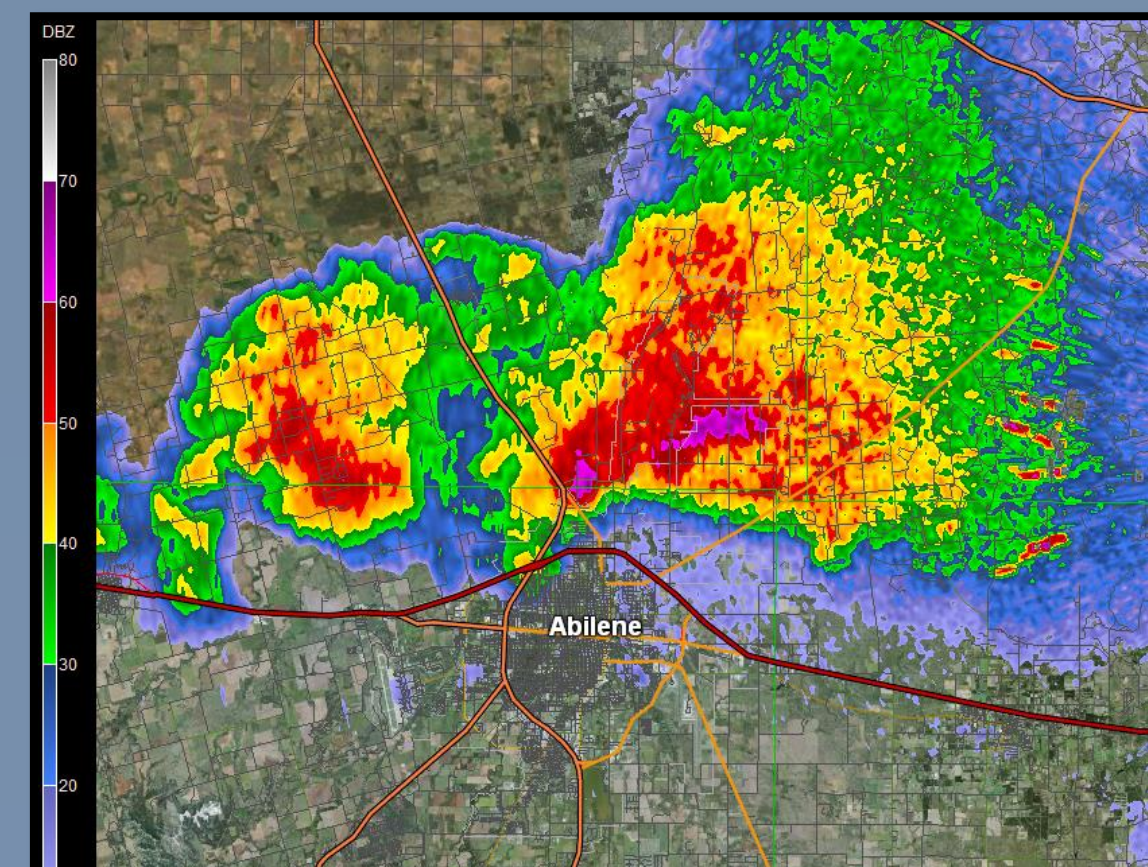


Public Reaction to Impact Based Warnings During an Extreme Hail Event in Abilene, Texas

