



FEMA

Integrated Public Alert and Warning System

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202-646-1386

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Agenda

- Overview of IPAWS
- How IPAWS is used today
- Changes to WEA coming
- National Advisory Council Subcommittee



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IPAWS Federal Guidance

Policy:

- ▶ ***Executive Order 13407 - Public Alert and Warning System***
 - Establishes policy of the United States to have an national warning system used by government officials at all levels of government to alert and warn people of all hazards

Law:

- ▶ ***Public Law 114-143, The IPAWS Modernization Act***
 - Enacts to law the policy statement and similar requirements found in Executive Order 13407
- ▶ ***Section 706 of 47 U.S.C. 606, The War Powers Act***
 - Provides for Presidential access to commercial communications during “a state of public peril or disaster or other national emergency”
- ▶ ***Public Law 93-288, The Stafford Act***
 - Sec. 202. Disaster warnings – directs FEMA to provide technical assistance to State and local governments to insure that timely and effective disaster warning is provided

Regulation:

- ▶ ***47 CFR Part 11 — Emergency Alert System (EAS)***
 - Provides for alert and warning on private sector radio and television infrastructure
- ▶ ***47 CFR PART 10 — Wireless Emergency Alerts (WEA)***
 - Provides for alert and warning to devices on wireless carrier networks



IPAWS Vision

“Timely Alert And Warning To American Citizens In The Preservation of Life And Property”

- Facilitate single emergency alert message delivery to all available public dissemination channels
- Easier to use by public safety/alerting authorities

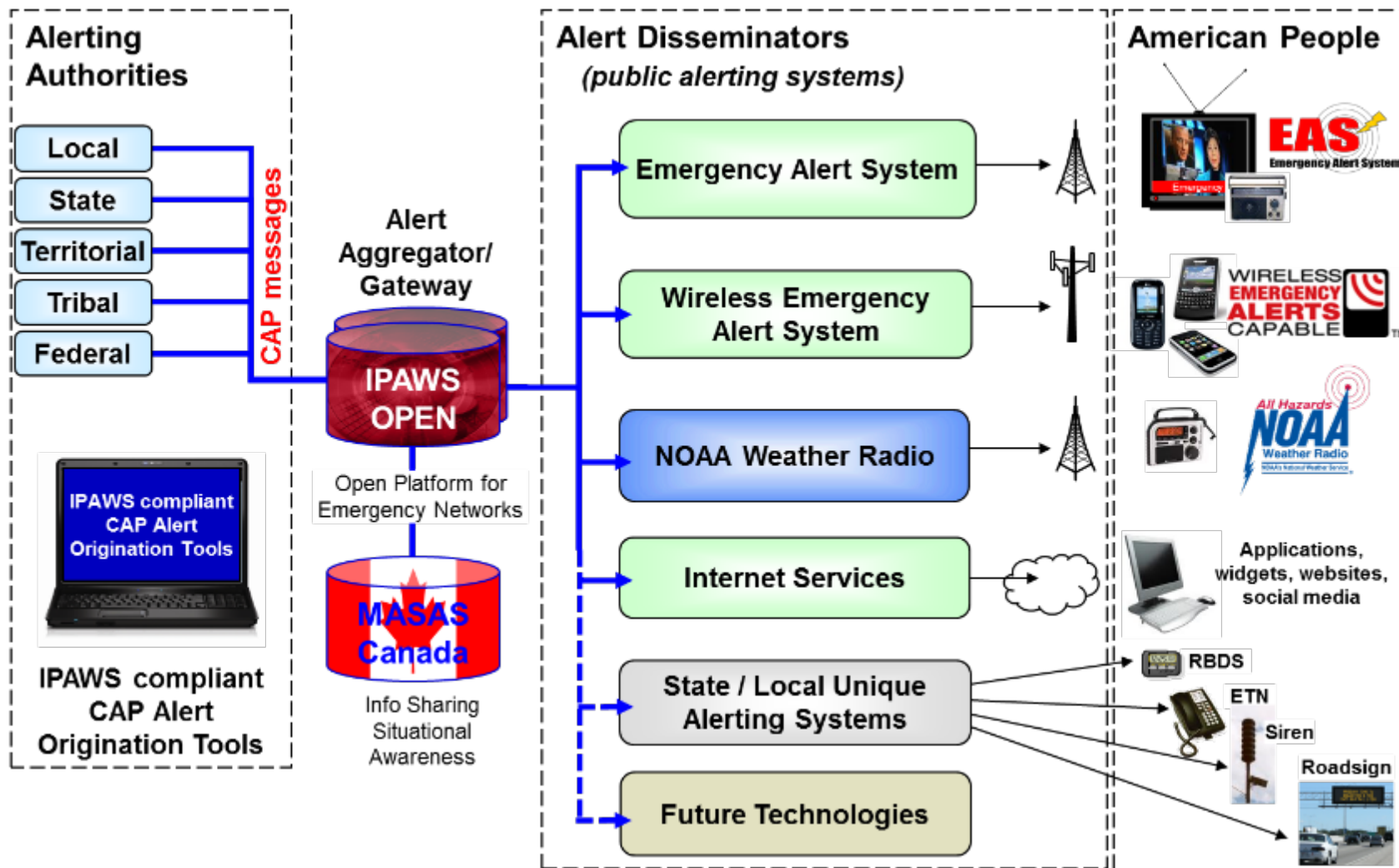


- Improves and Enhances emergency alerting capability in two critical ways:
 - Reliability that citizens receive alert via at least one path
 - likelihood that citizens react to emergency alerts



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IPAWS Architecture



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Emergency Alert System

- All radio/TV providers must monitor IPAWS-OPEN
- Equipment installed in all TV and Radio providers monitor for valid and relevant alert/warning messages
- Audio announcement and text display interrupts programming



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What Are Wireless Emergency Alerts (WEAs)?

