

EXHIBIT E2

# Advanced Communications Committee: Weather Warnings

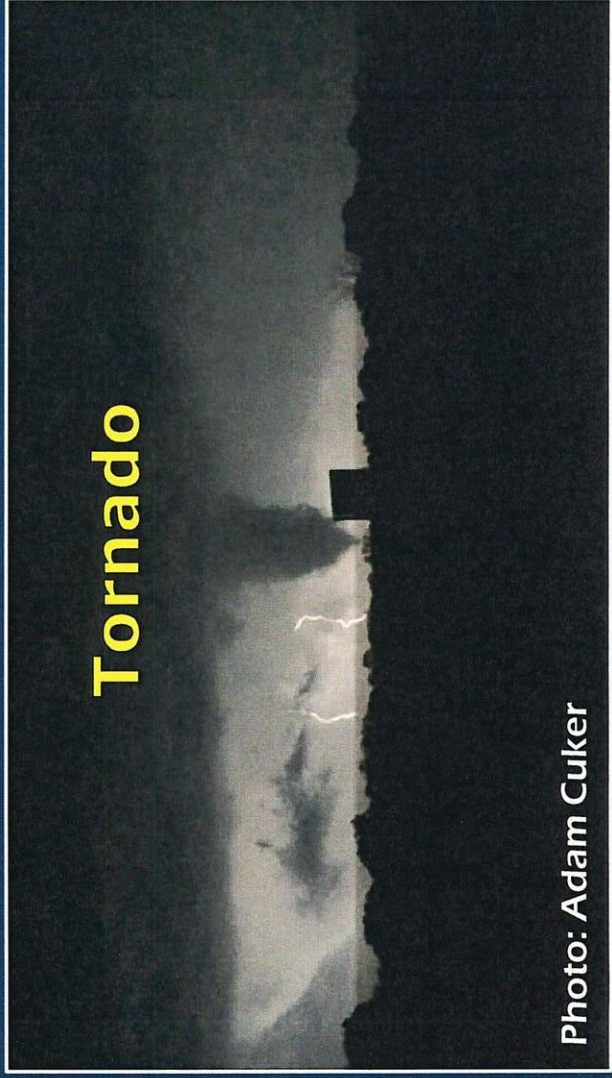
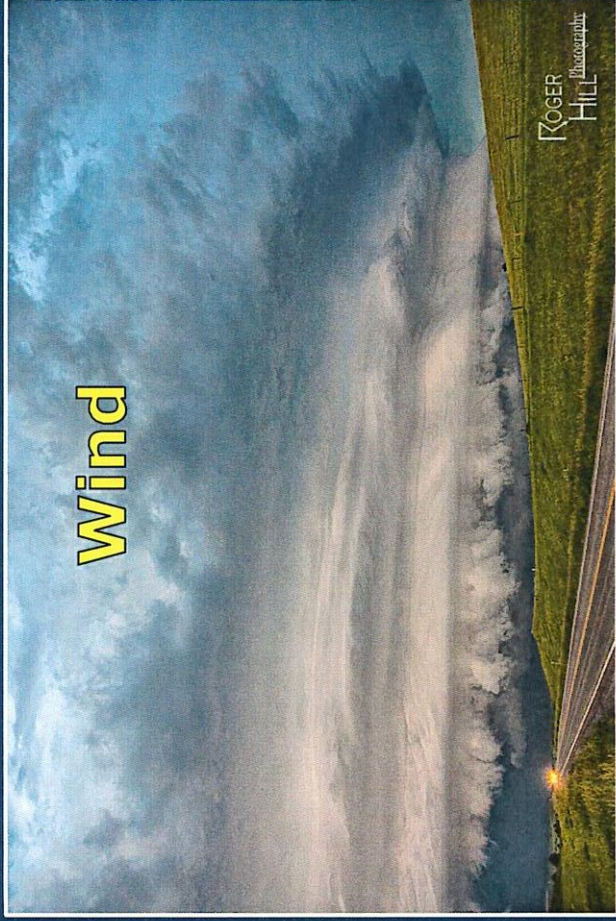
Dennis Cavanaugh  
National Weather Service Little Rock