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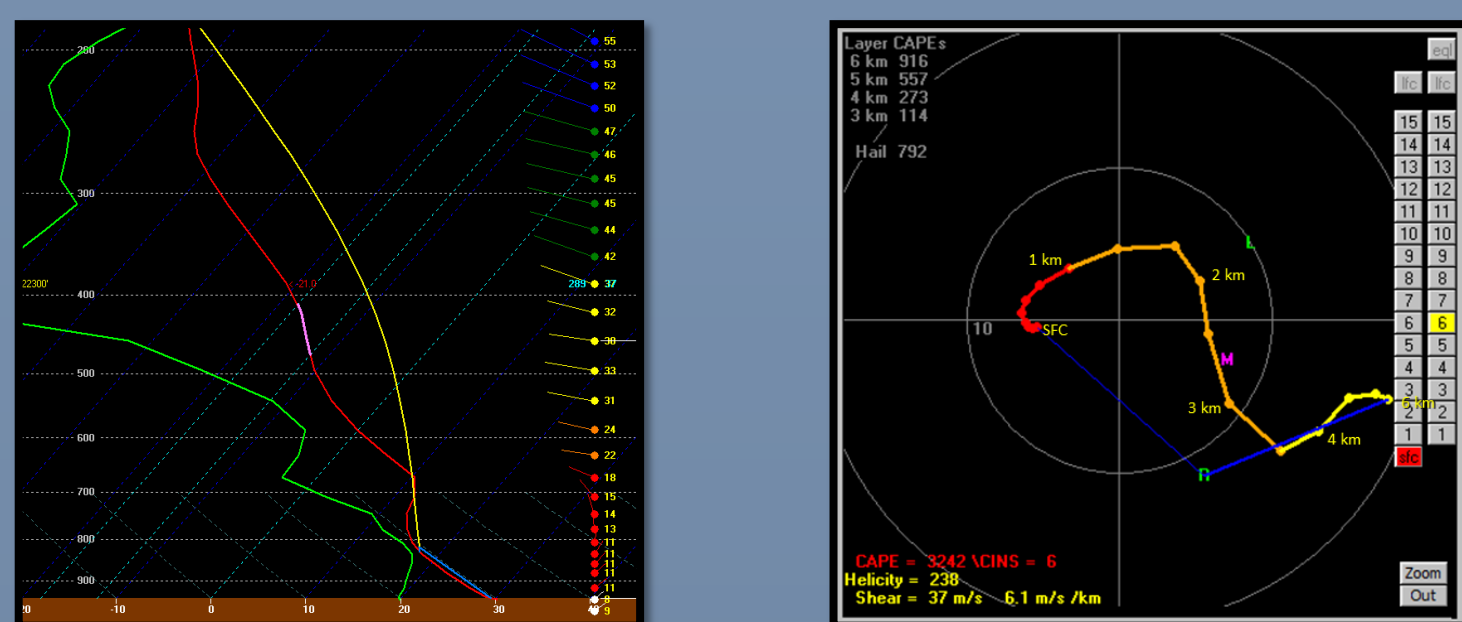


Mature supercell approaching Abilene, TX.

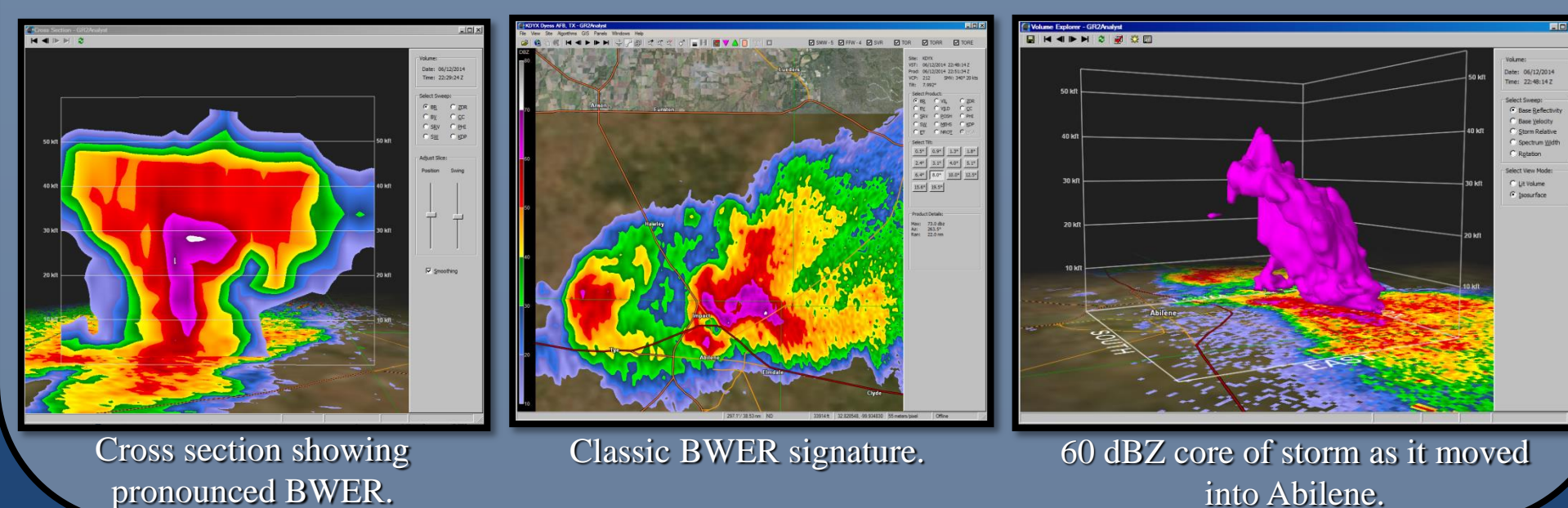
Storm was producing baseball size hail and damaging winds as it moved into the city of 117,000 residents.