Wireless Emergency Alerts (WEAs) are used to send concise, text-like messages to WEA-capable mobile devices during emergency situations.

WEAs are sent by your state and local public safety officials, the National Weather Service, the National Center for Missing and Exploited Children, and the President of the United States.

Types of Alerts



Presidential

Alerts issued by the President or a designee during a national emergency.



Imminent Threat

Alerts issued when an imminent threat to life or property exists in your area, including severe man-made or natural disasters such as earthquakes, wild fires, hurricanes, and tornadoes.



AMBER

Alerts issued to help law enforcement search for and locate an abducted child.



What You Need to Know



WEAs are designed to get your attention and alert you with a unique sound and vibration. WEAs are rebroadcast until the emergency situation has passed and is no longer a threat to those in the area.



WEAs are not affected by network congestion and will not disrupt text, calls, or data sessions that are in progress.



WEAs are no more than 90 characters, and they include the following information:

- Who is sending the alert
- What is happening
- Who is affected
- What action to take



Mobile users are not charged for receiving WEAs and are automatically enrolled to receive them.



There are a number of success stories across the United States on how WEAs have saved people's lives.



Check with your wireless provider to confirm WEAs are available in your area and your device is capable of receiving WEAs.

NOAA Weather Radio

- Non Weather Emergency Messages through the NOAA HazCollect system
- 1000 transmitters (162.400-162.550 MHz)
- Can wake up radios in the middle of the night
- Many schools have them

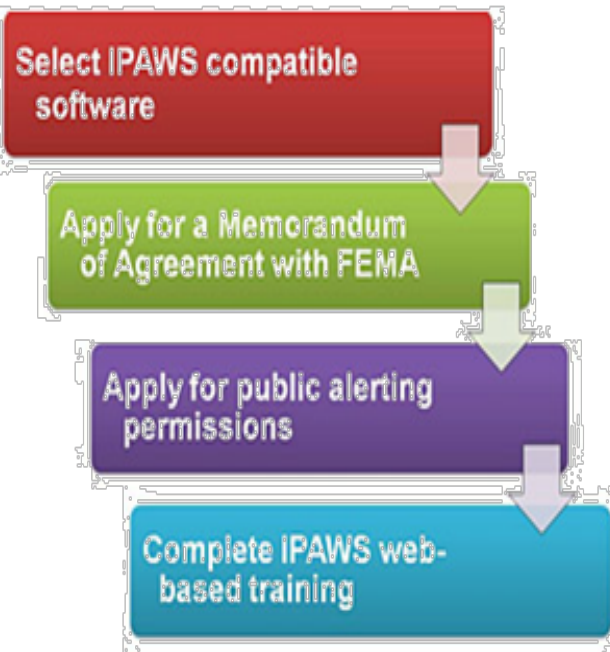


NOAA is Currently Updating System/Sign-Up



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Getting Access to IPAWS



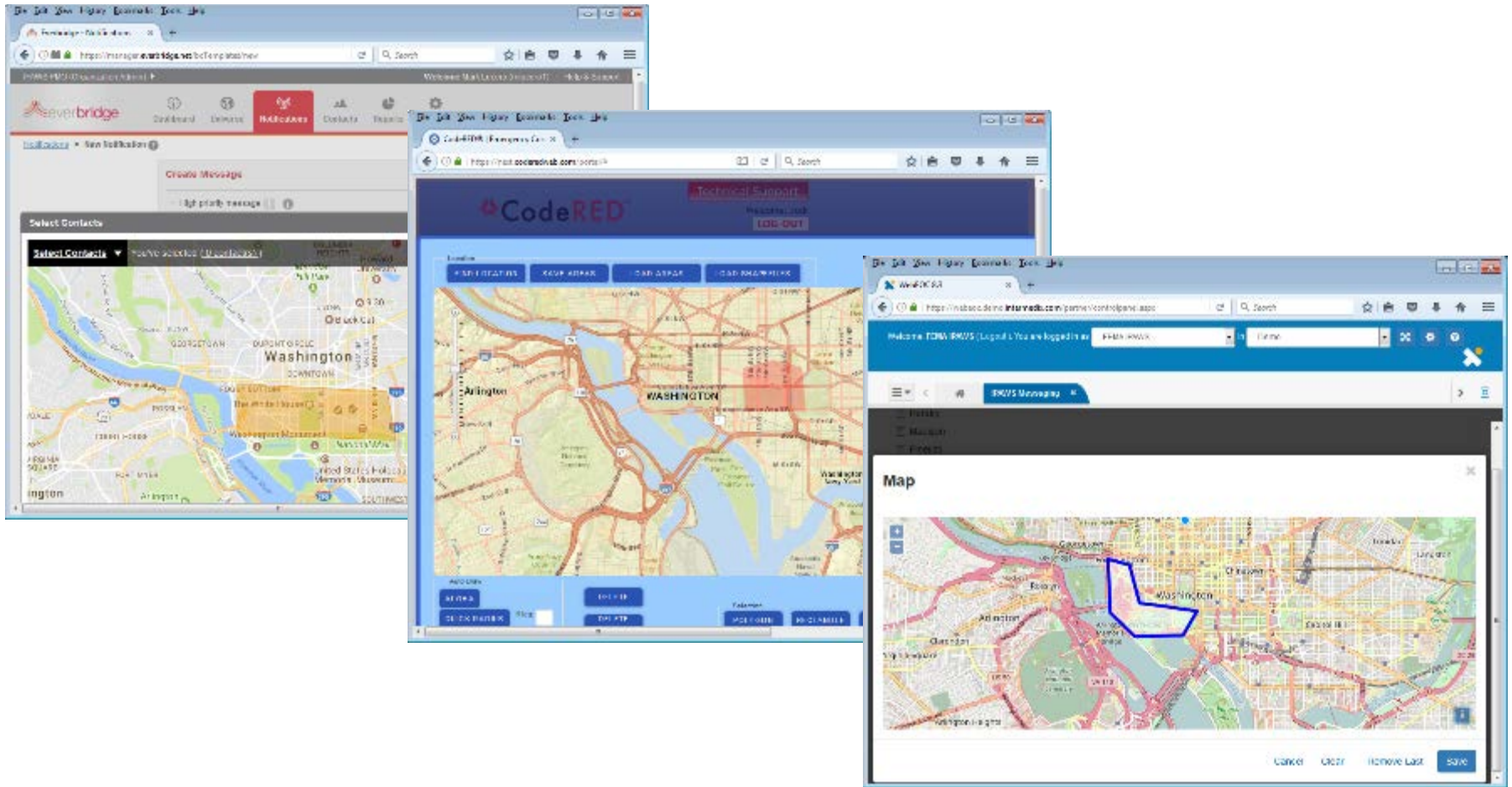
1. Obtain an IPAWS-compatible alerting tool
2. Complete a Memorandum of Agreement
 - Fill out the MOA Application (link below)
 - FEMA will create an MOA for you to sign
 - With a signed MOA, FEMA will set up your COG and send you a certificate to “digitally sign” your alert messages
3. Complete the “Public Alerting Application”
 - Coordinate with the state and obtain signature
4. Complete IPAWS web-based training
 - With a signed “Public Alerting Application” and training certificate, FEMA will enable your alerting permissions and you’re good to go