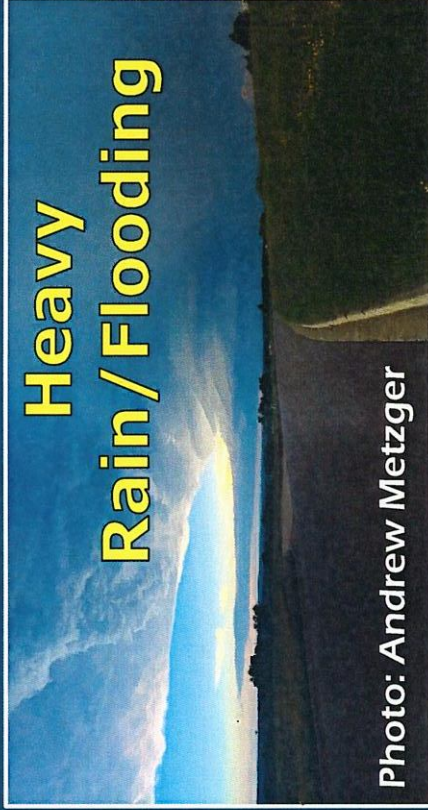
Little Rock

WEATHER FORECAST OFFICE

# Severe Storm Hazards

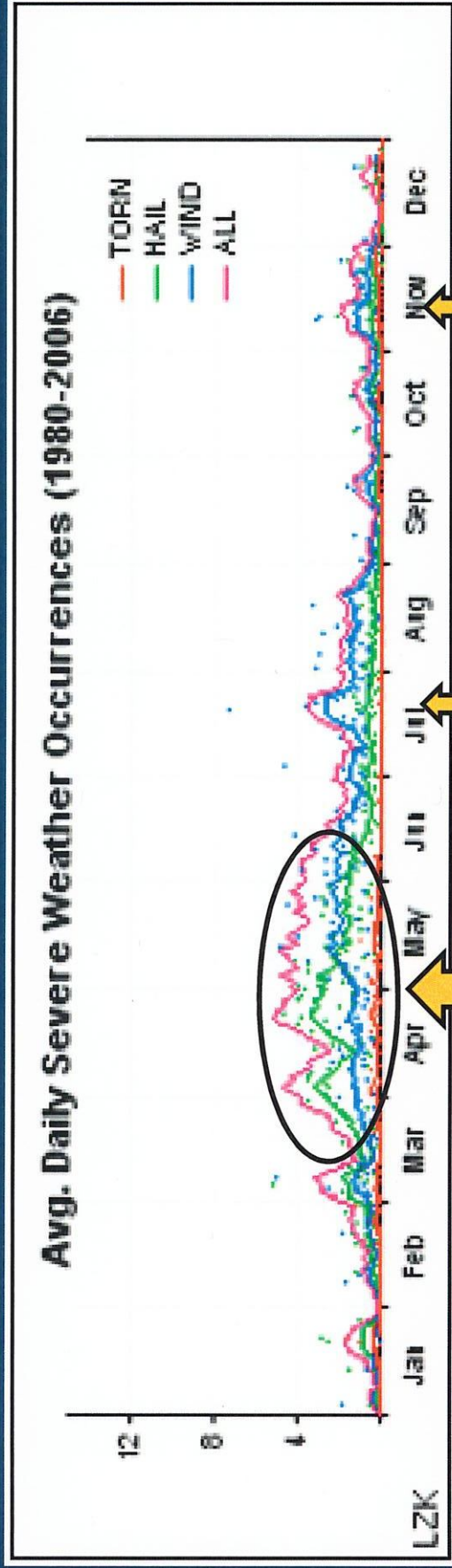


Heavy  
Rain / Flooding





# When is our Severe Storms Season?



# How Do I Know It's Coming?

# Information Available

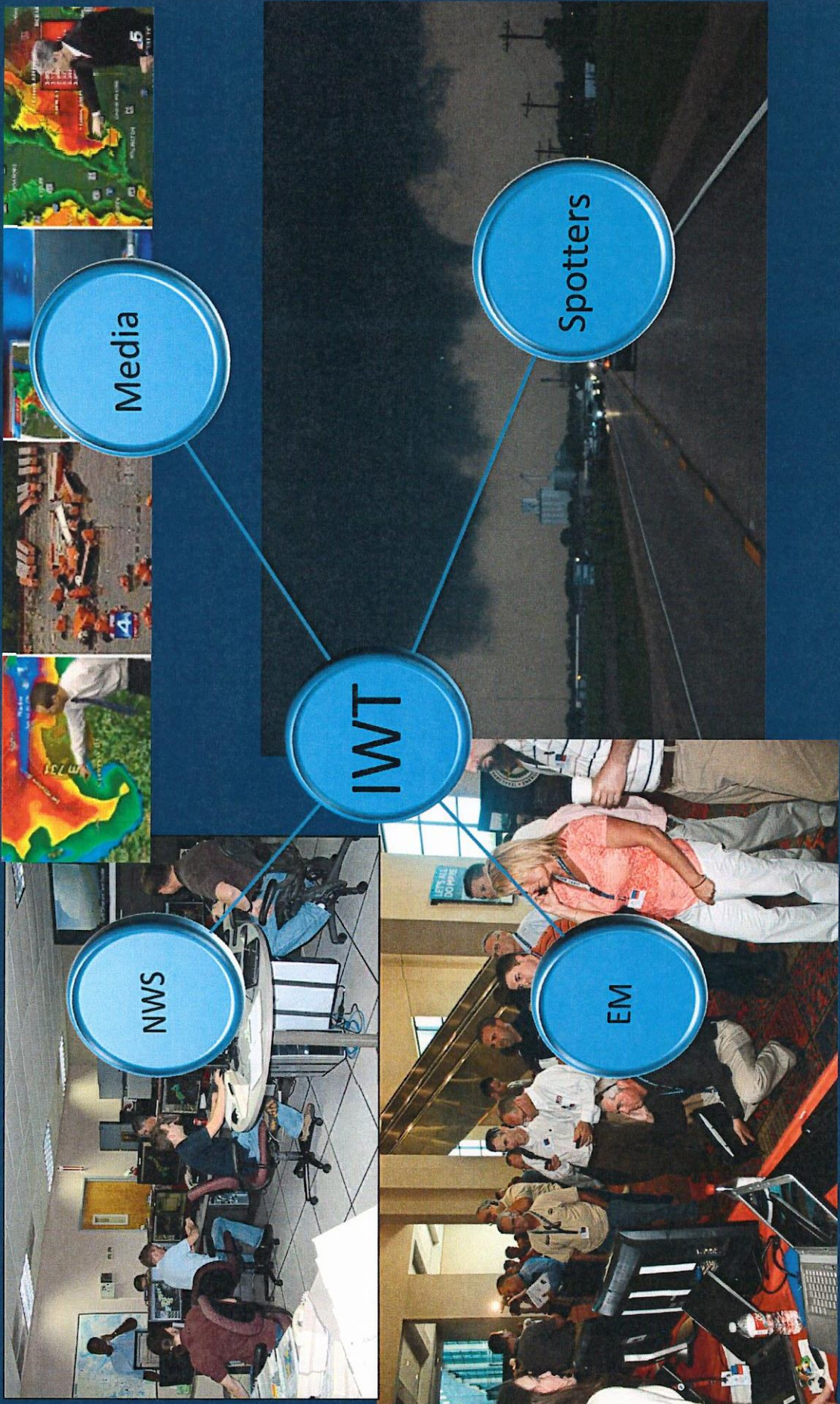
## Internal Communication

- Broadcast Media (Radio/TV)
- Open Source Radar
- Social Media
- Wireless Emergency Alerts
- Emergency Alert System
- Subscription-based alerts (ex. Code Red)
- NWS Chat
- HAM Radio- Storm Spotters
- Public Safety Radio (Police/Fire)

## The General Public

- Broadcast Media (Radio/TV)
- Open Source Radar
- Social Media
- Wireless Emergency Alerts
- Emergency Alert System
- Subscription-based alerts (ex. Code Red)
- Atmospheric Clues
- Outdoor Warning Sirens

