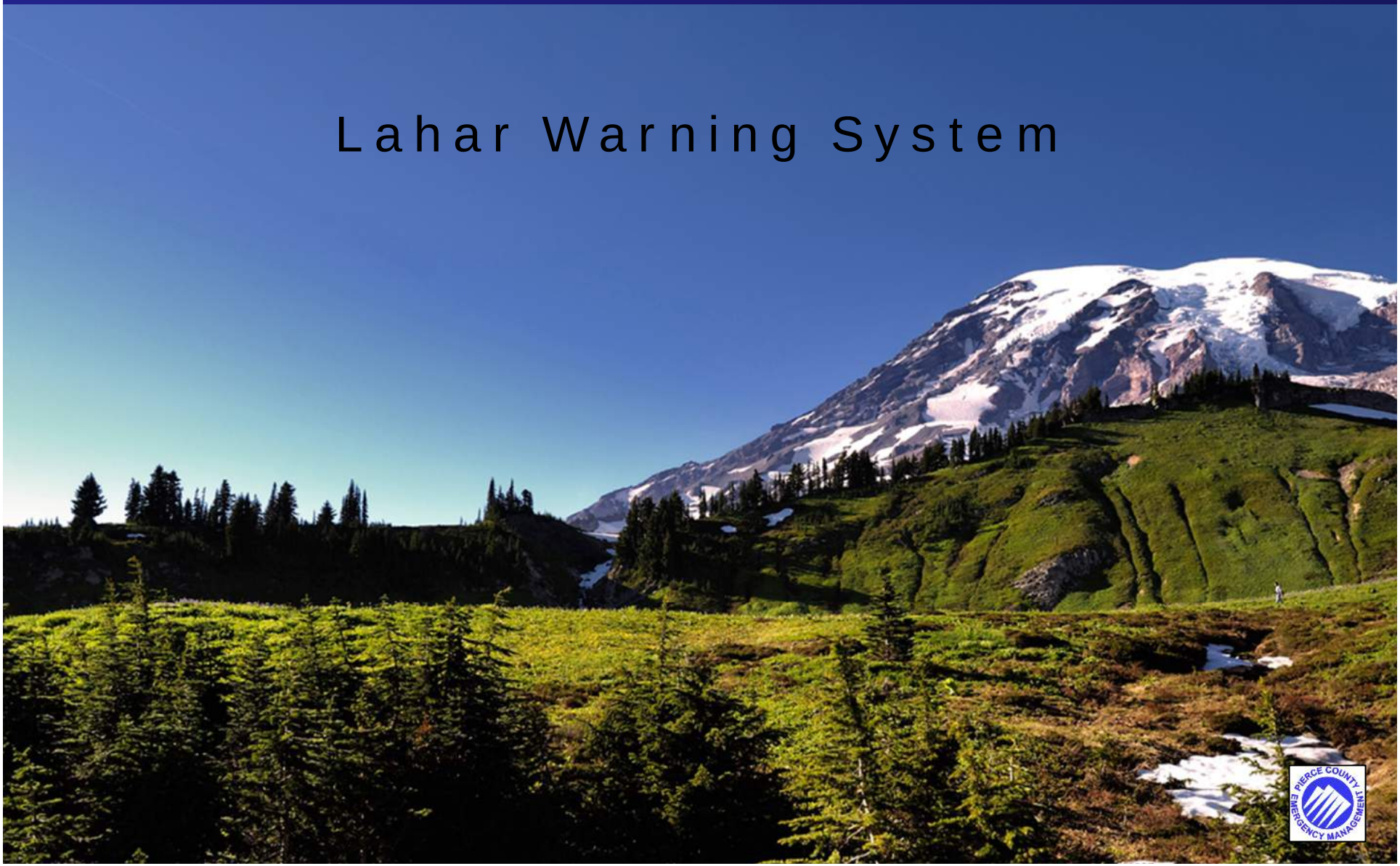
Pierce County Emergency Management

Lahar Warning System



Lahar Warning System

Two Components, One system

- **Acoustic Flow Monitors (AFM):**
  - Detection: AFMs detect and transmit presence of lahar to SS911 and WAEMD.
- **All Hazard Alert Broadcast (AHAB)/Lahar Sirens:**
  - Notification: Lahar sirens activated by SS911, WAEMD, or Pierce County Duty Officer (MOU between PCDEM, SS911, & WAEMD).

Acoustic Flow Monitors

AFM Component

- 5 AFMs, 1 Repeater each on the Carbon and Puyallup.
- More than one AFM must be triggered to activate alarm.
- Alarm is triggered at SS911 and WAEMD (24/7 watch).
- AFMs are maintained by USGS and PCEM.
- Currently upgrading.

AFM – New Vs. Old

Lahar Sirens

Siren Component

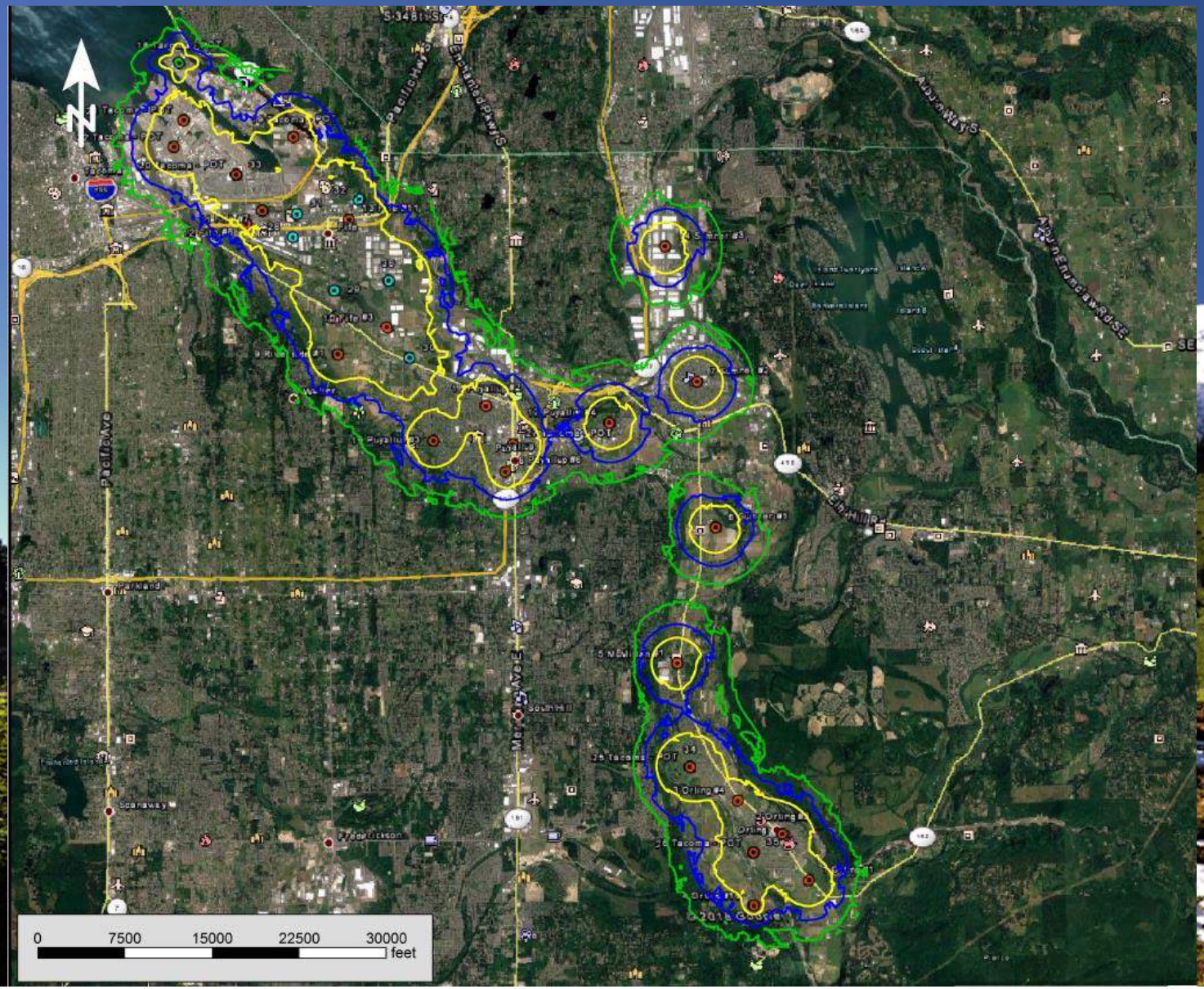
- 34 lahar sirens, 27 Modular and 7 Mechanical.
- Test: first Monday of the month using a five minute wail.
- Real: activated by SS911 (primary), WAEMD (backup), PCEM (secondary backup) using a continuous wail.
- Expansion project.

