters
• Increased interpretation & personalization
• Decreased milling
• Enhanced public protective action taking response

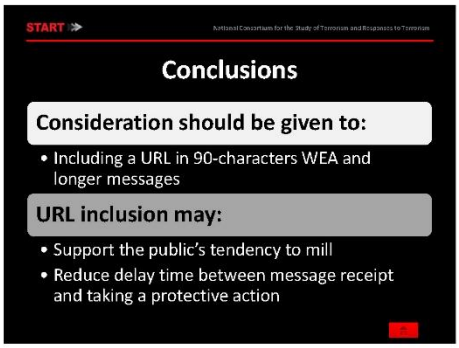

START
Qualitative Findings
Confirmed conclusion that:
• Longer messages improve understanding and reduce milling
Revealed an interesting complication:
• Preference for 140-character messages vs. 90 or 1380-characters

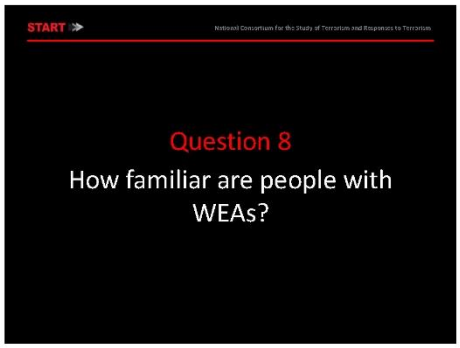

START
Conclusions
1380-characters
Optimize public perception & response outcomes
140-characters
Preferred in qualitative findings
How to balance the tension between these findings?

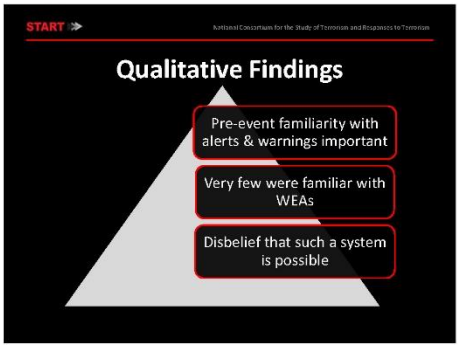

START
Question 7
Would including a URL be useful?

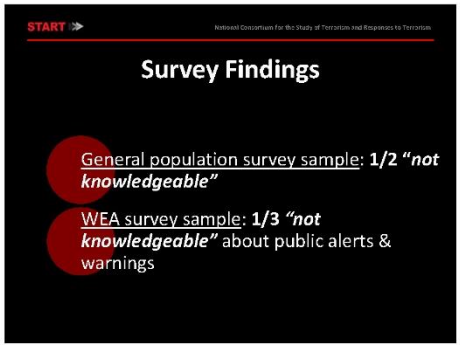

START
Qualitative Findings
Most participants were favorable to including a URL
Useful in a message of any length
Would use to find more event information

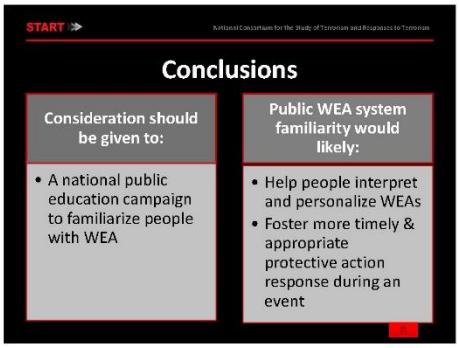

START
Survey Findings
Those who received a message containing a link had a shorter delay (i.e., less milling) before beginning to avoid flood areas
(compared to those who did not receive a message containing a link)

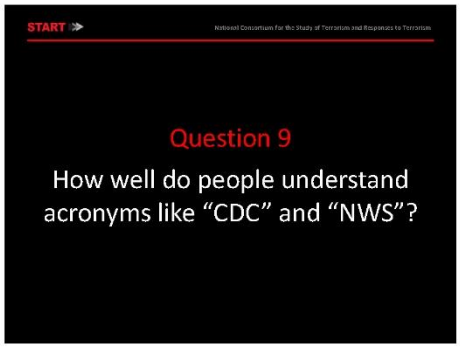

START
Conclusions
Consideration should be given to:
• Including a URL in 90-characters WEA and longer messages
URL inclusion may:
• Support the public's tendency to mill
• Reduce delay time between message receipt and taking a protective action

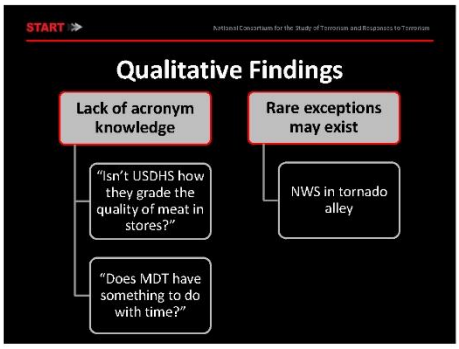

START
Question 8
How familiar are people with WEAs?

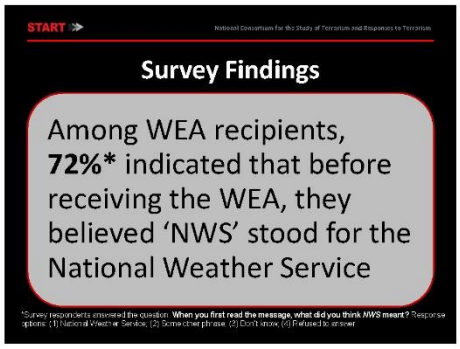

START
Qualitative Findings
Pre-event familiarity with alerts & warnings important
Very few were familiar with WEAs
Disbelief that such a system is possible

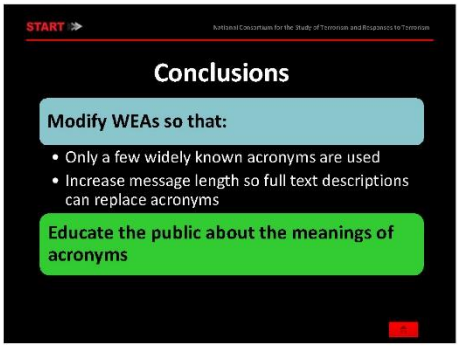

START
Survey Findings
General population survey sample: 1/2 "not knowledgeable"
WEA survey sample: 1/3 "not knowledgeable" about public alerts & warnings

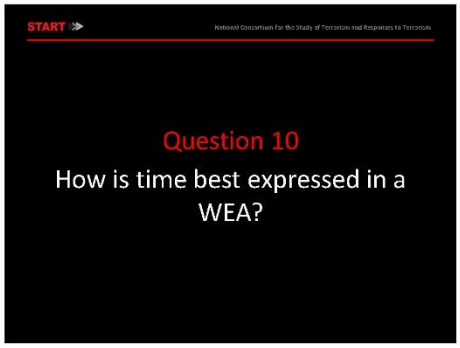

START
Conclusions
Consideration should be given to:
• A national public education campaign to familiarize people with WEA
Public WEA system familiarity would likely:
• Help people interpret and personalize WEAs
• Foster more timely & appropriate protective action response during an event

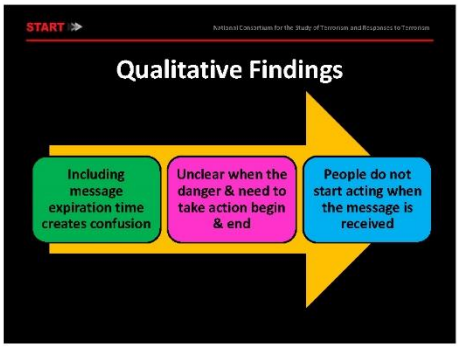

START
Question 9
How well do people understand acronyms like "CDC" and "NWS"?

