

cultivating a state of readiness

OUR RESPONSE TO APRIL 27, 2011

TORNADO
RECOVERY
ACTION
COUNCIL
of Alabama

Tornado Recovery Action Council

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Acknowledgments

GOVERNOR ROBERT BENTLEY reacted quickly to the tornado outbreak of April 27, and he continued his focused attention by proactively appointing 19 members to the Tornado Recovery Action Council. He recognized the need for a reflective look at the response to one of Alabama's worst natural disasters. Without Governor Bentley's vision, leadership, support and encouragement, this report would not have been possible. We express our most sincere thanks to him.

The Governor gave unfettered access to his staff, and their knowledge was vital to putting together this report. The Tornado Recovery Action Council would particularly like to thank Emergency Management Agency Director Art Faulkner, a constant presence at our community forums, and Alabama Department of Economic and Community Affairs Director Jim Byard Jr., whose office is overseeing the Long Term Community Recovery initiative.

Thank you to Clay Ryan, special counsel to Governor Bentley, who was instrumental in helping launch the Tornado Recovery Action Council and was a liaison between our group and the Governor's Office.

The storm system that clawed its way across Alabama on April 27 affected a broad area, from Choctaw County in South Alabama to the state's mountainous upper regions, from the border of Mississippi to the Georgia line. Likewise, the Tornado Recovery Action Council received input from hundreds of people who work and live across our state, including emergency response officials, nonprofit leaders, educators and meteorologists.

We give a special thanks to the communities that welcomed us and helped host our public forums; to the people we interviewed who were generous with their time and expertise; to Birmingham News Multimedia for its help with report production and distribution, including access to a library of captivating photography; and to Protective Life for project management support and use of office space.

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Introduction

THE SIGN AT HACKLEBURG United Methodist Church carried such a simple message after so much loss: “God Bless Our Town.”

The April 27 storm system that tore through Alabama, taking with it 248 lives and leaving paths of destruction, was remarkably cruel to Hackleburg.

Eighteen lives lost.

The Hackleburg Elementary and High schools destroyed, along with the town’s largest employer, a Wrangler distribution center.

A downtown left mostly in rubble.

We could understand, then, if several months after the storm, Hackleburg’s residents were singularly focused on the immediate needs of their recovery.

We could understand if some wanted to give up on the town. Truth be told, like much of rural Alabama, Hackleburg struggled before the tornado.

But this was, and is, *their* town. And when a team from the Tornado Recovery Action Council visited on the evening of Sept. 13, what we found was even more defining than the winds that uprooted their community.

Hackleburg was determined to build back, and to build back better.

To be sure, residents understand the challenges they face. They are realistic.

Their needs seem basic — a grocery store and a restaurant — and at the same time visionary and complex — jobs and a strategic plan. This is a town determined not to wilt away.

Across the state, from Tuscaloosa to Rainsville, from Lake Martin to Pratt City, the Tornado Recovery Action Council found communities eager to rebuild a stronger Alabama.

The process

We began our journey on Aug. 29 in Clanton, when Gov. Robert Bentley announced his appointment of 19 civic, community and business leaders to the Council.

“We pray that no disaster in our time or any time in the future will mirror the storms that tore across our state in April,” Gov. Bentley said. “But by deepening our understanding of this tragedy and its effects, we can improve our ability to prepare for and respond to a broad range of potential disasters here in Alabama and help inform leaders in other states who might face similar challenges.”



Joe Songer/*The Birmingham News*
Pam Siddall, president and publisher of Birmingham News Multimedia, and Johnny Johns, president and chief executive officer of Protective Life, speak at the Alabama Emergency Operations Center in Clanton on Aug. 29 shortly after Gov. Robert Bentley announced the creation of the Tornado Recovery Action Council.



Daniel Giles/TimesDaily

Caroline Yeilding, a project manager with Clarus Consulting Group, takes notes as residents give their thoughts during a Sept. 13 meeting hosted by the Tornado Recovery Action Council in Hackleburg. At seven community meetings across the state, TRAC asked residents how they were warned about the storms, what they thought of the response and which direction they wanted to see their communities take for the future.

Our mission was clear: Document what happened that day; determine what went right and what could have been done better; and propose solutions not only to promote a recovery, but also to improve preparation for future disasters by addressing vulnerabilities exposed by the storms.

We did this several ways. First, we visited areas of our state that were directly affected. With the help of Birmingham-based Clarus Consulting Group, the Council held community forums at seven locations across the state: Rainsville, Hackleburg, Tuscaloosa, Hanceville, Pratt City, Lake Martin and Shoal Creek Valley.

We asked residents and community leaders how they were warned about the storms, what they thought of the response and which direction they wanted to see their communities take for the future. Their feedback was invaluable.

We also heard from people through our website, tracalabama.org, and through the members of our Council.

Second, we met with Gov. Bentley's Cabinet members to solicit their reactions to how the state performed and their ideas about what they might have done differently. Information gathered from them, and from people who attended the community forums, can be found in the Clarus reports at the back of this book. Those reports provide an unedited version of what they had to say.

Third, we sent our team of researchers and writers out to interview weather experts, nonprofit leaders, response coordinators, building officials and others — anyone who might be able to offer insight and input as we prepared our report.

The outcome

Hundreds of hours of research culminated in the document before you today, featuring 20 recommendations approved by our Council and delivered to you in four chapters: Prepare, Warn, Respond and Recover.

Throughout, the people we talked to built the foundation for this report. They were more than accommodating — from residents who welcomed us into their communities to state officials who lent us their time — and we cannot thank them enough.

Gov. Bentley should be commended for recognizing the importance of an independent review. He was supportive, gave unparalleled access and allowed us to work without interference.

So what did we learn from April 27? How can we not only heal our state but also be better prepared the next time we face dark clouds?

First, we should say there's plenty that went right.

State officials quickly reacted, and National Guard troops were patrolling streets within an hour of storms touching down.

First responders and local governments jumped into action despite strained resources, and power companies stood ready to get electricity flowing again.

Volunteer organizations, particularly faith-based groups, were Herculean in their efforts, from delivering food and water to clearing fallen trees to finding housing for the displaced. Where would we be without their help?

Even the Federal Emergency Management Agency, rightly criticized in previous disasters, should be given high grades for its work on the ground and with our state officials.

This was a disaster of historic proportions. Sixty-two tornadoes touched down that day, affecting more than half the state. Alabamians met the challenge head-on, and the response continues.

There are lessons learned, however, in any crisis. As a state, we will be unable to progress without recognizing what might be holding us back. Remember Gov. Bentley's words: "By deepening our understanding of this tragedy and its effects, we can improve our ability to prepare for and respond to a broad range of potential disasters."

So that is what we must do. And we learned there are ways to improve.

We must hold ourselves to higher standards when building homes. Enhanced fortification measures — some of them simple and inexpensive — can limit the kind of destruction we saw in April, save lives and help control insurance costs.

We must do a better job of coordinating volunteer resources. The state should be careful not to get in the way of the vital assistance nonprofits provide, but should improve on its coordinating role to ensure the right resources get to the right places. Steps are already being taken to get this done.

We must make sure the directors of county emergency management agencies have the tools they need to do their jobs. People who coordinate disaster response need to have proper training so they are better prepared. Managing these types of crises begins at the local level, but investments there will pay organizational dividends at each link in the chain of command.

We must improve the way we alert residents to severe weather, using an integrated system that takes advantage of newer technologies, including smartphones, social media and electronic billboards.

The future

When we set out to draft this report, Gov. Bentley's charge was to develop a set of action-oriented recommendations that would:

- Save lives
- Increase cooperation between agencies
- Improve the delivery of services
- Reduce the negative economic impact of future storms

We recognize that not everyone will agree with each recommendation outlined in this report.

That's understandable. We were not looking for the easiest path.

Instead, we wanted to create a path for recovery and renewal with common-sense solutions. We wanted proposals that would increase preparedness without unduly expanding the footprint of government.

This is an opportunity for our state, and we must not waste it. To that end, in



Julie Ward/Big Communications
Alabama Emergency Management Agency Director Art Faulkner makes a point at a meeting the Tornado Recovery Action Council held with state officials. TRAC solicited feedback from a variety of sources in putting together its report of 20 recommendations.

Kim Richardson, a facilitator with Clarus Consulting Group, gets community input at a Sept. 19 meeting at Central High School in Tuscaloosa. Twelve percent of the city, including the building that housed the Emergency Management Agency, was destroyed by the April 27 storm, according to the City of Tuscaloosa.

Michelle Lepianka Carter/Tuscaloosa News





Sarah Dudik/Gadsden Times

The Tornado Recovery Action Council's first community meeting was held Sept. 12 at the Tom Bevill Enrichment Center in Rainsville. Here, and at the six meetings that followed across the state, TRAC asked residents for their input on storm preparation, warning, response and recovery.

In addition to the 20 recommendations, the Council proposes that the governor create an ad hoc committee to follow the progress of those recommendations. The group could be tasked with designing a framework for implementation, including projections of costs, funding sources, personnel and timelines.

The policies our state puts into place in the next six months to a year will impact Alabamians for decades to come. We need planning that will transcend political administrations and short-term corporate interests.

Consider the reality: For a three-decade period ending in 2010, Alabama was top among states for average number of tornado deaths. And the state ranked third for number of tornadoes per 10,000 square miles, according to another measure by the National Weather Service.

April 27 may have been historic, but it should not have been unexpected. If we did not know better before, we do now.

Certainly, the people of our state have been humbled by the destruction of that day. They have taken heed as they recover and make plans for a stronger future.

We heard their stories.

We listened to the teacher in Tuscaloosa who helped her students by having them draw pictures and share their personal accounts.