www.fema.gov/how-sign-ipaws



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Creating an IPAWS Alert



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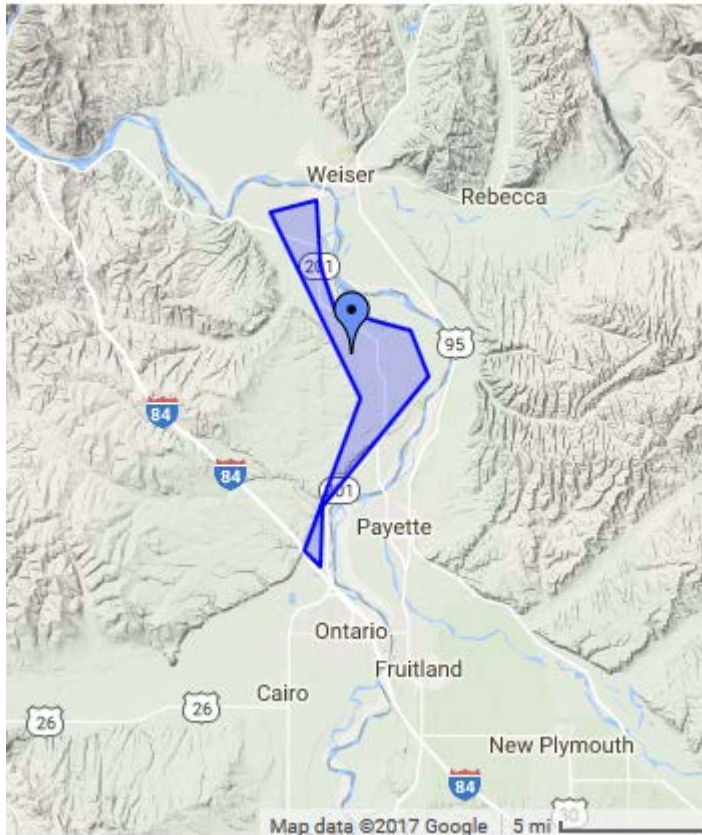
Alert Dissemination

- EAS
 - Broadcast
 - Large footprint
 - County-based
- WEA
 - Broadcast
 - Medium footprint
 - Polygon based
- NOAA Weather Radio
 - Broadcast
 - Large footprint
 - County-based



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A Little More Detail...



```

<?xml version="1.0" encoding="UTF-8" standalone="true"?>
<alert xmlns="urn:oasis:names:tc:emergency:cap:1.2">
  <identifier>AS-OR-49a4cee6-275b-453a-9ffa-9dbc417792c9</identifier>
  <sender>Robert.Hunsucker@malheurco.org</sender>
  <sent>2017-01-09T14:14:17-07:00</sent>
  <status>Actual</status>
  <msgType>Alert</msgType>
  <source>AlertSense</source>
  <scope>Public</scope>
  <addresses/>
  <code>IPAWSv1.0</code>
  - <info>
    <language>en-US</language>
    <category>Safety</category>
    <event>Civil Emergency Message</event>
    <responseType>Prepare</responseType>
    <urgency>Immediate</urgency>
    <severity>Extreme</severity>
    <certainty>Observed</certainty>
  - <eventCode>
    <valueName>SAME</valueName>
    <value>CEM</value>
  </eventCode>
  <effective>2017-01-09T14:14:17-07:00</effective>
  <expires>2017-01-09T15:14:17-07:00</expires>
  <senderName>Malheur County EM,OR</senderName>
  - <parameter>
    <valueName>BLOCKCHANNEL</valueName>
    <value>EAS</value>
  </parameter>
  - <parameter>
    <valueName>CMAMtext</valueName>
    <value>Prepare for minor flooding 4 low lying areas of the Snake River-Ontario to Weiser</value>
  </parameter>
  - <parameter>
    <valueName>BLOCKCHANNEL</valueName>
    <value>NWEM</value>
  </parameter>
  - <area>
    <areaDesc>Flood</areaDesc>
    <polygon>44.23240859791255,-117.01812744140625 44.238312212932016,-116.98654174804688
    44.20534278429107,-116.98379516601562 44.185158356346356,-116.97418212890625
    44.17826452922573,-116.94259643554688 44.17407859804763,-116.9216537475586
    44.15215916724575,-116.91032409667969 44.08783162859382,-116.9820785522461
    44.05749207201752,-116.98448181152344 44.06588017158586,-116.99478149414062
    44.14082683077555,-116.95701599121094 44.23240859791255,-117.01812744140625</polygon>
  - <geocode>
    <valueName>SAME</valueName>
    <value>041045</value>
  </geocode>
  
