# Virtual Training: Advancements in Public Alert & Warning Capabilities for Building Safer Communities

September 1, 2016

In Collaboration With:









### Instructor Introductions

#### **Wade Witmer**

Deputy Director, FEMA IPAWS

#### **Lewis Summers**

GII Program Manager, Geospatial Management Office, DHS

#### Rebecca Harned

Assistant Director, NAPSG Foundation



### NAPSG: Who We Are

- Our Vision A Nation of emergency responders and leaders equipped with the knowledge and skills in applying technology and data to change the outcome for survivors.
- Our Mission To equip emergency management & public safety with the knowledge, skills, and resources to apply decision support technology and data in enhancing preparedness and building a more resilient nation.



## Background

- 501 (c) (3) Not-for-Profit Organization
- Board of Directors are public safety practitioners
- NAPSG formed in 2005 as informal alliance of national associations
- Evolved to a formal organization to better serve public safety

























## **Training Purpose**

In this virtual training, participants will gain awareness-level knowledge on the Integrated Public Alert and Warning Systems (IPAWS) and Wireless Emergency Alerts (WEA), how they are integrated into the Geospatial Information Infrastructure (GII), and how your agency can use these tools in building safer communities.



## Training Objectives

- Learn how and what IPAWS is all about and how it can benefit your agency and the communities you serve.
- Gain insight on IPAWS enhancement efforts to increase effectiveness
- Learn how IPAWS data has been integrated and is available in the GII and what it means to you.
- Get a live demonstration on what public alert & warning data and symbols look like when integrated into GIS tools.



# **Key Terminology**

- IPAWS Integrated Public Alert and Warning System
- EAS Emergency Alert System
- WEA Wireless Emergency Alerts
- CAP Common Alerting Protocol
- GII Geospatial Information Infrastructure
- COP Common Operating Picture



## Agenda

2:00pm – Introduction (Rebecca Harned)

2:05pm – IPAWS Overview (Wade Witmer)

2:15pm – IPAWS/WEA Enhancement Efforts (Wade Witmer)

2:25pm – IPAWS Data Integration & Availability in the GII for Local/State (Lewis Summers)

2:40pm – Public Alert & Warning Symbology for Public Safety Mapping (Rebecca Harned)

2:50pm – Participant Questions & Answers (All)



# **IPAWS Overview & Enhancements**

Wade Witmer





Advancements in Public Alert & Warning Capabilities for Building Safer Communities

Wade Witmer, Deputy Director FEMA IPAWS September 1, 2016



#### The Evolution of Emergency Alerting











1963 - 1997 1997 - 2006 **EBS EAS** 

2006 **IPAWS** 



Originally called the "Key Station System," the **CON**trol of **EL**ectromagnetic **RAD**iation (CONELRAD) was established in August 1951.

Participating stations tuned to 640 & 1240 kHz AM and initiated a special sequence and procedure designed to warn citizens.

EBS was initiated to address the nation through audible alerts. It did not allow for targeted messaging.

System upgraded in 1976 to provide for better and more accurate handling of alert receptions.

Originally designed to provide the President with an expeditious method of communicating with the American Public, it was expanded for use during peacetime at state and local levels.

EAS jointly coordinated by the FCC, FEMA and NWS.

Designed for President to speak to American people within 10 minutes.

EAS messages composed of 4 parts:

- Digitally encoded header
- Attention Signal
- Audio Announcement
- Digitally encoded endof-message marker

Provided for better integration with NOAA weather and local alert distribution to broadcasters

IPAWS modernizes and integrates the nation's alert and warning infrastructure.

Integrates new and existing public alert and warning systems and technologies thru adoption of new alert information exchange format - the Common Alerting Protocol or CAP

Provides authorities a broader range of message options and multiple communications pathways



Source: The Broadcast Archive Maintained by: Barry Mishkind The Eclectic Engineer

#### What is IPAWS?

#### IPAWS is a *National System* for *Local Alerting*

- Authenticated emergency alert and information messaging from emergency officials to the public through IPAWS connections to:
  - radio and television as Emergency Alert System broadcasts
  - cellular phones as Wireless Emergency Alerts
  - NOAA All Hazards Weather Radio
  - Internet applications and websites
- FEMA, tasked by DHS, is responsible for:
  - Development, operation, integration, and maintenance of the IPAWS which includes EAS, WEA, NOAA HazCollect, and IPAWS Alerts
     Feed components plus future connections for alerting
  - And making it available for state/local/territorial/tribal use
- Executive Order 13407:
  - "Include in the public alert and warning system the capability to alert and warn all Americans, including those with disabilities and those without an understanding of the English language."



#### **IPAWS** is Not:

- Not a subscription based mass notification system
- Not an ETN or reverse dial phone system
- Not an SMS or email sign up service
- Not a paging or distribution list notification system
  - e.g. can't send a recall notice to a select group of employees

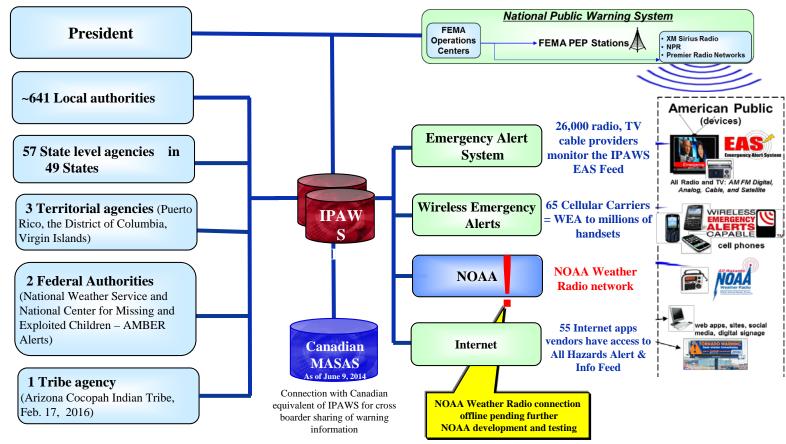
#### • IPAWS supports:

- <u>Emergency</u> public warning information
  - urgent messages and information to protect and manage public safety
- Warning *all* citizens in any given area
  - residents and visitors



#### **IPAWS Users & Stakeholders**

<u>IPAWS Users as of March 2016:</u> (IPAWS office receives approx. five new applications per week)





## When is IPAWS used?

#### When public safety officials need to warn of a threat to public safety:

- ✓ Evacuation
- ✓ Shelter-In-Place
- ✓ Law Enforcement Situations
- ✓ 911 Outage
- ✓ Road Closure
- ✓ Chemical Spill/Release
- ✓ Water Contamination
- ✓ Emergency Water

- Distribution Location
- ✓ Emergency Relief Location
- ✓ Emergency Shelter Locations
- ✓ Dam Release Alert
- ✓ Critical Power Outage
- ✓ Nuclear Accident
- ✓ Landslide

- ✓ Pipe Line Break
- ✓ Extreme Weather
- ✓ Flooding
- ✓ Volcano
- ✓ Earthquakes
- ✓ Wildfires
- ✓ Child Abductions/ AMBER Alerts









































## **IPAWS** Usage

(As of March 2016)

39,849

• messages processed per month

21,712

• WEA Alerts by NOAA via IPAWS

3,094

• WEA Alerts sent by other Users via IPAWS

635

• WEA AMBER Alerts sent via IPAWS



#### **Feb 23-25, 2016 Tornadoes**

"I have been doing (storm) surveys for over 25 years...never heard it all come together as well as this as told by the people in the path. With WEA, they got the warning and they immediately took action."

-- Meteorologist-in-Charge, NWS State College (PA)



"Dozens and dozens of people yesterday told us how they got our tornado warnings via WEA on their cell phone (and) took action before their house was damaged or destroyed."

-- Meteorologist-in-Charge, NWS New Orleans (LA)





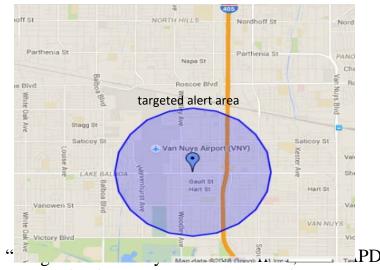
#### WEA example:

#### Los Angeles Police Depart Active Shooter Warning





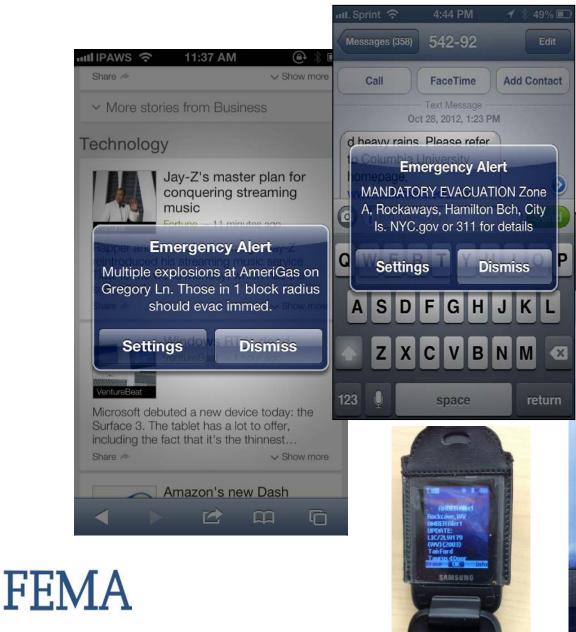
# WEA broadcast to cellular phones in a 1-mile radius



appeared to have sent an emergency alert to cellphones in the area at about 4 p.m., warning of "suspect shooting from balcony." ... The unidentified man surrendered to police around 5:45 p.m. and was taken away in handcuffs." - KTLA News 5 Report



## **Effective WEA Use Examples:**





#### **Collaborative Efforts**

- FCC Notice of Proposed Rulemaking
- Radiological Emergency Preparedness Program (REPP) Community Integration
- IPAWS National Test
- IPAWS Modernization Act



## Federal Communications Commission Notice of Proposed Rulemaking (NPRM)

- March 2013 FCC established a committee to make recommendations for WEA improvements
- November 2015 FCC issued a NPRM requesting public comments
- January 2016 FCC released new NPRM aimed at improving the Emergency Alert System and Wireless Emergency Alerts
- FCC Recommends
  - increasing WEA message length from 90 to 360 characters
  - allowing URLs and telephone numbers to be included in WEA messages (previously prohibited)
  - including multimedia in WEA messages
  - supporting multilingual WEA messages
  - improving geo-targeting capabilities



### **REPP Community Integration**

- Is enhancing its alerting features and leveraging IPAWS
- Moving away from traditional siren-only alerting and incorporating WEA
- The REPP Program Manual encourages the integration of IPAWS with offsite alert and notification plans





#### **IPAWS/EAS National Test**

- Phase I Controlled test in the Joint Interoperability Test Command (JITC) laboratory
- Phase II Series of ISSRTs using the National Periodic Test message event code
- Phase III Live end-to-end IPAWS National Test, September 28, 2016



# Integrated Public Alert and Warning System (IPAWS) Modernization Act of 2015 (Public Law 114-143)

- Became Public Law 114-143 upon signature of the President of the United States on April 11, 2016
- Ensures that the President of the United States can alert appropriate parties in the event of a disaster
- Incorporates multiple communication technologies
- Ensures accessibility to large portions of the population
- Makes information available to individuals with access and functional needs and those with limited English proficiency
- Calls for the establishment of National Advisory Council (NAC) Integrated Public Alert and Warning System (IPAWS) Subcommittee



#### Alerting the Whole Community

Effectively alerting all people including those with disabilities, access and functional needs, and limited English proficiency is a challenge!

