



Oregon

governor R. Kulongoski, Governor

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Date: February 27, 2007

To: Al Aya, Cleve Rooper, Tom Manning, Don Baker, John Buchanan, Wayne Stinson, Steve Scibelli, Jack Lenox, Mark Metcalf, George Priest, Ryan Sandler, Robert Smith, Chris Jonientz-Trisler, and Tyree Wilde

From: Jay Wilson, OEM

Subject: SB 557 Work Team - Survey Results

Enclosed are the survey results from your answers regarding draft language for the SB 557 required uniform tsunami warning signal standards and supplemental recommended standards. The last page is a spreadsheet with the results of each team member.

I am sending these out for everyone to see how the responses came out and to begin the next step of crafting the standards we intend to put forward for the Administrative Rules process.

We all don't agree on every standard, but I believe we have common ground on the intent of the standards and the desire to employ the most effective means to deliver a tsunami warning and evacuation notification.

During my trip to FEMA Headquarters next week for a WSSPC meeting, I will try and speak to one of the people involved in the EO 13407 "Public Alert and Warning System" Implementation Plan and share our concerns for complying with a forthcoming federal warning standard.

Thank you,

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Cc: Ken Murphy
Dave Cassel
Vicki McConnell

Questionnaire – Part A Criteria Requirements for SB 557 (type, duration, volume and location)

1a. TYPE of warning signal shall consist of a wavering siren tone with an up and down pitch.

Al Aya-Cannon Beach Fire Dist.

Agree

Comments: Field experience plus properly conducted tests confirm that the “wail” (continuous rising and falling frequency) carries farther and is better heard than a steady, high frequency siren tone. The reason is that by rising and falling, low range frequency is broadcast as well as high range and low range frequency is what carries farther. The undulation effect catches public attention faster and better than a single tone, which is why it is the basic standard for emergency vehicles clearing their way through traffic.

Tom Manning-Tillamook EM

Disagree

Comments: Recommends consistency with federal standard and maintaining similar standard with other Pacific Coast States.

Don Baker North-Lincoln Co. Fire

Disagree

Comments: I only disagree because of the 1980 FEMA document, and I believe our standard should be consistent with federal standards. Oregon should go on the record that the federal standard needs to be updated and changed, the wavering siren I believe to be more effective.

John Buchanan-Siuslaw Valley Fire

Agree

Wayne Stinson-Douglas EM

Agree

Steve Scibelli-North Bend Police

Agree

Jack Lenox-Coquille Tribe

Agree

Comments: With a change in the frequency, this will facilitate more people able to hear the warning – normal human range of frequency is 20 Hz to 20 kHz.

Mark Metcalf-Curry Co. Sheriff

Agree

Comments: The sirens in Curry County are currently wavering as opposed to steady for some duration. All testing done around the state seems to support the wavering tone as “superior” to constant tone

Robert Smith-Oregon Parks & Recreation

Agree

Comments: Steady tones are more easily disregarded

Tyree Wilde-NWS Portland

Agree

Comments: It’s the most audible at greater distances and also is a national standard; albeit an attack warning.

Ryan Sandler-NWS-Medford

Agree

Comments: I would choose the warning signal that is best heard (wavering vs. steady). That is, which signal can reach the most people? I think that is the wavering signal.

1b. TYPE of warning signal shall consist of a three minute steady tone with constant pitch.

Al Aya-Cannon Beach Fire Dist.

Disagree

Comments: As explained above, the undulating “wail” should be used rather than steady, high frequency tone - though duration should be three minutes which allows enough time for general public awareness. People sleeping at night in their homes or within areas having ambient loud noise levels need the three minutes to become aware of the alarm siren. Here in Cannon Beach, we don’t want longer than three minutes (which we’ve used for five or six years) because we want to follow the siren quickly with our four-times repeated voice instructions needed for benefit of visitors in the area who won’t quickly know what the alarm siren means.

Tom Manning-Tillamook EM

Agree

Don Baker North-Lincoln Co.Fire

Agree

Comments: Duration of not less than three-minutes is a standard we should stay consistent with (FEMA 1980). According to the same FEMA document, a steady pitch tone should be used (p. 5) for this type of warning. What is unclear is how a rotating siren is treated in this guide, rotating sirens have a steady tone that sounds to like a wavering tone as the siren rotates.(p.3) To the listener it will always sound like a wavering siren. By the way, this is the type of siren devise being used in Lincoln City.