The city of Abilene has no outdoor warning system.

Strong instability (SBCAPE values of 3000-4000 J/kg) and wind shear (50 kts of effective shear) resulted in an environment conducive for supercells. Hail up to 4.75" in diameter and wind gusts exceeding 60 mph were reported in Abilene, TX.



A textbook bounded weak echo region (BWER) was observed as the storm approached Abilene. The presence of this BWER coincided with the first reports of baseball size hail north of the city.



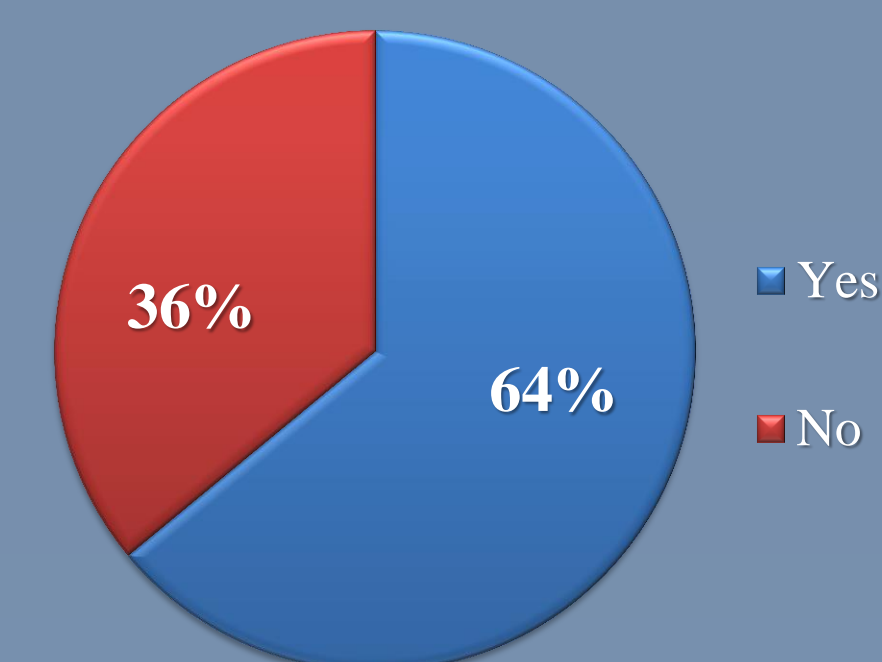
Cross section showing pronounced BWER.

Classic BWER signature.

60 dBZ core of storm as it moved into Abilene.