We listened to the man in Shoal Creek Valley who sang hymns to his dying neighbor as they waited for rescue personnel to reach them. "Shoal Creek Valley is more of a community now than it ever was because of that storm," he said. "We worked together to help each other. We learned from this that we need to plan ahead on how to deal with these things better."

We listened to people who attended our community forum at Lake Martin. They spoke of moving beyond the traditional municipal and county lines that separate them, and instead viewing the Lake Martin community from a regional perspective.

And we listened to first responders like Kenny Hallmark, Hackleburg's police chief, who said, "We were blessed in hundreds of ways."

Through all the destruction and uncertainty, Hallmark sees signs of hope and optimism. The number of dead could have been significantly higher, he noted, with nearly 200 homes and businesses damaged or destroyed and the school campus in ruins.

Another sign of hope hangs at the site of the wrecked blue jeans distribution center: "Future Home of Wrangler Distribution. Hackleburg, Alabama."

Pam Siddall
President and Publisher
Birmingham News Multimedia

John D. Johns
President and Chief Executive Officer
Protective Life Corp.

4.27.11

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Alabama's day of tornadoes

Three waves of twisters over nearly 18 hours leave the state with a drastically altered landscape, changed lives and a renewed focus

ALABAMIANS AWOKED to sirens on April 27, 2011. Even months later, with victims still recovering and scars still raw on the landscape, residents struggle to grasp the enormity of the massively destructive weather event known as the 2011 Super Outbreak.

Forecasters knew it was coming days in advance. But they didn't know — couldn't have predicted — the murderous fury with which it would strike.

Three different types of storm systems lashed Alabama, spawning three successive waves of tornadoes: in early morning, at midday and from midafternoon until well into the night.

The first attack began a couple of hours before sunrise and lasted a little more than three hours. Twenty-nine tornadoes slashed through Central and North Alabama, according to the National Weather Service. More than a dozen tore into the Lake Guntersville area alone, all within 37 minutes.

At 11:15, the second wave struck, dragging a cluster of seven weak tornadoes through the Athens, Decatur and Huntsville areas. Just 50 minutes later, it too had passed.

The final wave hit hard. Starting at 2:40 p.m. and continuing well into the night, violent long-track tornadoes — including two of the most powerful ever recorded — raked across the northern two-thirds of the state. The strongest, which devastated Hackleburg, Phil Campbell, Oak Grove and several other small towns, stayed on the ground for an incredible 132.04 miles across six North Alabama counties and into Tennessee.

Numbers can never tell the whole story. But as the physical and emotional pain fades, the statistics remain as a permanent reminder of one of the most horrific days in Alabama's history. They paint a stark picture:

- Sixty-two tornadoes touched down. During all of 2010, only 37 tornadoes struck Alabama.
- Those tornadoes, says the Alabama Emergency Management Agency, killed 248 people. Another 2,219 were injured.
- Two EF-5 tornadoes struck the state. EF-5s, highest on the destructiveness scale, are rare. The entire United States saw only two in the four years from 2007 through 2010.
- Thirty-five of Alabama's 67 counties suffered tornado damage.
- According to the American Red Cross, 23,553 homes were damaged or destroyed.
- The Alabama EMA estimates property damage at \$1.1 billion. Other estimates go higher.
- The tornadoes cut unusually long (1,206 miles total) and broad swaths. Fifteen of Alabama's April 27 tornadoes left devastation at least 1,000 yards wide. That's 10 football fields, or more than half a mile.
- If the EF-4 monster that struck Tuscaloosa and suburban Birmingham had been the day's only tornado, it would have made national front-page news. Up to a mile and a half wide and immortalized in all its malevolent menace on YouTube, it injured 1,500 people and killed 64. In July, the president of the Insurance Information Institute told The Birmingham News that insurers

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EF Scale

The Enhanced Fujita Scale, or EF Scale, ranks tornadoes by damage caused to 28 types of structures and trees. Here are the ratings of the 62 tornadoes in Alabama on April 27, with estimated top wind speed in parentheses:

EF-0 (65-85 mph)	6
EF-1 (86-110 mph)	30
EF-2 (111-135 mph)	8
EF-3 (136-165 mph)	9
EF-4 (166-200 mph)	7
EF-5 (more than 200 mph)	2

Source: National Weather Service



Photo courtesy of the Office of the Governor
 Gov. Robert Bentley and First Lady Dianne Bentley leave the ruins of a business on 15th Street in Tuscaloosa two days after an EF-4 tornado destroyed large sections of the city.

expected to pay \$2 billion in tornado damage claims from the Tuscaloosa and Birmingham areas alone.

For several days, the National Weather Service had been noting with increasing concern the unstable meteorological conditions building in the West and South.

On April 23, the Weather Service's Hydrometeorological Prediction Center warned that "a significant heavy rainfall event is setting up over the middle Mississippi and Ohio River valleys" that would produce "moderate to heavy rain along with thunderstorms." The message concluded: "Severe weather, including hail, high winds and tornadoes, will be possible within the strongest storms."

That was the center's first mention of tornadoes. The Weather Service's Huntsville office first mentioned tornadoes in a Hazardous Weather Outlook the same day.

On April 25, twisters associated with the weather pattern struck Texas, Oklahoma, Missouri, Arkansas, Kentucky and Tennessee. On April 26, they hit 11 states, touching down as far east as Florida, Mississippi, Tennessee and even New York — but not in Alabama.

Then came Wednesday, April 27.

The first wave

Alabama's day of disaster began modestly at 4:01 a.m. in Lauderdale County, at the northwest tip of Alabama. An EF-1 tornado — **No. 1** of the day — touched down a mile northeast of Waterloo. It tore a path up to 200 yards wide as it moved northeast along County Road 90. After 9 miles, it entered Tennessee, then lifted less than a quarter mile later. It damaged seven buildings, two docks and numerous trees. Nobody was reported injured or killed.

For the outbreak's first couple of hours, tornadoes

slashed Alabama in scattershot fashion, striking as far north as Lauderdale County and as far south as Pickens and Shelby counties. Then the storms mounted a concentrated attack in the northeastern part of the state on Blount and DeKalb counties and especially Marshall County.

The first wave actually encompassed two simultaneous but different types of storms. In North Alabama, part of the storm system began rotating into something called a mesoscale convective vortex. In Central Alabama, that same fast-moving front that roared in from Mississippi took the form of a quasi-linear convective system — a squall line.

A squall line can carry tremendous danger from straight-line winds alone. For example, gusts of up to 100 mph damaged numerous buildings, mostly by crashing trees onto them, near Moody, Pell City and Riverside along Interstate 20 in St. Clair County. One person died in Moody and one in Pell City, each when a tree toppled onto a mobile home.

A squall line also often spawns tornadoes. This one generated 13 — Nos. 1-12 and 14.

No. 2 entered Alabama at 4:16 as the day's first "wedge" tornado. That's a tornado that appears to be at least as wide as it is tall. A wedge tornado typically begins as a classic funnel cloud. As the funnel reaches the ground, it spreads into a wedge shape.

This particular whirling wedge, more than 1,000 yards across, crossed into Pickens County from Mississippi. Rated EF-1 in Alabama, it stayed on the ground for 22.6 miles, destroying a barn and two silos and damaging a farm irrigation system.

The wave continued, fast and furious:

- **No. 3**, rated EF-1, came next, touching down at 4:19 near Smithsonia in Lauderdale County. In its brief existence — four minutes, 1.8 miles, a maximum width of 100 yards — it damaged or destroyed two sheds, a travel trailer, a house and a church.
- **No. 4**, rated EF-2 and up to three quarters of a mile wide, slashed across central Pickens County for 14.4 miles from 4:27 to 4:42. It damaged several homes and outbuildings.
- **No. 5**, an EF-3 tornado with maximum winds estimated at 140 mph, struck Pickens and Tuscaloosa counties, touching down at 4:41 and tearing a 22.5-mile path that maxed out at 700 yards wide. It damaged a number of homes and other buildings and tossed a 3,500-pound trailer 100 yards.