John Buchanan-Siuslaw Val. Fire

Wayne Stinson-Douglas EM

Steve Scibelli-North Bend Police

Jack Lenox-Coquille Tribe

Mark Metcalf-Curry Co. Sheriff

Disagree

Robert Smith-Oregon Parks& Rec

Disagree

Tyree Wilde-NWS Portland

Ryan Sandler-NWS-Medford

Disagree

2. DURATION of warning signal shall require the above TYPE signal to be broadcast for three continuous minutes beginning no later than at the issuance of a Tsunami Warning and repeated at least every hour and then half-hour before expected landfall.

Al Aya-Cannon Beach Fire Dist.

Disagree

Comments: The TSUNAMI WARNING may be issued considerably ahead of the tsunami ETA, and here in Cannon Beach we wouldn't want to unnecessarily evacuate our hazard areas by sounding the evacuation alarm (and issuing voice instructions) when the TSUNAMI WARNING might be canceled ahead of when the ETA would require evacuation. A good example would be the alarm received here at 6:15AM on Labor Day 1989, while true that the alarm wasn't as yet a TSUNAMI WARNING, the major holiday weekend had all 2nd homes and hotel/motel rooms filled with people still asleep. ETA was around 11:00AM (the possible tsunami coming from Gulf of Alaska). Had we not had our community warning system in place and able to supplement the evacuation sirens with voice instructions, we would have had to begin evacuation on basis of the received TSUNAMI WATCH - complication of awakening and effectively evacuating so large a population would have required it in our circumstances.

Had we had only sirens, we would have immediately begun evacuating - because of confusion developing amongst so many people not knowing what the sirens meant. As it was, the proven efficiency of our system allowed us to wait until, as it turned out, ATWC at Palmer, canceled the emergency - the cancellation came just minutes before we would have had to begin evacuation. Requiring evacuation to begin with receipt of the TSUNAMI WARNING would interfere with local use of judgment as to when evacuation should begin - sometimes an evacuation might have to begin with receipt of the TSUNAMI WATCH. It all depends on local circumstances and local officials' experience and judgment.

Value of repeating evacuation signals every hour, based on our experience here, seems unnecessary - if evacuation has taken place why start all over? What's the reasoning to that?

Tom Manning-Tillamook EM

Agree

Don Baker North-Lincoln Co. Fire

Agree

John Buchanan-Siuslaw Valley Fire

Agree

Wayne Stinson-Douglas EM

Agree

Steve Scibelli-North Bend Police

Agree

Jack Lenox-Coquille Tribe

Agree

Mark Metcalf-Curry Co. Sheriff

Agree

Robert Smith-Oregon Parks& Recreation

Agree

Comments: The more often the better.

Tyree Wilde-NWS Portland

Agree

Comments: I'm a bit confused about the words "then half-hour". Do you mean at the next hour (after the initial warning), then every half-hour?

Ryan Sandler-NWS-Medford

Disagree

Comments: The longest warning lead-time is 3 hours. Best to blow the siren every ½ hour so the greatest number of 3 minutes blasts would be 7 times (21 minutes total time) before the 1st wave in 3 hours. Also, would the siren be blown each hour after the initial wave if there is a threat from a 2nd, 3rd, 4th, etc. wave or is it anticipated that everyone will know with the first responder (road blocks) activity occurring?

3. VOLUME of warning signal shall not exceed 123 Decibels* when measured from a distance of 100 feet from the source.

* Source: 1980, Outdoor Warning Systems Guide, FEMA CPG 1-17, page 8

Al Aya-Cannon Beach Fire Dist.

Disagree

Comments: This would be adopting a mistaken interpretation of what's meant by that FEMA rule. *Siren units, whether electro-mechanical or electronic, have different characteristics according to their engineering design.*

Electronic sirens designed to project sound very directionally, such as three of our units here in Cannon Beach, do so *by projecting the sound similarly to a searchlight's beam.* At 100 ft directly out horizontally from the loudspeaker, peak volume is sufficient to deliver about 70 decibels nearly a mile distant. But decibel level on the ground about 40 ft directly beneath the loudspeaker is only about 90 decibels. The sound beam's decibel level drops 10 for every doubling of horizontal distance from the loudspeaker.