- No *single* communications system will alert *everyone* 
  - Not everyone will be watching TV or listening to the radio
  - Not everyone will hear sirens
  - Not everyone owns a weather radio
  - Not everyone will be subscribed to the local alerting phone list/app
- Reaching the whole community requires communicating on as many pathways as possible
  - Recent surveys note people with disabilities increasingly use smart phones to assist with communications
- Using IPAWS can assist
  - Distribute alert info *simultaneously* to many communications channels
  - Post alert detail to web pages/social media and inform local media
  - Make alerts available to assistive technology vendors and website tools



#### The Symbology Initiative

- Working toward the development a common, national symbol set/symbol characteristics
- Seeking to make public alerts and warnings more effective for:
  - People with disabilities or Limited English Proficiency (LEP)
  - The whole community
- Although the first 16 symbols are WEA symbols, they are ultimately intended for use with:
  - WEA
  - EAS
  - Computer and phone apps (on maps, etc)
  - Television broadcasts of emergencies and incidents.



## **Symbology Partners**

- FEMA IPAWS
- DHS Geospatial Management Office
- National Alliance for Public Safety GIS Foundation (NAPSG)

(symbol library: <a href="http://www.napsgfoundation.org/all-resources/symbology-library/">http://www.napsgfoundation.org/all-resources/symbology-library/</a>)

And...all users and developers of alerts. We would like your input and support!

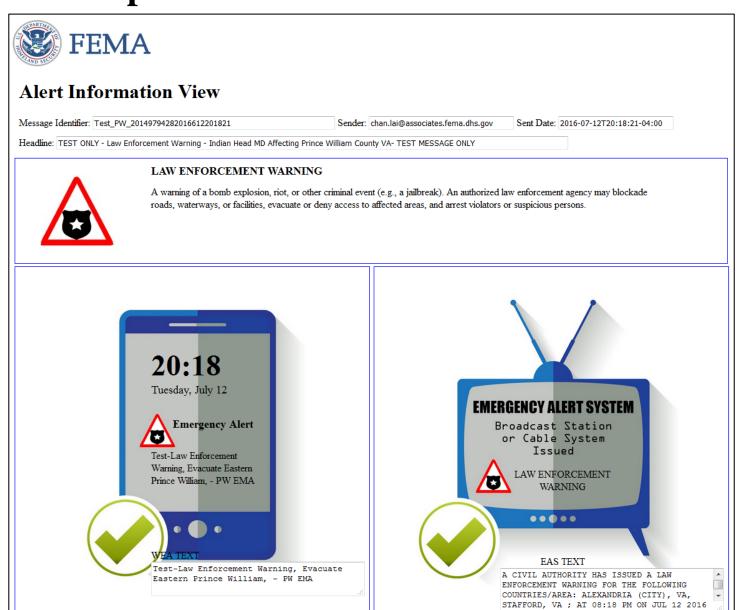


# **Current Public Alert and Warning Symbols** (available in PNG, SVG, and TTF formats)





### **Symbology Device Depictions**







Wade Witmer FEMA IPAWS



# IPAWS Data Integration & Availability in the GII for Local/State

**Lewis Summers** 





## **Geospatial Information Infrastructure (GII)**

National Alliance for Public Safety GIS Foundation Webinar Presentation Advancement in Public Alert & Warning

Prepared by Lewis Summers - GMO 1 September 2016

#### Agenda



- DHS Geospatial Information Infrastructure (GII)
  - GII Portal Application
    - IPAWS Layer
      - Search
      - Metadata
      - Map
      - Access