Location (County)	Est. Peak Winds in AL	Damage Path Length in AL	Start Time
1. Waterloo (Lauderdale)	110 mph	9.0 miles	4:01 a.m.
2. Dancy (Pickens)	100 mph	22.6 miles	4:16 a.m.
3. Smithsonia-Rhodesville (Lauderdale)	90 mph	1.8 miles	4:19 a.m.
4. Northern Reform (Pickens)	120 mph	14.4 miles	4:27 a.m.
5. Holman (Pickens/Tuscaloosa)	140 mph	22.5 miles	4:41 a.m.
6. Berry (Fayette)	100 mph	7.3 miles	5:03 a.m.
7. Coaling (Tuscaloosa/Jefferson)	155 mph	20.3 miles	5:17 a.m.
8. Parrish-Cordova (Walker)	140 mph	18.9 miles	5:18 a.m.
9. Hanceville-Holly Pond (Cullman)	120 mph	30.3 miles	5:48 a.m.
10. Altadena (Shelby/Jefferson)	100 mph	3.4 miles	5:50 a.m.
11. Mountain Woods Lake (Jefferson/Blount)	135 mph	3.2 miles	5:53 a.m.
12. Cahaba Heights (Jefferson)	120 mph	7.8 miles	5:54 a.m.
13. Liberty (Blount/Marshall)	105 mph	14.8 miles	6:12 a.m.
14. Odenville (St. Clair)	120 mph	3.8 miles	6:16 a.m.
15. Johnson's Mill Area (Cullman/Marshall)	110 mph	11.0 miles	6:20 a.m.
16. SW Guntersville-Blount Co Line (Marshall)	95 mph	6.4 miles	6:24 a.m.
17. Lake Guntersville State Park (Marshall/DeKalb)	120 mph	20.0 miles	6:30 a.m.
18. Guntersville-Pleasant Grove Rd (Marshall)	110 mph	3.4 miles	6:30 a.m.
19. W of Albertville (Marshall)	110 mph	4.6 miles	6:30 a.m.
20. Lattiwood Area (Marshall)	110 mph	5.7 miles	6:30 a.m.
21. Browns Valley Rd (Marshall)	95 mph	4.9 miles	6:35 a.m.
22. Grant Area (Marshall)	90 mph	0.3 miles	6:35 a.m.
23. Bakers Chapel Ln-Hwy 79 (Marshall)	85 mph	2.8 miles	6:43 a.m.
24. McKee Island-Star Point (Marshall)	105 mph	6.9 miles	6:45 a.m.
25. Guntersville SP-Hwy 227 (Marshall)	90 mph	4.8 miles	6:45 a.m.
26. Pine Island-Preston Island (Marshall)	105 mph	1.6 miles	6:49 a.m.
27. Section-Shiloh (Jackson, DeKalb)	110 mph	27.9 miles	6:58 a.m.
28. Henagar-Rosalie (DeKalb/Jackson)	120 mph	6.6 miles	7:10 a.m.
29. Mentone-GA State Line (DeKalb)	100 mph	4.1 miles	7:18 a.m.
30. SW of Athens-Blackburn Rd (Limestone)	85 mph	6.7 miles	11:15 a.m.
31. Decatur Ind Pk-Calhoun CC (Morgan/Limestone)	105 mph	9.0 miles	11:20 a.m.
32. Tanner (Limestone)	70 mph	4.1 miles	11:23 a.m.
33. Monrovia-Deposit (Limestone/Madison)	110 mph	25.3 miles	11:30 a.m.
34. Magnolia Springs (Limestone/Madison)	110 mph	3.1 miles	11:35 a.m.
35. Moores Mill-Winchester Rd (Madison)	105 mph	7.6 miles	11:50 a.m.
36. Buckhorn High School (Madison)	85 mph	3.5 miles	11:55 a.m.
37. Cullman (Cullman/Morgan/Marshall)	190 mph	46.9 miles	2:40 p.m.
38. Hackleburg-Phil Campbell (Marion/Franklin/Lawrence/Morgan/Limestone)	210 mph	118.6 miles	3:05 p.m.
39. Cordova (Pickens/Tuscaloosa/Fayette/Walker/Blount/Cullman/Marshall)	170 mph	127.8 miles	3:40 p.m.
40. Panola (Sumter/Pickens)	140 mph	16.2 miles	3:57 p.m.
41. Shottsville (Marion/Franklin)	160 mph	20.1 miles	4:00 p.m.
42. Section-Flat Rock-GA (Jackson/DeKalb)	190 mph	27.7 miles	4:01 p.m.
43. Orvil Smith Rd-Harvest (Madison)	105 mph	1.4 miles	4:40 p.m.
44. Tuscaloosa-Birmingham (Greene/Tuscaloosa/Jefferson)	190 mph	80.7 miles	4:43 p.m.
45. Madison-Monrovia-Brownsferry Rd-Jeff (Limestone/Madison)	90 mph	14.6 miles	4:53 p.m.
46. Bridgeport (Jackson)	180 mph	20.2 miles	5:05 p.m.
47. Haleyville (Marion/Winston)	150 mph	31.8 miles	5:10 p.m.
48. Sawyerville-Eoline (Greene/Hale/Bibb)	145 mph	72.1 miles	5:30 p.m.
49. Hubbertville (Fayette)	145 mph	8.0 miles	6:06 p.m.
50. Lakeview-Rainsville-Cartersville (DeKalb)	200+ mph	33.7 miles	6:19 p.m.
51. Shoal Creek-Ohathee-Argo (Jefferson/St. Clair/Calhoun/Etowah/Cherokee)	180 mph	71.3 miles	6:28 p.m.
52. Wateroak (Hale/Bibb)	110 mph	8.6 miles	6:50 p.m.
53. Near West Point (Cullman)	80 mph	1.2 miles	7:09 p.m.
54. Northern Choctaw (Choctaw/Sumter/Marengo/Perry)	150 mph	60.1 miles	7:10 p.m.
55. Marvel (Bibb/Shelby)	105 mph	5.4 miles	7:32 p.m.
56. Lake Martin (Elmore/Tallapoosa/Chambers)	170 mph	44.2 miles	8:12 p.m.
57. Vincent-Logan Martin (Shelby/Talladega)	105 mph	8.6 miles	8:15 p.m.
58. Marion (Perry)	90 mph	4.2 miles	8:50 p.m.
59. Dogtown Rd-Fischer Rd (DeKalb)	120 mph	6.5 miles	9:05 p.m.
60. White Plains (Chambers)	110 mph	5.2 miles	9:19 p.m.
61. Finley Creek (Chambers)	90 mph	5.0 miles	9:29 p.m.
62. Verbena (Chilton)	80 mph	1.9 miles	9:48 p.m.
Total Length of All Paths		1,206 miles	

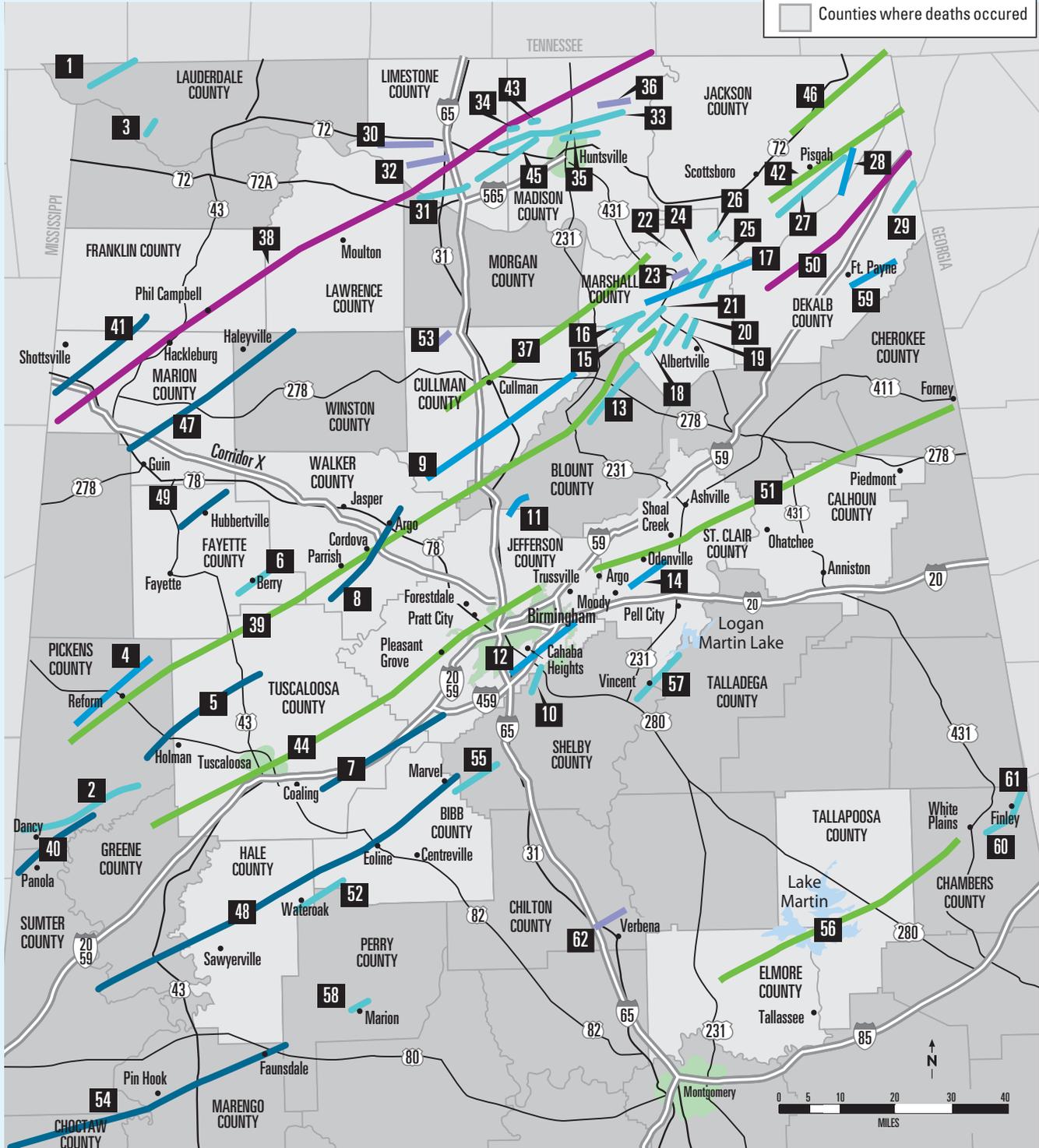
Final National Weather Service field report for April 27, 2011

TRACKING THE TORNADOES' PATHS

APRIL 27 STORM STRENGTH

- EF-0 Tornado
- EF-1 Tornado
- EF-2 Tornado
- EF-3 Tornado
- EF-4 Tornado
- EF-5 Tornado

Counties where deaths occurred



Source: National Weather Service; template courtesy of The Birmingham News

- **No. 6**, an EF-1 tornado, touched down at 5:03 in Fayette County. It lasted only eight minutes and 7.3 miles and reached only 175 yards in width, but it caused significant damage to the town of Berry and injured four people.
- **No. 7**, an EF-3 tornado, touched down in southwest Tuscaloosa County at 5:17. It never exceeded 200 yards in width, but it stayed on the ground for 20.3 miles, damaging or destroying at least a dozen homes in Coaling and causing minor damage at the Mercedes-Benz plant near Vance. It crossed into Jefferson County before lifting.
- **No. 8**, an EF-3 tornado up to 375 yards wide, hit central Walker County at 5:18, lasting for 18.9 miles and causing 20 injuries. It was the first half of a one-two punch — along with No. 39 — that heavily damaged the town of Cordova.
- **No. 9**, an EF-2 tornado, touched down at 5:48 and gouged a 30.3-mile path up to half a mile wide across Cullman County. At Hanceville, it damaged several Wallace State Community College buildings, the high school gym, and several houses and other structures.
- **No. 10**, a four-minute EF-1 tornado that never exceeded 100 yards in width, sliced for 3.4 miles through the Altadena area in northern Shelby and southern Jefferson counties, touching down at 5:50. It knocked numerous trees into buildings, vehicles and power lines.
- **No. 11**, a brief but destructive EF-2 tornado, touched down at 5:53 in far northeast Jefferson



Mark Almond/The Birmingham News

Salvaged washing machines sit outside as debris from a coin laundry is shown in the background in downtown Cordova on May 6.