We also have some electronic siren units designed to project sound horizontally 360° simultaneously. While engineered to project horizontally straight out, considerably less than full volume (as measured 100 ft directly out from the loudspeaker) reaches the ground at about 40 ft directly below.

Some sirens aren't engineered so precisely - and radiate not only out but down with such strong effect directly beneath them that they can cause nosebleeds for a person at base of the pole. Point is that *sirens are not all engineered the same.* So great caution is needed in defining their maximum decibel level.

Tom Manning-Tillamook EM

Agree

Don Baker North-Lincoln Co. Fire

Agree

John Buchanan-Siuslaw Valley Fire

Agree

Wayne Stinson-Douglas EM

Agree

Comments: I am not sure if we should have a "shall not exceed." The more important volume would be minimum, which if I recall was 60db

Steve Scibelli-North Bend Police

Agree

Jack Lenox-Coquille Tribe

Disagree

Comments: Should be 125db at 100ft for a siren with coverage of 4500ft @ 70db – high end sirens are specified at the above. Many local coastal cities have purchased these high end sirens.

Mark Metcalf-Curry Co. Sheriff

Agree

Robert Smith-Oregon Parks& Recreation

Agree

Tyree Wilde-NWS Portland

Agree

Comments: I assume 123 db is within public safety health concerns for audible signals.

Ryan Sandler-NWS-Medford

Agree

Comments: I noticed in the 2001 DOGAMI "Tsunami Warning Systems and Procedures" booklet it mentioned a specific siren model with a signal strength of 127 dBC at 100 feet.

4. LOCATION of warning signal device(s) shall be sited to provide primary delivery to densely populated outdoor areas, such as beaches, harbors, main streets, and parks.

Al Aya-Cannon Beach Fire Dist.

Disagree

Comments: While that's how our siren stations are located here in Cannon Beach, we would prefer (if we had the financial resources) to saturate our entire area with siren stations so that everyone in the whole area would hear the same thing. Surely there are other communities feeling the same way. As it is, we can only afford to place our siren stations to cover the most densely populated FLOOD HAZARD areas. In due course of time we will likely keep expanding coverage beyond those areas.

Tom Manning-Tillamook EM

Agree

Don Baker North-Lincoln Co. Fire

Agree

John Buchanan-Siuslaw Valley Fire

Agree

Wayne Stinson-Douglas EM

Agree

Comments: It should state something about being in the tsunami evacuation or inundation zone.

Steve Scibelli-North Bend Police

Agree

Jack Lenox-Coquille Tribe

Agree

Comments: The db ratings of the various sirens are for outdoors – the sirens are not meant to be heard indoors (it's nice if they can, but its not their design).

Mark Metcalf-Curry Co. Sheriff

Agree

Comments: Agree in concept. However, there should be some consideration given to local control when the Tsunami warning signal device has multiple uses. For example, many tsunami sirens currently are primarily fire sirens and simply incorporated into the tsunami warning system. As many were previously sited for fire alert, the consideration for "best location" relative to tsunami warning likely was not considered.

Robert Smith-Oregon Parks& Recreation

Agree

Comments: Especially parks and beaches.

Tyree Wilde-NWS Portland

Agree

Comments: Would also like to see language 'in the inundation zone'.

Ryan Sandler-NWS-Medford

Agree

Questionnaire – Part B
Additional or Optional Requirements for SB 557

5. TSUNAMI WARNING SIGNAL RESPONSE PROTOCOL:

When you hear the three minute wavering up and down siren blast, move away from the shore and tune to local media or NOAA weather radio for more information. Remain in a tsunami safe location until local authorities issue an official “Re-entry” notification.

Al Aya-Cannon Beach Fire Dist.

Disagree

Comments: While that sounds good, here in Cannon Beach we don't sound the evacuation sirens until our experience and judgment say *its necessary*. At that point, we certainly don't want our hazarded population fiddling with their radios or TV “for more information”. What we need them to do is to get going to safety zones - not to sit around waiting for additional guidance. While radio and TV may have begun broadcasting the alarm, in some cases there may not be any commercial power (as in the Nisqually quake effect here) - and both landline and cell phone systems were dead. When we sound the evacuation alarms here, we want people to get going.