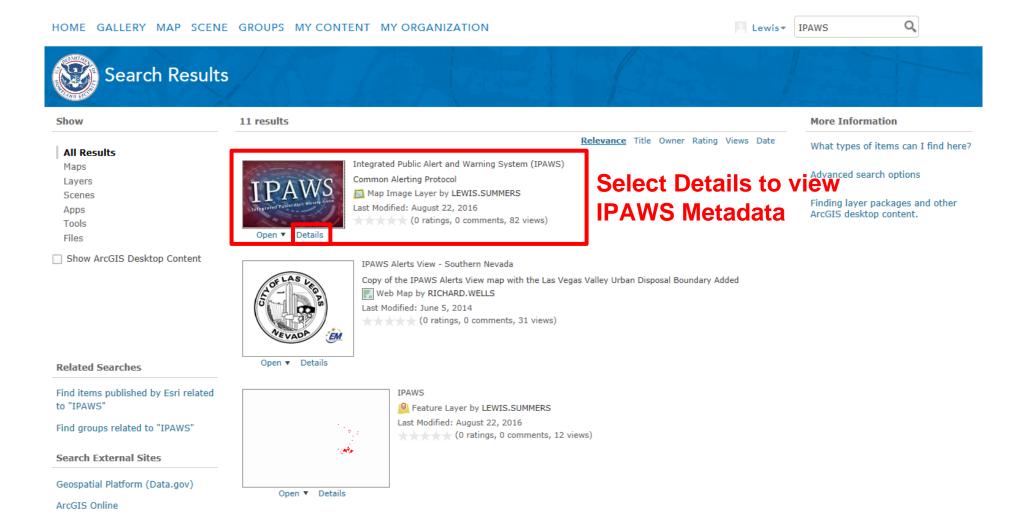
#### **IPAWS Search**





#### **IPAWS** Discovery from Search Results





#### **IPAWS Metadata**

1 KB

Delete Protection

Extent

Disabled

Left:-163.02 Right: -54.58 Top: 70.92 Bottom: 17.99



 Lewis▼ HOME GALLERY MAP SCENE GROUPS MY CONTENT MY ORGANIZATION Integrated Public Alert and Warning System (IPAWS) Fields: GEPFS.GES.InfoAreaGeom.OBJECTID ( type: esriFieldTypeOID , alias: OBJECTID ) Common Alertina Protocol • GEPFS.GES.InfoAreaGeom.areaID ( type: esriFieldTypeString , alias: Area ID , length: 50 ) Map Image Layer by LEWIS.SUMMERS GEPFS.GES.InfoAreaGeom.polygon (type: esriFieldTypeString, alias: Area polygon, length: 2048) Source: Map Service • GEPFS.GES.InfoAreaGeom.circle ( type: esriFieldTypeString , alias: Area circle , length: 50 ) Last Modified: August 22, 2016 GEPFS.GES.InfoAreaGeom.geocode (type: esriFieldTypeString, alias: Area geocode, length: 50) (0 ratings, 84 views) • GEPFS.GES.InfoAreaGeom.geocodeValue ( type: esriFieldTypeString , alias: Area geocode value , length: 50 ) • GEPFS.GES.InfoAreaGeom.identifier ( type: esriFieldTypeString , alias: Message ID , length: 50 ) • GEPFS.GES.InfoAreaGeom.infoID ( type: esriFieldTypeString , alias: Info ID , length: 50 ) EDIT X DELETE 
MOVI GEPFS.GES.InfoAreaGeom.SHAPE (type: esriFieldTypeGeometry, alias: SHAPE) OPEN - SHAPE.STArea() (type: esriFieldTypeDouble, alias: SHAPE.STArea()) SHAPE.STLength() ( type: esriFieldTypeDouble , alias: SHAPE.STLength() ) Description GEPFS.GES.Info.OBJECTID ( type: esriFieldTypeInteger , alias: OBJECTID ) GEPFS.GES.Info.identifier (type: esriFieldTypeString, alias: Message ID, length: 50) During an emergency, alert and warning officials need to provide the GEPFS.GES.Info.language (type: esriFieldTypeString, alias: Language, length: 50) modernization and integration of the nation's alert and warning inf GEPFS.GES.Info.event (type: esriFieldTypeString, alias: Event type, length: 50) • GEPFS.GES.Info.urgency ( type: esriFieldTypeString , alias: Urgency , length: 50 , Coded Values: [Immediate: taken soon (within next hour)], [Future: Responsive action SHOULD be taken in the near future], ... 2 more... Common Alerting Protocol GEPFS.GES.Info.severity (type: esriFieldTypeString, alias: Severity, length: 50, Coded Values: [Extreme: E Possible threat to life or property], ... 2 more...) GEPFS.GES.Info.certainty (type: esriFieldTypeString, alias: Certainty, length: 50, Coded Values: [Observed: Map Contents but not likely  $(p \le ~50\%)$ ], ...2 more...) GEPFS.GES.Info.audience (type: esriFieldTypeString, alias: Audience, length: 50) • GEPFS.GES.Info.effective (type: esriFieldTypeDate, alias: Effective date/time, length: 36) https://gii.dhs.gov/ags/rest/services/GEP/IPAWS/MapServer/0 GEPFS.GES.Info.onset (type: esriFieldTypeDate, alias: Onset date/time, length: 36) GEPFS.GES.Info.expires (type: esriFieldTypeDate, alias: Expiration date/time, length: 36) • GEPFS.GES.Info.senderName (type: esriFieldTypeString, alias: Sender name, length: 250) GEPFS.GES.Info.headline (type: esriFieldTypeString, alias: Headline, length: 250) • GEPFS.GES.Info.description (type: esriFieldTypeString, alias: Description, length: 1073741822) **View more Metadata**, IPAWS, FEMA, NWS GEPFS.GES.Info.instruction (type: esriFieldTypeString, alias: Instructions, length: 2048) • GEPFS.GES.Info.web ( type: esriFieldTypeString , alias: Information URL , length: 2048 )

GEPFS.GES.Info.contact (type: esriFieldTypeString, alias: Contact info, length: 2048)

GEPFS.GES.Info.infoID (type: esriFieldTypeString, alias: Info ID, length: 50)

#### **IPAWS Open Map**









#### All Results

Maps

Show

Layers

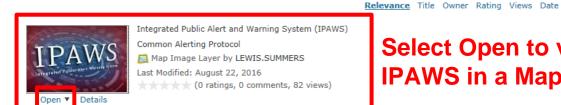
Scenes

Apps Tools

Files

Show ArcGIS Desktop Content

#### 11 results



#### **More Information**

What types of items can I find here?

#### Select Open to view Advanced search options **IPAWS** in a Map

Finding layer packages and other ArcGIS desktop content.