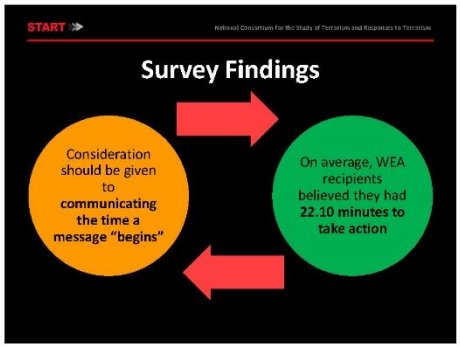

START
Qualitative Findings
Lack of acronym knowledge
"Isn't USDHS how they grade the quality of meat in stores?"
"Does MDT have something to do with time?"
Rare exceptions may exist
NWS in tornado alley


START
Survey Findings
Among WEA recipients, 72%* indicated that before receiving the WEA, they believed 'NWS' stood for the National Weather Service

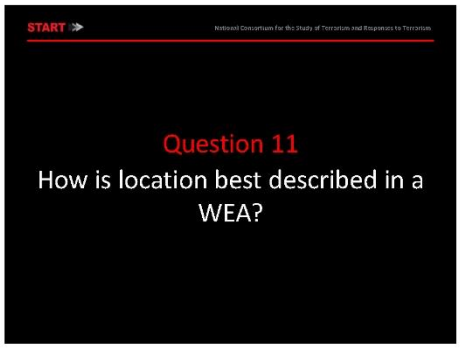

START
Conclusions
Modify WEAs so that:
• Only a few widely known acronyms are used
• Increase message length so full text descriptions can replace acronyms
Educate the public about the meanings of acronyms

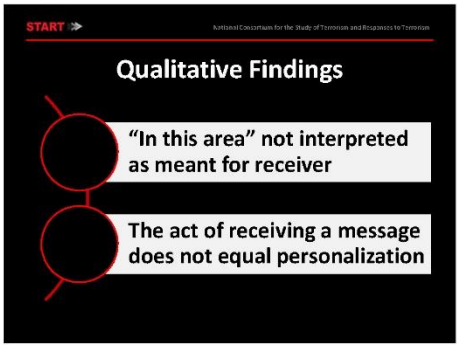

START
Question 10
How is time best expressed in a WEA?

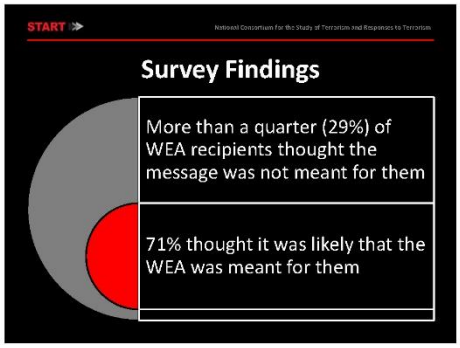

START
Qualitative Findings
Including message expiration time creates confusion
Unclear when the danger & need to take action begin & end
People do not start acting when the message is received

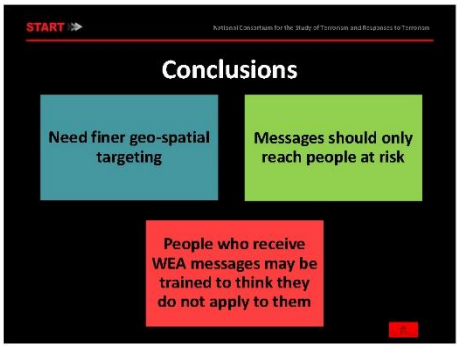

START
Survey Findings
Consideration should be given to communicating the time a message "begins"
On average, WEA recipients believed they had 22.10 minutes to take action

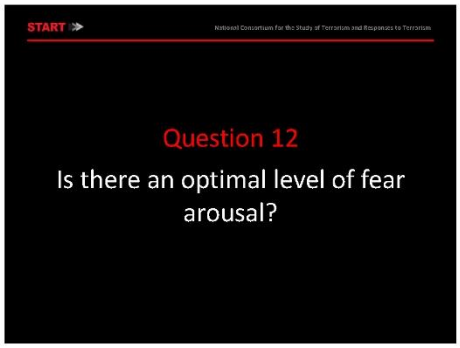

START
Conclusions
Communicating message expiration time confuses public about action taking
Need to be clear when danger & the need to take protective action begin & end

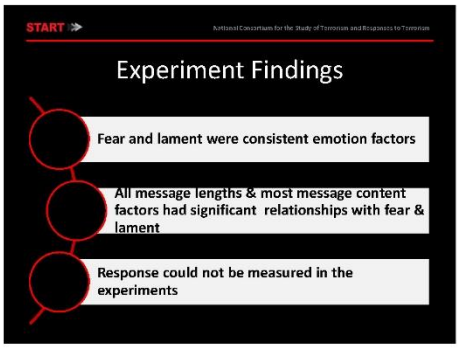

START
Question 11
How is location best described in a WEA?

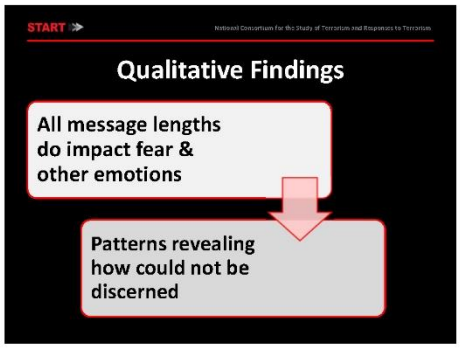

START
Qualitative Findings
"In this area" not interpreted as meant for receiver
The act of receiving a message does not equal personalization

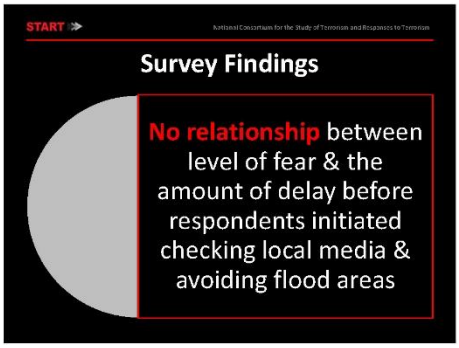

START
Survey Findings
More than a quarter (29%) of WEA recipients thought the message was not meant for them
71% thought it was likely that the WEA was meant for them

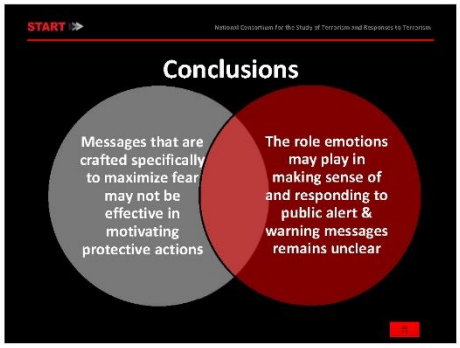

START
Conclusions
Need finer geo-spatial targeting
Messages should only reach people at risk
People who receive WEA messages may be trained to think they do not apply to them

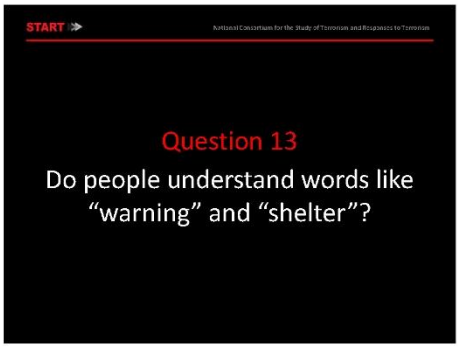

START
Question 12
Is there an optimal level of fear arousal?

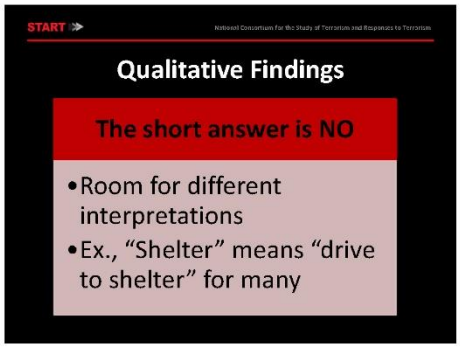

START
Experiment Findings
Fear and lament were consistent emotion factors
All message lengths & most message content factors had significant relationships with fear & lament
Response could not be measured in the experiments

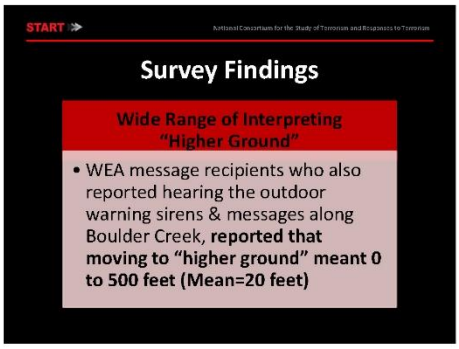

START
Qualitative Findings
All message lengths do impact fear & other emotions
Patterns revealing how could not be discerned

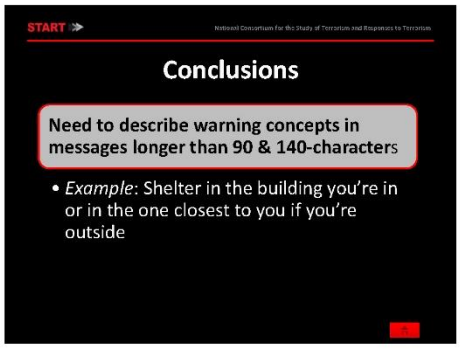

START
National Consortium for the Study of Terrorism and Responses to Terrorism
Survey Findings
No relationship between level of fear & the amount of delay before respondents initiated checking local media & avoiding flood areas


START
National Consortium for the Study of Terrorism and Responses to Terrorism
Conclusions
Messages that are crafted specifically to maximize fear may not be effective in motivating protective actions
The role emotions may play in making sense of and responding to public alert & warning messages remains unclear


START
National Consortium for the Study of Terrorism and Responses to Terrorism
Question 13
Do people understand words like "warning" and "shelter"?