# Greater Arkansas Integrated Warning Team



# IWT Working Together:

Communication

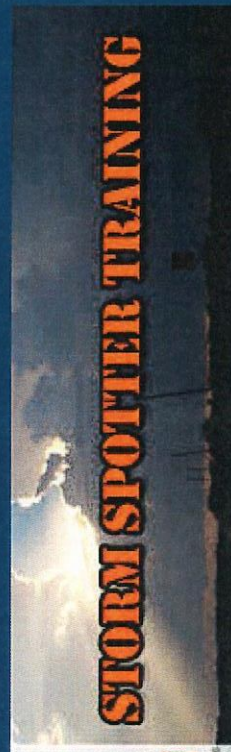
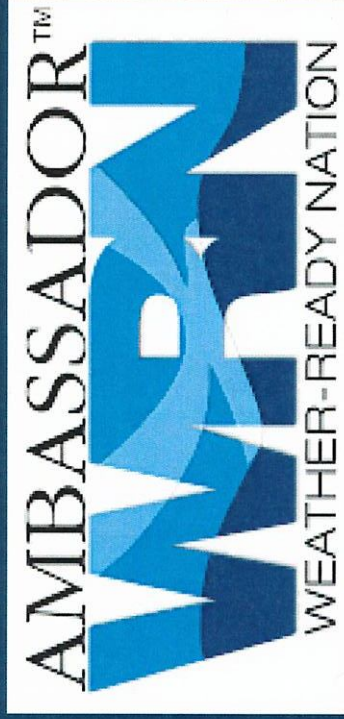
Preparedness

## Arkansas Wireless Information Network (AWIN)

### iNWS Alerts Via Text Message or Email

- Follow the link in the message for more information

The image shows a BlackBerry phone on the left with a text message that reads: "New event. Severe Thunderstorm Warning from 09/14/09 01:08 PM MDT to 09/14/09 02:00 PM MDT for SLC. http://www.nws.gov". To the right is a computer monitor displaying a weather map with a red box over the St. Louis area. Below the monitor is a yellow button with the text "iNWS". To the right of the phone and monitor is a large grey rounded rectangle containing the "NWS CHAT" logo and two cartoon figures (one blue, one green) sitting at desks with laptops.