IPAWS Alerts View - Southern Nevada

Copy of the IPAWS Alerts View map with the Las Vegas Valley Urban Disposal Boundary Added

Web Map by RICHARD.WELLS

Last Modified: June 5, 2014

(0 ratings, 0 comments, 31 views)

#### Related Searches

Find items published by Esri related to "IPAWS"

Find groups related to "IPAWS"

Search External Sites

Geospatial Platform (Data.gov)

ArcGIS Online



IPAWS

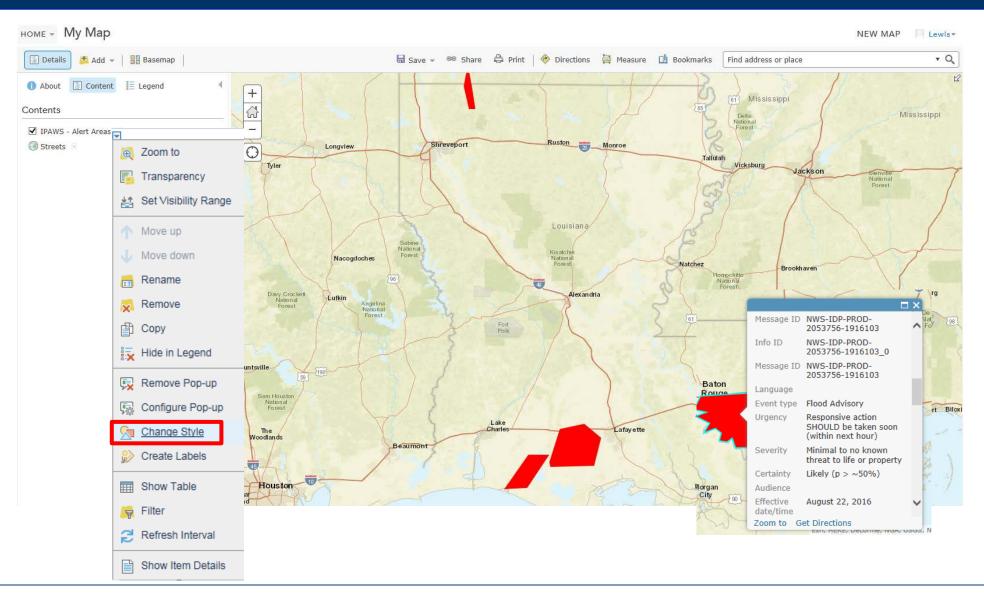
Feature Layer by LEWIS.SUMMERS

Last Modified: August 22, 2016

(0 ratings, 0 comments, 12 views)

## **IPAWS Map**

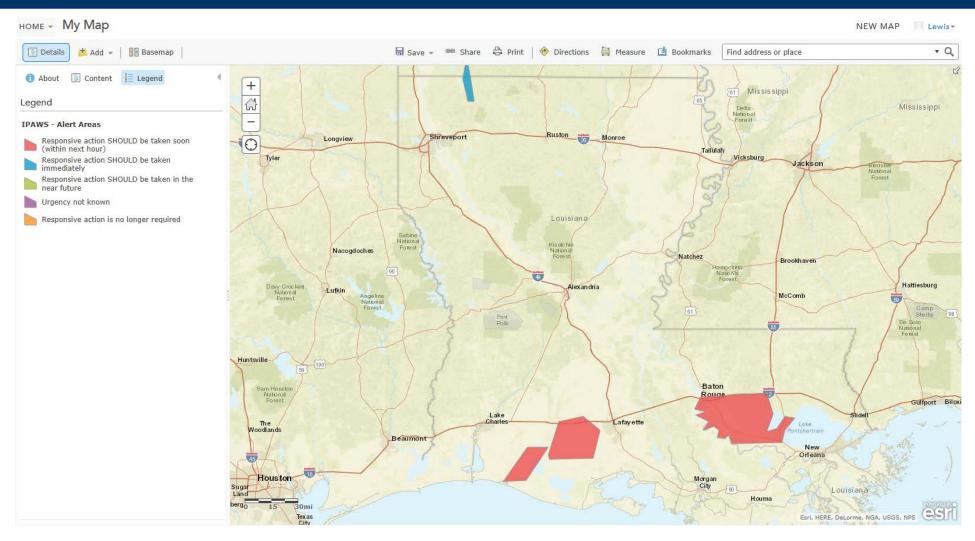




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## **IPAWS Map Continued**



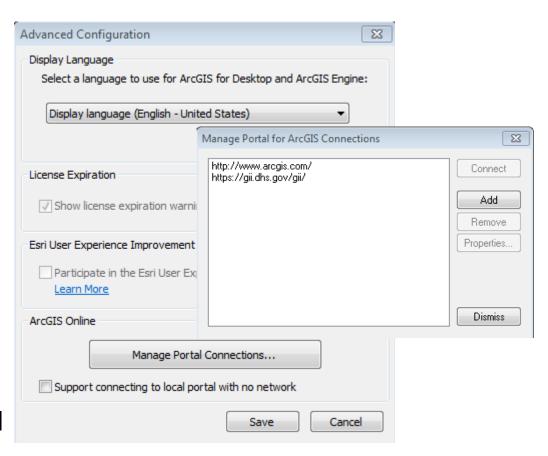


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### How to Access IPAWS in the GII



- Homeland Security Information Network (HSIN) User Account:
  - GII Portal: <a href="https://gii.dhs.gov/gii">https://gii.dhs.gov/gii</a>
  - ArcGIS Desktop Access
    - User Guide
    - Story Map Video
- Public web service, consume URL in User Defined Operating Picture (UDOP) or AGOL/Portal
  - https://gii.dhs.gov/ags/rest/ services/GEP/IPAWS/Map Server/0