START
National Consortium for the Study of Terrorism and Responses to Terrorism
Qualitative Findings
The short answer is NO
•Room for different interpretations
•Ex., "Shelter" means "drive to shelter" for many


START
National Consortium for the Study of Terrorism and Responses to Terrorism
Survey Findings
Wide Range of Interpreting "Higher Ground"
• WEA message recipients who also reported hearing the outdoor warning sirens & messages along Boulder Creek, **reported that moving to "higher ground" meant 0 to 500 feet (Mean=20 feet)**


START
National Consortium for the Study of Terrorism and Responses to Terrorism
Conclusions
Need to describe warning concepts in messages longer than 90 & 140-characters
• *Example*: Shelter in the building you're in or in the one closest to you if you're outside

START

National Consortium for the Study of Terrorism and Responses to Terrorism

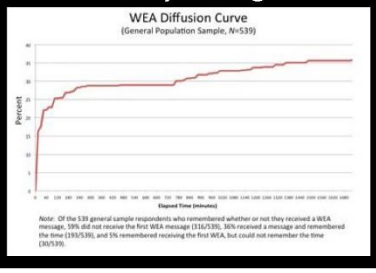
Question 14

What does a WEA diffusion curve look like?

START

National Consortium for the Study of Terrorism and Responses to Terrorism

Survey Findings



START

National Consortium for the Study of Terrorism and Responses to Terrorism

Survey Findings

Just over 15% of survey city residents received & read the first WEA message when it was issued

More than 20% read it within the first half hour

Just over a 1/3 eventually read the message

START

National Consortium for the Study of Terrorism and Responses to Terrorism

Conclusions

WEA worked in Boulder to distribute the message on a steep trajectory

WEAs hold great promise for becoming the alert/warning technology of the future

WEA effectiveness is expected to grow as more people learn about WEA and obtain WEA compatible cell phones

START

National Consortium for the Study of Terrorism and Responses to Terrorism

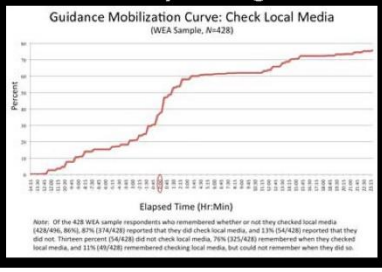
Question 15

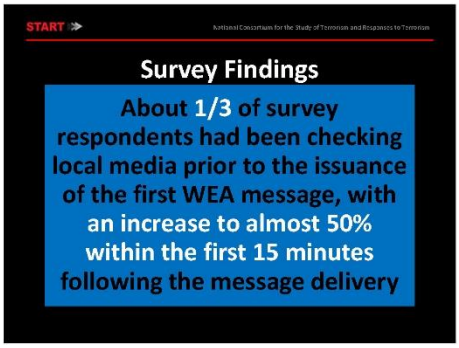
What does a WEA mobilization curve look like?

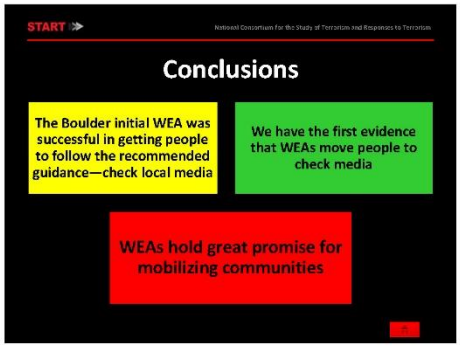
START

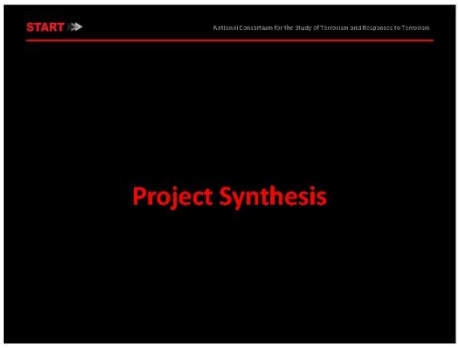
National Consortium for the Study of Terrorism and Responses to Terrorism

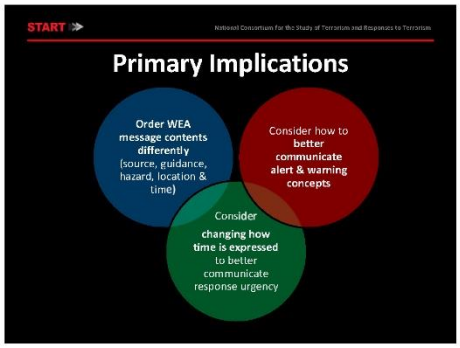
Survey Findings

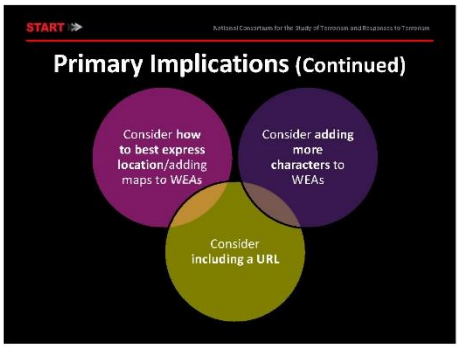



START
Survey Findings
About 1/3 of survey respondents had been checking local media prior to the issuance of the first WEA message, with an increase to almost 50% within the first 15 minutes following the message delivery

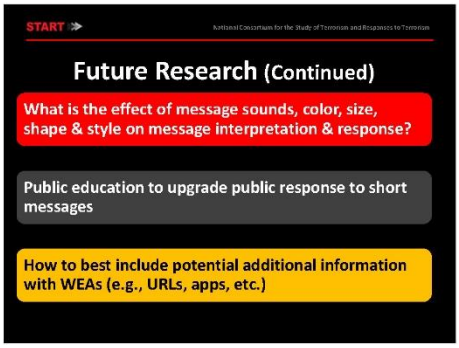

START
Conclusions
The Boulder initial WEA was successful in getting people to follow the recommended guidance—check local media
We have the first evidence that WEAs move people to check media
WEAs hold great promise for mobilizing communities


START
Project Synthesis

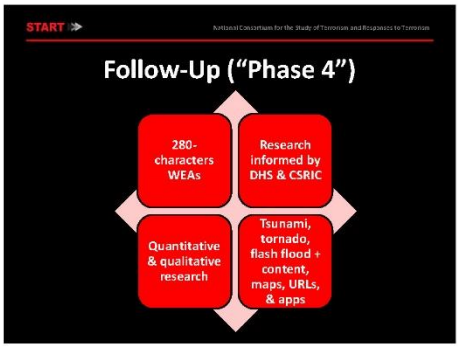

START
Primary Implications
Order WEA message contents differently (source, guidance, hazard, location & time)
Consider how to better communicate alert & warning concepts
Consider changing how time is expressed to better communicate response urgency

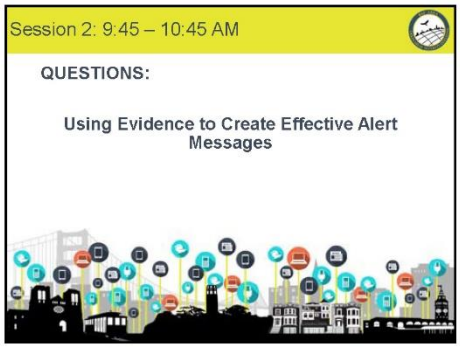

START
Primary Implications (Continued)
Consider how to best express location/adding maps to WEAs
Consider adding more characters to WEAs
Consider including a URL

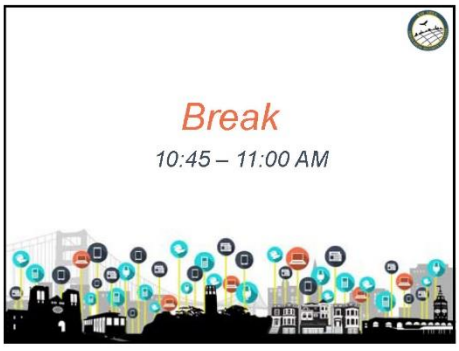

START
Future Research
Optimized order of message contents for messages longer than 90-characters
WEA public education campaign needed with formative, process & outcome evaluation research components
How to best visualize hazard & receive location in maps


START
National Consortium for the Study of Terrorism and Responses to Terrorism
Future Research (Continued)
What is the effect of message sounds, color, size, shape & style on message interpretation & response?
Public education to upgrade public response to short messages
How to best include potential additional information with WEAs (e.g., URLs, apps, etc.)