# Warning the Public:

# NWS Warnings

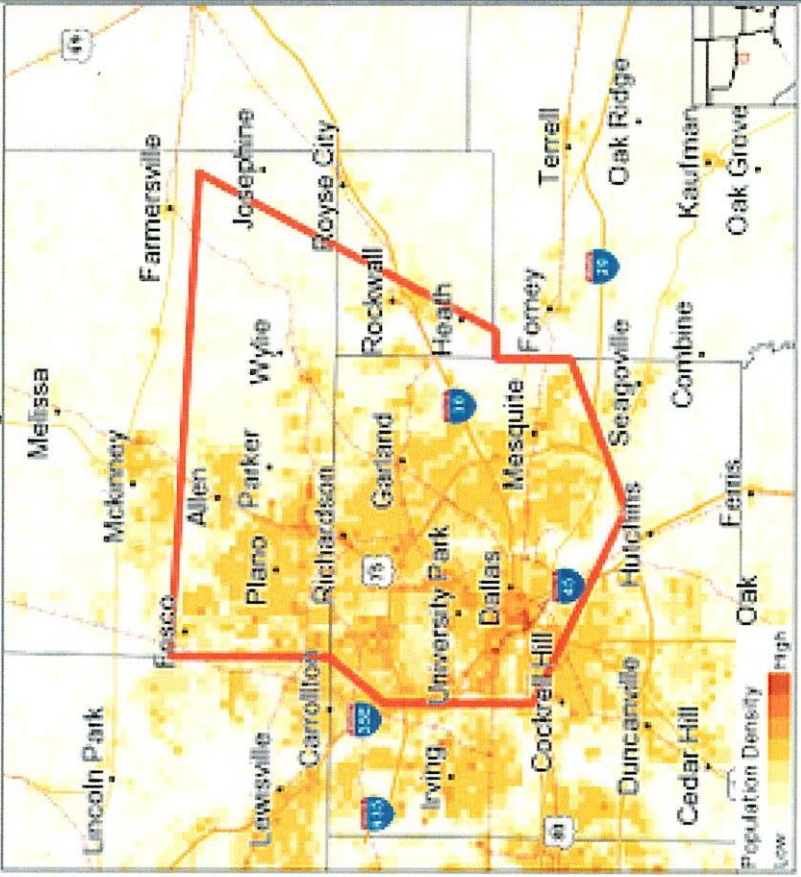
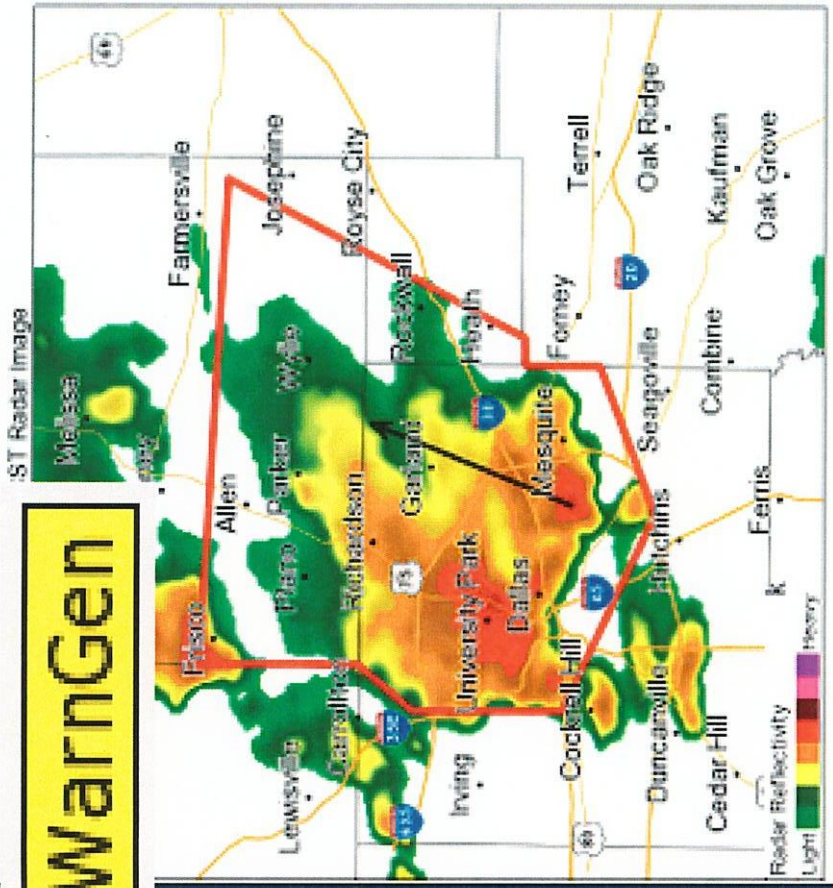


**Tornado Warning**

Valid until December 26th, 2015 at 7:30 PM CST

Created

# WarnGen



### Impact Statistics

Population: 2,265,807	Miles of interstate: 81	Public Schools: 579	Airports: 4
Area: 765 square miles	Miles of railroad: 265	Hospitals: 51	National Parks: 0

### Storm Information

Moving to the North at 45 MPH | Hal up to 1.00 inches in diameter | Tornado Radar Indicated