### **Contacts and Questions?**



For general GII inquiries:

DHS\_GCOE@hq.dhs.gov

Request HSIN account to access GII services:

DHS\_GCOE@hq.dhs.gov

Include First Name, Last Name, Organization, and Email Address

Access to GII Portal:

https://gii.dhs.gov/gii

Lewis Summers GII Program Manager

Lewis.Summers@hq.dhs.gov

# Overview & Demo of Public Alert & Warning Symbology

Rebecca Harned



## Background

- 2014 NAPSG began developing set of standardized symbols for IPAWS Event Codes
  - Key partnerships with DHS GMO and FEMA IPAWS
- Over 30 local, state, federal public safety stakeholders informed symbol development
- Applies and is consistent with NAPSG's Incident Symbology Guideline
  - Flexible and scalable framework for use in developing and applying map symbols for public safety
- Result Group of specific symbols for IPAWS event codes that achieve standardization and are publically available for use nationwide
- Outcomes:
  - When applied in public safety decision support tools, aids in consistently communicating public alert and warning information on maps
  - When used in alerts and warnings, aids in optimizing message content for people with disabilities and limited English proficiency

#### **Common Language through Common Symbols**

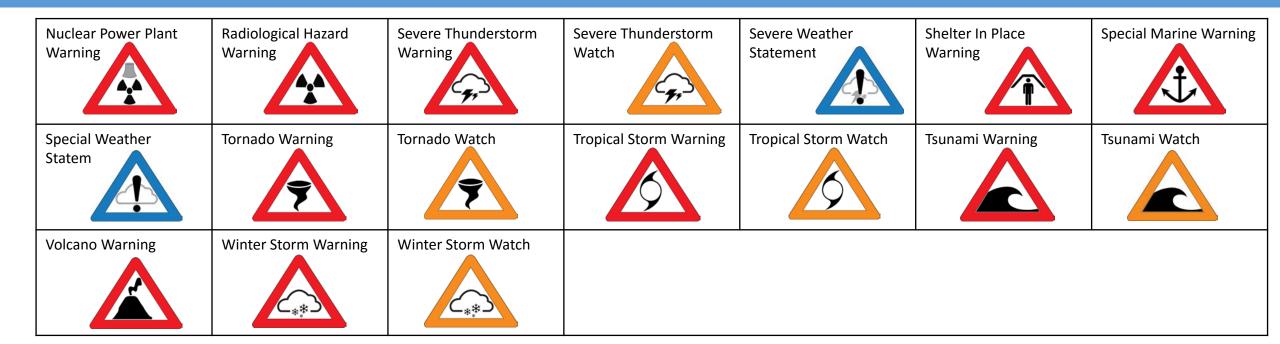


# Public Alert & Warning Symbol Set – Part 1

Emergency Action Notification	Avalanche Warning	Avalanche Watch	Blizzard Warning	Child Abduction Emergency	Civil Danger Warning	Civil Emergency Message
Coastal Flood Warning	Costal Flood Watch	Dust Storm Warning	Earthquake Warning	Evacuation Immediate	Fire Warning	Flash Flood Warning
Flash Flood Watch	Flash Flood Statement	Flood Warning	Flood Watch	Flood Statement	Hazardous Materials Warning	High Wind Warning
High Wind Watch	Hurricane Warning	Hurricane Watch	Hurricane Statement	Law Enforcement Warning	Local Area Emergency	911 Telephone Outage Emergency