Expansion Project

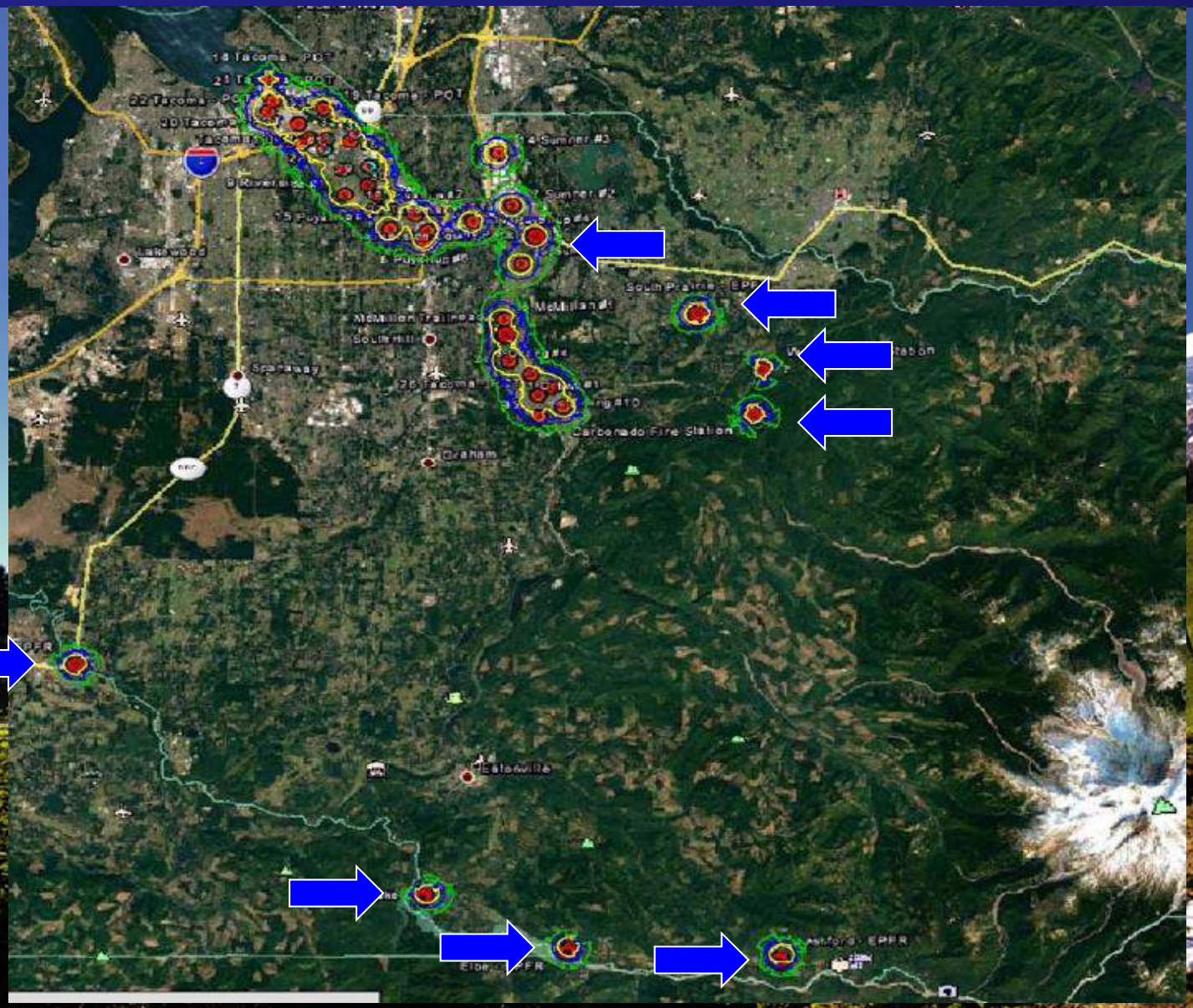
Siren Expansion Plans

- Next-Generation Integrated Lahar Warning System.
- Fill sound gaps and expand to Nisqually drainage.
- All modular style, side lights, voice capable.
- Used for outdoor warning.
- Eight new sites.
- Will be completed in 2019.

Current Sound Coverage



Future Sound Coverage



Questions?

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All Hazard Alert Broadcast (AHAB) Tsunami Siren System Overview

Keily Yemm: Tsunami Program Coordinator

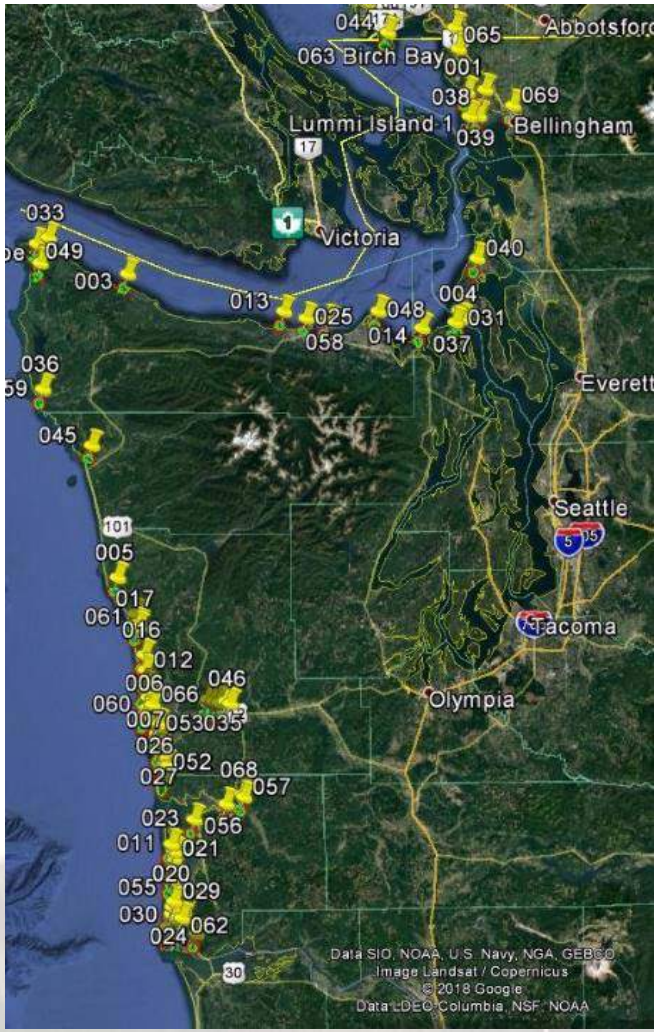
As of: 26 SEP 2018

Agenda

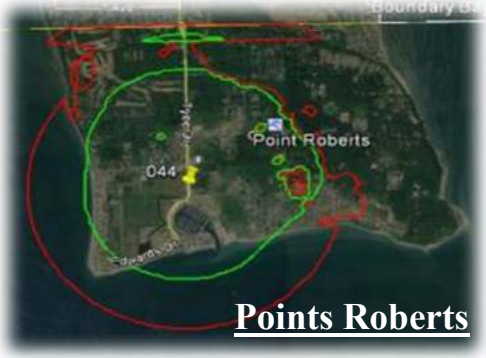
- Siren Purpose
- Coverage and gaps
- System Capabilities
- Control Points and Activation
- Testing schedule
- Regular maintenance and annual costs
- Future upgrades
- Funding source(s)