County, tearing a 3.2-mile path into Blount County and across the western shore of Mountain Woods Lake. It damaged a number of boat docks and at least 20 homes, destroying three of them. Three members of a family inside one of the demolished homes were injured.

- **No. 12**, a fast-moving EF-2 tornado, touched down at 5:54 in suburban Birmingham near Gresham Elementary School in Jefferson County. It took only six minutes to plow 7.8 miles through residential and commercial areas, including Cahaba Heights and Liberty Park, damaging many homes and other buildings. The tornado injured 20 people, and one person was killed during cleanup efforts.
- **No. 14**, a small EF-2 tornado, touched down for three minutes near Odenville in St. Clair County. It began at 6:16, traveled 3.8 miles and damaged two large brick homes. Brief as it was, the tornado caused five injuries.

Meanwhile, the mesoscale convective vortex — a low-pressure area of circling winds within a larger line of thunderstorms — had developed in North Alabama. David Nadler, a meteorologist with the Huntsville National Weather Service office, described it as looking “almost like a minihurricane on radar.” Shortly after 6 a.m., it spun out a swarm of tornadoes. Most tore through Marshall County around Lake Guntersville. Fortunately, they caused relatively little damage:

- **No. 13**, rated EF-1, touched down at 6:12 in Blount County and traveled 14.8 miles in 10 minutes before lifting in Marshall County. It damaged several homes and destroyed a number of sheds and barns.
- **No. 15**, rated EF-1, touched down at 6:20 in Cullman County. It crossed quickly into Marshall County, sending an unanchored mobile home tumbling in Extreme and destroying chicken houses and barns along its 11-mile path.
- **No. 16**, rated EF-1, touched down at 6:24 along Marshall County Road 14. It lasted for 10 minutes and 6.4 miles, and damaged the roofs of several chicken houses.
- **No. 17**, rated EF-2, was the largest (up to a half mile wide), longest (20 miles) and most powerful (maximum winds 120 mph) of this cluster. It touched down at 6:30 just west of Lake Guntersville, damaging numerous piers

and sheds, tearing off shingles, snapping power poles and uprooting many trees during the 25 minutes before it lifted. The tornado crossed Lake Guntersville twice and damaged the roof of the lodge at Lake Guntersville State Park.

- **Nos. 18, 19 and 20**, all rated EF-1, touched down in the same area just south of Guntersville almost simultaneously at about 6:30. No. 18 traveled 3.4 miles, tearing off the steeple of Pleasant Hill Church and hurling it 100 feet. No. 19 lasted 4.6 miles, destroyed one chicken house and damaged several others. No. 20 destroyed several barns on its 5.7-mile path.
- **Nos. 21 and 22**, both rated EF-1, also struck simultaneously, at 6:35. No. 21 hit near the southern end of Lake Guntersville, lasting 4.9 miles, mangling the roof of one house and snapping several trees. No. 22 skimmed the ground for just a third of a mile, starting in the Grant area north of the lake. It damaged one roof

and mowed down a few trees.

- **No. 23**, rated EF-0, lasted two minutes and traveled 2.8 miles. It touched down at 6:43 west of U.S. 431, uprooted a few trees and lifted as it reached Lake Guntersville.
- **Nos. 24 and 25**, both rated EF-1, touched down at 6:45. No. 24 began near McKee Island and spent much of its 6.9-mile path over water. It hit a marina and crossed Guntersville Municipal Airport-Joe Starnes Field, but caused little damage. No. 25 lasted for 4.8 miles and damaged Lake Guntersville State Park near the entrance and at the golf course.
- **No. 26**, rated EF-1, touched down at 6:49 and tore across Pine Island and Preston Island for 1.6 miles, knocking trees onto a number of homes.
- **No. 27**, rated EF-1, touched down at 6:58 just south of Section in Jackson County and lasted until 7:36. It traveled 27.9 miles along Alabama 71 through Dutton and the southern part of Pisgah, where



Robin Conn/The Huntsville Times

A cross scrawled with messages stands where the Phil Campbell Church of God was destroyed in the April 27 storm system that swept across the state.

it killed one person. A much stronger afternoon tornado (No. 42) followed almost the same track.

- **No. 28**, rated EF-2, touched down at 7:10 and lasted eight minutes. It traveled 6.6 miles from Henagar in DeKalb County to Rosalie in Jackson County, demolishing at least three barns and a house in Rosalie.
- **No. 29**, rated EF-1, touched down at 7:18 just north of downtown Mentone in DeKalb County. It lasted four minutes, carved a 4.1-mile track no more than 50 yards wide, destroyed numerous trees and tore off part of one house's roof.

At 7:22 a.m., the first wave had ended — all before many people had even left their houses that morning.

The second wave

Almost four hours later, another quasi-linear convective system crossed North Alabama. It unleashed seven weak tornadoes on Limestone and Madison counties and the northwestern tip of Morgan County:

- **No. 30**, rated EF-0, touched down at 11:15 southwest of Athens in Limestone County. Witnesses said it lifted and descended several times along its 6.7-mile path, causing minor damage before it finally departed at 11:25.
- **No. 31**, rated EF-1, struck Mallard-Fox Creek Industrial Park in Decatur at 11:20, heavily damaging the Independence Tube plant. Crossing the Tennessee River from Morgan to Limestone County, it snapped trees at Calhoun Community College and knocked out power at Pryor Field Regional Airport in Decatur before dissipating short of Interstate 65. Along its 9-mile path, it never exceeded 75 yards in width.
- **No. 32**, rated EF-0, touched down at 11:23 and lifted 4.1 miles later. It damaged some signs near Tanner High School in Limestone County.
- **No. 33**, rated EF-1, touched down at 11:30 south of U.S. 72 at the eastern edge of Limestone County and traveled 25.3 miles to the Deposit community in Madison County. At 35 minutes, it was by far the longest-lasting of this pack of tornadoes. It left many downed trees and power poles.
- **No. 34**, rated EF-1, touched down at 11:35 in Limestone County near the Magnolia Springs neighborhood and quickly crossed into Madison County. It lasted 3.1 miles and five minutes,



Mark Almond/The Birmingham News

A damaged truck bears a message in Rainsville on April 28.

knocking down trees and slightly damaging some houses.

- **No. 35**, rated EF-1, carved the widest path (500 yards) in this wave of tornadoes. It touched down at 11:50 in the Moores Mill area of Madison County, causing tree and roof damage along a 7.6-mile track.
- **No. 36**, rated EF-0, touched down at 11:55 in Madison County and passed near Buckhorn High School on its 3.5-mile path, damaging trees. Straight-line winds caused additional damage along a swath 2.5 miles wide.

Nos. 33, 35 and 36 all lifted off at 12:05 p.m., ending the second wave.

The third wave

The third wave sprang from a series of supercells — fierce, rotating thunderstorms. A barrage of intense long-track tornadoes slashed from southwest to northeast across Alabama. Eleven were rated EF-4 or EF-5 at some point. Two tore through Alabama for more than 100 miles.

The wave began at 2:40 p.m. when a massive tornado — **No. 37** — touched down in western Cullman County near Lewis Smith Lake. It ripped a 46.9-mile track, tearing through downtown Cullman and destroying a number of retail buildings, two churches and many homes. It continued across the southeast tip of Morgan County near Hulaco and well into Marshall County,

flattening trees and structures along the way. The National Weather Service rated it as EF-4, with peak winds of 190 mph and a path of destruction that reached a mile wide.

At 3:05, an even stronger tornado, **No. 38**, touched down just inside the Mississippi-Alabama line in southwest Marion County. It began at EF-3 west of Alabama 19 near Sipsey Creek. It strengthened to EF-4 north of Hamilton. It continued strengthening as it followed U.S. 43 northeast.

By the time it reached Hackleburg, it was an EF-5 beast three quarters of a mile wide. It tore through several subdivisions. It destroyed Hackleburg Elementary School and High School. It flattened the economic heart of the town, the Wrangler distribution center. The tornado continued to strengthen as it crossed into Franklin County. It wiped out much of the town of Phil Campbell, sucking up a 25-foot section of pavement and scattering chunks of it more than a third of a mile. It was a mile wide and probably at its maximum ferocity as it devastated Oak Grove. It continued through Lawrence,

Morgan, Limestone and Madison counties and into Franklin County, Tennessee, smashing chicken houses, power poles, stores, restaurants, vehicles, hundreds of houses and thousands upon thousands of trees.

By the time it reached Tennessee at 5:08, this tornado had stayed on the ground for 118.6 miles, reaching a maximum width of a mile and a quarter and a maximum wind speed of 210 mph. It injured at least 145 people. It killed 72.