START
National Consortium for the Study of Terrorism and Responses to Terrorism
Follow-Up Research

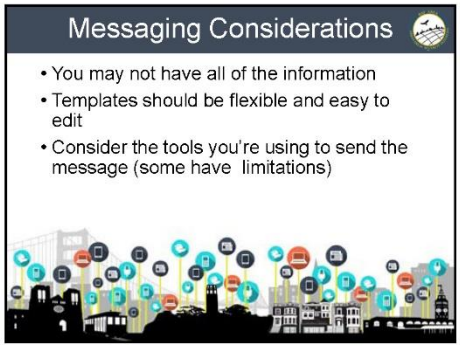

START
National Consortium for the Study of Terrorism and Responses to Terrorism
Follow-Up ("Phase 4")
280-characters WEAs
Research informed by DHS & CSRIC
Quantitative & qualitative research
Tsunami, tornado, flash flood + content, maps, URLs, & apps


Session 2: 9:45 – 10:45 AM
QUESTIONS:
Using Evidence to Create Effective Alert Messages

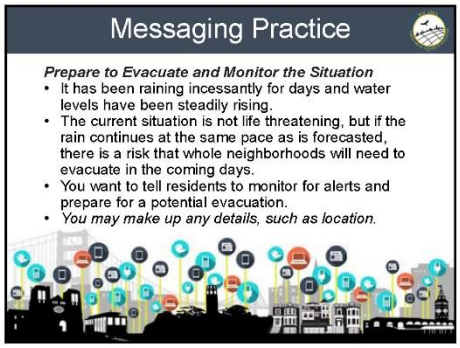

Break
10:45 – 11:00 AM


Session 3: 11:00 AM – 12:15 PM
Creating Your Messages - An Interactive Workshop
Jenny Thamer, Director - Nusura
Heather Tiernan, Community Warning System Manager - Contra Costa County
Moderator: Kristine Jordan, Public Information Officer - Napa County

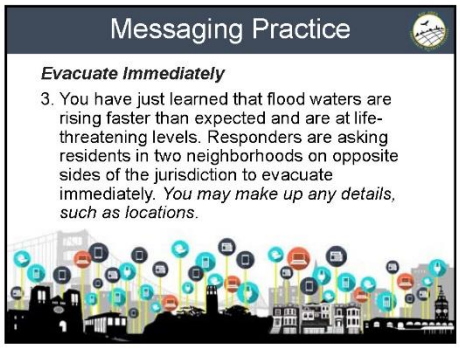

Messaging Considerations
• Focus on telling people what to do (and make sure it's really clear)
• The order of content matters
• Keep it simple; avoid "jargon" and acronyms
• Consider how a variety of people will personalize the message
• Note the difference between preparedness and warning messages should be different

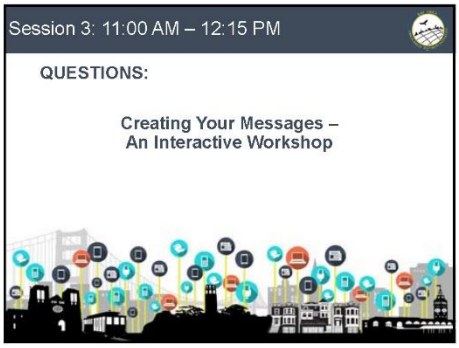

Messaging Considerations
• You may not have all of the information
• Templates should be flexible and easy to edit
• Consider the tools you're using to send the message (some have limitations)


Messaging Practice: Shelter-in-Place
1. You have received confirmed reports of an active shooter at an office complex in your jurisdiction. Law enforcement is currently responding. You may make up any details, such as location.
AND/OR
2. You have just learned that a HazMat truck overturned on a major roadway and is on fire, releasing a plume of toxic smoke. You may make up any details, such as location.

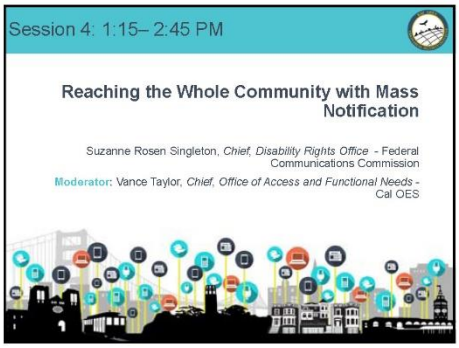

Messaging Practice
Prepare to Evacuate and Monitor the Situation
• It has been raining incessantly for days and water levels have been steadily rising.
• The current situation is not life threatening, but if the rain continues at the same pace as is forecasted, there is a risk that whole neighborhoods will need to evacuate in the coming days.
• You want to tell residents to monitor for alerts and prepare for a potential evacuation.
• You may make up any details, such as location.


Messaging Practice
Evacuate Immediately
1. You have just received confirmation that an apartment building in your jurisdiction is engulfed in flames. It is in a row of 5 similar buildings, all attached or nearly attached to each other. Responders are calling for residents to evacuate immediately. You may make up any details, such as location.
AND/OR
2. You have just received confirmation that a wildfire is dangerously close to a residential neighborhood. Responders are telling residents to evacuate immediately. You may make up any details, such as location.


Messaging Practice
Evacuate Immediately
3. You have just learned that flood waters are rising faster than expected and are at life-threatening levels. Responders are asking residents in two neighborhoods on opposite sides of the jurisdiction to evacuate immediately. You may make up any details, such as locations.


Session 3: 11:00 AM – 12:15 PM
QUESTIONS:
Creating Your Messages –
An Interactive Workshop

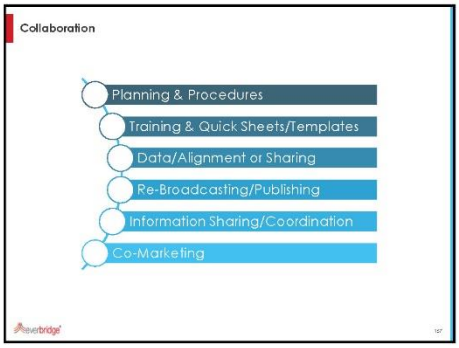

Lunch & Learn
12:15 – 1:15 PM
Alert & Warning Legislative Update
Reggie Salvador, Chief of Legislative and External Affairs – Cal OES

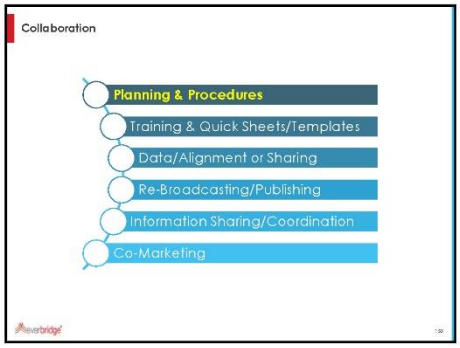

Session 4: 1:15– 2:45 PM
Reaching the Whole Community with Mass Notification
Suzanne Rosen Singleton, Chief, Disability Rights Office - Federal Communications Commission
Moderator: Vance Taylor, Chief, Office of Access and Functional Needs - Cal OES

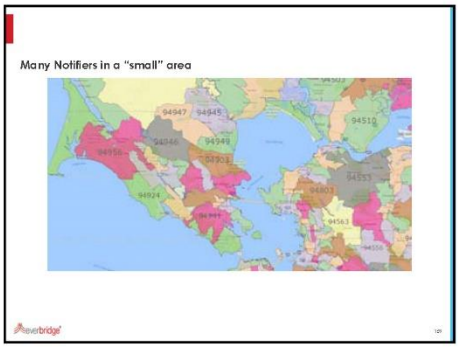

Session 4: 1:15– 2:45 PM
QUESTIONS:
Reaching the Whole Community with Mass Notification

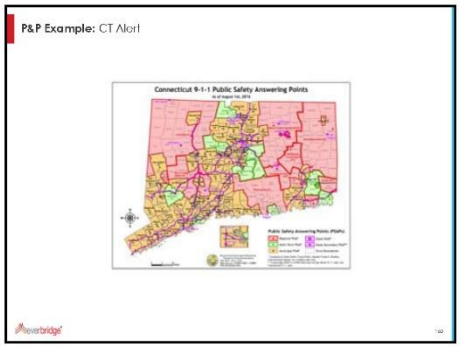

Vendor Case Study
Everbridge – Mobilizing Cross Jurisdictional Collaboration for Effective Critical Event Management
Jeremiah Kunze, MS, CEM, Practice and Adoption Manager - Everbridge