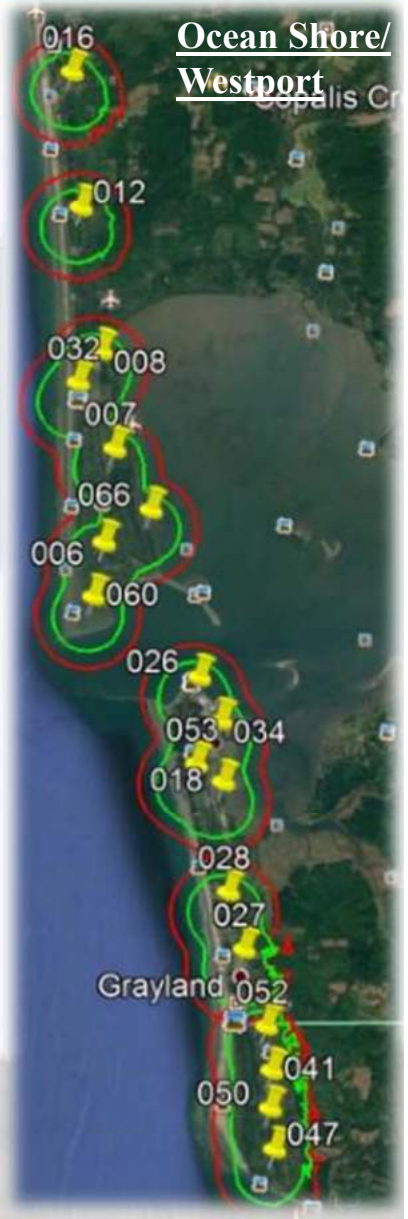
AHAB Siren Purpose

- **Currently have 72 sirens (including one test siren at Camp Murray)**
  - 2 more scheduled for install next spring
- **Coverage areas focus on major population centers/tourist attractions**
- **OUTDOOR warning system**
- **Can be used for other than tsunami warnings**



Coverage Area





Control Points and Activation

- **According to state SOP, if a Tsunami Warning is issued all Sirens are activated.**
- **Primary Control Point: State Emergency Operations Center**
- **Secondary control points:**
  - Commander software package on a local computers with internet access
  - CommanderOne is a cloud based application that approved users can access and activate sirens
  - Radio activation capable
- **All remote activations of the sirens are internet based via satellite using either the Commander software or the CommanderOne cloud based application**
- **Uses the Skywave Mobile Communications system – Inmarsat satellites (There are three satellites in our viewing area.)**

System Capabilities

- **Once activated Sirens will play run off of battery power for about 4 hours of continuous play before battery's are depleted**
- **Can produce the Wail sound, a Steady Wail sound, play the Westminster Chimes, and/or make voice announcements**
- **Currently programmed with Test, actual evacuation announcements and cancelation message in English and Spanish**
  - These are prerecorded on each sirens installed on micro SD cards

System Capabilities

- **Pre-programmed phrases and words, available on the installed Micro SD card, can be used by the primary control point to create short messages like**
  - 'Shelter in Place' or
  - 'Hazardous Material' Notification

- **Using radio activation of the public address feature police and fire can make immediate emergency announcements as needed**

Testing Schedule

- **Daily diagnostic silent communication test**
  - Primary driver of maintenance trips

- **Monthly sound test using test voice messages using the Westminster Chimes first Monday of every month at 12pm**

  "The following is a test of the siren warning system. This is only a test of the siren warning system. Had this been a real emergency you should move to higher ground or inland and then tune to your local media sources for further instructions. This was only a test."

- **Great Washington ShakeOut and Siren Test 10/18 at 10:18**

EMERGENCY MANAGEMENT DIVISION

"A disaster ready and resilient Washington State"

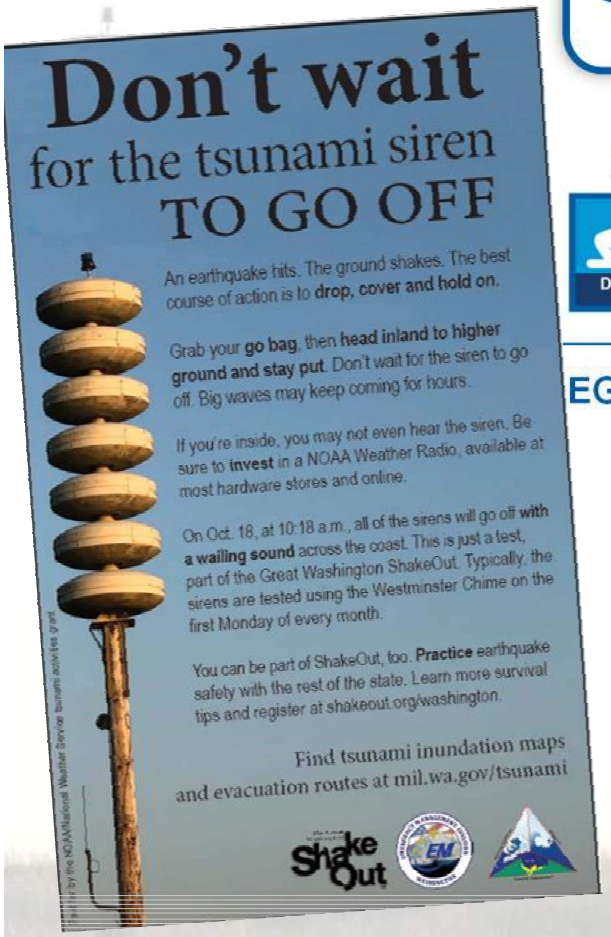
The Great Washington ShakeOut

OCTOBER 18, 2018

@ 10:18 a.m.

Join us for the largest statewide Earthquake Drill & Tsunami Siren Test

EGISTER: www.shakeout.org/washingt



Don't wait
for the tsunami siren TO GO OFF

An earthquake hits. The ground shakes. The best course of action is to **drop, cover and hold on.**

Grab your **go bag**, then **head inland to higher ground and stay put**. Don't wait for the siren to go off. Big waves may keep coming for hours.

If you're inside, you may not even hear the siren. Be sure to **invest** in a NOAA Weather Radio, available at most hardware stores and online.

On Oct. 18, at 10:18 a.m., all of the sirens will go off **with a wailing sound** across the coast. This is just a test, part of the Great Washington ShakeOut. Typically, the sirens are tested using the Westminster Chime on the first Monday of every month.

You can be part of ShakeOut, too. **Practice** earthquake safety with the rest of the state. Learn more survival tips and register at shakeout.org/washington.

Find tsunami inundation maps and evacuation routes at mil.wa.gov/tsunami

Paid for by the NOAA/National Weather Service tsunami activities grant.

Are you in the zone?

Learn how to prepare for and survive a tsunami and earthquake with these simple steps:

- ❑ I know where my tsunami evacuation routes are to high ground and inland. I have walked my evacuation route.
- ❑ I know where inundation zones are in my area.
- ❑ I created a "go bag" and started my "2 Weeks Ready Kit."
- ❑ I identified an out-of-area-contact and talked to friends and family about my disaster plans.
- ❑ I signed up for local alert messages or purchased a NOAA Weather Radio so I'll get alerts when a tsunami comes.
- ❑ I registered for the Great Washington ShakeOut at 10:18 a.m. on Oct. 18 at shakeout.org/washington to practice my drop, cover & hold on skills.