```



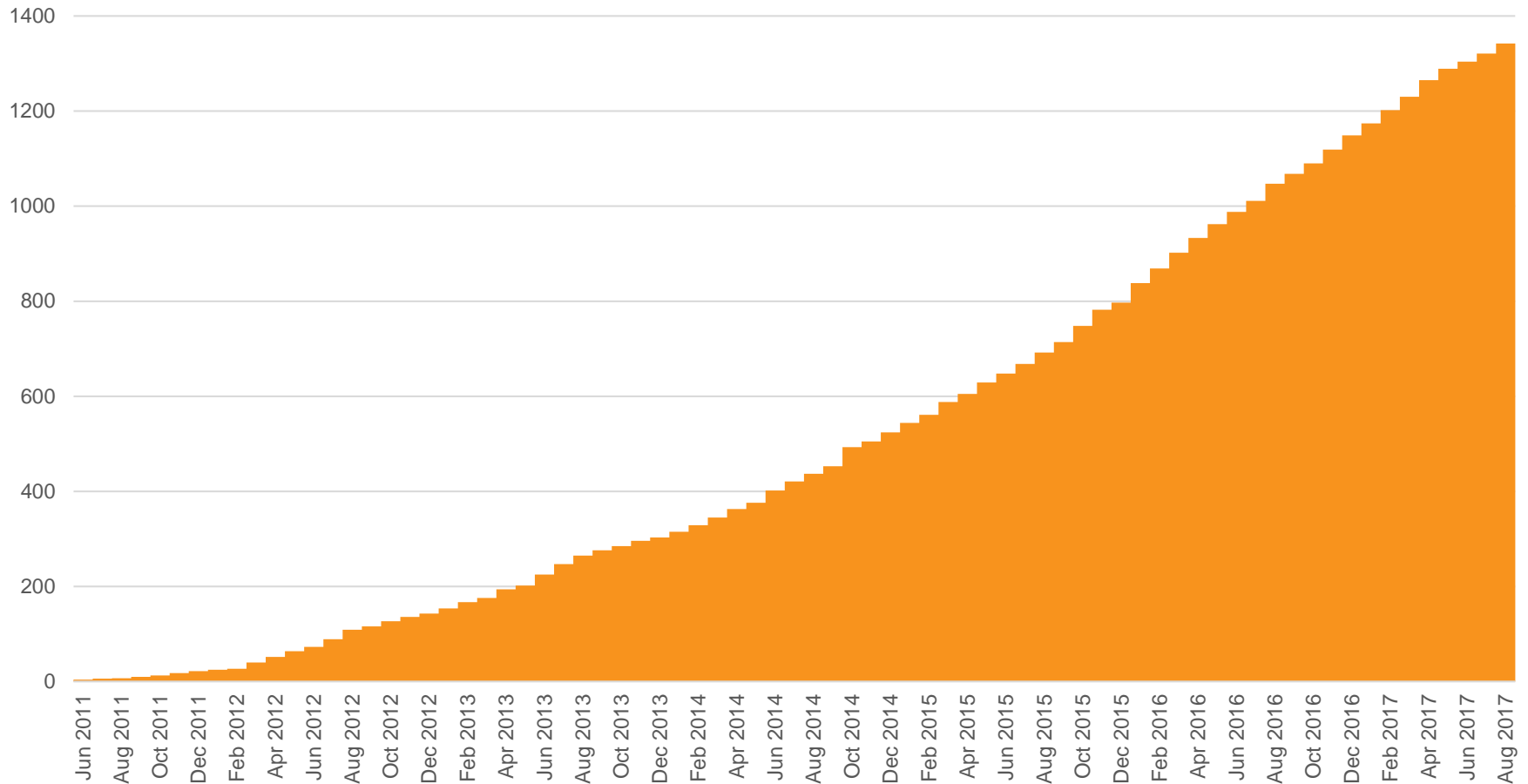
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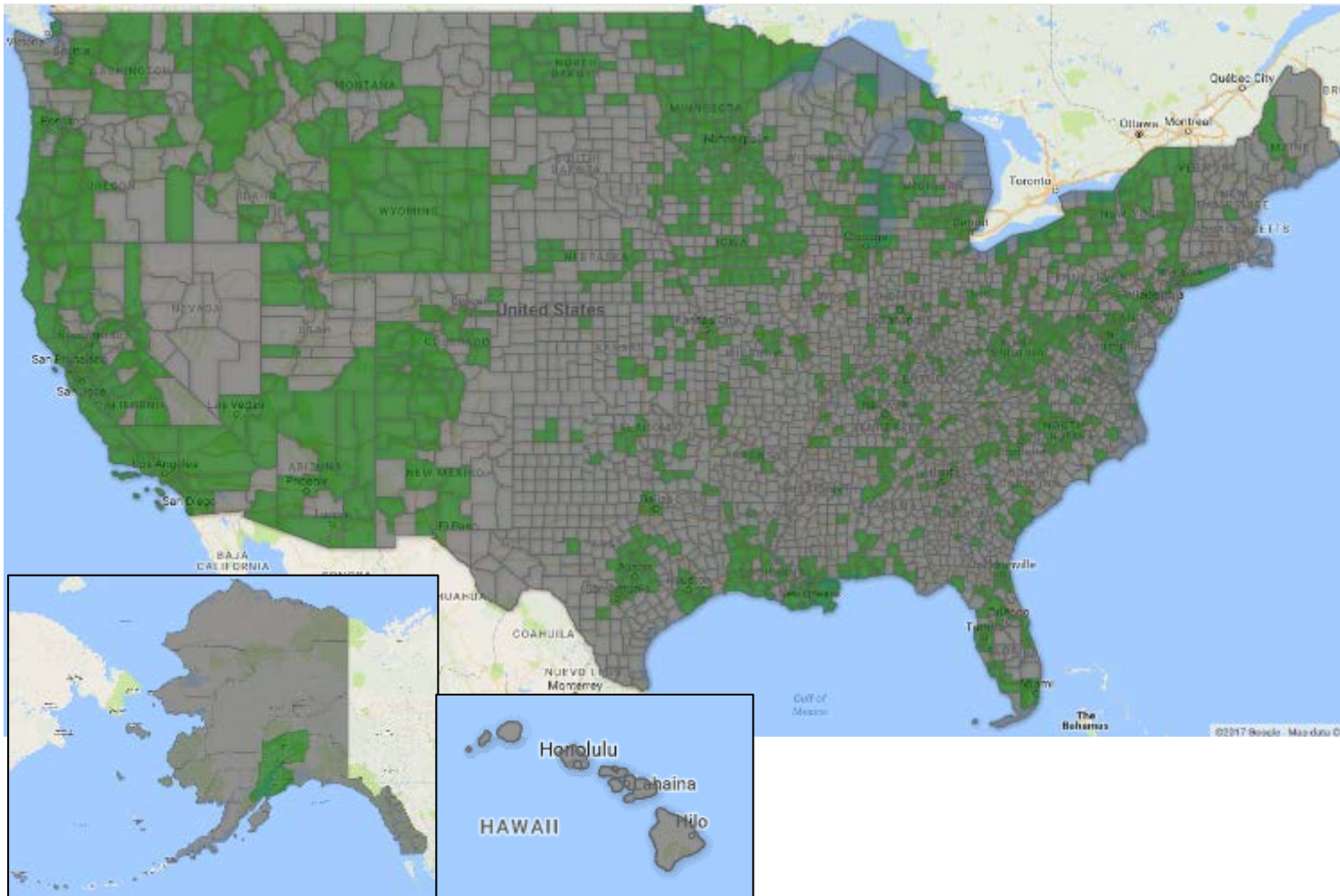