# Social Media

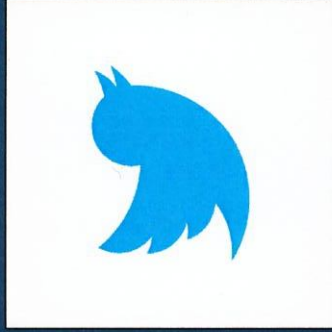
*From the NWS:  
Social Media*



Like



US National  
Weather Service  
Little Rock  
Arkansas ✓  
@NWSLittleRock

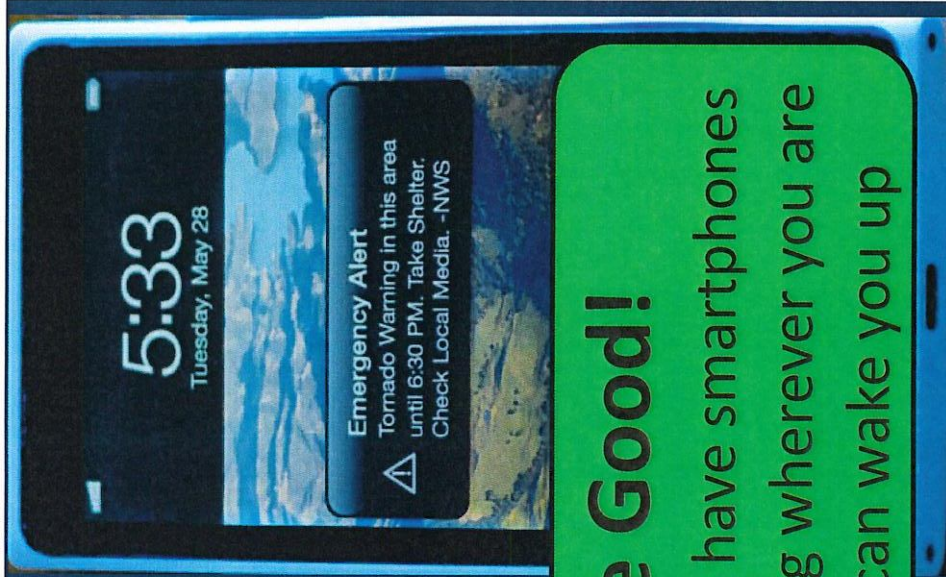


@NWSLittleRock

#ARWX



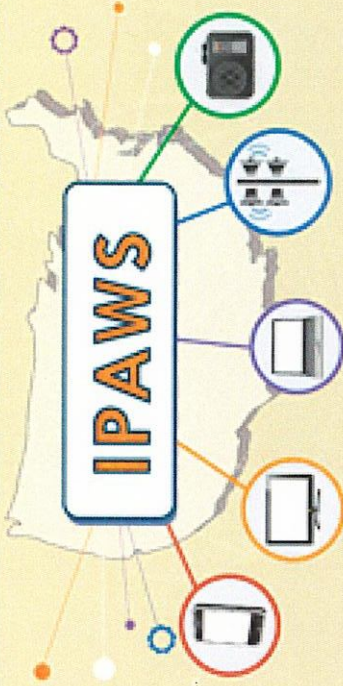
# WEA Highlights



## GET ALERTS, STAY ALIVE



Public Safety Officials create and send messages to the public through the **INTEGRATED PUBLIC ALERT and WARNING SYSTEM**



To make sure that no matter where you are, at home, at school, or work, or even on vacation, **you can get life saving alerts!**

## The Good!

Most people have smartphones  
Get a warning wherever you are  
It's loud, can wake you up

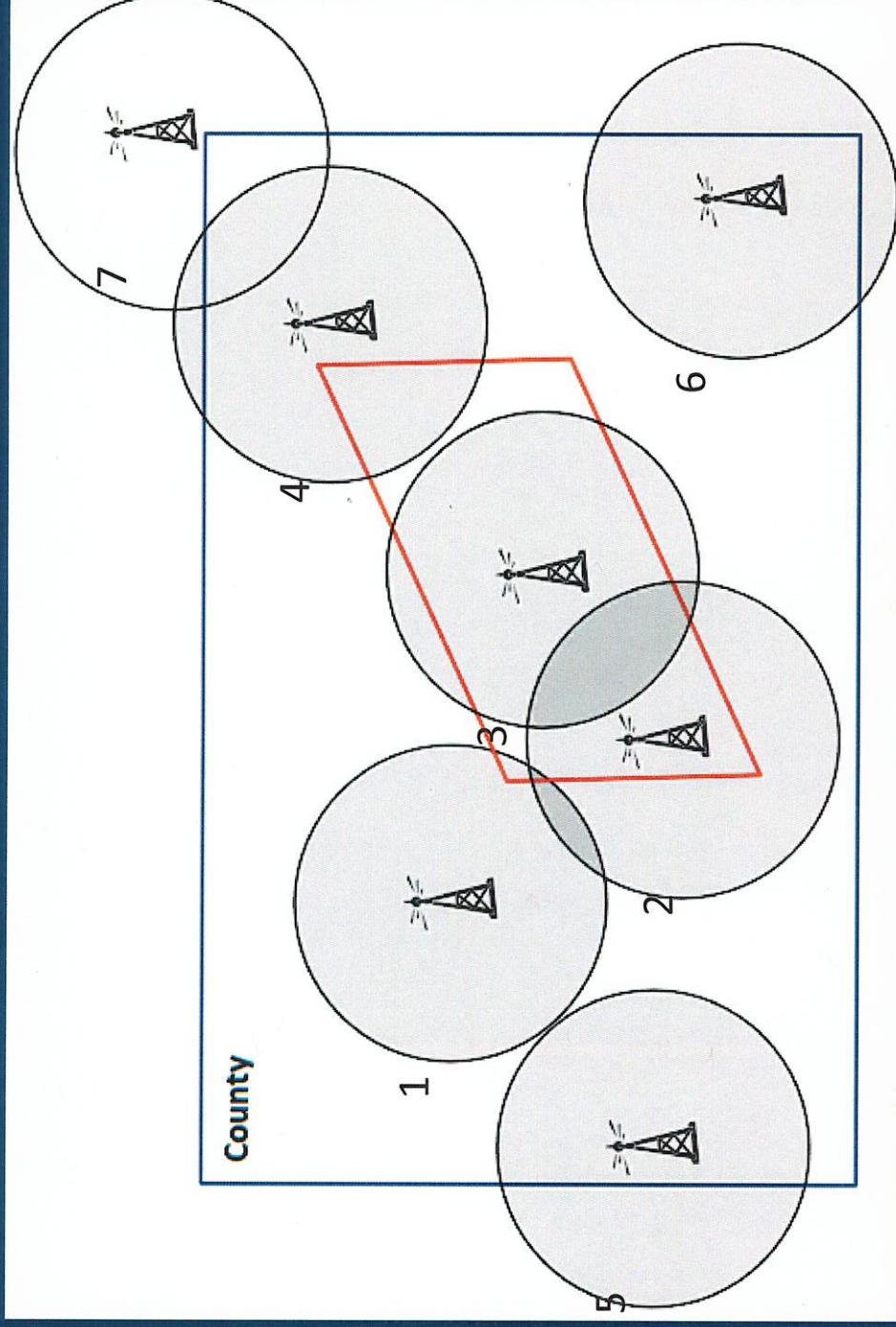
## The Limitations

You can turn alerts off forever  
Limited text → misunderstandings  
It's up to cell phone companies to decide to broadcast or not