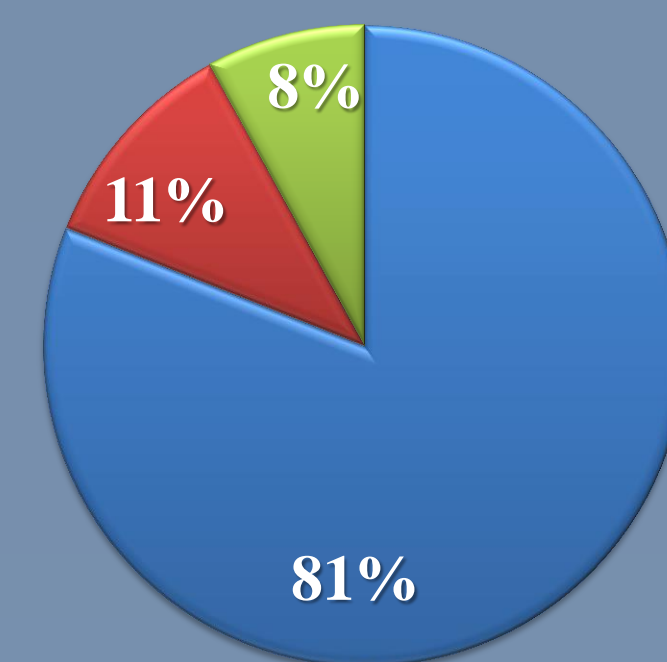
Survey Results: 324 respondents

Did you receive warning of severe weather prior to the severe weather event?