IPAWS Adoption (as of October 2, 2017)



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Alerting Authorities (as of August 3, 2017)



Complete

833 Local

65 State-wide

16 Federal

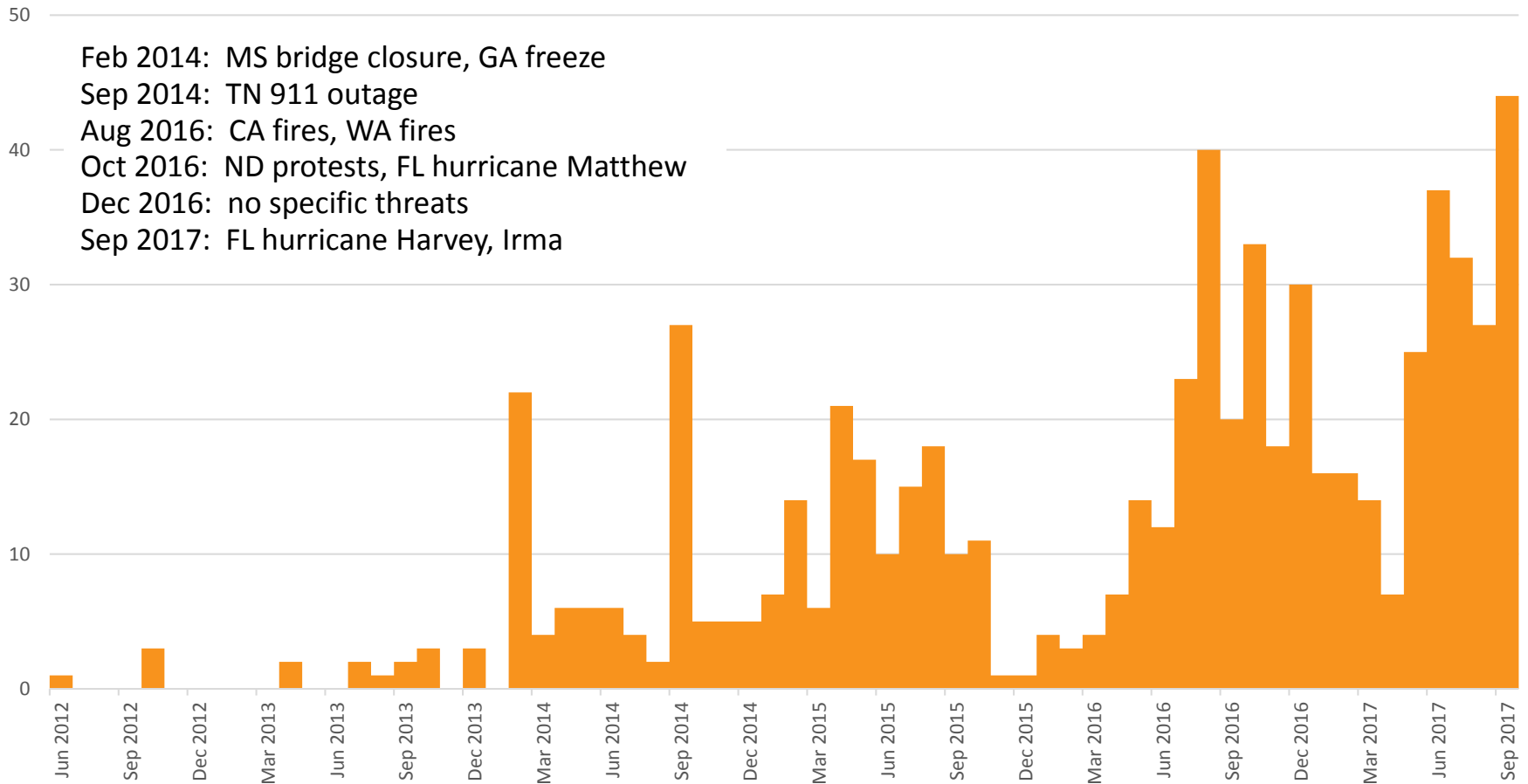
3 Tribal

2 Territory



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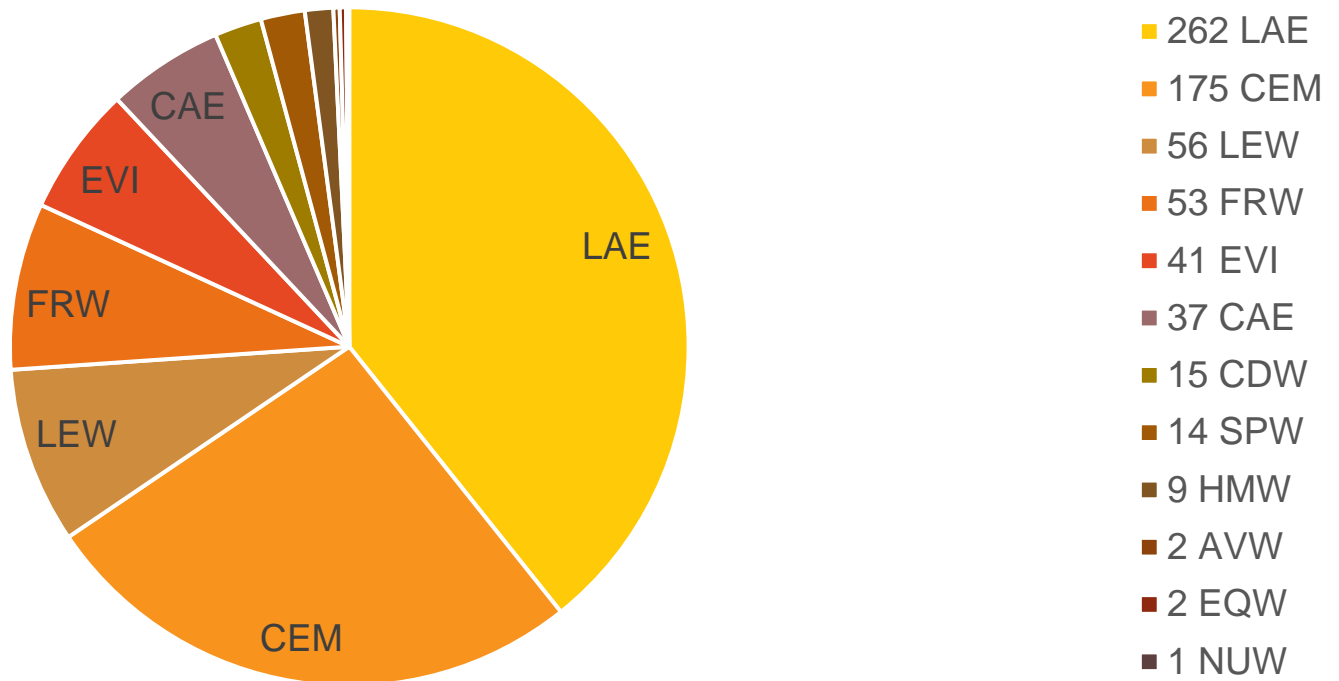
State and Local WEA Usage (as of October 2, 2017)



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State and Local WEA Usage (as of October 2, 2017)

State and Local WEA Usage



Hurricane/TS Harvey, Irma

09/17/17	FL Florida DEM	Monroe County has issued a Boil Water Notice
09/14/17	FL Florida DEM	There is NOT a boil water notice for Volusia County
09/14/17	FL Florida DEM	Generators Produce deadly odorless fumes Do not use indoors or in garages
09/14/17	FL Florida DEM	Volusia County boil water notice. Residents are advised to boil water before consumption
09/14/17	FL Florida DEM	Monroe County water boil notice. Residents are advised to boil water before consumption.
09/11/17	FL Florida DEM	Coastal Citrus County, Dangerous Surge Imminent
09/11/17	FL Seminole County	The curfew for Seminole County will be rescinded at 11 a.m. today, Monday September 11th
09/10/17	FL Pinellas County	Strong winds are beginning to occur across Pinellas County. Take Shelter Immediately!