# Carrier Targeting of the WEA Broadcast

Note: Map is not drawn to scale and is for illustrative purposes only.

**Red polygon represents a warning**



- FCC reg says carriers can broadcast to county (towers 1-6), even if alert only at sub-county level
- As of 2/7/13, all major carriers target sub-county (a good thing) when sub-county alerts are issued
  - Some carriers broadcast from cell towers within sub-county alert area (towers 2 and 3)
  - Some also broadcast where signal overlaps sub-county alert area (adds towers 1 and 4)

# WEA Messages from NWS Warnings

## Extreme

## Severe

Warning Type	WEA Message
	Tsunami danger on the coast. Go to high ground or move inland. Listen to local news. -NWS
Tornado Warning	Tornado Warning in this area til hh:mm tzT. Take shelter now. Check local media. -NWS
	Extreme Wind Warning this area til hh:mm tzT ddd. Take shelter NWS
	Hurricane Warning this area til hh:mm tzT ddd. Check local media and authorities. -NWS
	Tsunami Warning this area til hh:mm tzT ddd. Check local media and authorities. -NWS
Flash Flood Warning	Flash Flood Warning this area til hh:mm tzT. Avoid flooded areas. Check local media. -NWS
	Dust Storm Warning in this area til hh:mm tzT ddd. Avoid travel Check local media. -NWS

### Legend

tzT = timezone  
ddd = three letter abbreviation  
for day of the week

\*WEA activated for Tsunami Warnings when Tsunami Watch or Tsunami Advisory not previously in effect.

# Warnings from Apps



FEMA

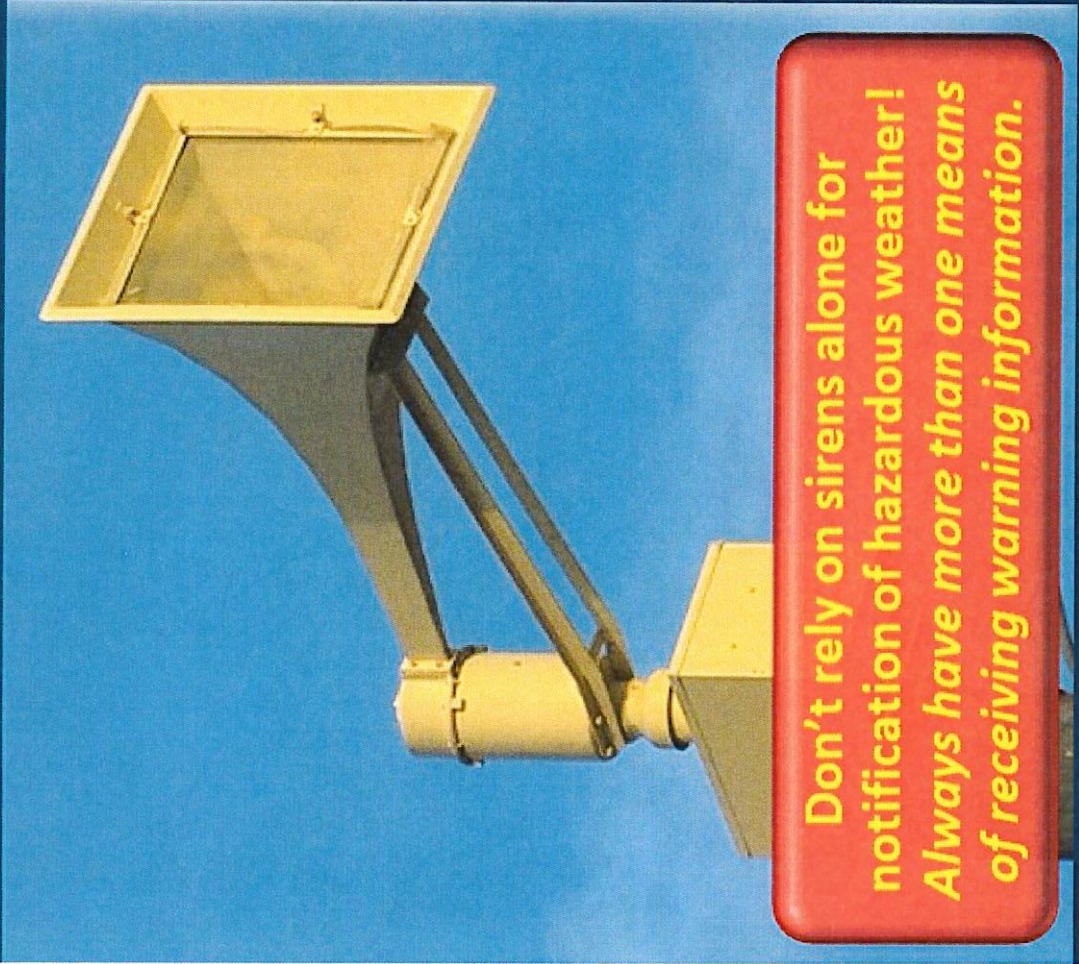
Red Cross

TV Stations

Private Weather  
Companies

NWS is not allowed to  
develop an app

# Outdoor Warning Siren Misconceptions



**Don't rely on sirens alone for notification of hazardous weather!  
Always have *more than one means* of receiving warning information.**