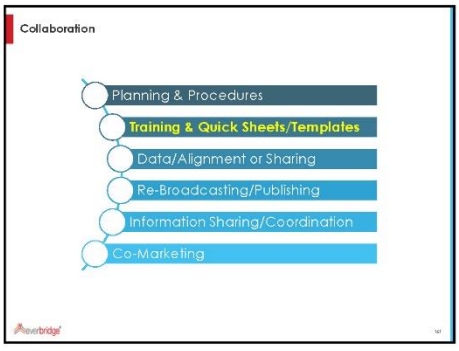

everbridge
Mobilizing Cross Jurisdictional Collaboration for Effective Critical Event Management
Jeremiah Kunze MS, CEM – Practice and Adoption Manager

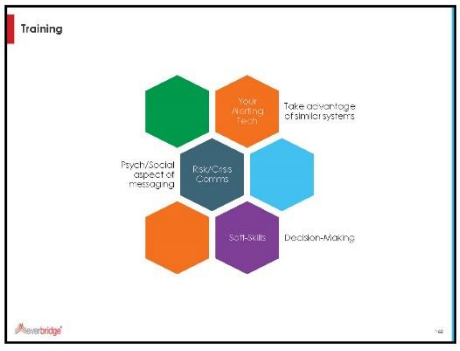

Collaboration
Planning & Procedures
Training & Quick Sheets/Templates
Data/Alignment or Sharing
Re-Broadcasting/Publishing
Information Sharing/Coordination
Co-Marketing

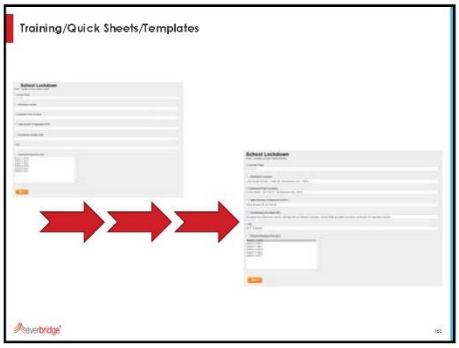

Collaboration
Planning & Procedures
Training & Quick Sheets/Templates
Data/Alignment or Sharing
Re-Broadcasting/Publishing
Information Sharing/Coordination
Co-Marketing

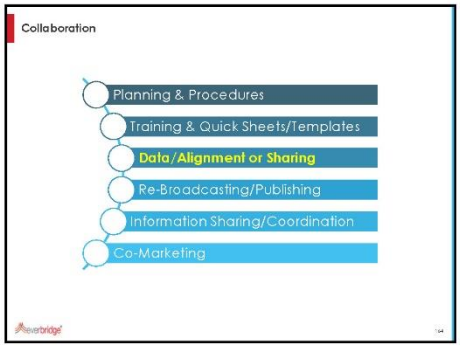

Many Notifiers in a "small" area


P&P Example: CT Alert
Connecticut 9-1-1 Public Safety Answering Points


Collaboration
Planning & Procedures
Training & Quick Sheets/Templates
Data/Alignment or Sharing
Re-Broadcasting/Publishing
Information Sharing/Coordination
Co-Marketing

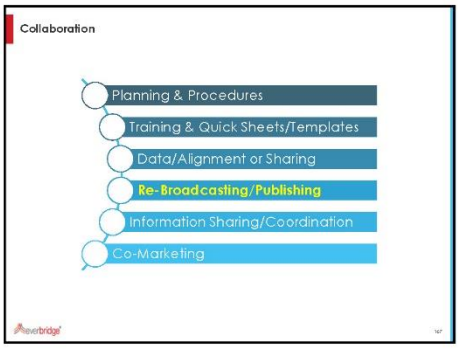

Training
Your Alerting Tech
Take advantage of similar systems
Psych/Social aspect of messaging
Risk/Crisis Comms
Soft-Skills
Decision-Making


Training/Quick Sheets/Templates

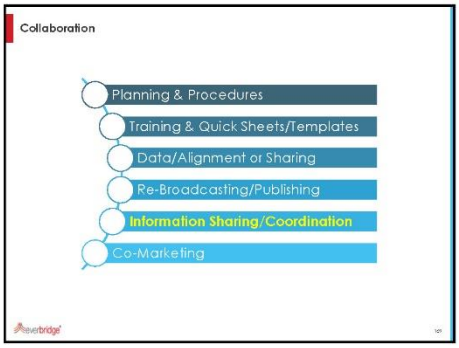

Collaboration
Planning & Procedures
Training & Quick Sheets/Templates
Data/Alignment or Sharing
Re-Broadcasting/Publishing
Information Sharing/Coordination
Co-Marketing

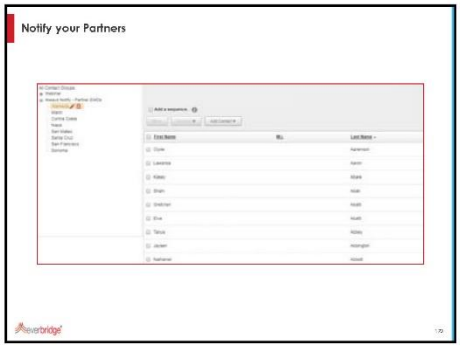

Contact Sharing Example: AlertFlorida


What about a Webform?
ACALERT
ALERT SF
SMC Alert


Collaboration
Planning & Procedures
Training & Quick Sheets/Templates
Data/Alignment or Sharing
Re-Broadcasting/Publishing
Information Sharing/Coordination
Co-Marketing


RSS & Publishing Example: NY-Alerts
Albany, NY

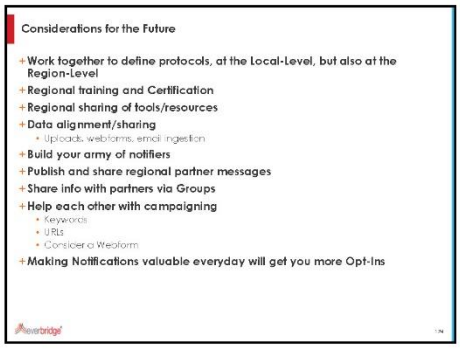

Collaboration
Planning & Procedures
Training & Quick Sheets/Templates
Data/Alignment or Sharing
Re-Broadcasting/Publishing
Information Sharing/Coordination
Co-Marketing

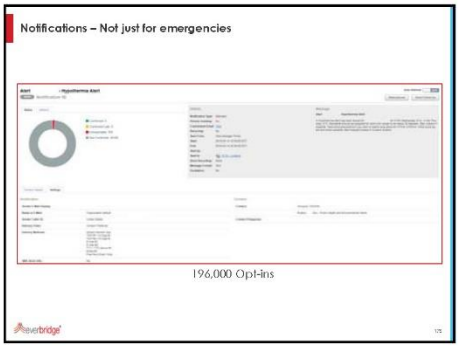

Notify your Partners

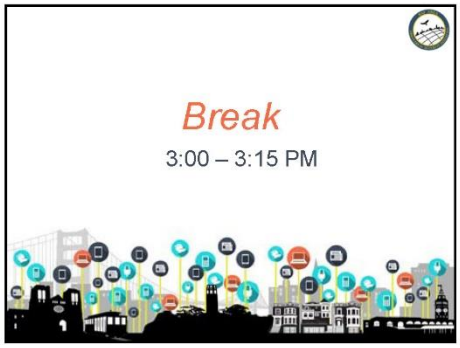

Collaboration
Planning & Procedures
Training & Quick Sheets/Templates
Data/Alignment or Sharing
Re-Broadcasting/Publishing
Information Sharing/Coordination
Co-Marketing

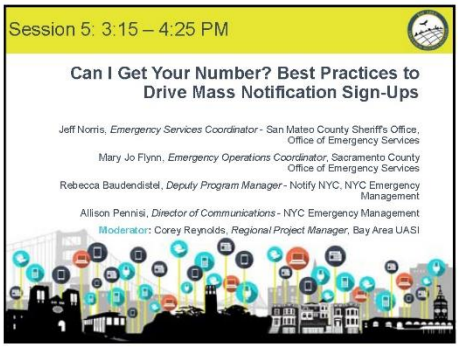

Cooperative Marketing
CAPITALERT.gov

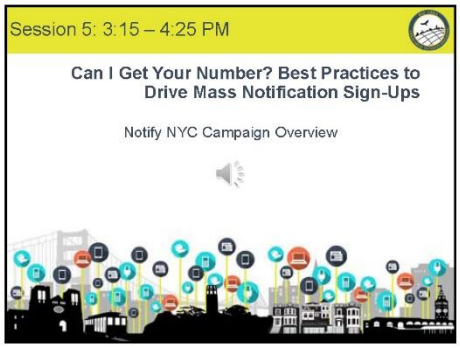

Cooperative Marketing Example: AlertFlorida

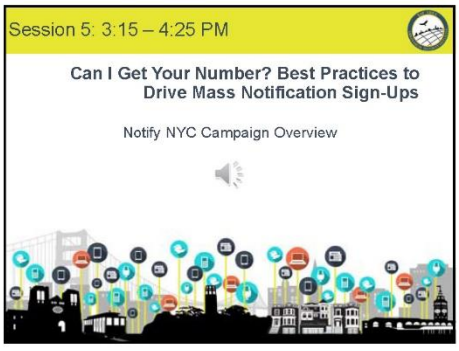

Considerations for the Future
Work together to define protocols, at the Local-Level, but also at the Region-Level
Regional training and Certification
Regional sharing of tools/resources
Data alignment/sharing
Uploads, webforms, email ingestion
Build your army of notifiers
Publish and share regional partner messages
Share info with partners via Groups
Help each other with campaigning
Keywords
URLs
Consider a Webform
Making Notifications valuable everyday will get you more Opt-Ins