09/10/17	FL Florida DEM	Orange Co Gov issued Mandatory Evacuation Order for Mobile Homes effective immediately.
09/10/17	FL Florida DEM	Jefferson Co issued Voluntary Evacuation Order of Mbl Homes, Low Lying areas immediately
09/09/17	FL Seminole County	Seminole County evacuation issued for mobile manufactured homes and low lying areas
09/09/17	FL Citrus County	EXTREME HIGH STORM SURGE ANTICIPATED FOR WEST CITRUS COUNTY, EVACUATE NOW, DON'T WAIT.
09/09/17	FL Pinellas County	Pinellas under evacuation level A, B, All mobile homes. Evac to be completed by dusk today
09/08/17	FL Citrus County	Citrus County Mandatory Evacuation ordered. Check media outlets.
09/11/17	TX Galveston County	FOR FEMA ASSISTANCE CALL 1-800-621-FEMA (3362) OR www.fema.gov/apply-assistance
08/28/17	TX Galveston County	DICKINSON is under a MANDATORY EVACUATION. We may not be able to rescue anyone who stays.
08/27/17	TX Montgomery County	Spring Creek will be in major flood stage in the next 24hrs if you can leave, do so now.
08/27/17	TX Galveston County	First responders working on rescues, if able flag down rescue boats and personnel.
08/27/17	TX Harris County	Call 911 for LIFE THREATENING emergencies ONLY. STAY PUT IF SAFE. Monitor media
08/27/17	TX Galveston County	Creeks are in flood stage. If you are in a low lying area, move to higher ground.
08/27/17	TX Galveston County	Montgomery County EOC Flooding event Expires August 29 seek shelter