Meanwhile, at 3:40, tornado **No. 39** touched down in Pickens County, two counties south. This one varied considerably in strength and width along its 127.8-mile track through Pickens, Tuscaloosa, Fayette, Walker, Cullman, Blount and Marshall counties. It peaked at more than three quarters of a mile wide and EF-4 in strength, ripping through Blountsville and already-ravaged Cordova. It heavily damaged the Ferguson Fire & Fabrication plant near Guntersville before lifting at 5:56 in beleaguered Marshall County. The twister injured 54 and killed 13.

The supercell that spawned the twister wasn't



Michelle Campbell/The Birmingham News

A tornado that reached EF-4 in strength with peak winds estimated at 170 mph demolished Mount Hebron East Baptist Church and its fellowship-educational building in Elmore County.

finished. At 6:19, it sent another tornado — **No. 50** — to the ground in DeKalb County's Lakeview community, 22.45 miles from where the previous vortex had dissipated. The path varied in width from just 50 yards to three quarters of a mile. The tornado caused extensive damage to Rainsville and Sylvania and at one point reached EF-5 intensity with estimated peak winds of more than 200 mph. The path length was 33.7 miles (plus 3.1 more miles in Georgia). The tracks of the two tornadoes spawned by this supercell totaled 168 miles.

Meanwhile, at 3:57, **No. 40**, a tornado from Kemper County, Mississippi, entered Sumter County as an EF-2. It reached EF-3 strength in Pickens County, damaging trees and at least one building and injuring two people along its 16.2-mile path.

Another Mississippi tornado entered Marion County at 4 p.m. It had caused major damage to Smithville, Mississippi, as an EF-5 with estimated peak winds of 205 mph. By the time it reached Alabama as twister **No. 41**, it had weakened to EF-1. But it strengthened again, reaching EF-3 status as it destroyed several homes and killed six people near Shottsville in Marion County. It

continued damaging homes, trees and chicken houses as it ventured for 1.6 miles into Franklin County south of Hodges. In Alabama, this tornado traveled 20.1 miles, injuring 100 and killing seven.

At 4:01, a weak tornado, **No. 42**, touched down near Section in Jackson County and began following almost the same path as No. 13 had that morning. It quickly strengthened to the top of the EF-4 scale, with peak winds of up to 190 mph. Residents told National Weather Service investigators that two or three funnels merged into one very large tornado, up to a mile wide, that caused incredible destruction in the Jackson County communities of Pisgah, Flat Rock and Higdon. The tornado killed six people in Jackson County and five more as it tore through Shiloh in the northern tip of DeKalb County. At Shiloh, it tossed a van 400 yards into a field. At 4:36, still at EF-3 strength, it moved into Georgia. There, it injured 12 people and killed two. Altogether, the tornado stayed on the ground 46 miles, 27.7 of them in Alabama.

Shortly afterward, two lesser tornadoes raked through Madison County:

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Joe Songer/The Birmingham News

Along 15th Street near McFarland Boulevard in Tuscaloosa, an EF-4 tornado caused severe damage. Forty-three people died from injuries caused directly by the tornado, and another nine died from conditions related to the storm, according to the city.

- **No. 43**, an EF-1 tornado, touched down at 4:40 and scraped a 1.4-mile path through Harvest, northwest of Huntsville. It destroyed trees and fences, overturned an RV trailer and damaged several houses.
- **No. 45**, also an EF-1 tornado, touched down at 4:53 near Interstate 65 in Limestone County. It traveled into the city of Madison in Madison County before lifting off, leaving a 14.6-mile trail of mangled trees and slightly damaged homes.

The Tuscaloosa tornado

In between those two came **No. 44**, the largest, most devastating of the day's tornadoes. This EF-4 killer — a mile and a half wide at one point — ravaged Tuscaloosa.

The National Weather Service storm survey report baldly sketches the facts: "This tornado initially touched down in rural northern Greene County and moved northeast through southern Tuscaloosa and western Jefferson counties, where it caused devastating damage consistent with a violent EF-4 rating to portions of the city of Tuscaloosa and western suburbs of Birmingham, before it lifted northeast of downtown Birmingham."

The tornado's track extended 80.7 miles. Its winds peaked at 190 mph. It touched down at 4:43 and lifted 91 minutes later. It hacked a diagonal gash 5.9 miles long and half a mile or more wide through the heart of Tuscaloosa. The twister just missed the University of Alabama campus.

According to the City of Tuscaloosa:

- Twelve percent of the city was destroyed and more than 7,000 people became unemployed in less than six minutes.
- Forty-three people died from injuries caused directly by the tornado, and another nine died from conditions related to the storm.
- DCH Health System treated about 1,200 people the night of the storm.
- The tornado destroyed 1,257 houses. Another 4,105 were damaged.

- The tornado destroyed 114 commercial buildings and damaged another 242.
- The city lost a fire station, a police station, a communications tower and the building that housed the Environmental Services Department and the Emergency Management Agency.
- More than 750,000 cubic yards of debris were removed during cleanup.

As it passed out of Tuscaloosa, the tornado damaged boats and a restaurant at a marina. The devastation continued in Jefferson County at Concord, Pleasant Grove, McDonald Chapel, Pratt City, Smithfield Estates and Fultondale. Even as the storm reached Interstate 65, weakened to EF-2 or EF-1 status, it was still a mile and a half wide.

A heart-wrenching May 23 cover story in Sports Illustrated described University of Alabama baseball players searching the wreckage of a Tuscaloosa house

where three students had died. The family of one of the victims had asked for help. "There is a white dress that we'd like to have," the mother had said. "We'd like to bury her in it." The players found the dress.

The story focused on Carson Tinker, a muscular, 220-pound long snapper for the University of Alabama football team. He and his girlfriend, Ashley Harrison, were huddled in a closet when the tornado tore Tinker's house apart, ripped Harrison from his arms, and threw the two of them several dozen yards in different directions.

Tinker suffered a concussion, gashes and other injuries. Harrison's body was not found until the next morning.

Altogether, the tornado killed 64 people and injured at least 1,500. In August, the University of Alabama awarded posthumous degrees to Harrison and the other five university students who died.

Just 14 minutes after the Tuscaloosa tornado finally lifted and 10.55 miles farther northeast, the same supercell generated another tornado, almost as vicious. Tornado **No. 51** touched down at 6:28 in Jefferson County, then crossed Interstate 59 into St. Clair County near Argo. As it moved along Shoal Creek south of Ashville, it rapidly gained strength, reaching EF-4 status with top winds of 170 mph. It roared along Shoal Creek Valley,

More than
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minutes.

mowing down acres of trees, damaging or destroying 256 houses and killing 13 people, including seven at an unlicensed assisted-living facility in two mobile homes. Two more people would die later of tornado-related injuries, and seven more perished elsewhere along the tornado's path.

Winds of up to 180 mph shredded houses and turned trees into stumps. The twister injured more than 80.

As it crossed Neely Henry Lake into Calhoun County, the tornado was a mile wide.

After chewing across Etowah and Cherokee counties, the tornado entered Georgia at 7:45 and blasted through three more counties, injuring four more people. In Alabama, the tornado stayed on the ground for 71.3 miles. The supercell that produced it formed in Mississippi at 2:54 p.m. and dissipated 380 miles northeast in North Carolina at 10:18 Central time, almost seven and a half hours later.

The rest of the wave

Meanwhile, tornado **No. 46** hit Jackson County in the

northeast corner of Alabama. It touched down at 5:05 and built to EF-4 status before it entered Marion County, Tennessee. The tornado peaked at winds of 180 mph and a path three quarters of a mile wide, destroying trees and several houses. It left tracks of 20.2 miles in Alabama and 10 miles in Tennessee.

Tornado **No. 47**, rated EF-3, touched down at 5:10 south of Hamilton. It slashed across Marion and Winston counties, leaving major damage in the Pea Ridge, Whitehouse, Thornhill and Haleyville areas, and injuring 25. The Winston Furniture and Fontaine Trailer plants at Haleyville took major hits. The tornado finished its 31.8-mile path — three quarters of a mile wide at its peak — by plowing into the Bankhead National Forest, causing extensive tree damage.

No. 48 knocked down thousands more trees farther south in the Talladega National Forest, in Hale and Bibb counties. It left seven people dead and 50 injured along its 72.1-mile path. The EF-3 tornado, which eventually spread a mile wide, touched down at 5:30 near the Tombigbee River in southwest Greene County, west



Joe Songer/The Birmingham News

A tornado created swirls of pine trees, and broke them like matchsticks, east of Tuscaloosa.

of Tishabee. It gathered strength as it crossed the Black Warrior River into Hale County, doing extensive damage and causing at least 40 injuries and six deaths northeast of Sawyerville. In Bibb County, it smashed through Eoline, destroying a dozen homes and the fire department, killing one person and injuring at least 10.

No. 49, also rated EF-3, stayed on the ground only 8 miles and, though it reached a half mile in width, destroyed only trees, a house and some outbuildings. It struck at 6:06 in Fayette County, 4.5 miles south of Bobo.

Another supercell spawned three successive twisters across four Central Alabama counties between 6:50 and 8:24:

- **No. 52**, an EF-1 tornado, sliced for 8.6 miles through Hale and Bibb counties, touching down at 6:50. It damaged a business and a mobile home in Waterlooak and many trees in the Talladega National Forest.
- **No. 55**, an EF-1 tornado, touched down at 7:32 in Bibb County, snapped off several dozen pine trees and lifted 5.4 miles later in Shelby County.
- **No. 57**, an EF-1 tornado, touched down at 8:15 south of Vincent in Shelby County and traveled 8.6 miles, entering Talladega County and brushing the east end of the Logan Martin Dam at Logan Martin Lake.