TSUNAMI EVACUATION ROUTE

RUTA DE EVACUACION

Need help checking off your list?

Talk to your local emergency management office or visit mil.wa.gov/tsunami

Don't Forget!

All tsunami AHAB sirens will be tested at 10:18 a.m. on Oct. 18 with the actual wailing sound of a tsunami warning alert and all schools in mapped tsunami zones will have mandatory evacuations.

Watch out for kids!

Paid for by the NOAA/National Weather Service tsunami activities grant.

Regular Maintenance

- **Amplifiers**
- **Battery replacements (2-4 years)**
- **Electrical Box inspection/ replacements**
- **Satellite transceiver line of sight**

Future Upgrades

- **New and improved CommanderOne and Commander programs coming at the end of October.**
  - Will allow us to add a training/test option
  - Will allow us to add a Tsunami Warning cancellation messages for all entities with sirens
- **Mobile CommanderOne application**
- **Blue light upgrade**
- **Replacement of all current satellite transceivers with a new improved transceiver (estimated 12/2020).**
  - Provides capability to do updates over the satellite system and not have to visit the siren for programming changes.

Funding Sources

ALL AHAB siren costs are currently funded by the NOAA/National Weather Service tsunami Activities Grant

- New Siren installation
- Satellite time/licensing fee
- Computer software licenses
- Siren Technician travel expenses
- Miscellaneous Parts expenses:
  - local siren owners are responsible for battery replacement costs, security and maintaining siren access roads

Currently asking for state funding to help cover siren sustainment costs

Question?

Keily Yemm

Tsunami Program Coordinator WA State EMD

253-512-7067

Keily.Yemm@mil.wa.gov

AlertSense

Simplifying Critical Communications

Emergency Notification Systems

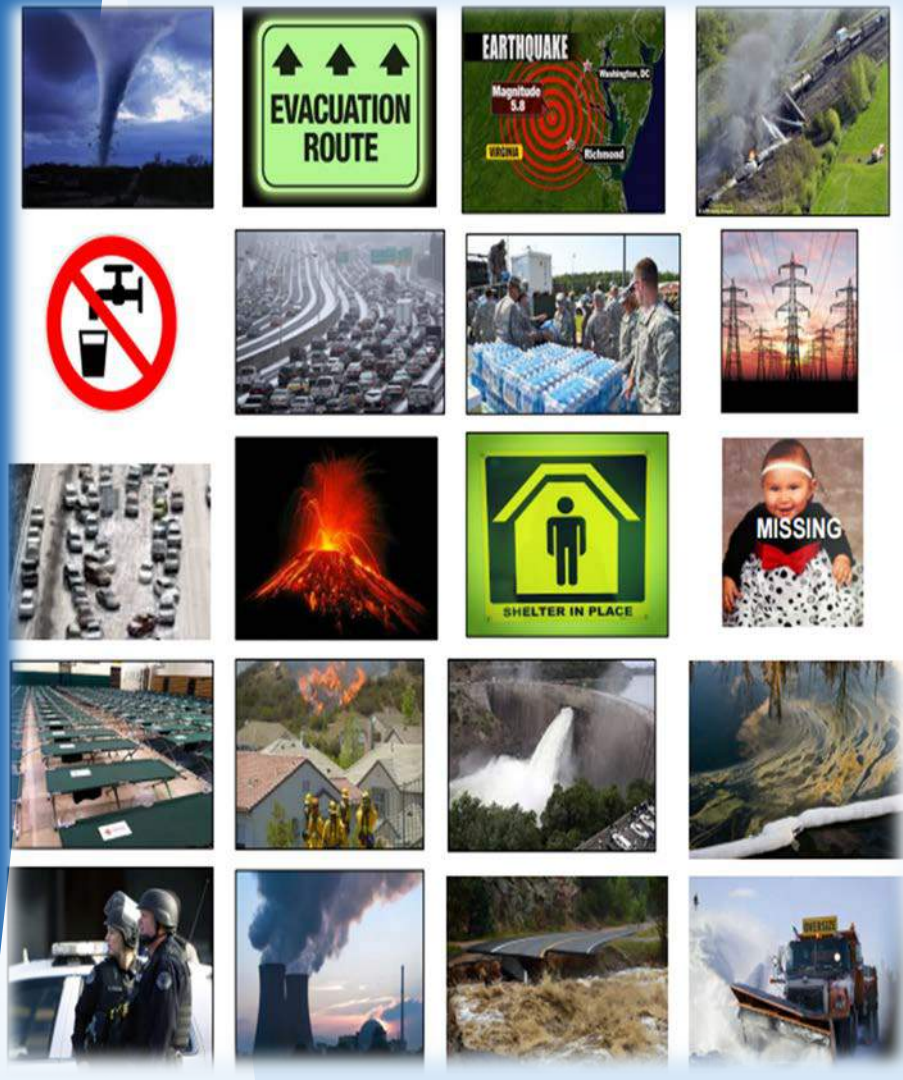
Years ago, man would use available tools to alert and warn groups and villages…

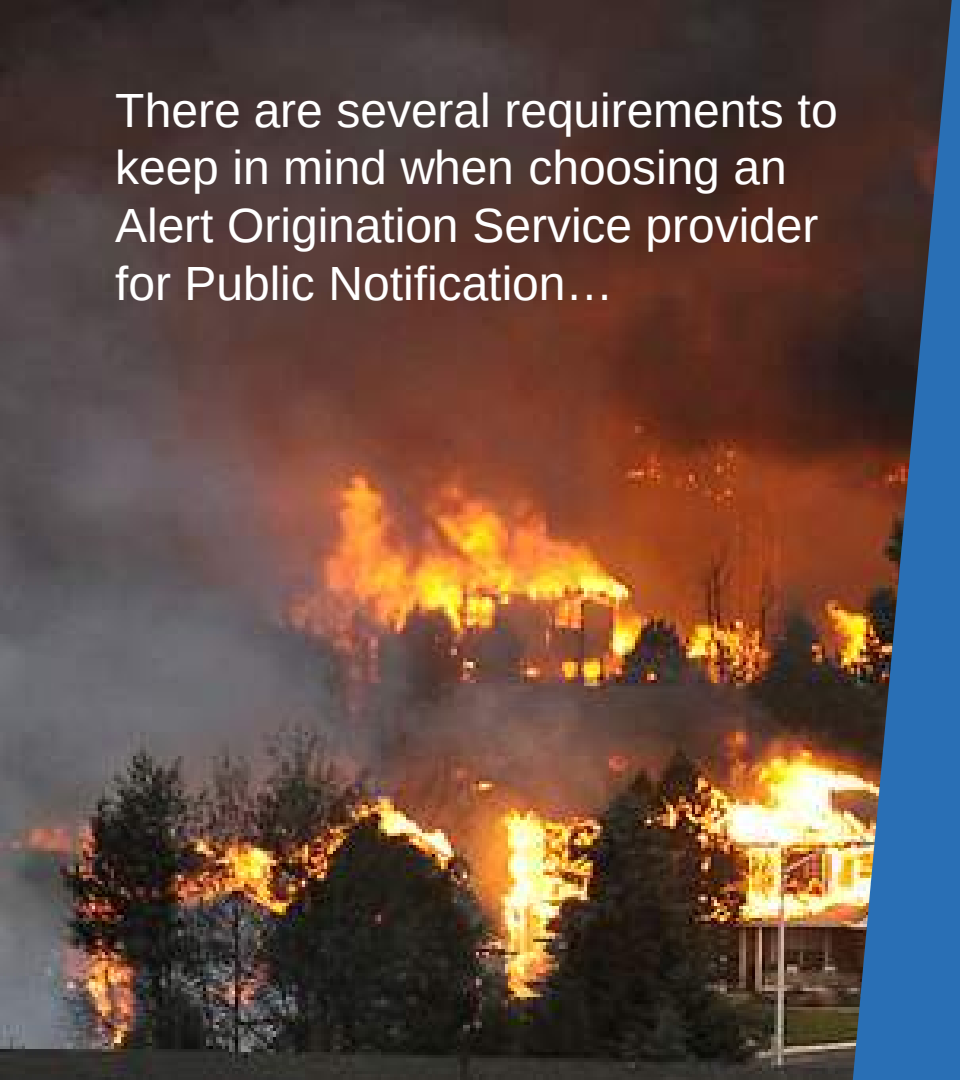
Through advances in technology, messages can be sent through Alert Origination Service Providers to multiple channels…

When can Public Warning be used?