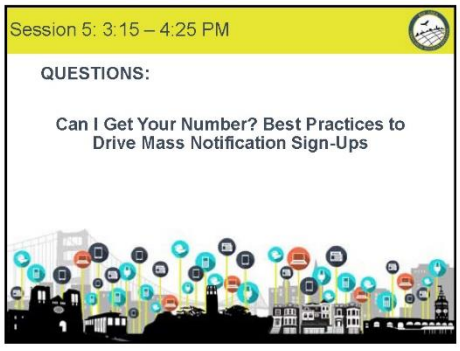

Notifications – Not just for emergencies
196,000 Opt-Ins


Break
3:00 – 3:15 PM


Session 5: 3:15 – 4:25 PM
Can I Get Your Number? Best Practices to Drive Mass Notification Sign-Ups
Jeff Norris, Emergency Services Coordinator - San Mateo County Sheriff's Office, Office of Emergency Services
Mary Jo Flynn, Emergency Operations Coordinator, Sacramento County Office of Emergency Services
Rebecca Baudendistel, Deputy Program Manager - Notify NYC, NYC Emergency Management
Allison Pennisi, Director of Communications - NYC Emergency Management
Moderator: Corey Reynolds, Regional Project Manager, Bay Area UASI

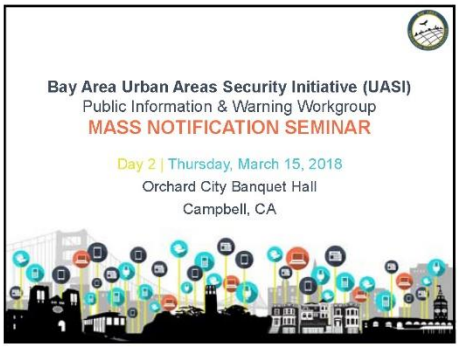

Session 5: 3:15 – 4:25 PM
Can I Get Your Number? Best Practices to Drive Mass Notification Sign-Ups
Notify NYC Campaign Overview


Session 5: 3:15 – 4:25 PM
Can I Get Your Number? Best Practices to Drive Mass Notification Sign-Ups
Notify NYC Campaign Overview


Session 5: 3:15 – 4:25 PM
QUESTIONS:
Can I Get Your Number? Best Practices to Drive Mass Notification Sign-Ups


Session 6: 4:25 – 4:55 PM
But What About…? An Open Session for Lingering Questions and Future Seminar Topic Suggestions
Moderator: Paul Hess, Supervisor, Alameda County Office of Emergency Services


Closing Remarks


Bay Area Urban Areas Security Initiative (UASI)
Public Information & Warning Workgroup
MASS NOTIFICATION SEMINAR
Day 2 | Thursday, March 15, 2018
Orchard City Banquet Hall
Campbell, CA

APPENDIX E – NOTIFICATION SYSTEMS MATRIX

Mass Notification Alerting Matrix

Alert Mechanism	Description	Ability to Narrowly Target Recipients	Triggered By	Opt In / Out / N/A?	Additional Strengths	Additional Limitations	Typical Usages	Thresholds	Used with other Alerting Mechanisms Below?	Awareness (Adjacent OAs, etc)	Coordination (multiple alerting authorities with alerting ability)	Comments
EAS	Interrupts broadcast TV & radio, cable, satellite transmissions with emergency messages	Very broad - entire media market	Operational Area Primarily	N/A	Often functions when other alerting systems are not	Only received by those watching/listening to broadcasts	Major immediate threats to a very large area/media market	Imminent threat to a large portion of the media market	WEA	N/A for jurisdictions in the same media market		
					Can reach large audiences (broad distribution)	Limited by programming of LP	Regional disaster month text		Reverse 911			
					Closed captioning and verbal, visual elements	Stations do not have to turn them (voluntary)	Community outreach notification	Multiple jurisdictions whole area, not targetable	Nixle			
					Legacy system	Less likely to reach younger people	Catastrophic events (e.g. tsunamis, tornadoes)	Advisory (need to take action)	Social media (always)			
					Good for reaching older populations	Message not stored locally		Alert (need action because of imminent risk)				
					Opt-in not required	2 minute limit (message disappears quickly)						
					Recognizable tone/authority							
WEA	Short emergency messages broadcast from cell towers to text-capable mobile phones within tower coverage range	Broad - though ability to more narrowly target is coming 11/19	OAs and others with alerting authority	Opt Out	Reaches all people (+/-) within coverage of targeted cell towers (captures transient population)	Limited to 90 characters (expect by 360 characters rolling out over time - planned for 2019)	Major immediate threats affected a large area - typically major portion/entire county (i.e. large wildfire, major flooding, tsunami, tornado)	Imminent threat to a large portion or entire county or counties or very serious threat to smaller area	Reverse 911		Need to coordinate with other alerting authorities to ensure consistent messaging.	
					Generally works during power failure	Public may opt-out if overused (i.e. non-critical alerts, frequent Amber Alerts)	Critical Amber Alerts		Nixle			
					Unaffected by o/w congestion	Limited location targeting	Weather warning		Social media			
					Opt-in not required	Can't always control quickly	Short notice evacuations					
						Verification disappears quickly						
						No reporting/metrics						
						Limited language capabilities						
Reverse 911 (wireless phone)	Voice calls to a database of phone numbers	Down to individual address via polygon	Operational Areas or Jurisdictions/Agencies	N/A	Database of phone numbers/addresses include all wireline phones, MAY also include some VoIP	Requires landline. The public is dropping wireline phones at a high rate, so many residents are not included	Major immediate threats to a large portion of a defined area (i.e. wildfire, flooding, armed criminal in the area)	Imminent threat to a narrowly defined area	Nixle			
					Geo-targetable to a granular level	People often do not answer numbers they don't recognize	Critical Missing person	Life safety	Social Media			
					Ability to reach non-tech community	Not all VOIP data can be obtained from providers Data ownership problems	Hazmat	Actionable	WEA			
					Opt-in not required		Evacuation order					
					Longer (lessons) dependable, tried and true		Firestorm					
					Does not require mobile carrier app							
					Systems are able to make multiple calls							
Reverse 911 (wireless phones)	Voice calls / messages to a database of phone numbers, (i.e., text, email, etc)	Narrow down to household	Operational Areas or Jurisdictions/Agencies	Opt In	Multimodal (text, voice, email, pager, etc.)	Will not address people who are not at a registered location (in transit, not at work / home / school)	Major immediate threats affected a defined area (i.e. wildfire, flooding, armed criminal in the area)	Imminent threat to life or property to a narrowly defined area	Nixle			
					Can get alerts for multiple locations, regardless of location	People often do not answer numbers they don't recognize		Firestorm	Social Media			
								Hazmat				
								Natural disaster				
Nixle	Primarily text based alerting service broadly available to jurisdictions & agencies of all sizes	Can target down to a zip code	Agencies or organizations that have established tool alerting authority	Opt In	Easy & anonymous registration (which probably increases # of registrants; can be used without registration)	Numerous overlapping alerting authorities can make coordination very difficult	Temporary closure of major roads, inclement weather	Temporary closure of major roads, inclement weather	Depending on local social media policy might also post to social media			Has three levels of alerting (Alert, Advisory, Community); thresholds & usage varies widely
					Longer messages allowed (more than 90 characters)	Each alerting agency must acquire Nixel alerting capability	Press release	Community messages				Some use without other alerting mechanism during major events
					Interfaces with Facebook, Twitter, etc.	Potential for receiving multiple alerts.	Crime in progress	Advisory				
					Can autofeed through Google Alerts (check if available in other OAs)	Possibility of inconsistent messages	Life threats	Emergency alerts				
					Dial-out & Spanish translation (same as reverse 911)	Message fatigue	Coffee with a Cop					
					URLs in text message can easily link to more information	Limited targeting to self-reported zip codes.	PIO					