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WEA Gotchas

- Mercer Island's boil-water advisory has been lifted. See city website for more information
- Mercer Island's boil-water advisory has been lifted. See city website for more information



WEA Gotchas

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WEA Gotchas

Allowed

Unicode Character 'APOSTROPHE'



Browser Test Page
Outline (as SVG file)
Fonts that support U+0027

UTF-8 (hex) 0x27

Not Allowed

Unicode Character 'ACUTE ACCENT'



Browser Test Page
Outline (as SVG file)
Fonts that support U+00B4

UTF-8 (hex) 0xC2 0xB4

Unicode Character 'HYPHEN-MINUS'



Browser Test Page
Outline (as SVG file)
Fonts that support U+002D

UTF-8 (hex) 0x2D

Unicode Character 'EN DASH' (U+2013)



Browser Test Page
Outline (as SVG file)
Fonts that support U+2013

UTF-8 (hex) 0xE2 0x80 0x93



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Creative Work Arounds

09/15/14	TN Tennessee EMA	In an emergency in Shelby County, use 9015436333 or landline to call 911
09/15/14	TN Tennessee EMA	In an emergency in Weakly County, use 7313645454 or landline to call 911
09/15/14	TN Tennessee EMA	In an emergency in Obion County, use 7318853316 or landline to call 911
09/15/14	TN Tennessee EMA	In an emergency in McNairy County, use 7316453406 or landline to call 911
09/15/14	TN Tennessee EMA	In an emergency in Madison County, use 7314249677 or landline to call 911
09/15/14	TN Tennessee EMA	In an emergency in Henry County, use 7316422424 or landline to call 911
09/15/14	TN Tennessee EMA	In an emergency in Henderson County, use 7314256202 or landline to call 911
09/15/14	TN Tennessee EMA	In an emergency in Haywood County, use 7317721215 or landline to call 911
09/15/14	TN Tennessee EMA	In an emergency in Hardin County, use 7319259007 or landline to call 911
09/15/14	TN Tennessee EMA	In an emergency in Gibson, use 7315623714 or landline to call 911
09/15/14	TN Tennessee EMA	In an emergency in Hardeman County, use 7316585101 or landline to call 911
09/15/14	TN Tennessee EMA	In an emergency in Gibson, use 7315628176 or landline to call 911
09/15/14	TN Tennessee EMA	In an emergency in Fayette County, use 9014653456 or landline to call 911
09/15/14	TN Tennessee EMA	In an emergency in Dyer County, use 7312854019 or landline to call 911
09/15/14	TN Tennessee EMA	In an emergency in Decatur County, use 7318523911 or landline to call 911
09/15/14	TN Tennessee EMA	In an emergency in Crockett County, use 7316962104 or landline to call 911
09/15/14	TN Tennessee EMA	In an emergency in Chester County, use 7319892787 or landline to call 911
09/15/14	TN Tennessee EMA	In an emergency in Carroll County, use 7319868947 or landline to call 911
09/15/14	TN Tennessee EMA	In an emergency in Benton County, use 7312794280 or landline to call 911



How EAS is Created

A CIVIL AUTHORITY HAS ISSUED A

[Event Code]

FOR THE FOLLOWING COUNTIES/AREAS:

[County Code(s)]

AT *[h:mm AM/PM from Sent Time]*

ON *[mmm dd, yyyy from Sent Time]*

EFFECTIVE UNTIL *[h:mm AM/PM from Expires Time].*

MESSAGE FROM *[station call sign].*

[text from Description]. [text from Instruction].



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Test Mode- This message will only be sent to the IPAWS test environment. *i*

Required fields only
 All fields

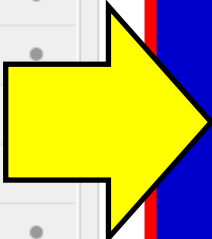
Information used for:

	WEA	EAS
* Private Key	<input type="checkbox"/>	<input type="checkbox"/>
* Keystore Password	<input type="checkbox"/>	<input type="checkbox"/>
* Message Status	<input type="checkbox"/>	<input type="checkbox"/>
Source	<input type="checkbox"/>	<input type="checkbox"/>
* Scope	<input type="checkbox"/>	<input type="checkbox"/>
* Message Category	<input type="checkbox"/>	<input type="checkbox"/>
* Urgency	<input type="checkbox"/>	<input type="checkbox"/>
* Severity	<input type="checkbox"/>	<input type="checkbox"/>
* Certainty	<input type="checkbox"/>	<input type="checkbox"/>
* Event Name	<input type="checkbox"/>	<input type="checkbox"/>
* Expires	<input type="checkbox"/>	<input type="checkbox"/>
* Sender Agency Name	<input type="checkbox"/>	<input type="checkbox"/>
Headline	<input type="checkbox"/>	<input type="checkbox"/>
* Message to Public	<input type="checkbox"/>	<input type="checkbox"/>
* Area Description	<input type="checkbox"/>	<input type="checkbox"/>

051059 - Fairfax

How EAS is Created

A CIVIL AUTHORITY HAS ISSUED A
 CIVIL EMERGENCY MESSAGE FOR THE
 FOLLOWING COUNTIES/AREAS:
 Fairfax, VA;
 AT 9:32 AM
 ON OCT 5, 2017
 EFFECTIVE UNTIL 10:32 AM.
 MESSAGE FROM WXYZ.
 This text will be used for EAS
 after the "FCC Required Text"