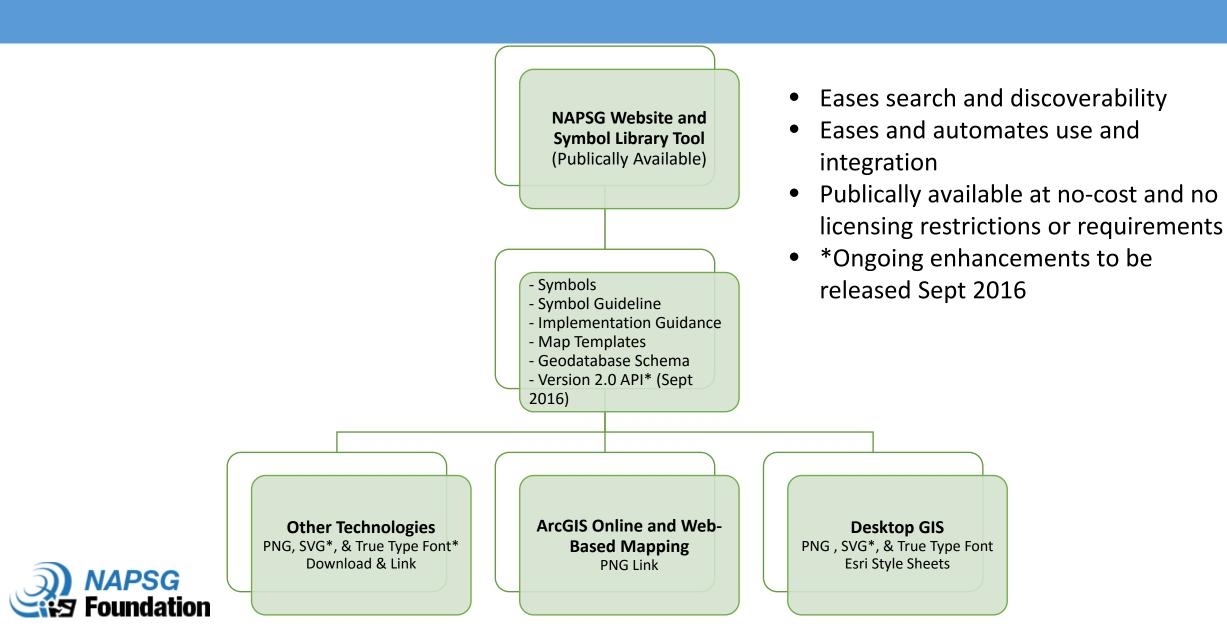


## Public Alert & Warning Symbol Set – Part 2

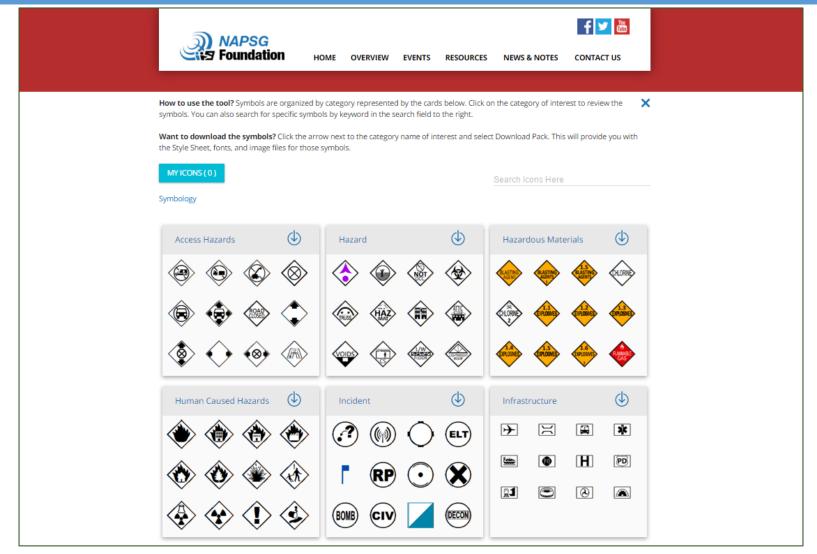




## Symbol Library Tool Basics

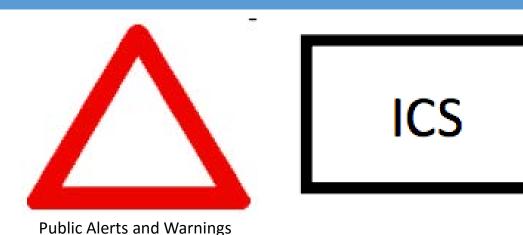


## Symbol Library Tool



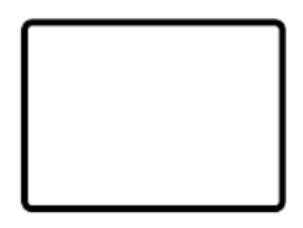


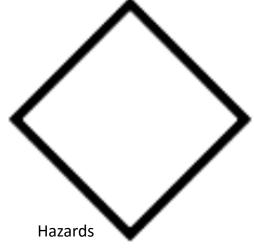
## Reserved Shape



Selected a single Reserve Shape applied to all public alerts and warnings symbols to achieve standardization and consistency with the NAPSG Incident Symbology Guideline.

When possible achieved icon consistency across threats and hazards.