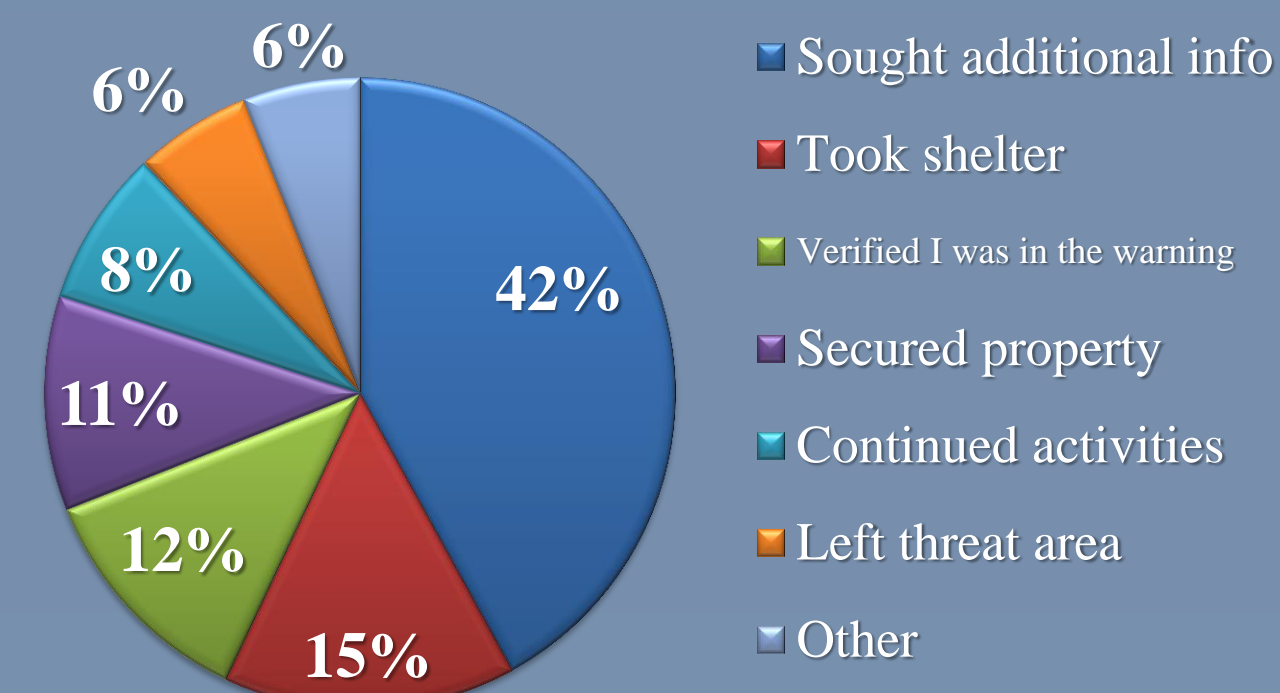
■ Yes
■ No

Based on your understanding of the National Weather Service's severe thunderstorm warnings, how likely are you to take protective action?



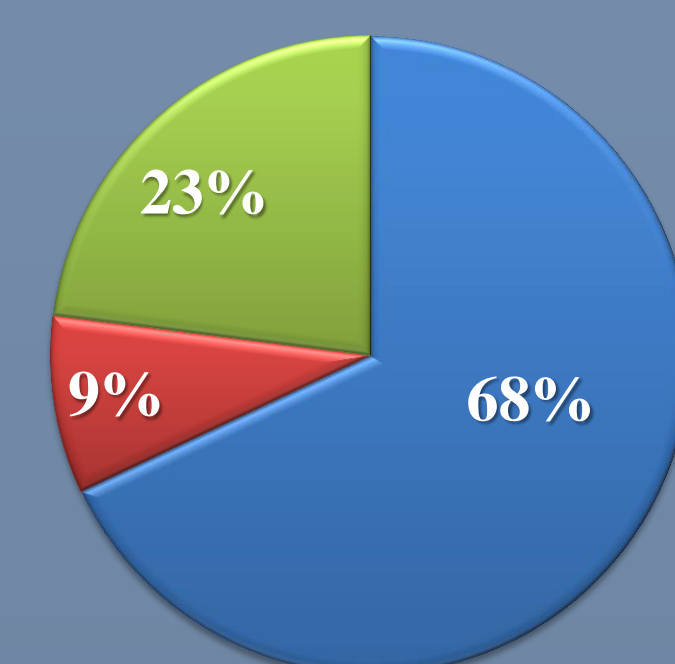
■ Likely
■ Undecided
■ Unlikely

Which of the following actions was the first action you took when you received the severe thunderstorm warning?



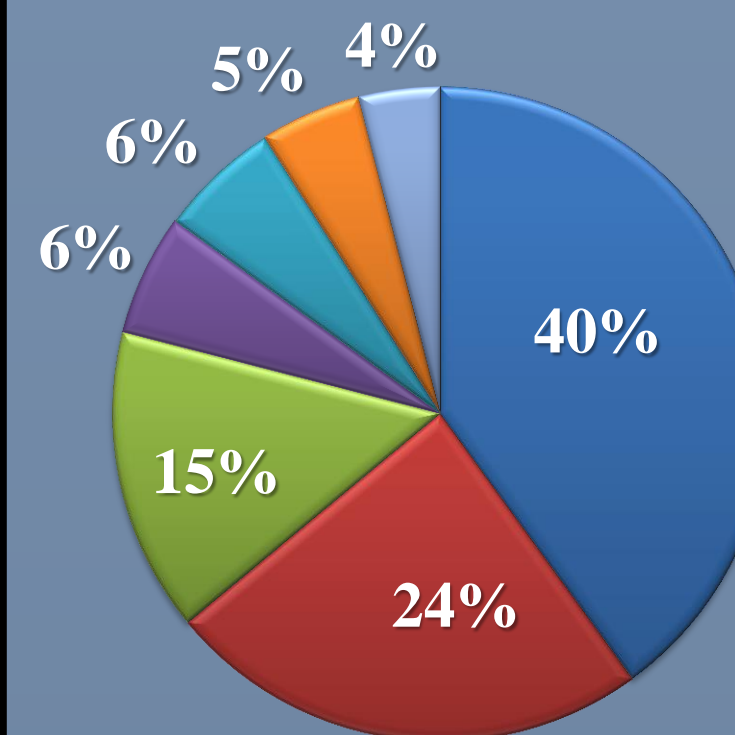
■ Sought additional info
■ Took shelter
■ Verified I was in the warning
■ Secured property
■ Continued activities
■ Left threat area
■ Other