Public Warning Systems can be used for anything public safety officials determine as a threat to public safety, such as:

- √ Evacuation
- √ Shelter-in-Place
- √ Law Enforcement Situations
- √ 911 Outage
- √ Road Closures
- √ Chemical Spills/Releases
- √ Water Contamination
- √ Emergency Shelter Locations
- √ Emergency Water Distribution Locations
- √ Dam Release Alert
- √ Nuclear Accident
- √ Pipe Line Break
- √ Landslide
- √ Boil Water
- √ Extreme Weather
- √ Flooding
- √ Volcano
- √ Earthquakes
- √ Wildfires
- √ Child Abductions/AMBER
- √ Critical Power Outage

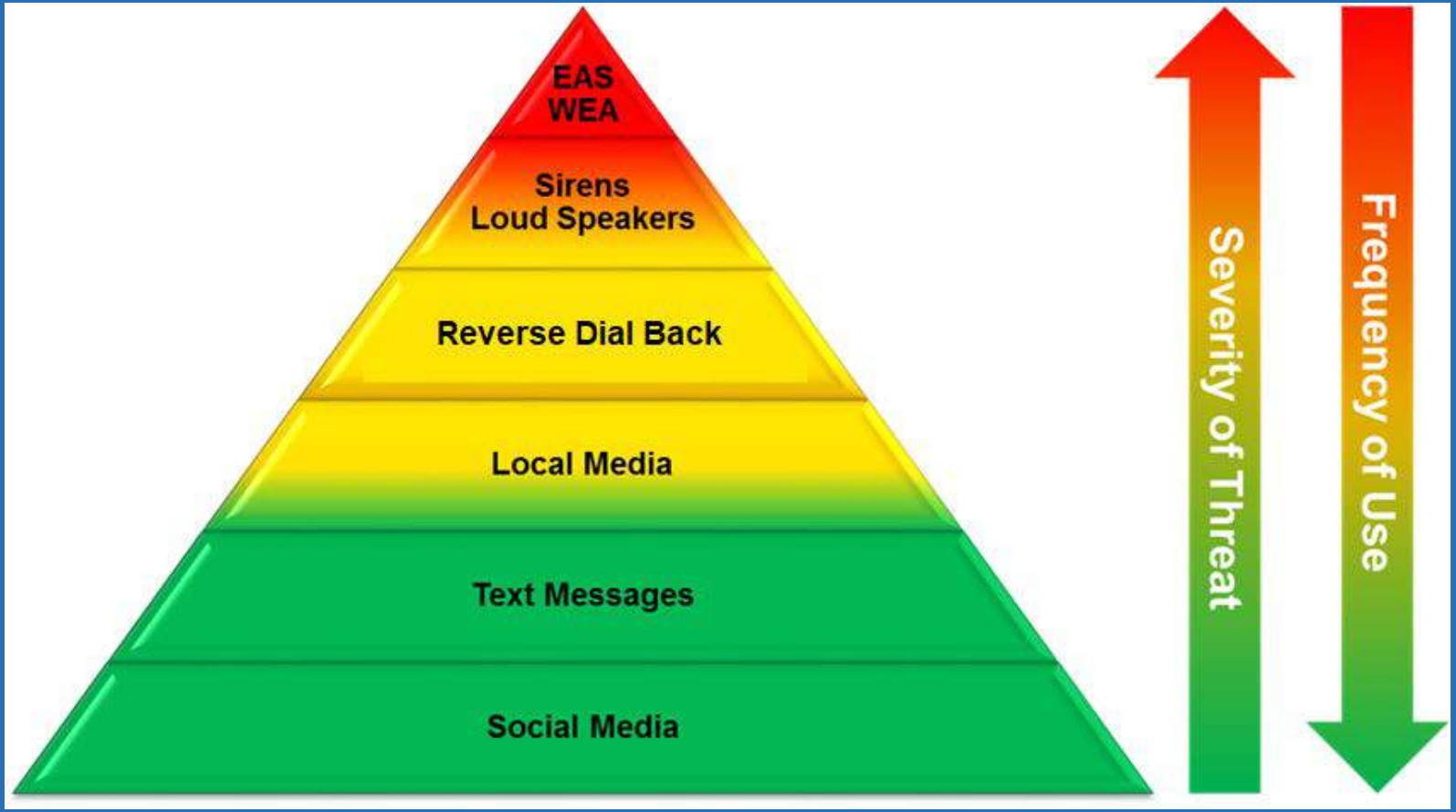




There are several requirements to keep in mind when choosing an Alert Origination Service provider for Public Notification…

- **Notification Coverage**: Communication through multiple channels is critical
- **Demographics of your Entity**: Multi-lingual communication is essential for entities that either require it or have a high population of non-English speaking residents
- **Ease of Use/Permissionable:** Systems that are easy to use are utilized more frequently – add permissions for security
- **Testing Mode:** Ensures the ability to train those who will be sending alerts without fear of accidental alerting
- **Cost:** Budgeting is important for an Emergency Notification System - look for grants and discounts from vendors through bundling

Alert and Warning Systems Hierarchy



Public Alert Best Practices – All Alerts

- **Identify Hazards:** Identify your jurisdictions' hazards and vulnerabilities
- **Document:** Document needs and requirements for each hazard. Who needs to know, when do they need to know and how do they need to know.
- **Authorize:** Clearly identify who is authorized to originate and manage alerts.
- **Engage Partners:** Seek advice and council from warning partners and vendors

Public Alert Best Practices – All Alerts

- **Develop Policies**: Develop clear and REPEATABLE warning policies, guidelines, procedures, training, test and exercise plans.
- **Update Plans**: Review and frequently update public warning plans and policies in close coordination with all partners.
- **Educate**: Educate the public on the importance of being informed, the use of warning sources and what to expect.
- **TEST**: Run tests and exercises frequently!

Training Best Practices – Alert Originators

- **Create SOPs:** In addition to alert creation guidelines, standard operating procedures should be created to establish training expectations
- **User Controls:** Apply and re-examine user access controls or permissions, and update when an employee changes positions or leaves
- **Training Schedule:** Develop a training schedule to include regular refresher training with or without your alert origination service provider - work with broadcasters to establish weekly EAS testing – utilize IPAWS Lab by sending test alerts using your Test COG
- **Accountability:** Hold employees accountable for maintaining proficiency in system use and knowledge of SOPs

Training Best Practices – IPAWS Lab

- **Offline Version of IPAWS:** The Lab is a valuable resource to alerting authorities because it mimics live environment capabilities, but is a closed/safe network to test, train and exercise
- **Assistance with SOPs:** IPAWS Lab employs experts to assist public alerting authorities with SOP creation and updates, best practices and plan reviews
- **Training:** The IPAWS Lab can assist with training through a webinar, assist with exercise plans/events – have access to most alert origination service provider products for training purposes and are knowledgeable about how systems works
- **Message Viewer:** Available 24/7, the message viewer is a way to confirm that alerts sent with Test COG were successfully received by the lab

AlertSense

Questions or Comments?