Tornado **No 53**, rated EF-0, touched down for just four minutes and 1.2 miles in Cullman County near West Point, starting at 7:09. It damaged only trees and one porch.

No. 54, in contrast, was a brute that killed seven people and injured another 17 across two states. It started in Mississippi, where it reached EF-4 intensity. At 7:10, it moved into Choctaw County, Alabama, near Yantley as an EF-3 with maximum winds of 150 mph. It tore across northern Choctaw, up to 1,000 yards wide, before crossing the Tombigbee River into Sumter County, then Marengo and Perry counties, weakening gradually but still destroying many homes and other structures and injuring three people just south of Faunsdale in Marengo. The tornado punched 60.1 miles into Alabama before lifting at 8:35. Including its time in Mississippi, the twister left a 122-mile path of wreckage.

No. 56 touched down at 8:12 five miles north of Wetumpka in Elmore County. It moved through Dexter at EF-2 strength, damaging houses. It intensified to EF-3 as it destroyed 10 mobile homes and killed four people at a mobile home park. It continued east, destroying homes, businesses and churches, then crossed Lake

Fatalities by county

Fatalities directly caused by April 27 severe weather, including those who died later from injuries suffered that day.

Tuscaloosa	48
DeKalb	35
Franklin	26
Marion	25
Jefferson	21
St. Clair	15
Lawrence	14
Calhoun, Madison, Walker	9
Jackson	8
Elmore, Hale	6
Marshall	5
Fayette, Limestone	4
Cullman	2
Bibb, Tallapoosa	1
Total	248

Source: Alabama Emergency Management Agency

Martin just south of the Kowaliga Bridge. It was nearly a quarter mile wide as it damaged more homes in the Windermere area.

By the time it crossed into Tallapoosa County just south of County Road 34, it was nearly half a mile wide and EF-4 in strength, obliterating multistory homes. It weakened to EF-3 as it crossed U.S. 280 just east of Dadeville, damaging several homes and businesses. It entered Chambers County north of Sikes and finally lifted after 44.2 miles and almost an hour on the ground.

That was the day's last big tornado, and the last killer. Still, the supercells weren't finished. They spun out five final twisters, all but one in Central Alabama:

- **No. 58**, an EF-1 tornado, touched down 5.5 miles south of Marion in Perry County at 8:50. Along its 4.2-mile path, it damaged a couple of barns and the roof of a house and destroyed an outbuilding.

- **No. 59**, an EF-2 tornado, gave North Alabama's DeKalb County one last shellacking. According to the Alabama Emergency Management Agency, DeKalb was second in tornado fatalities (35) to Tuscaloosa County (48). The county's last tornado touched down at 9:05 southeast of Fort Payne. The twister left considerable tree damage along its 6.5-mile path. It also destroyed three farm buildings, knocked several trees onto houses and snapped off power poles.
- **No. 60**, an EF-1 tornado, touched down at 9:19 near White Plains in Chambers County and severely damaged a house along its 5.2-mile path.
- **No. 61**, an EF-1 tornado, touched down at 9:29 near the end point of No. 60. But it was a separate twister that traveled 5 miles and uprooted a number of trees.
- **No. 62**, the day's final tornado, wasn't very impressive — an EF-0 with estimated peak winds of 80 mph, a 1.9-mile track and a maximum width of 50 yards. Still, it injured one person, uprooted oak trees, and damaged a carport and a mobile home. It touched down at 9:48 and lifted two minutes later.

When the third wave ended, so did the worst tornado disaster in Alabama's history.

The mournful wail of the warning sirens died away, replaced by the more urgent clamoring of emergency vehicles. In the darkness, flashlight beams stabbed through still-falling rain as rescuers stumbled among the wreckage, tracking the screams of the injured. With the light of morning would come an assessment of the damage and a first tentative glance toward the future. Rescue and recovery had begun.

Unless otherwise noted, information in this chapter about the storms and their impacts came from the National Weather Service.

Prepare

2

How we plan, organize and build better

Recommendations include adding shelters and safe rooms, implementing statewide fortification standards and raising community awareness

A QUESTION HEARD OFTEN in countless variations after tornadoes hit is: What if?

What if homes had been built more sturdily to withstand such devastating winds? What if everyone had known in advance the location of the nearest storm shelter or the safest room at home for riding out severe weather?

What if utilities — electric, gas, water and telecommunications — had coordinated better to restore services more rapidly? What if more generators had been available to provide temporary power for essential services?

What if people had routinely kept on hand emergency supplies of food, water, medicine, radios, batteries and even copies of important documents needed later to confirm homeownership, insurance coverage and bank accounts?

In short, what if everybody had been more prepared?

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Preparedness benefits everyone

From individuals staying informed about storms to institutions laying the groundwork for smoother operation during emergencies, everyone benefits from preparedness. The widespread destruction and tragic loss of life caused by the April 27 tornadoes offer strong

motivation to become better prepared at every level for when severe weather strikes again, as it inevitably will.

Being prepared means having more shelters, safe rooms and generators ready for action. It means streamlining communication among utilities, establishing tougher standards for constructing more storm-resistant homes, creating a statewide sales tax holiday to encourage the purchase of storm-related emergency supplies, and mounting a long-range campaign to raise awareness about tornadoes. It means improving warning systems for use before severe weather strikes and upgrading emergency response plans for quicker recovery after storms pass. In every case, preparation reduces unknown factors during emergencies and increases the chances of situations turning out better.

Ultimately these recommendations aim to save lives, deliver services more quickly, reduce negative economic impacts and improve cooperation among key players, from individual citizens to government agencies to businesses large and small to faith-based communities that lend help where needed.

Learning from experience

Not everything went completely wrong on April 27.



Bernard Troncate/The Birmingham News

Fourth and fifth graders at Warrior Elementary hunker down in a hallway during a tornado drill in Warrior. School officials face tough decisions when deciding whether to cancel classes because of approaching severe weather.

Quite a lot went right, an encouraging starting point for thinking about preparedness.

Electrical power didn't go out everywhere tornadoes hit, and utility crews restored service quickly to large sectors. Some buildings in tornado paths remained standing with only minor damage even as adjacent structures were obliterated, occasionally due to plain luck but often the result of sound construction methods. In many instances, first-response and emergency-service efforts unfolded according to plan. Backup generators kicked in as intended, powering hospitals,

homes and businesses. Shelters and safe rooms served their purposes. Many people were well aware of the seriousness of the approaching storm because they followed its progress on television and radio, checked online and cellular resources, and heeded old-fashioned sirens. The University of Alabama's StormReady program, certified by the National Weather Service a year before, successfully alerted students, faculty and staff via e-mails and text messages to seek shelter before one of the day's worst tornadoes plowed through Tuscaloosa.

Everyone needs a disaster plan

IRMA GORE KNOWS exactly when she realized she was on her own to ride out the April 27 tornadoes. The resident of Tuscaloosa's Alberta City neighborhood along University Boulevard had been glued to television newscasts while the deadly storm approached.

"Right as (ABC 33/40 meteorologist) James Spann said, 'If you are in the University Boulevard area, you need to seek shelter *now*,' that's when my TV went all snowy, and then the power went out," Gore recalled.

But Gore had a disaster plan. Within moments she was hunkered in the tub of her downstairs bathroom, the safest place in her house. "I put a blanket and sofa pillows in with me and family photos I couldn't bear to lose," she said. "I had some bottled water, yogurt and granola bars. I had my personal identification and my cell phone. And I had Jesus."

Thankfully, she survived unscathed, her house damaged but not destroyed like so much of the immediate area. "I'm a teacher, and I learned something from this," Gore said. "We need to teach our students to take every drill seriously, to pay attention to bad weather, to take heed when sirens sound, to have a plan of action. Everyone should know the safest room in the house or where the nearest storm shelter is. Everyone should have a weather radio and a flashlight and batteries."

Gore's story underscores the need for people to be prepared when severe weather hits. Here are some suggestions:

- Pay attention to sirens and newscasts. Stay informed.
- Develop a personal disaster plan that includes where to go, what to bring and how to reconnect later with family members who shelter elsewhere.

- Consider adding a reinforced safe room.
- Keep a battery-operated radio on hand for power outages.
- Keep supplies such as food, water, a flashlight, a first-aid kit and essential medicines on hand and ready to grab.
- Make copies of important identification, insurance, home ownership, prescription, bank account and other documents, and take them to your safe place to smooth the recovery process if original records get destroyed.
- Have some cash on hand. Power outages render credit cards, ATMs and other financial conveniences unusable.
- Plan for pets' safety too. If possible, take them with you to your safe place, and bring food and water for them. Arrange with neighbors or friends to check on your pets if you're away when disaster strikes.

The American Red Cross website, redcross.org, includes a "Be Red Cross Ready" fact sheet and a Tornado Safety Checklist about what to do before, during and after storms. Tips range from how to recognize tornado-producing conditions and what to do when caught in a storm while driving to how to deal with downed power lines and ruptured gas pipes.

For another primer, review the Tornado Safety section of the National Oceanic and Atmospheric Administration (NOAA) website at spc.noaa.gov/faq/tornado/safety.html. The Federal Emergency Management Agency also has a tornado section under Plan & Prepare on its website, fema.gov.

It's worth studying these bright spots in the picture to learn from experience what works best and apply those lessons to future preparations.

Meanwhile, there were problems. Power went out in wide swaths as transmission towers collapsed and distribution lines snapped. Communications failed when they were needed most. Some sirens didn't blare as planned. Homes that might have remained intact with better roof and frame tie-downs instead disintegrated, their windblown materials becoming dangerous airborne missiles. People who might have fared better in storm shelters didn't always know where to find them. There weren't enough radios, flashlights, batteries, food, water and medicine. Fuel stored underground at gas stations couldn't be accessed for emergency use because generators weren't available to power the pumps to extract it. People without proper identification to prove residency — because it blew away with their wallets or purses — were prevented from returning to damaged homes, doubling their frustration over already dismal circumstances.