Degree in which the information or services received explained the severe thunderstorm threat and expected impacts (Impact Based Warning IBW)



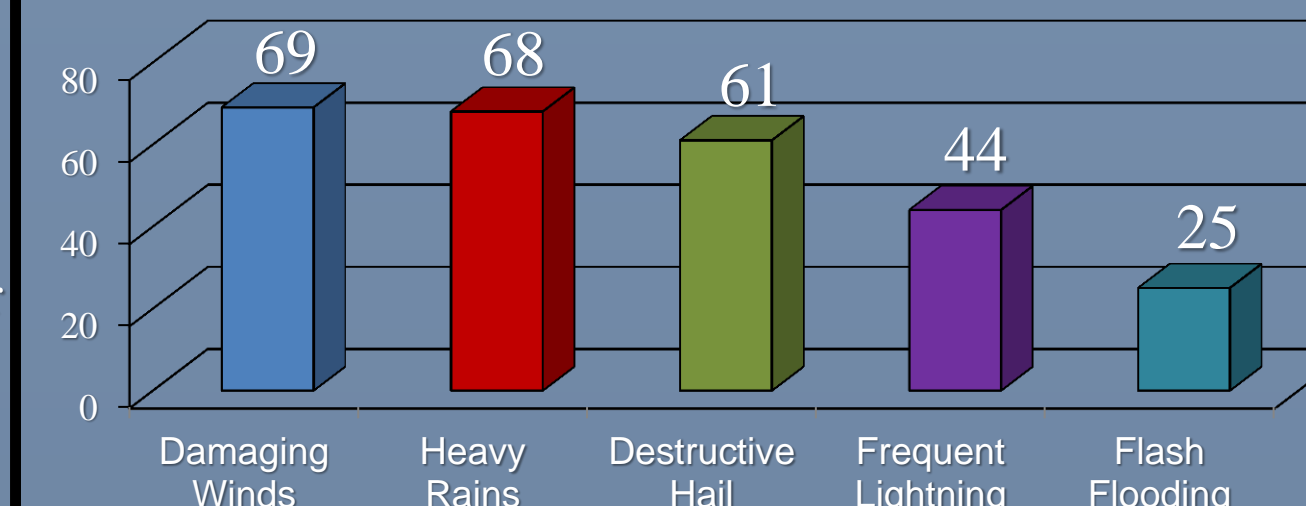
■ Satisfied
■ Neither
■ Dissatisfied

What led to your decision to seek shelter during the severe thunderstorm warning?



■ Threatening weather was visible
■ The severity of the storm mentioned (IBW)
■ Other sources confirmed the danger
■ Typically take cover after warning
■ Other

Based on the information you were given, what did you feel the threat(s) from the Severe Thunderstorm would be? (Values represent percentages of 209 respondents)



Primary source of hazardous weather information (top 3):