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Training Director
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Wireless Emergency Alerts

John W. Davis

Network Engineer, Voice Services

WECCWG Public Alert & Warning

HAR Policy and VMS Use Policy

James Todd Daley, Region Traffic Engineer, WSDOT Southcentral Region

September 28 , 2018

Washington Emergency Communications Coordination Workgroup

Highway Advisory Radio (HAR)

- What is it?
- What does it do?
- How does it work?

Highway Advisory Radio

- Highway Advisory Radio (HAR) sites consist of a transmitter station and corresponding signs with flashing beacons (permanent and portable)
- WSDOT has over 50 permanent HAR sites
- Most WSDOT regions have several portable HAR systems
- Policy applies to the operation of both permanent and portable HARs

Highway Advisory Radio

Uses:

- It is primarily used to provide motorist information <u>on road conditions:</u>
  - Mountain pass conditions
  - Roadway blocking or lane reducing highway incidents
  - Highway construction or maintenance work
  - Cancellation of ferry runs and special event lane or roadway closure

Highway Advisory Radio

WSDOT HAR Policy

- Highest priority (collisions, mountain pass conditions, hazardous roadway conditions, construction/special event closures
- Medium priority – upcoming maintenance/construction
- Lowest priority – PSA, AMBER/Silver alerts, and weather forecasts

Highway Advisory Radio

- This service operates in the AM Broadcast Band (530 kHz - 1700 kHz) and are limited to a 10 watt transmitter output power, an antenna height no greater than 15 meters (49.2 feet), and a coverage radius of 3 km. These stations may not transmit commercial information. 47 CFR 90.242

Variable Message Signs (VMS)

Variable Message Signs (VMS)

- VMS are traffic control devices designed to display a variety of messages.
- VMS allow the Traffic Management Center (TMC) to communicate with drivers quickly, reliably and effectively.
- They assist in TMC operations and allow operators to meet their objectives for incident management, congestion management and operational efficiency.
- Their use is governed by the Manual on Uniform Traffic Control Devices (MUTCD).

VMS priorities

- **Lane-blocking incidents:** VMS legends for incidents with more severe impact shall have priority over incidents with lesser impacts.
- **Future incidents:** VMS legends for incidents and events occurring at the present time shall have priority over messages relating to future events.
- **Non-transport related messages:** VMS legends for AMBER Alerts, Blue Alerts, approved PSAs, national security and emergency messages, etc.
- **Travel time** legends shall be posted as a last priority.

VMS don’ts

- No advertising,
- No video,
- No event names (e.g., Use “stadium event” rather than “Kenny Chesney concert” when alerting about late evening unexpected traffic)

VMS characteristics

- Signs across the state are all different
- Some have three lines while others have two
- Some can accommodate 18-20 characters per line while others can only accommodate 10-12
- Therefore messages have to be tailored to individual signs

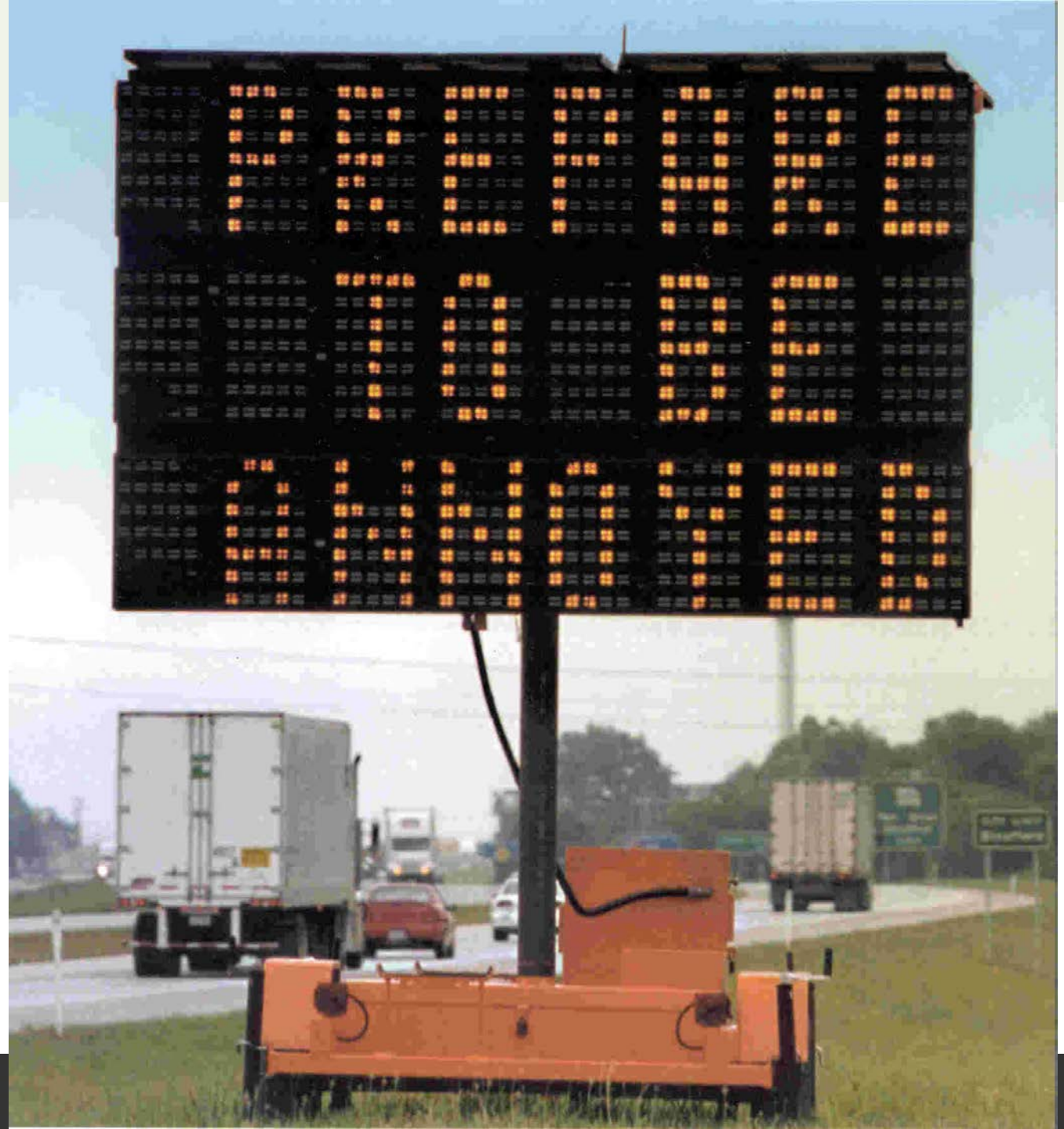
VMS messaging

Other PSA uses related to roadside fire danger.

PREVENT FIRES
USE YOUR ASHTRAY

FIREWORKS
PROHIBITED IN
MANY AREAS

CHECK
BEFORE
LIGHTING



WSDOT I-5
MLK JR WAY S
LOW PRESSURE
I-5 NORTH CLOSED
AFTER I-90
USE ALTERNATE ROUTES

LEFT LANE
STAY IN LANE
FOR 1 MILE
TUKWILA 15 MIN
SEATTLE 28 MIN
BELLEVUE 30 MIN
SPEED LIMIT 60

WSDOT I-5
MLK JR WAY S
LOW PRESSURE
I-5 NORTH CLOSED
AFTER I-90
USE ALTERNATE ROUTES

090vc05688 - Gold Creek #4 SCR_ITS
18 Feb 2014 01:24:21 Pacific Standard Time

MERGE
SMARTER HIGHWAYS AHEAD

SPEED LIMIT 60
SPEED LIMIT 45
SPEED LIMIT 45
SPEED LIMIT 45
SPEED LIMIT 45
REDUCED SPEED ZONE

EXIT 154B
518
Sea-Tac
Airport
1 MILE

VMS future

- Possible Future Uses:
  - Working with FHWA on road weather messaging. Examples can include current conditions (e.g. “ice on road ahead”) or near term high-confidence forecasts (e.g. “heavy snow tomorrow afternoon”).