Only designed to be heard **INDOORS**

NWS has **NO** control over siren activation or policy

Siren policy often varies quite a bit from place to place

# City of Little Rock Outdoor Warning System Proposed Design Layout

## Summary of Design

When evaluating the City of Little Rock's existing warning system, SafetyCom/Carter & Burgess reviewed data from potential sites, and utilize GIS analysis to provide a complete system design.

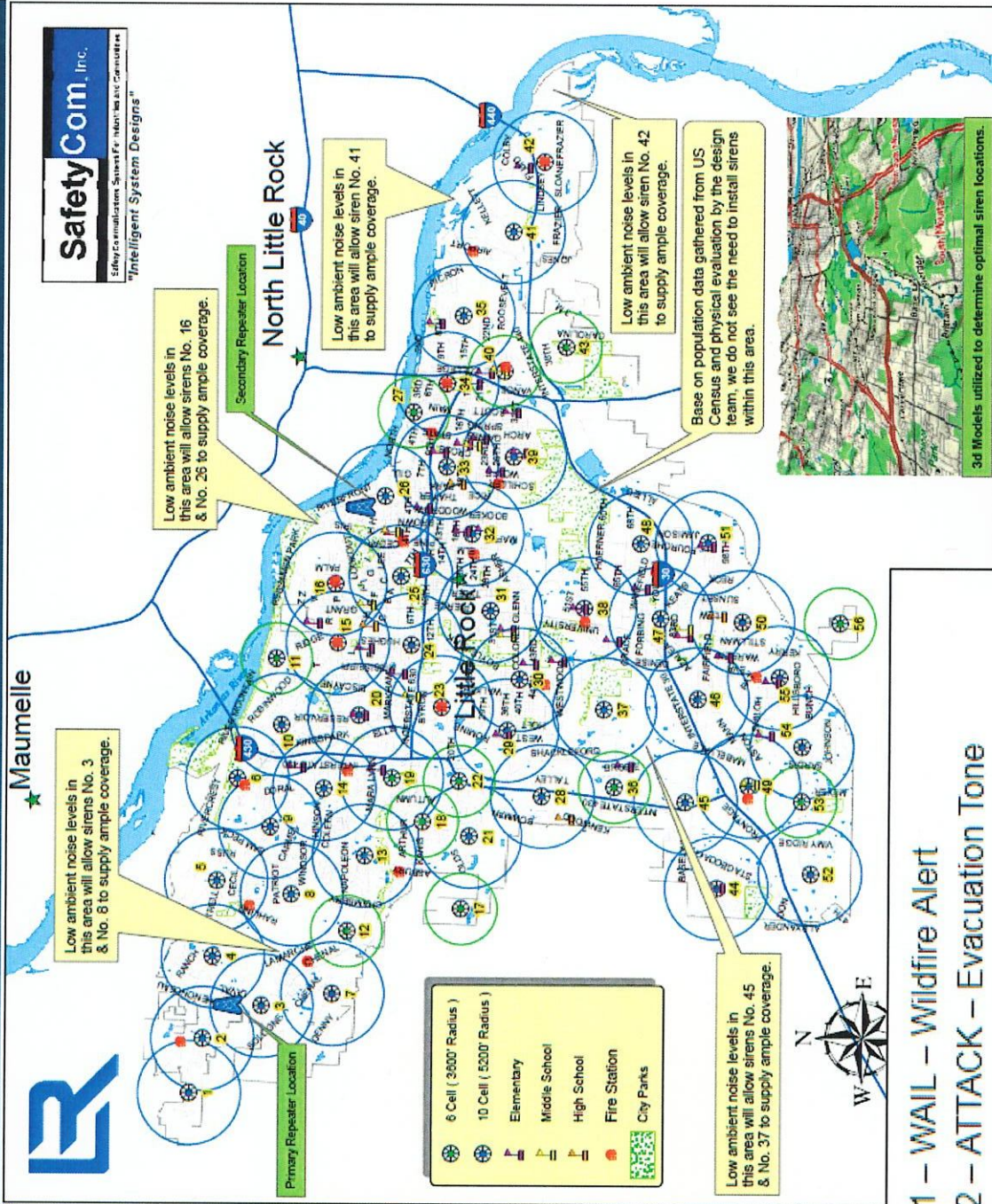
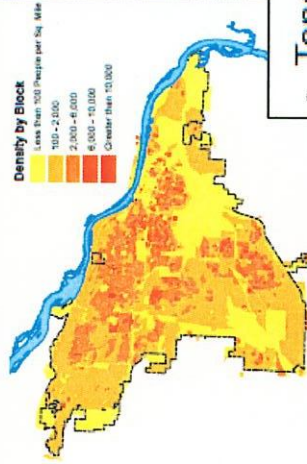
Design Criteria for evaluating the existing warning system and system recommendation:

Geographic and Topographic Aspects at proposed locations.  
Population Density at proposed locations.  
Ambient Noise at proposed locations.  
GIS data and USGS contour models.