1. Local broadcast media
2. Internet (websites and social media)
3. Cell phone apps

Impacts included in the updated Severe Thunderstorm Warning

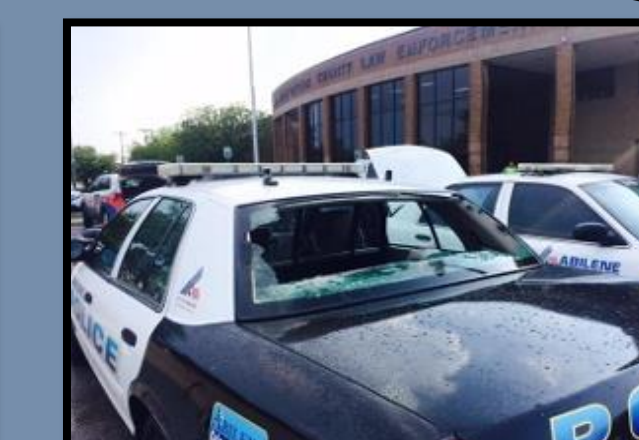
"YOU ARE IN A LIFE THREATENING SITUATION. FLYING DEBRIS MAY BE DEADLY TO THOSE CAUGHT WITHOUT SHELTER. MOBILE HOMES WILL BE HEAVILY DAMAGED OR DESTROYED. HOMES AND BUSINESSES WILL HAVE SUBSTANTIAL ROOF AND WINDOW DAMAGE. EXPECT EXTENSIVE TREE DAMAGE AND POWER OUTAGES."



Courtesy: KTXS TV



Courtesy: KTXS TV



Courtesy: KTXS TV



Courtesy: Edgar Reed



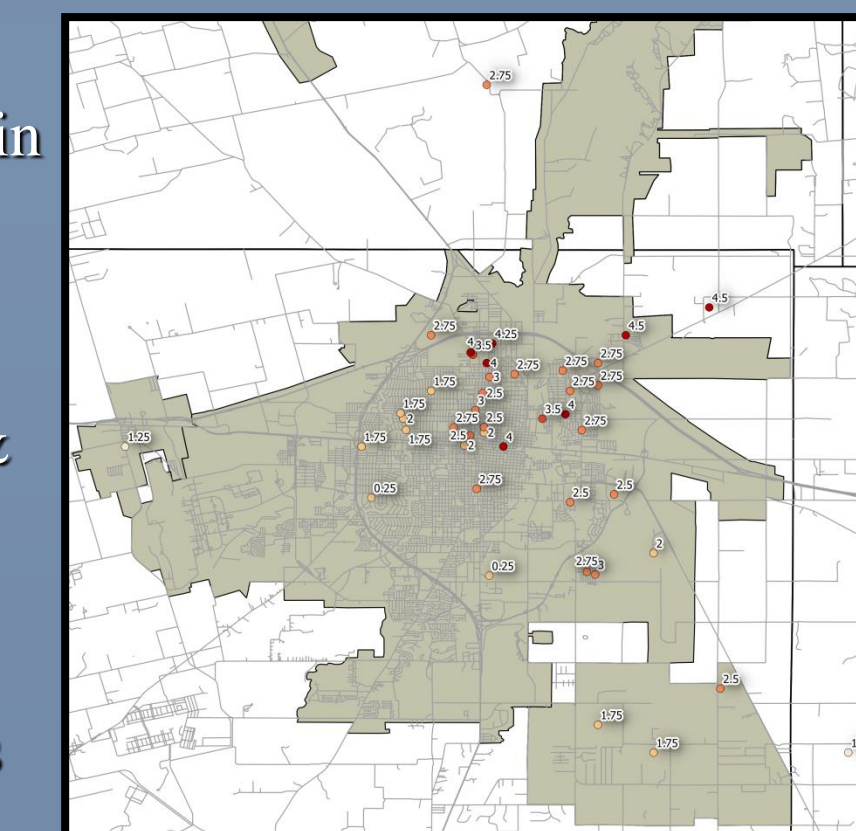
Courtesy: Mike Hamernik



NWS Damage Survey

Highlights:

- Warning lead time of 25 minutes in north Abilene; 35 minutes for the downtown area.
- Several thousand patrons were downtown at the Children's Art & Literacy Festival parade.
- Widespread roof, vehicle, and window damage was reported. There were several minor injuries and damage was estimated at \$400M.



Recommendations:

- 1) Enhance warning dissemination to everyone, anytime, anywhere (Wireless Emergency Alerts).
- 2) Title warnings with basic weather terms, not definitions (e.g. Destructive Hail Warning).
- 3) Paint a clearer picture of personal impacts to prompt action (Impact Based Warnings).