As to “weather radios” they're nice if their batteries are working. What proportion of weather radios in average households will have their batteries maintained?

As to remaining in a tsunami safe location until local authorities issue an official “Re-entry” notification - *absolutely yes*. That's very important. But experience shows that people listening to commercial radios or watching TV misinterpret cancellations of tsunami emergencies; they don't realize that local authorities may be having local problems unknown by the scientists at Palmer. *It's extremely important that people await local authorities' issuance of “Re-entry” notification*. For example, the scientists at Palmer have absolutely no knowledge of local authorities struggling with a broken water main or gas line in town - or a tangle of fallen power lines.

Tom Manning-Tillamook EM

Agree

Comments: The question makes the assumption that the up and down signaling is the correct signaling mode. I would like to see where our neighboring states and FEMA weighs in?

Don Baker North-Lincoln Co.Fire

Agree

Comments: Assuming that the three-minute wavering is the standard adopted; If not, I would say “When you hear three-minute siren blast...”

John Buchanan-Siuslaw Valley Fire

Agree

Wayne Stinson-Douglas EM

Agree

Steve Scibelli-North Bend Police

Agree

Comments: recommend adding after, “move away from shore - GO TO HIGH GROUND.”

Jack Lenox-Coquille Tribe

Agree

Comments: AM & FM radio stations are designed with back up generators and would be one of the primary emergency response communications for the public.

Mark Metcalf-Curry Co. Sheriff

Agree

Comments: The pre-text message should be consistent state-wide with some ability for local “special” instruction following the agreed upon script, as above.

Robert Smith-Oregon Parks & Recreation

Agree

Tyree Wilde-NWS Portland

Agree

Comments: Also add ‘move to higher ground’ in addition to move away from the shore

Ryan Sandler-NWS-Medford

Agree

6. UNIFORM TSUNAMI WARNING SIGNAL TESTING:

All tsunami warning sirens shall be tested monthly at an agreed upon time (CSEPP tests its system at noon on the last Tuesday of every month).

Al Aya-Cannon Beach Fire Dist.

Agree

Comments: Our routine here is to test at noon monthly on another day than that - but we could easily adapt. Main thing is to get the systems tested monthly.

Tom Manning-Tillamook EM

Agree

Don Baker North-Lincoln Co.Fire

Agree

John Buchanan-Siuslaw Valley Fire

Agree

Wayne Stinson-Douglas EM

Agree

Comments: We need to state a Uniform test tone and duration

Steve Scibelli-North Bend Police

Agree

Jack Lenox-Coquille Tribe

Agree

Comments: Most critical to have an agreed upon test period across the state.

Mark Metcalf-Curry Co. Sheriff

Agree

Comments: Fully agree in concept. Date and time need to be est. state wide but may be something different than last Tuesday at noon.

Robert Smith-Oregon Parks& Recreation

Agree

Tyree Wilde-NWS Portland

Agree

Comments: Great idea. It also exercises procedures and the equipment

Ryan Sandler-NWS-Medford

Agree

7. “RE-ENTRY” SIGNAL for “End of Test” or “Warning Cancellation” notification (aka All Clear): Recommend agreement on short distinct standard signal (to be determined) that can be broadcast from both electronic and electro-mechanical sirens systems to notify public of end of test or cancellation of tsunami warning.

Re-entry notification following a damaging tsunami may need to be handled with selective notification based on emerging conditions.

Al Aya-Cannon Beach Fire Dist.

Agree

Comments: Having an electronic siren system here in Cannon Beach, we use the “Air Horn” to draw public attention to our voice announcement that an evacuation emergency is ended. Voice announcement varies to the occasion depending upon any special needs of the occasion, e.g. perhaps we don’t want people re-entering town via a junction wrecked by flooding - or we can’t let people back yet into an area where some other problem isn’t ended. We wouldn’t use any form of siren tone to signal such an announcement - because, here, the system’s sirens mean to evacuate.