These types of preparation breakdowns obviously offer room to improve.

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In hoping for the best but getting ready for the worst, better preparation might be the strongest defense against future tornadoes. Better preparation can lead to fewer deaths, less property loss, a smoother transition back to normal and hopefully fewer “what ifs” to consider after the next serious storms.

The Tornado Recovery Action Council of Alabama proposes the following recommendations aimed at improving preparedness:

STORM SHELTERS & SAFE ROOMS

RECOMMENDATION: Increase the number of storm shelters available to the public, and publicize their locations so people know where to go when severe weather approaches.

There aren't enough storm shelters, and people often don't know about them. This became clear during the April 27 tornadoes. Later, people in affected areas consistently said they would have sought safe haven away from homes that lacked below-ground basements or reinforced safe rooms — two of the best options for sheltering in place — but didn't know where to go.

That should be corrected. More shelters — either those specifically designed to withstand fierce winds and flying debris or other fortified structures where taking refuge improves people's chances of surviving killer storms — should be designated where they already stand, built where none currently exist and publicized better. Factories, schools, shopping centers, “big box” stores, office and apartment complexes, municipal and public safety buildings, and mobile home parks that don't already have storm shelters should consider adding them.

Everyone's personal disaster plan should include identifying nearby shelters beforehand and even practicing getting to them quickly.

Where are they?

Part of the problem with locating emergency shelters is that no comprehensive list exists.

Why? First, storm shelters fall under hundreds of



Hal Yeager/The Birmingham News

Brent Mitchell with Safe-T-Shelter walks past underground shelters sitting at his company in the Massey community of Morgan County. Mitchell said the business has seen a boost in shelter and safe-room sales since the April 27 storms. “It's relatively inexpensive life insurance,” he said.



Joe Songer/The Birmingham News

Danny Cole helps Teresa Fugate up a slope near the underground storm shelter that saved their lives, along with those of 15 neighbors, in Phil Campbell during the April 27 tornado outbreak. The couple's home was swept away.

local jurisdictions. Densely populated Jefferson County, for instance, includes more than 30 cities, towns and unincorporated communities, making coordination of assets difficult. Sparsely populated counties might have just a couple of shelters or none at all, leaving many people out of range. Even public buildings with sturdy basements that could provide safe haven — courthouses, city halls, libraries, schools — often aren't marked as shelters and aren't always open or available on short notice.

Second, there are different types of shelters for different purposes, confusing the issue. The American Red Cross defines four types: general population shelters meant to provide displaced people with a safe place to stay for a few days after disaster strikes; medical needs shelters set up when needed to manage public health emergencies stemming from disasters; heating or cooling shelters offering temporary refuge during extreme hot or cold spells; and community storm shelters strategically pre-identified by local officials as places for residents to seek refuge for short periods of time during severe weather.

Third, many potential safe places are in privately owned buildings — office towers, retail shops, churches, warehouses — that might not be available at any given time.

Finally, not all potential shelters can be positively identified in advance. In virtually every disaster, people find safety in unexpected places. Last April, several people piled into a walk-in freezer at a Tuscaloosa restaurant and later emerged unharmed to find the rest of the building and much of the neighborhood destroyed.

As a moving target, a complete inventory of shelters may not be feasible. But an increased effort to identify potential shelters is a realistic expectation. They should be dispersed throughout communities so that nobody is too far from one and should be easily recognizable. In tornado-prone areas, adding storm shelters should be a priority, using grants, existing budgets, volunteer contributions of cash or in-kind services and any other means available. Storm shelters should be publicized better so people know about them long before needing one.

Local emergency management agencies should include in their emergency operations plans a thorough list of suitable storm shelters — those designed for that purpose and possibly substitutes including public buildings, private businesses, churches and other sturdy structures. For local authorities to be able to answer the simple question “where’s a safe place to go when tornadoes are coming?” would represent a significant improvement.

Making progress

Within six months of the April 27 tornadoes, approximately 383 applications for matching grants to build community storm shelters had been submitted to the Alabama Emergency Management Agency. That’s a good start.

One example of local progress since April is DeKalb County in northeast Alabama, soon to be home to seven new community storm shelters. Previously only one such shelter, a 100-person private facility maintained by the United Methodist Church’s Upper Sand Mountain Parish, existed in the county. In reaction to a tornado that hit DeKalb in May 2010, the county commission applied for and received matching grants from the Federal Emergency Management Agency that covered 75 percent of the cost for six new 100-person storm

Building a safe room

Want more information on safe rooms, including how to build your own? Download the document “FEMA 320 — Taking Shelter from the Storm: Building a Safe Room for Your Home or Small Business” at [fema.gov/plan/prevent/saferoom/fema320.shtm](https://www.fema.gov/plan/prevent/saferoom/fema320.shtm).

shelters in Fyffe, Geraldine, Henagar, Powell, Shiloh and Sylvania. Those communities contributed the other 25 percent of costs, raising cash or lining up in-kind services donated by civic-minded local companies, for a total storm shelter investment of about \$700,000.

Coincidentally the DeKalb Commission agreed on April 26 — the day before devastating tornadoes ripped through the area again — to put those projects out to bid. Although dire circumstances delayed the bidding, approval and construction processes, finishing the shelters took on renewed urgency. The sturdy, prefabricated, metal-and-concrete modules, which get anchored to solid concrete foundations and are partially buried, represent FEMA's current best-practices standards for community storm shelters. All six should be ready for use in 2012, according to DeKalb County EMA Director Anthony Clifton. Applications for two additional storm shelters at Collinsville and Ider have been submitted, Clifton said. And more than 600 private individuals in DeKalb have applied for smaller matching grants to help pay for safe rooms in homes and businesses, reflecting an encouraging trend throughout tornado-hit areas of Alabama.

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DeKalb's seventh new shelter tells a different story. The 600-person bunker, located at Plainview School in Rainsville, is one of four placed by FEMA at hard-hit Alabama schools to protect students studying in decidedly non-storm-resistant portable classrooms while their damaged schools are rebuilt. Others are in Hackleburg, Phil Campbell and Alberta City. Controversy erupted over a FEMA rule stipulating that the school systems had to either buy the \$500,000-apiece shelters or tear them down once students moved out of portable classrooms. The prospect of razing perfectly good shelters led to a public uproar. U.S. Rep. Spencer Bachus, a longtime proponent of community storm shelters, led a chorus calling for a solution to the problem. The rule was changed, and those shelters will remain.

DeKalb's positive developments represent examples other communities could follow, taking advantage of any and all available resources, public and private, to add to their storm shelter options. Simply put, more shelters will save more lives.

RECOMMENDATION: Offer incentives to add safe rooms to new construction as well as existing homes and businesses.

Structurally reinforced safe rooms for sheltering in place greatly enhance chances of survival. They should be cornerstones of tornado preparedness.

A safe room is a space inside a home or other building that is fortified, or "hardened," with concrete, steel or wood as a sturdy haven during tornadoes, hurricanes and straight-line winds. Some safe rooms are placed underground or in partially below-ground basements. Where those options don't exist, versions can be created from windowless bathrooms, closets, hallways or utility rooms. All are meant to provide short-term refuge for a few occupants during severe weather and are expected to remain intact even if the rest of the structure is destroyed.



Joe Songer/The Birmingham News

University of Alabama engineering students examine a tornado shelter shaped like a bullet at the Safer Alabama Summit in June. Safe rooms can be built into construction or added later.

Safe rooms made of prefabricated steel and fiberglass or poured concrete are available on the market starting at about \$6,000. FEMA offers detailed guidelines, complete with schematic drawings and extensive notes about materials, vents, doors and other design elements, for safe rooms that can be built to best-practices standards for a little less or much more than that.

Travis Taylor, the Huntsville rocket scientist of Rocket City Rednecks television fame, built a safe room in his house for just \$2,000.

Interest in safe rooms has grown since April 27 throughout Alabama's tornado-hit areas. Yes, it costs money to buy and install a prefab safe room or build one from scratch or structurally reinforce an existing room. But anyone who has survived a deadly storm in a safe room or lost family members for lack of one or witnessed some of the worst destruction will agree that the investment is worthwhile.

Two main financial incentives for promoting safe rooms come to mind. First is the existing system by which FEMA, using disaster assistance funding, offers matching grants that reimburse homeowners for 75 percent of safe room costs up to \$4,000. Whether directly affected by storms or not, individuals apply for these grants in droves during a three-month window of opportunity after tornadoes hit. Applications are made to county or tribal EMAs, which forward properly prepared requests to the state EMA, which reviews them and sends many to FEMA for consideration. Six months after the April 27 tornadoes, the state had received approximately 4,194 applications for individual safe rooms.

Second is a tax incentive this report recommends. It would involve income tax credits modeled on other successful programs that reward, for example, the purchase of energy-efficient heating, ventilating and air conditioning systems, windows, insulation, or solar panels. Initiatives toward this end have been proposed in Alabama following previous devastating weather events, but to date no legislation has been passed. The amount of such a credit would be determined through collaboration among elected officials, construction industry representatives, homeowners groups and revenue department officials, but it should be enough to encourage people to install safe rooms.

Promoting safe rooms will make communities better prepared for future tornadoes.

Detractors will argue that such credits hurt the overall economy by reducing tax revenues that could be put to other worthy uses. However, promoting the proliferation of safe rooms will make the community far better prepared for future tornadoes and will ultimately save lives.