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Background of WEA Laws and Regulations

- 2006 – WARN Act passed by Congress
- 2008 – Original WEA rules and regulations
- 2012 – WEA system operational
- 2013 – CSRIC IV review rules, recommend changes
 - 3 of 31 members from emergency management discipline
 - Submitted final report to FCC October 2014
- 2015 – CSRIC V recommended additional changes
 - 10 of 48 members from emergency management discipline
 - Submitted final report to FCC September 2016
- 2016 – New WEA rules and regulations



WEA Improvements

- Increase message length from 90 to **360 characters**
 - 2.5 years (May 2019)
- Add new **alert category**, “Public Safety Messages”
 - 2.5 years (May 2019)
- Support **URLs and phone numbers**
 - 30 days for text URLs and phone numbers (Nov 2016)
 - 1 year for “clickable” URLs and phone numbers (Nov 2017)
- **Spanish** language WEA
 - 2 years (Nov 2018)
- WEA **test code**
 - 2.5 years (May 2019)



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FCC Further Notice of Proposed Rulemaking (a.k.a. Under Consideration)

- Defining the Modes of Participation in WEA
 - What do “in whole” and “in part” really mean?
- Infrastructure Functionality
 - Is WEA really available everywhere there’s coverage?
- Alert Message Preservation
 - Review old messages on the phone
- Earthquake Prioritization
 - Alert delivery in less than 3 seconds, or your pizza is free
- Disaster Relief Messaging
 - Many-to-one messaging
- Multimedia Alerting
 - Cell broadcast images to phones
- Multilingual
 - Beyond English and Spanish
- Matching the Geographic Area
 - Reach 100% of phones in targeted area with no more than 0.1 mile overshoot
- WEA on 5G networks



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IPAWS Subcommittee Working Groups

- IPAWS leadership determined that Working Groups were the preferred approach to address requirements as laid out in the IPAWS Modernization Act of 2015 (Public Law 114-143). The Working Group tasks reflect the Act's requirements
- The key deliverables and tasks are as follows:
 - **Through to April, 2019:** Working Groups hold monthly / bi-weekly webinars to conduct research, deliberate, and provide recommendations for their assigned areas
 - **October 2018:** Working Groups submit recommendations to the IPAWS Subcommittee for deliberation and approval
 - **November 2018:** The IPAWS Subcommittee submits all the Working Group initiatives to the National Advisory Council (NAC) for their consideration and approval
 - **November 2018-April 2019:** Working Groups consider lesser priority areas while also addressing questions the NAC may have on your submission



Working Groups and their areas of focus

- **Group 1: Alert Writers and Alerting Authorities**

1. Assess alert and warning protocols, standards, and terminology to provide timely and effective warnings
2. Ensure there are redundant alert mechanisms to reach the greatest number of people
3. Examine non-IPAWS subscription-based alerting systems (e.g., opt-in SMS text and email services)

- **Group 2: Public Needs**

1. Identify how to distribute alerts based on location, risks, personalization, and integrate symbology, while respecting privacy
2. Assess how alerts can be provided to visitors (domestic and international) to ensure they receive timely warnings
3. Provide effective alerts to the access and functional needs, and limited-English proficiency communities

- **Group 3: Stakeholder Engagement and Coordination**

1. Examine how public education for public and private entities can improve the understanding of and responding to alerts
2. Promote local and regional partnerships to enhance community preparedness and response, and engage with the FCC
3. Provide recommendations on training, test, and exercise programs, including an IPAWS certification program

- **Group 4: Future Technologies**

1. Examine how future alerting technologies and the modernization of IPAWS can improve public alerts and warnings
2. Provide recommendations to ensure a resilient and secure public alerting system
3. Identify how alerts can reach the largest portion of the affected population feasible in a timely manner





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The Evolution of Emergency Alerting



Originally called the "Key Station System," the **CONTROL of E**lectromagnetic **R**ADIation (CONELRAD) was organized a network of **AM radio** stations with special procedures for warning citizens and providing emergency instructions and information in the event of a national catastrophic emergency.

EBS expanded emergency warning to include **radio and TV** stations providing the President with an expeditious method of warning the public during a national emergency.

Later expanded to enable state and local officials to alert local populations during local emergencies and provide for better and more accurate handling of alert reception and rebroadcast.

EAS modernized the EBS providing automation of alert transmission and activation to **radio and TV** stations with the adoption of the Specific Area Message Encoding (SAME) protocol and provided better integration with National Weather Service and state and local alert systems.

IPAWS integrates and expands public alert and warning from just **radio and TV**, to **wireless devices, Internet applications**, NOAA All-Hazards **Weather Radios**, and **future communications technologies** using an international open standard for information exchange - the Common Alerting Protocol or CAP.

IPAWS enables public safety officials at all levels of government to warn citizens via a diverse and integrated network of private sector communications systems.

IPAWS enhances and extends a national infrastructure and capability to local, state, territorial, and tribal officials for public alerting and warning



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Alert Aggregation

What the Aggregator does:

1. Authenticates sender
 - A. Web Service Security
 - B. Digital Signature
2. Validates CAP message
3. Verifies permissions
 - A. What alerts can you send
 - B. Where can you send them
 - C. How can you send them
4. Non-repudiation, message integrity
5. Gateway to EAS, WEA, NOAA WX

**Alert
Aggregator/
Gateway**



the Message Router
(Open Platform for
Emergency Networks)



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Alert Dissemination

- Emergency Alert System
 - TV, Radio, Cable, Satellite
 - ~20,000 connected via EAS Feed
- Wireless Emergency Alerts
 - Opt-in Carriers
 - 61 connected via Fed Alert Gateway
- National Weather Service
 - NOAA Weather Radio/HazCollect
 - 1000 WX transmitters
- Interoperating Systems
 - 72 connected via Public Alert Feed