Recommended sirens based on this design.

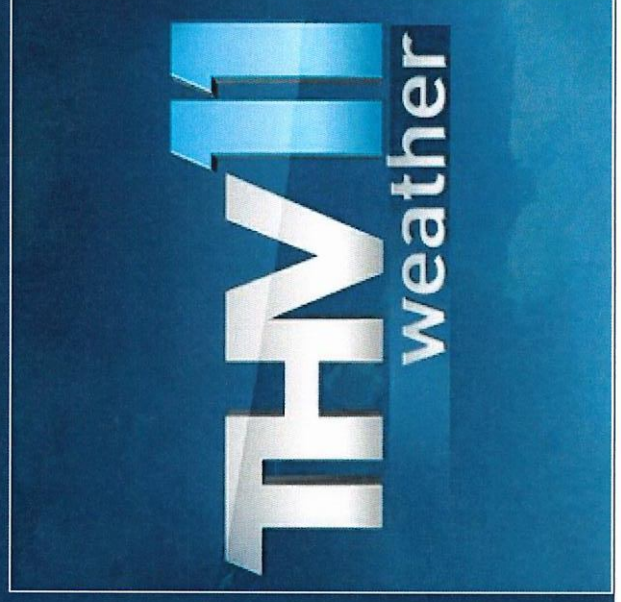
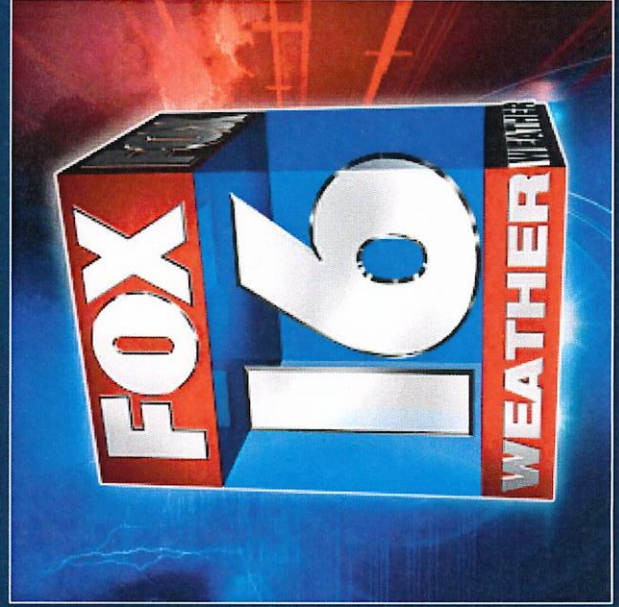
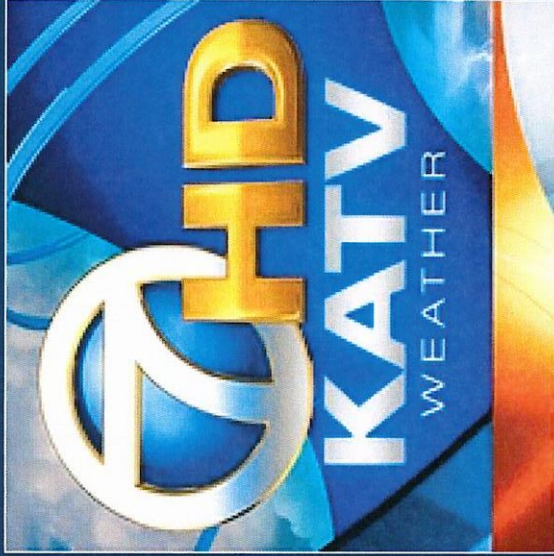
- Ten Cell = 45 each
- Six Cell = 11 each
- Total number of sirens = 56

Population density coverage taken from 2000 Census Data



- Tone 1 – WAIL – Wildfire Alert
- Tone 2 – ATTACK – Evacuation Tone
- Tone 3 – ALERT – Tornado Warning
- Tone 4 – HI/LO – Hazardous Materials Incident
- Tone 5 – AIR HORN – All Clear
- Tone 6 – SLOW WHOOP – Test

# Local TV Stations



# Takeaways

- We encourage the Public to have a couple of reliable ways to receive a warning
- Very few high impact severe weather events actually occur without warning
- When you get a warning, have a plan in place so you know what to do quickly (preparedness)

# Questions? Contact Us!

US National Weather Service Little Rock

[@NWSLittleRock](https://twitter.com/NWSLittleRock)

501.834.0308

[www.weather.gov/LZK](http://www.weather.gov/LZK)



E-mail:

[Dennis.Cavanaugh@noaa.gov](mailto:Dennis.Cavanaugh@noaa.gov)

# Tornado Safety/Sheltering

Get to an approved storm shelter!

Get **BELOW** GROUND level!

Get inside a house with a solid foundation!

Get to the lowest floor, internal room!

If air can get **UNDER** you or your shelter, **IT IS NOT SAFE!**

**General Rule: Put as many walls as possible between you and the tornado!**