Questions?

Thinking Outside the Box

Disabled Access and Functional Needs

WECCWG VII – Ellensburg, WA

September 27, 2018

Jim House
CIEP Disability Integration Manager

- **C**oalition on **I**nclusive **E**mergency **P**lanning with Washington State Independent Living Council (WASILC)
- Subject Matter Expert on Effective Communications as an Access and Functional Need
- Presented on Access to 9-1-1 services, and Communication Access in Emergency Management
- Developed **Community Emergency Preparedness Information Network** training (AWR-186) with FEMA
- Co-chair of **NENA Accessibility Committee Emergency Notification Work Group**

- Contact: housej@dshs.wa.gov

Coalition on Inclusive Emergency Planning

CIEP is a statewide disability advisory group that provides technical advice based on the Three Pillars of Emergency Planning

- Effective Communication Access
- Programmatic Access
- Physical Access

CIEP Mission:

- Inclusive Planning, Response and Recovery

CIEP Vision:

- Partnerships that Work for a More Effective Quality Planning, Response, and Recovery

CIEP Quarterly meetings open to the public.

- Next meeting in Lacey on Dec. 12, 2018.

CIEP members and stakeholders provide insights and recommendations on Access and Functional Needs.

Statistics on Americans with Disabilities

- US Census: 57M people living with a disability in 2010 https://www.census.gov/newsroom/releases/archives/miscellaneous/cb12-134.html
- About 20% of Americans, 48 million, report some degree of hearing disability. http://www.hopkinsmedicine.org/news/media/releases/one_in_five_americans_has_hearing_loss
- More than one million Americans are legally blind and 12 million have low vision. https://www.cdc.gov/healthcommunication/toolstemplates/entertainmented/tips/Blindness.html
- About 1 in 68 children has been identified with autism spectrum disorder (ASD). https://www.cdc.gov/ncbddd/autism/data.html
- Approximately 61.6 million individuals, foreign and U.S. born, spoke a language other than English at home … 41% (25.1 million) were considered Limited English Proficient (LEP). https://www.migrationpolicy.org/article/limited-english-proficient-population-united-states

Dr. Robert Haig "Bob" Weitbrecht was a deaf physicist, and also a ham radio operator "W6NRM". He used Morse Code and radioteletype to communicate with other ham radio operators, and to connect with others during disasters when traditional telecommunication networks were down. One day, at the request of his friends **Dr. James L. Marsters** and **Andrew Saks,** he retrofitted his radioteletype modem for use on phone lines, and made possible telephone access for deaf people. Thousands of TTYs installed worldwide today bear testimony to Weitbrecht's genius and vision.

Vincent Wood, a deaf NOAA National Severe Storms Laboratory research meteorologist, believes deaf and hard-of-hearing people need access to the same critical audio information from NOAA Weather Radio. After the May 3, 1999, Tulsa tornado outbreak, Wood conducted a 9-month survey which revealed **81% of deaf and hard-of-hearing people experienced fear about being unprepared for weather emergencies** and have limited ways of knowing that severe weather is imminent. This led to the OK-WARN system.

http://www.nssl.noaa.gov/education/okwarn/

Emergency Preparedness and Emergency Communication Access

http://dhhcan.org/emergency-report/

- EXECUTIVE SUMMARY
  - The events of September 11, 2001 and its aftermath exposed many glaring weaknesses in the emergency preparedness infrastructure that compromise the safety and security of 28 million Americans who are deaf, hard of hearing, late-deafened and deaf-blind. Experiences with emergencies during the past three years continue to reinforce the urgent need for these weaknesses to be addressed.
- Top Priority: An Effective Emergency Communication System
  - **America's current public warning and emergency communication systems get a failing grade from deaf, hard of hearing, late-deafened and deaf-blind individuals.** There are too few effective options for communication and the options currently available have largely proved unreliable.

Report issued December 2004 by

DHCAN

Deaf and Hard of Hearing Consumer Advocacy Network

Special Needs Assessment for Katrina Evacuees (SNAKE) Project Report

https://tap.gallaudet.edu/Emergency/Nov05Conference/EmergencyReports/katrina_snake_report.pdf

- Shelters claimed to have basic accessibility and supplies for people with mobility disabilities. **The most underserved group were those who are deaf or heard of hearing.**
  - Less than 30% of shelters had access to ASL interpreters
  - 80% did not have TTY's
  - 60% did not have TVs with open caption capability.
  - Only 56% of shelters had areas where oral announcements were posted so people who are deaf, hard of hearing or out of hearing range could go to a specified area to get or read the content of announcements.
- **This meant that the deaf or hard of hearing had no access to the vital flow of information.**

Report issued August 2006 by

Disability Policy Timeline

- 1990 – **ADA** passed – Title II requires **equal access to all** local and state government services and effective communication
- 1998 – Congress amends Section 508 of the **Rehab Act** of 1973 to require Federal agencies to make their **electronic and information technology (EIT)** accessible to people with disabilities.
- 2000 – FCC requires all broadcasters to make TV emergency bulletins accessible **visually** and aurally
- 2004 – **Executive Order 13347** …**strengthen** emergency preparedness with respect to individuals with disabilities… **President G. W. Bush 7/22/2004**
- 2006 – **Executive Order 13407** …include in [IPAWS] the **capability to alert and warn all Americans**, including those with disabilities and those without an understanding of the English language… **President G. W. Bush 6/26/2006**
- 2017 – **SB-5046** WA Governor requires all state and local emergency agencies to submit plans on how they will inform people who don't speak English during emergencies – ASL and captioning are included.

- Photo: Houston Astrodome after Hurricane Katrina © 2005 FEMA

Effective Communication

ADA.gov
United States Department of Justice
Civil Rights Division

- Ensure that the person with a disability can communicate and exchange information.
- Covered entities must provide auxiliary aids and services as needed to communicate effectively.
- Consider the nature, complexity, and context as well as the person's preferences.
- The rules also apply to that person's parent, spouse, or companion in certain circumstances.
- This includes providing a qualified interpreter, alternative formats (e.g. captioning, graphics) or assistive listening systems (e.g. loops)
  - https://www.ada.gov/effective-comm.pdf

People who benefit from captions:

- **In addition to 48M with a hearing disability**
- 30M learning English as a second language (LEP)
- 27M learning to read
- 10M improving literacy skills
- **115M TOTAL** and more…

- Like electronic curb cuts that help viewers who favor reading over listening due to circumstances
  - Auditory Processing Disorder or other conditions
  - Environment – noisy or quiet places, workplaces, etc.
- Search engine users can find videos by tracking key words in caption data

Real-Time Text (RTT)

