Operational Challenges

Moderator: Lisa Teel
University of Oklahoma

Daphne LaDue
– University of Oklahoma

James Bell
– ASSA ABLOY

Genaé Raines-Wilkerson
– City of Birmingham, AL

Experiences and Practices With Public Tornado Sheltering in Alabama

Dr. Daphne LaDue
Kara Manning

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About This Data

- Culled from 64 hrs of interviews & meetings
- 84 EMs, deputies, officers, GIS specialists
  - Mostly county level, a few university or regional

Research goals:
1. Understand how n AL EMs deal with uncertainty in severe weather forecasts
2. Capture & map spatially specific vulnerabilities (tornadoes, flooding, winter, and wildfire)

Public Tornado Shelters

Many have been installed after April 27, 2011, with FEMA Hazard Mitigation Grant funds, 75-25% FEMA-local match.

About 150 people were inside this 60-person capacity shelter when it was hit during Maplesville, AL, 2012 Tornado

Some state funding: EM61: The state of Alabama gets about $500,000 a year...they want community shelters built, which...cost around $100,000 a piece, so that's only five shelters across the state of Alabama. It's sad, but you hear about got to get hit the year before to get [given priority]...

Most tornado shelters were installed after the 2011 outbreak, in areas most affected

Public Tornado Shelters
Northern ~50 counties in Alabama
Approximate number per county
Shelters hold 40–1,200 people
96-person are the most common
Population vs. Capacity

- Example:
  - Jackson County = 52,000 people
  - Has 30 shelters; most have capacity of 96 people
  - Even if you can get 150–200/shelter in an emergency, capacity is only 8.7% of population

<table>
<thead>
<tr>
<th>Population Range</th>
<th># of Shelters</th>
<th>Highest %, People That Could Shelter*</th>
</tr>
</thead>
<tbody>
<tr>
<td>8,000–19,000</td>
<td>0–18, median 2</td>
<td>17%, Fayette Co.</td>
</tr>
<tr>
<td>20,000–45,000</td>
<td>0–23, median 10.5</td>
<td>13%, Pickens Co.</td>
</tr>
<tr>
<td>50,000–119,000</td>
<td>0–35, median 14</td>
<td>9%, Jackson Co.</td>
</tr>
<tr>
<td>162,000–660,000</td>
<td>0–20, median 9</td>
<td>2%, Tuscaloosa Co.</td>
</tr>
</tbody>
</table>

*Serves 150 capacity

Schools as Shelters?

- Schools Built After the 2011 Outbreak
  - New schools are required to have shelters
  - Generally high capacity: 1,000–1,200 people
  - But are these available to the public?

EM38: If we had another build up like April 27th then I'd be calling all them and saying you need to cancel school, you need to open the shelter...
Locating Community Shelters

- Some cities have installed them
- Throughout county, often at Volunteer Fire Department Sites
- Many Pros:
  - Counties may already own the land
  - VFDs take responsibility for opening, staffing
  - Usually there to check, prep equipment
  - Distributes shelters across a county
- Cons:
  - But not all counties own the land
  - Who is responsible for maintenance?
  - EM42: county can’t maintain something on 501c3 property
  - In some counties each VFD is its own 501c3!

Staffing, Opening

- Eastern portions of a CWA might be in a watch for longer periods of time
  - do the shelters open at the watch or afterward?
  - if at the watch, is a volunteer “stuck” there for several hours prior to when storms arrive?
    - e.g., the University EM who has to provide staffing to the building that serves as a shelter
  - One EM mentioned that a city shelter does not open until a warning is issued(!)
- Q: Is there an optimal way to manage shelter opening re: storm arrival? (not all storms “arrive”; some will form nearby?)

Location and Staffing: Non-Trivial Problems

**EM40:** “Our county has shied away from doing community shelters because community shelters, first you have to pick which community you’re gonna put it in, and then who’s gonna close it, who’s gonna manage it, who’s gonna maintain it. So, we’ve encouraged moving more towards individual shelters.”