As to ending our monthly test, we could use the “Air Horn” to do so, but our monthly test primarily consists of voice announcement explaining what’s going on - and we use a prolonged test tone chosen for simulating battery drain as it would be for a run of the sirens - - - we never sound the sirens unless we intend people to evacuate our hazard areas. That’s part of our local culture here - residents are educated to understand that if they ever hear the sirens they need to evacuate and not wait for the voice announcements. This is a very important local rule, because voice announcements aren’t heard well (or at all) outside the most heavily populated flood hazard zones - whereas the sirens are far more widely heard. So if we sounded sirens for testing, many unable to hear the voice announcements would panic. Our rule restricting local siren use has been in use for nearly twenty years.

Tom Manning-Tillamook EM

Disagree

Comments: Concerned that electro-mechanical sirens cannot produce the 10 second interval tones, though other possible tone variations may be acceptable. On Tsunami “Re-Entry” can be difficult to know, when wave action can continue for several hours. This should be done by EAS, and initiated by NOAA, and Alaska Tsunami Warning Center

Don Baker North-Lincoln Co.Fire

Disagree

Comments: At this point, I do not agree with having an all clear siren signal; this is to avoid confusion as to which direction people should be moving.

John Buchanan-Siuslaw Valley Fire

Agree

Wayne Stinson-Douglas EM

Agree

Steve Scibelli-North Bend Police

Agree

Jack Lenox-Coquille Tribe

Agree

Mark Metcalf-Curry Co. Sheriff

Agree

Robert Smith-Oregon Parks& Recreation

Agree

Tyree Wilde-NWS Portland

Agree

Comments: Would not use sirens for re-entry. Notification for re-entry can be done via other means such as fire/police, local radio, etc.

Ryan Sandler-NWS-Medford

Disagree

Comments: Prefer not to use the siren for all-clear. Let the local authorities and media outlets handle this. We need to keep the use of sirens as simple as possible.

8. USE OF STROBE LIGHTS FOR HEARING IMPAIRED:

Recommend supplementary high-powered strobe lights tied to tsunami warning system to augment audible signal and provide visual warning for hearing impaired and for persons out of range of audible sirens.

Al Aya-Cannon Beach Fire Dist.

Agree

Comments: This is a good idea - but funding for it is very far beyond our local ability.

Tom Manning-Tillamook EM

Agree

Don Baker North-Lincoln Co. Fire

Agree

Comments: If possible, configure the strobe lights to flash continually during the Warning, not just while the siren is sounding.

John Buchanan-Siuslaw Valley Fire

Disagree

Wayne Stinson-Douglas EM

Agree

Comments: I think some agencies are using Blue, but it needs to be standardized.

Steve Scibelli-North Bend Police

Agree

Jack Lenox-Coquille Tribe

Agree

Comments: This should be required for new sirens. Optional – Highly recommended retrofit for existing.

Mark Metcalf-Curry Co. Sheriff

Agree

Comments: Agree in concept. May be problematic to individual entities.

Robert Smith-Oregon Parks& Recreation

Agree

Tyree Wilde-NWS Portland

Agree

Comments: Need to reach out to this community.

Ryan Sandler-NWS-Medford

Agree

Comments: Would help to reach more people and increase the threat level. Not sure of the expense involved with this.

SB 557 Uniform Tsunami Signal Survey Results, February 22, 2007

Uniform Standards	Type W	Type S	Duration	Volume	Location	Protocol	Test	Re-entry	Strobe
Representative	1a	1b	2	3	4	5	6	7	8
Al Aya-Cannon Beach Fire Dist.	A	D	D	D	D	D	A	A	A
Tom Manning-Tillamook EM	D	A	A	A	A	A	A	A	A
Don Baker North-Lincoln Co.Fire	D	A	A	A	A	A	A	D	A
John Buchanan-Siuslaw Val. Fire	A		A	A	A	A	A	A	D
Wayne Stinson-Douglas EM	A		A	A	A	A	A	A	A
Steve Scibelli-North Bend Police	A		A	A	A	A	A	A	A
Jack Lenox-Coquille Tribe	A		A	D	A	A	A	A	A
Mark Metcalf-Curry Co. Sheriff	A	D	A	A	A	A	A	A	A
Robert Smith-Oregon Parks& Rec	A	D	A	A	A	A	A	A	A
Tyree Wilde-NWS Portland	A		A	A	A	A	A	D	A
Ryan Sandler-NWS-Medford	A	D	D	A	A	A	A	D	A
Totals									
Agree	9	2	9	9	10	10	11	8	10
Disagree	2	4	2	2	1	1	0	3	1