- FCC allows support for TTY or RTT
- RTT roll out in phases over next four years
- RTT works on computers and mobile devices
- RTT allows you to read messages letter by letter in real-time like a TTY
- Both parties can type messages and respond simultaneously without hitting “SEND”
- RTT will be integrated with 9-1-1 and with 7-1-1 (relay services).
- You can mix voice and text on the same call

https://www.youtube.com/watch?v=tfmAblNvr8E

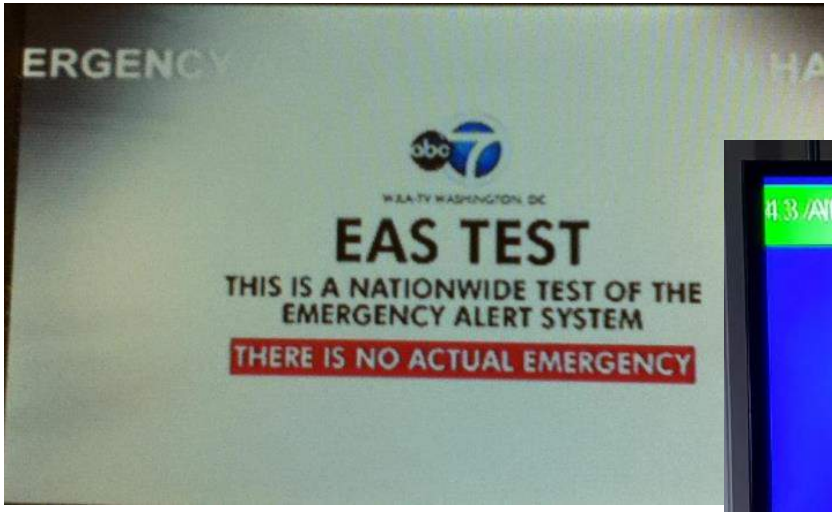
Next Generation 911

- An interim solution, Text-to-911 is being implemented around the country to restore direct access to 9-1-1 services by text.
- NG-911 is an Internet Protocol (IP)-based system that allows digital information (e.g., voice, photos, **videos, text messages**) to flow seamlessly from the public, through the **911** network, and on to emergency responders before they arrive on the scene.
- A deaf or hard of hearing person will be able to call NG-911 from a computer or mobile device using RTT or video. If a sign language interpreter is needed, the PSAP can summon one from a multi-language service provider.

https://mil.wa.gov/emergency-management-division/e911/texting911
https://www.911.gov/911-issues/standards.html

Which is more accessible?

What's wrong with these photos?



Top: WJLA during first nationwide EAS Test on 11/9/11
Bottom: KONG during monthly EAS Test on 6/26/18

Irma's Tale of Two Interpreters

Two interpreters in separate press conferences during the same hurricane

ASL Videos / Interpeters at Media Briefings

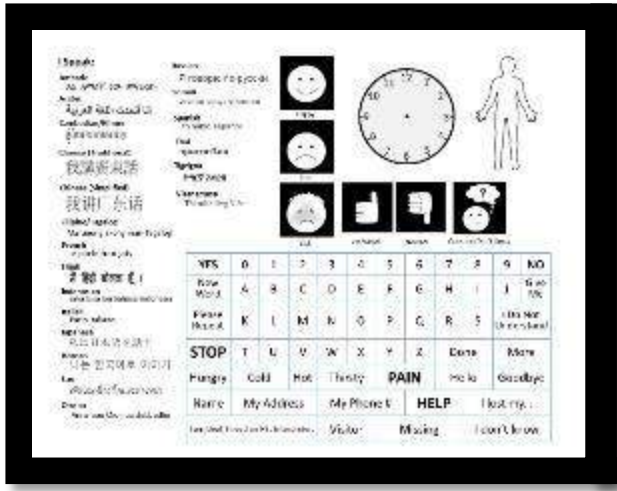
- In order to provide effective communications to people that use ASL, we need to include video clips of emergency information in sign language and captions.
- Be sure your interpreters have been vetted/and or credentialed.

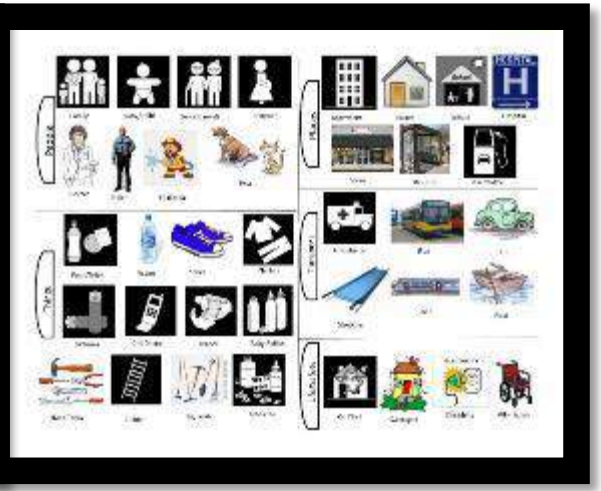
https://ein.az.gov/emergency-preparedness-asl-videos

Best Practices

- **Before an emergency**
  - Recruit & engage local subject matter experts with disabilities in CERT training, planning, development, etc.
  - Require or encourage local businesses that have public TV sets to display captioning during business hours.
  - Upgrade alerting technology to take advantage of new and emerging accessibility features.
- **During or after an emergency**
  - Create generic videos with disaster tips to show right away, then show videos that have specific information.
  - Remember to consider readability and comprehension when composing text and graphics
  - Frame qualified deaf interpreters with officials in the video during televised press conferences

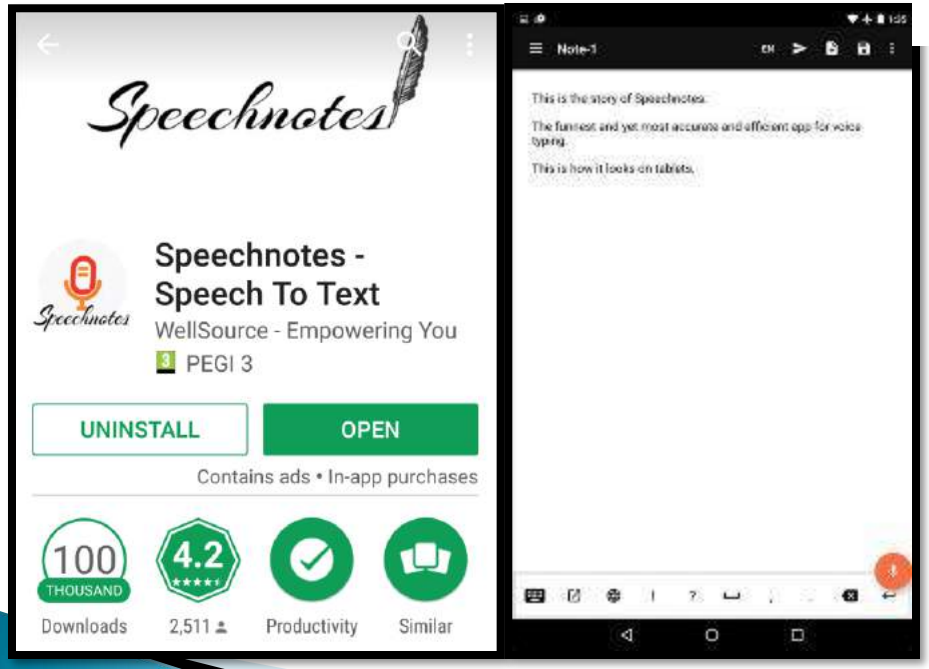
Show Me… I will remember…

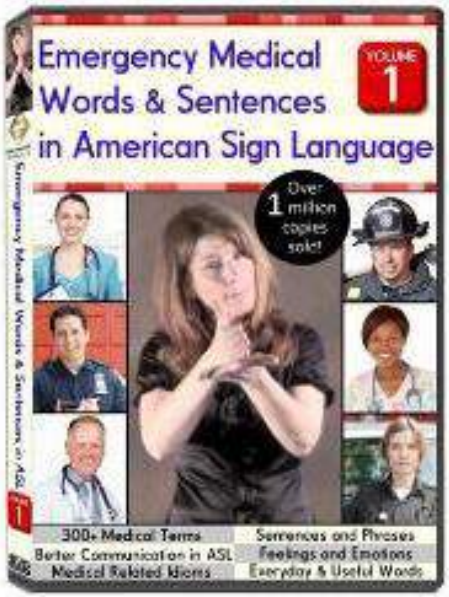




Roger Pen/ EasyPen transmitter

Show Me… There's an app…





If there is only one thing you need to remember…

Do not ask “Can you read my lips?”

It is better to ask

“What is the best way for us to communicate?”

Questions?