#### **FLOOD**

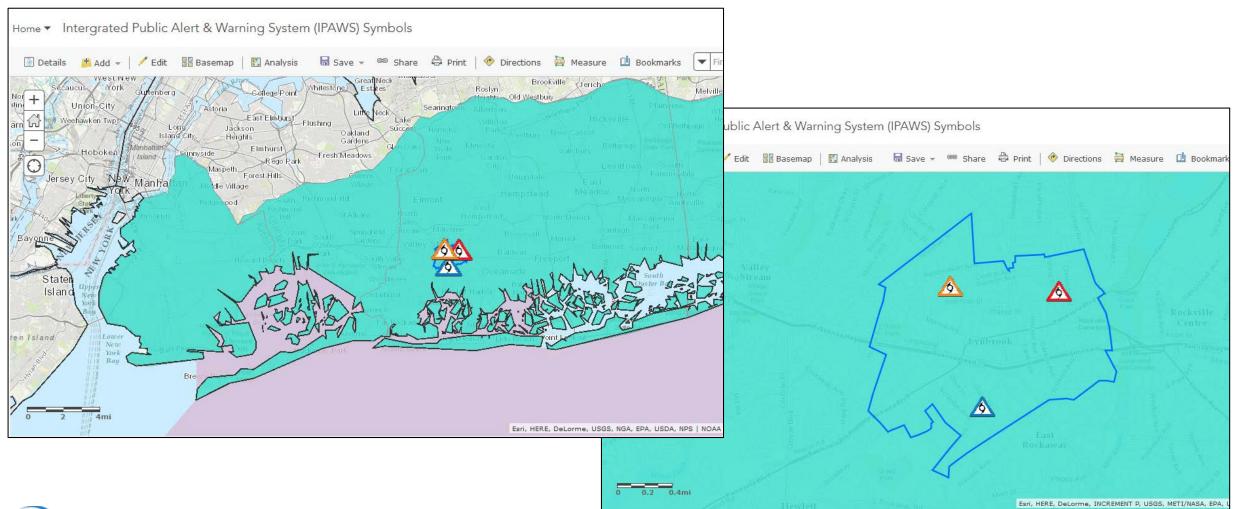




Infrastructure

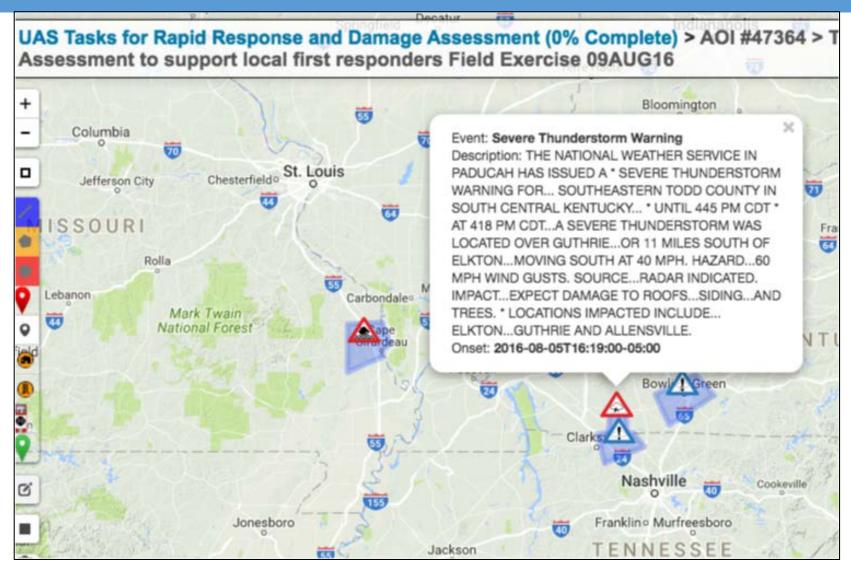


## Test 1 – Symbols Applied in a Web-Based Map



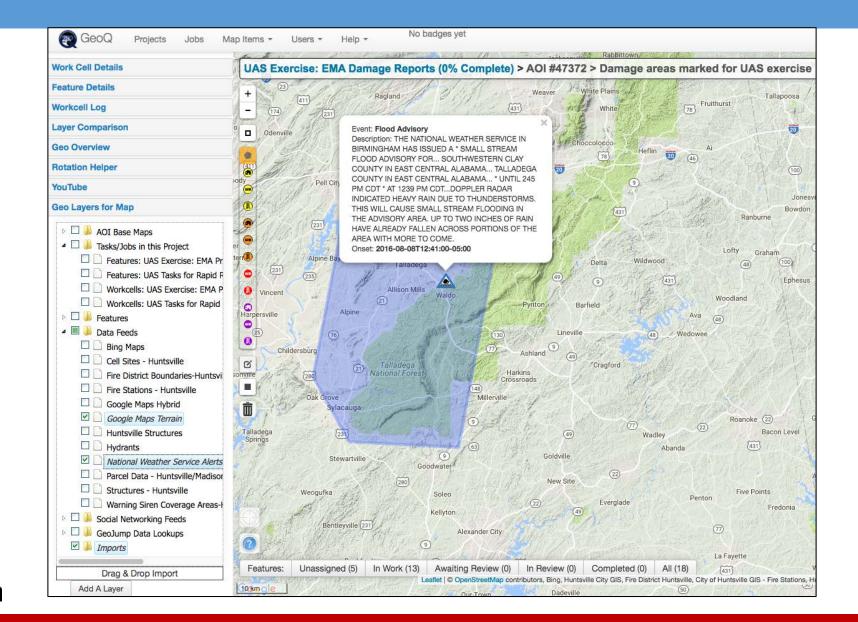


## Test 2 – Symbols Applied in Open Source Map (1)





## Test 2 – Symbols Applied in Open Source Map (2)





## NAPSG Foundation Support Services

#### Contact Us: services@napsgfoundation.org



#### **Geospatial Subject Matter Expertise**

Our GIS Subject Matter Experts can augment your capabilities by providing technical assistance, solution development and implementation. We craft geospatial solutions that support your workflows, and the mission-critical decisions that must be made.



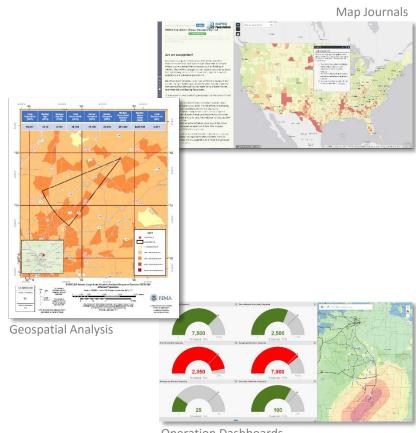
#### **Business Planning & Documentation**

Just as success in public safety starts with planning, so does successfully implementing GIS capabilities. Whether it is assessing needs, documenting procedures, or strategic planning, we'll provide you a roadmap for success and help keep you on track.



#### **Training & Education**

Training and education focused on your workflows and solutions helps ensure adoption and use of your GIS. We develop and conduct training where you need it most, and can help train staff to your standards and guidelines across the organization.



**Operation Dashboards** 



## **Upcoming Events**

- Upcoming Virtual Training
  - November Unifying Mutual Aid through Location Information and Decision Support
  - Others to be announced!
- National Geospatial Preparedness Summit
  - September 13-14, 2016 in Washington, DC

http://conta.cc/1SYZZZP



# Thank You!

NAPSG Contact – Rebecca Harned <a href="mailto:rharned@publicsafetygis.org">rharned@publicsafetygis.org</a>

https://www.napsgfoundation.org/all-resources/symbology-library/

IPAWS -

http://www.fema.gov/integrated-public-alert-warning-system

DHS GII -

https://gii.dhs.gov/HIFLD/