Mass Notification Alerting Matrix

Alert Mechanism	Description	Ability to Narrowly Target Recipients	Triggered By	Opt In / Out / N/A?	Additional Strengths	Additional Limitations	Typical Usages	Thresholds	Used with other Alerting Mechanisms Below?	Awareness (adjacent OAs, etc)	Coordination (multiple alerting authorities with alerting ability)	Comments
Social Media	Typically Twitter, sometimes Facebook & others including Nextdoor	Very broad, depending on following	Agency / jurisdiction	Opt In	Inherently spreads widely	Generally not suited to alerts requiring immediate action	Agency / jurisdiction dependent	Agency / jurisdiction dependent	All other messages depending on severity level	Subscribe to other agencies' feeds		
					Media follows social media	Requires internet	Community messages					
					Can be used to direct people to authoritative source	Must build brand so that people trust it (people need to follow to see messages)	Emergency messages					
					Potential large Following	Advertisement clutter	Preparedness Events					
					Ability to reach people of all ages	Rumor control issues/ inappropriate content issues						
					Easy navigation	Requires opt-in/subscription						
					Interactive	Must be sensitive to current events						
					Messages are easily shareable	Can't talk to another						
					Low cost/free and scalable	Geographically static						
					News stations use Twitter as their "news wire" and can amplify message	Moves faster than the government						
Sirens / Horns, Outdoor Speakers	Sirens / horns, outdoor speaker systems	Somewhat narrow - but variable due to topography, weather conditions; bleed over inevitable	Typically local gov't	N/A	Typically very resilient to infrastructure failure	Sirens & horns require public to get direction from another source (radio, etc.)	Major immediate threats affecting a local area (i.e. tsunami, wildfire)	Imminent threat to a narrowly defined area	All other methods depending on threat/Situation			
					Opt-in not required	Old technology	Get people's attention	Life-safety				
					Can reach transient population	Can't reach entire community	Immediate, life-saving action if used during the evening	Pretty significant incident				
					Can be transportable	Weather dependent (e.g., wind reduces effect)						
					Can target specific areas	Can be obstructed (e.g. trees)						
					Can do live translations	Can be hard to hear indoors						
					Can control timing/length of alert	Public education required						
					Not dependent on internet	Issues with hearing impaired, those with AFN, anxiety, etc.						
					Can reach "hard to reach," multilingual populations							
Weather Radios Alerting					Don't have to be "on" and constantly bothering you all the time; can turn on only when needed	People don't have a good understanding of how they work	Exos for non-weather incidents					
						Lack of market penetration of devices and their uses	Potentially in areas with many waterways					

APPENDIX F – ORGANIZING MASS NOTIFICATION SYSTEMS

Contra Costa County Community Warning System	
Staffing	
Number of staff	1 manager, 2 Emergency Planning Coordinators
Dedicated to emergency notification? (primary function?)	Yes
Time spent on alert and warning - planning, etc.	Full time
Alert Originators	
Who activates?	CWS Staff or Duty Officer
Number of trained alert originators	6 - 3 CWS staff, 3 additional personnel who serve in the on-call rotation
On-call rotation	
How many/who is included	3 Full time CWS staff; 3 Emergency Services personnel (sworn)
Length of on call duty - including business hours?	1 week (0800 Monday - 0800 Monday) Technically duty officer is responsible for the entire week, but generally, staff in the office during requests will activate
Activator redundancy (back up for primary on-call personnel or alert activator)	No formal backup - dispatch has all on-call staff information and if primary is unreachable, they will contact CWS manager and then additional staff until they reach someone
Training	
Frequency	Monthly for Duty Officers
Topics/what is covered	Monthly - debrief activations and requests; send test alert or alert in test system Biannually - monthly plus social science review, roles and responsibilities, etc.
Authority	
Approval needed for alert to be sent?	CWS staff and Duty Officers have the authority to send alerts without any additional approval - all alerts sent on behalf of the requesting agency - all message content and affected area info based on request from incident commander
If yes, who needs to approve the activation/message	Additional approval not required

Activation Request Procedure
Incident Commander (or designee) requests CWS activation through dispatch; if non-Sheriff's Office, that dispatch contacts Sheriff's Office dispatch with request information; Sheriff's Office dispatch contacts Duty Officer or CWS staff; Duty officer or CWS staff contact Incident Commander directly to get any additional information needed and confirm message and affected area; Emergency notification sent
Benefits of our activation structure
Dedicated staff beneficial for becoming subject matter experts in public alert and warning Understanding of the system and ability/expectation to follow up on alerts after being sent
Challenges of our activation structure
Timing - while we are on call 24/7, we are not sitting a computer waiting for a call 24/7. Any delay in activating the system is risky. Jurisdictions that use dispatch centers or other 24/7 staff to activate may be able to get alerts out faster

City and County of San Francisco Emergency Alert and Warning System	
Staffing	
Number of staff	3 managers, 11 Emergency Services Coordinators (3 Day Watch)
Dedicated to emergency notification? (primary function?)	3 Dedicated Monday through Friday 0700-1600
Time spent on alert and warning - planning, etc.	8 ESCs take rotating week long shifts. 3 ESCs dedicated full time to development of the program.
Alert Originators	
Who activates?	Watch Center or on call Duty Officer
Number of trained alert originators	3 Managers, 11 Emergency Services Coordinators
On-call rotation	
How many/who is included	3 Managers, 11 Emergency Services Coordinators (3 Day Watch)
Length of on call duty - including business hours?	1 Week Rotations Approximately 1200 Tuesday - 1200 Tuesday Day Watch assumes Alert and Warning Responsibility at 0700 - 1600 Monday through Friday (excluding Holidays)
Activator redundancy (back up for primary on-call personnel or alert activator)	Managers on Call are primary support for Watch Center and Duty Officers.
Training	
Frequency	Initial Academy Style Training occurs during on-boarding. Biannual Classroom (2x year) Refreshers Monthly Training Weekly Case Review Training Bulletins/Operational Updates issued as needed
Topics/what is covered	Biannual Training covers in brief academy program Monthly training cover one academy session
Authority	
Approval needed for alert to be sent?	Day Watch and Duty Officers have authority to send any alert based upon situation and requests from Incident Commanders. If any question arises, MOC will determine level of alert and warning.
If yes, who needs to approve the activation/message	IPAWS initiation must receive authority from DEM Director, Fire Chief, or Police Chief

Activation Request Procedure
"Incident Commander initiates life safety actions (shelter in place, evacuation) Dispatch notifies Day Watch or on Call Duty Officer PD or FD Liaisons clarify any information if necessary. Alert sent"
Benefits of our activation structure
Dedicated staff capable of sending emergency alerts.
Challenges of our activation structure
"Obtaining clear and accurate descriptions of the incident perimeter, life safety actions to be taken, and timing to update or close out emergency alerts. Maintaining training standard and proficiency among all staff beyond Day Watch personnel."

Monterey County	
Staffing	
Number of staff	12 PSAP Supervisors, 3 OES Staff, 1 OES Staff as A&W Coordinator
Dedicated to emergency notification? (primary function?)	The 12 PSAP Supervisors and 1 OES Admin/Coord are dedicated to emergency notification when needed
Time spent on alert and warning - planning, etc.	1 OES Admin/Coord focused on planning/testing/training
Alert Originators	
Who activates?	PSAP Supervisors as needed for daily operations/emergency. OES Duty Officer as needed or in support of the PSAP
Number of trained alert originators	12 PSAP Supervisors, 3 OES Staff, 1 OES Staff as A&W Coordinator
On-call rotation	
How many/who is included	PSAP Supervisors - 24/7/365 OES DO - 24/7/365
Length of on call duty - including business hours?	PSAP Supervisors - 24/7/365 OES DO shift Monday 0800 to Monday 0800 hours.
Activator redundancy (back up for primary on-call personnel or alert activator)	PSAP is primary as needed. OES DO is backup to PSAP, and Alert & Warning Coordinator is backup to all.
Training	
Frequency	Quarterly for PSAP Supervisors or as needed 24/7 for inquiries or refresher. Refresher quarterly for OES Staff. OES is Initiating monthly testing of Everbridge notifications and IPAWS COG-COG testing on the production side.
Topics/what is covered	Basic A&W messaging creation, template use and creation, polygon generation in a rural/urban interface situation, basic Nixle messaging, using polygons for zip code capture, IPAWS messaging.
Authority	
Approval needed for alert to be sent?	PSAP has the authority to send any alert based upon situation and requests from Incident Commanders. A&W Coordinator has the authority to send any alert based upon situation and request agency. Duty Officer have authority to send without prior approval, and based on situation. Duty Officer required to notify Emergency Manager/OES staff.
If yes, who needs to approve the activation/message	

Activation Request Procedure
"Incident Commander or Agency FD or LE can initiate life safety actions (shelter in place, evacuation) through PSAP. PSAP notifies OES Duty Officer. Alert & Warning Coordinator provides support and back up if needed."
Benefits of our activation structure
Dedicated PSAP staff capable of sending emergency alerts and backed by OES Staff, supported by SME
Challenges of our activation structure
"Obtaining clear and accurate descriptions of the incident perimeter, life safety actions to be taken. Timing on follow-up messaging. Maintaining training standard and proficiency among all staff, OES and PSAP."