**Community Shelters** vs **Individual Shelters**

<table>
<thead>
<tr>
<th>Community Shelters</th>
<th>Individual Shelters</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 More common in lower population counties</td>
<td>1 More popular in larger population counties</td>
</tr>
<tr>
<td>Funding: FEMA sometimes community or church raises funds</td>
<td>Funding: FEMA (no info on how many self-fund)</td>
</tr>
<tr>
<td>Administration is part of the job</td>
<td>Significant administrative overhead to manage</td>
</tr>
<tr>
<td>Lessons learned on:</td>
<td>Keep list of homeowners; call next in line</td>
</tr>
<tr>
<td>- considering maintenance</td>
<td>- Called paperwork</td>
</tr>
<tr>
<td>- management</td>
<td>- Set deadlines</td>
</tr>
<tr>
<td>- open areas</td>
<td>- Finish filing and/or move on to next</td>
</tr>
<tr>
<td>Locations: fire departments (most common), churches</td>
<td>Locations: private homes/land</td>
</tr>
</tbody>
</table>

**FEMA 361 vs. Safer Places vs. Unknown Safety:**

- No parallel info

**Problems:**

<table>
<thead>
<tr>
<th>Community Shelters</th>
<th>Individual Shelters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concern about liability during travel to/from shelter</td>
<td>No concern about liability during travel to/from shelter</td>
</tr>
<tr>
<td>Who will open, monitor use?</td>
<td>No concern about who will open/monitor use</td>
</tr>
<tr>
<td>Metal ones rust, mold, mildew, must be repaired</td>
<td>No need to repair/maintain</td>
</tr>
<tr>
<td>Dealing with animals</td>
<td>No need to deal with animals</td>
</tr>
</tbody>
</table>

**Can Be Problematic:**

- Adequate budget?
  - Dual use shelters outside normal hours may require paid staff to open, manage
- Commissioners
  - May not be as willing to help after being voted out

**EM40:** “Their commissioners [will] open it up [and] close it, ... [but] as soon as he gets voted out, ... [he says], “I’m not opening it.” Now you’ve got to find somebody else committed to going over there. EM40: if you leave it open all the time what’s it gonna turn into?”
Managing Individual Shelter Programs

- Took one county 7 years to complete
  - feel they have “a pretty good system”
  - waiting list of 193
  - when funds available, next person is given 30 days to turn in paperwork
  - they have completed 200-300 so far
- managed through state EMA
- Significant Administrative Overhead
  - quarterly reports
  - multiple grant cycles
- Numbers unclear: mentions of 1, 12, 300; approx. 9 (of 48) counties participating

Considering Unique Vulnerabilities

- Many university towns w/ students in “build-and-burn” apartment complexes or manufactured housing

Dual Use Shelters

Several counties are starting to prioritize dual-use shelters.

Cost can be similar, but climate controlled and maintenance is built into the operations plan of its regular use.

EM14 is an advocate of doing sheltering this way now.

Finding Shelters:

EMA or Other Local Map

Safer Places are not FEMA-approved.

This EMA office has mutual aid agreements with the churches and other entities.

These are to be used as a last resort.
Finding Shelters:
EMA or Other Local

Finding Shelters:
Google Maps, Unknown Author

So Many Potential Problems

- No tornado watch
- Tornado with no warning
- Shelter isn’t open (bad press!)
- Wait too late to go... or cannot get in once there
- Shelters don’t eliminate vulnerability: some people won’t go

RegionEM: They save lives. Especially the community shelters.
EM54: Yeah, we just can’t get everybody to get in them.

Liability?

Q: Is there a need for state laws to address some of these concerns?

Specific to
Safer Place “Shelters”

EM72: We don’t have any [shelters]. ...I’m supposed to be working with [someone who said] we could get some [buildings] covered that don’t have to be maybe tornado-proof but maybe better than where you would be. Because that was a thing that the counties were concerned about. That if you’re in a building and then something happens then who’s responsible, so we’ve kind of backed away with that before-the-storm shelter kind of deal.

EM43: The legal exposure, the liability side of it. If you determine that we’re going to open it at a tornado watch, that’s going to be our process. What happens when you have a no-notice tornado warning? Who’s then liable for the people that say they were hurt because they couldn’t get in that community shelter?

Challenges in Managing Shelters

- Repainting: $4k
  - heard from one
- Mildew/mold remediation?
  - Unknown; no one mentioned how much, only that it had to be done

EM41: Some of the individual towns went and got their own person to do the grants and do the paperwork for ’em and get the community shelters. Now those folks are gone. Now there’s the upkeep. They want to paint it, they want to clean, keep it open, and now they’re calling us.

EM42: “I guess you would call them necessary evils, and they are very evil. We’ve had ‘em put in, we go through ‘em and inspect ‘em they’re already rustin’ before they’re even signed off on. A year later they’re completely rusted, they’re leaking, they’re moldy.”

EM43: “I do. I do. I mean, I completely believe in them.”