APPENDIX G – PRE-SCRIPTED MESSAGES

Incident: Active shooter incident

1. Los Gatos Police responding to active shooter at Netflix headquarters. Stay inside, lock your doors, and avoid the area. More information will follow.

2. XYZ PD advises you remain indoors. Situation developing. Shooter at large. Avoid area.

3. Campbell Police: Active shooter reported at Campbell Office Park. Run, Hide, Fight now. All others stay away from location.

4. Los Altos Police advise public to avoid area of Foothill Expressway and San Antonio Road. Officers responding to active shooter. Those located in the area should seek shelter and remain inside.

5. Benicia Police Department: Residents are urged to remain indoors, lock their doors until further notice. Avoid the area of 07 400 block of First Street as of 11 a.m. Officers are responding to confirmed reports of an active shooter in the area. Updates to follow. Only call 9-1-1 in case of emergency.

6. Benicia Police: As of 11 a.m. avoid area of 400 block of 1st Street due to active shooter. BPD Responding.

7. Avoid the area of Park and Main due to an active shooter until further notice.

8. Anytown USA PD advises to shelter-in-place due to an active shooter in the vicinity of the Anytown USA Office Complex. Please go to [link] for additional information and standby for further instruction.

9. Sunnyvale Department of Public Safety is currently involved in a police activity in the area of Matilda and 101. Please avoid this area until further notification.

10. Police activity in the area of 7th & H Street, downtown Sacramento. Traffic detours in place; do not go into this area. Listen for messages from authorities on official social media accounts and TV & Radio. Message to employees/those in the area: Hide, fight, flee.

11. City Police Department: Active shooter in Woodward Complex Bldg. A. If you're in the complex, shelter-in-place. Put phone on silent mode. Updates to follow.

12. San Jose Police: Active shooter at Campbell Community Center. Law enforcement on scene. Avoid the area until further notice.

Incident: Hazmat Truck spill

1. CHP closed S/B Hwy 101 @ Holly Street in San Carlos due to hazardous material fire. Use alternative routes. Unknown time to reopen.

2. XYZ FD advises you stay inside, close windows and doors, due to toxic smoke. Additional updates will be provided.

3. 880 Freeway in Oakland is closed in both directions from XYZ Ave. to 7th Street due to a Hazmat vehicle fire from an overturned truck. Emergency crews are responding. If you smell or see smoke, go indoors, close all windows, and turn off your air conditioner until further notice. People that have breathing issues are especially at risk. For more information, click [here].

4. Berkeley Fire: People three blocks from San Pablo and University should shelter in the nearest building now due to a hazardous material release.

5. Santa Clara Police advise public to avoid area surround Levi Stadium and Great America. Public Safety responding to overturned Hazmat truck at Great America & Tasman Drive. Those in the area should seek shelter indoors. Close windows & doors. If inside either Levi Stadium or Great America, please follow instructions from event staff.

6. California Highway Patrol, Benicia Fire Department, Benicia Police Department: Avoid the area of Interstate 780 and Columbus Parkway due to toxic smoke from an overturned truck on fire as of 11 a.m. Residents and pets south of the area should stay indoors and turn off air conditioners. Motorists should avoid the area. Updates to follow (Map included).

7. Santa Clara County Fire Department requesting a shelter-in-place within a ½ mile radius of Winchester Blvd. and Hamilton Ave. due to a hazardous materials incident. Stay indoors, close your windows, turn off your air conditioner, and bring your pets indoors. More information to follow. [link]

8. Avoid the area of Hwy 101 @ Tully and stay indoors due to a toxic smoke and fire hazardous material truck overturn. Updates to follow.

9. CHP: Avoid the area of Hwy 101 @ Tully Rd. and those in area stay indoors due to a hazardous material truck overturn. Toxic smoke and fire. Updates to follow.

10. Richmond Fire Department advises to shelter-in-place, stay indoors, and close windows, doors, and vents due to an overturned Hazmat truck which is on fire and releasing toxic smoke within the area of A/B St. and C/D/ Ave., effective 1150 until further notice. For additional information go to [link]. Standby for further instruction.

11. Hayward Fire Department is currently working the scene of a hazardous materials spill with fire on NB 880 at the Winton exit. Residents in the area are asked to shelter indoors. All others avoid the area. This is to be effective immediately and until further notice.

12. Hazmat truck overturned and on fire. Reported at 1130. Avoid area of 99 @ Twin Cities. Smoke plume observed from fire. All residents/persons within 2-mile radius advised to go inside, close all windows, and turn off A/C units. Listen to authorities for official updates.

13. City Fire: Shelter-in-place if you are within one mile of 280 and 92. Go inside and close windows and doors. Hazardous material incident. Tune into AM 1610 or local traffic station.

14. BAUASI: Chemical spill at Hwy 17 & Hamilton Ave. People in the immediate area: close windows, doors and vents. Motorists avoid the region. Authorities are responding.

15. San Jose Fire Dept: Airborne Hazmat spill on Hwy 58 at 880. Drivers shelter within vehicles. Local residents shelter-in-place. All others avoid the area.

Incident: Storm Event

1. Source: City of San Jose. City of San Jose Office of Emergency Services is actively monitoring rising water levels due to recent heavy rain. Mandatory evacuations may be issued at a moment's notice. Be prepared, gather essential supplies in case you may have to leave your home. Register for Alert San Jose for emergency alerts. Check (monitor) local media and Sanjose.gov for further updates.

2. Due to ongoing storm conditions, the City crews are out cleaning drains and monitoring creek levels. Residents should prepare their homes by cleaning gutters and culverts and bringing in outdoor furniture. XYZ Neighborhoods may experience flood conditions in the upcoming 24 hours. Monitor SMC Alert for additional information or the City hotline 123-456-7890. Stay dry! Sandbags are available at XYZ location (embed map).

3. NWS has issued a flood advisory for Corte Madera Creek from March 15 to March 18. Residents are advised to prepare for evacuation. For up to date information, listen to AM 1234 or check this site for details.

4. This message is from the Marin county Sheriff's Office the National Weather Service has issued a flood advisory for Corte Modera. All residents are advised to prepare within a ¼ mile to evacuate for more information. Go to [link] for up to date information. Please listen to AM 1234 or check this site for details.

5. Sacramento Water Resources and Office of Emergency Service recommends residents in neighborhoods XYZ take protective action now. Flooding is likely to begin in two days.

6. Due to heavy rain over the last several days and the National Weather Service forecast for more, residents are encouraged to prepare for possible flooding, water levels are rising along Adobe Creek and flooding is possible in neighborhoods located nearby. Register for Alert SCC to receive ongoing status update. For more information and location of complimentary sandbag stations, visit [link].

7. County of Sonoma: Due to heavy forecasted rain, areas around Lake Sonoma are likely to flood on March 14th and 15th. Residents should take precaution now by moving to higher grounds, monitoring National Weather Service (link) and local media. Updates to follow, check [County website link]. Sandbags available at local fire stations.

8. CHP: People in the Watter Road area of Pescadero should prepare to evacuate. Watch for rising water and go to Pescadero High School.

9. The National Weather Service advises to stay tuned for alerts and prepare for a potential evacuation due to a possibility of localized flooding.

10. The Petaluma Police Department is advising residents of the Payran and Rocca neighborhoods to be prepared for potential evacuation over the next 24 hours. The National Weather Service is predicting flooding in this area. Use this [link] for evacuation preparation. Updates to follow.

11. Forecasted precipitations may cause evacuations for XYZ neighborhoods. Continue flooding prevention for your homes. [Link to sandbag locations]. Ensure evacuation kits are ready for your families. Local authorities will provide up-to-date weather conditions and recommendations on a regular basis. Monitor social media and local media for current information.

12. Marin County EMS: Weather forecast indicates potential of flooding in your area (shapefile). Prepare bags with clothes, medications, and important documents for potential mandator evacuation. Tune in to local media for updates.