RECOMMENDATION: Work with industry representatives to require that community storm shelters be included at any new apartment complexes and mobile home communities built in tornado-prone regions, and offer incentives for adding them to existing facilities.

More should be done to promote tornado safety in densely populated residential areas such as apartment complexes and in communities with structures prone to serious damage from tornadoes such as mobile home parks.

Because mobile homes aren't always secured to the ground well enough or built sturdily enough, they tend to be easily tossed about or destroyed by severe winds, causing injuries and damage. The Birmingham News, citing National Weather Service data and other sources, reported that from 2000 to 2010, 54 percent of tornado deaths in Alabama took place in manufactured homes, which make up nearly 15 percent of the state's houses.

New mobile home developments should be required to include on-site community storm shelters where residents can seek refuge during tornado weather. Local authorities, especially those focused on building standards and emergency management, should work with industry representatives to develop guidelines for creating community storm shelters suitable to different situations.

Apartment building shelters could be incorporated into the structures — perhaps built into foundations or created by fortification of below-ground basements — or they could be separate nearby facilities. As at mobile home parks, they should be close enough and big enough to be useful during severe weather.

New construction is targeted here so that investors in such projects will know what is expected and be able to figure costs into their business plans. Because existing operations should not be retroactively burdened with additional costs that weren't required at

Storms stretch rural Alabama resources

IN THE CHAOTIC HOURS after tornadoes pounded northwest Alabama, hundreds of injured people needed medical care. In Marion County alone, the injured totaled more than 200, most of them from the town of Hackleburg.

In Hackleburg, with 1,500 residents, the only medical facility is a small clinic run by a physician who commutes from Russellville in neighboring Franklin County. So the injured, half of them in ambulances and the rest in private vehicles, were taken to nearby hospitals, such as those in Russellville and Red Bay to the north and west, and in Hamilton and Winfield to the south and west.

Kenny Hallmark, Hackleburg police chief, said the nearby hospitals were quickly overwhelmed with patients, not only from Marion County, but also from storm-ravaged communities in other counties, such as the Franklin County town of Phil Campbell.

“We prepared for a storm,” Hallmark said. “We didn’t prepare for what we got.”

34 Hackleburg’s experience illustrates what can happen when a major disaster strikes small towns and rural communities. They simply lack institutional resources to cope with what has happened and often rely on the skills and assets of their residents.

“If I had to rank the No. 1 and No. 2 issues that give problems to small communities, it’s going to be manpower, No. 1, and equipment, No. 2,” Hallmark said.

By their very nature, urban communities have more resources for responding to disasters — “large medical facilities, more rescue units, cranes for heavy rescue, more personnel and volunteers, more technology (and) equipment,” said Jefferson County Emergency Management Coordinator Allen Kniphfer.

Nonetheless, the storms proved to be a formidable challenge for urban areas. In Tuscaloosa, DCH Health System’s main hospital, which was close to the path of the tornado that tore through the city, treated about 1,000 injured persons in the 12 hours after the storm had passed. Its sister hospital in nearby Northport treated about 250.

Janet Teer, the health system’s general counsel and vice president of legal services, said injured people were walking in without having been through triage, and ambulances were bringing 12 to 15 people at a

time. In two hours, because of the volume of patients who could not be identified, the hospital used all of the 450 patient identification kits it had prepared in advance. Midway through the 12-hour stretch, a drop in water pressure prevented the steam-sterilizing of surgical instruments. That forced the hospital to send some patients to Birmingham.

“I don’t think that we were overwhelmed,” Teer said. “But we were sorely pressed.”

Outdoor sirens are staples in weather warning systems, but rural areas may not have a storm warning siren within hearing distance. Hackleburg has two sirens to cover its 15.3 square miles. By contrast, Jefferson County’s Emergency Management Agency has 255 to cover 1,111 square miles (nearly one for every four square miles) and plans to add more. In DeKalb County’s High Point community, where five people died, no siren is close enough to be heard.

Rural areas and small towns often lack buildings suitable as storm shelters or have shelters that people have to travel miles to reach. In DeKalb County, in which 35 persons died, 14 of the 16 municipalities have police forces that typically have no more than three officers, and the same communities have no public works departments. Debris-removing equipment, vital after a storm, is in scattered locations. Police and fire departments and other first responders often use the same communications frequency, which can sometimes slow their ability to respond.

Hackleburg’s police and volunteer fire departments got an influx of help from other Alabama departments immediately after April 27. The town’s residents provided a significant boost to cleanup efforts by cranking up their own tractors, bulldozers and backhoes.

Outside help has since left town. In October, thieves stole items from a storm-damaged auto parts store. Hallmark suspects they took advantage of the limited police presence. The force isn’t likely to expand. With a damaged tax base, town leaders are also left with a diminished budget.

the time they opened, they would be exempt. However, in the spirit of improving preparedness for future tornadoes, tax incentives similar to the safe room construction credits described above should be extended to existing apartment complexes and mobile home parks, encouraging owners to upgrade storm readiness for the safety of their residents.

FORTIFICATION STANDARDS

RECOMMENDATION: Establish statewide fortification standards for construction of new, rebuilt and extensively remodeled homes to save lives and property when tornadoes or other forms of severe weather move through Alabama; provide in the code inspection procedures and enforcement rules that apply statewide.

When engineers surveyed the damage to homes on the fringe of the EF-4 tornado that struck Tuscaloosa, a pattern became clear: Many of the wrecked houses should still have been standing, roof and walls intact.

It is no puzzle why they weren't.

Like most older and many new homes built in Alabama, those in the paths of the April 27 tornadoes lacked the design fortifications needed to withstand the violent winds that day.

Alabama, unlike most states, does not have a statewide building code with inspection and compliance requirements and enforcement teeth. Roofs tear off and walls collapse when basic construction steps could hold them fast.

Weather experts agree that homes in the direct center path of EF-4 and EF-5 tornadoes generally can't withstand the wind forces. But those on the edges of



Tamika Moore/The Birmingham News

Two workers nail in a strap on a home in Pratt City on Aug. 30. Industry specialists say basic fortification features can run between 25 cents and 50 cents per square foot, or \$500 to \$1,000 for a 2,000-square-foot home.

those tornadoes, where winds are lower, “could see dramatic improvements in safety and overall structure through better engineering design and construction practices,” said Andrew Graettinger, an associate professor of engineering at the University of Alabama. His department joined in a study of extensive but preventable damage caused by the Tuscaloosa tornado’s weaker peripheral winds.

Better-constructed homes would not only fare better on the edges of powerful EF-4 and EF-5 tornadoes, but they would also stand stronger in the direct paths of the weaker ones that often tear across Alabama’s landscape.

In the wake of the deaths and unprecedented losses from April’s violent weather, it is imperative that the state use this event as a springboard to save lives in the future with better-fortified housing.

The Tornado Recovery Action Council recommends that minimum fortification standards be applied and enforced statewide, including the roof tie-downs, foundation anchor bolts and other wind-design criteria of the most current residential codes for the industry.

The state also should have what it now lacks — a statewide inspection and compliance process that assures Alabama’s homes will be built to the highest wind-resistance safety standards. Year by year, decade by decade, a better-fortified housing stock will help save homes and lives as tornado weather patterns raise the risk of increased dangers.

A step toward creating a statewide regulatory authority occurred in 2010 with a law forming the Alabama Energy and Residential Code Board. The board, with 17 members, began the process last year of approving a statewide minimum building code along with other codes related to energy and electrical standards. But it has no inspection or enforcement authority, and some 60 of Alabama’s 67 counties and about 90 percent of its municipalities have no code and are exempt until they decide to pass one.

Standards need to improve, and not just for jurisdictions that already have building codes. Fortification standards should be enforced statewide.

To help with the transition, construction inspectors now working with other state offices could be trained and utilized to inspect home fortifications when they

go to a home construction site. Along with the counties and cities that have code departments, agencies with technical staffs include the Alabama Building Commission, which oversees construction of public buildings, schools, hotels and theaters; the State Fire Marshal’s Office, which adopts code standards for buildings; and boards overseeing homebuilders, general contractors and electrical, plumbing, and heat and air contractors.

Also, regional compliance offices could be set up to serve multiple jurisdictions to assist smaller and rural counties and municipalities that lack resources for full-scale inspection offices.

The State Energy and Residential Code Board, working in collaboration with existing boards and commissions, could be the umbrella authority for this home fortification inspection initiative. Or the Alabama Building Commission, which has central staff and inspectors in regions statewide, could be tapped. Or a different agency could be established to serve this purpose.

“A code here and a code there is absolutely the wrong way to do it,” said Lannie Smith, the chief

building official with Orange Beach. A veteran building inspector who has served on state boards for his profession, Smith said a cost-efficient system can be created by using trained inspectors and the expertise that already exists within the various code boards and commissions.

Dwight Richardson Jr. of Tuscaloosa, chairman of the Energy and Residential Code board and a member of the Home Builders Association of Alabama, said wind standards away from the coast should not be raised to levels where the science is in dispute and the added cost could harm the ongoing housing recovery. But he said a regional approach to inspections might work if there is new funding to cross-train inspectors and pay for travel to rural counties and cities that have no inspectors of their own, and if a “many-headed monster” can be avoided.

Linda Snapp, a code board member who is with an architectural engineering company in Mobile, said she would love to see an inspection system statewide, but “we hit a wall every time” over the lack of funds.

To limit initial costs, a pilot program covering three or four counties might be considered; if it is feasible, it

“A code here and a code there is absolutely the wrong way to do it.”

—Lannie Smith, Orange Beach building official

could be expanded, or it could be revised if a different approach is needed.

The construction of commercial buildings, which the new residential code board does not regulate, also lacks an inspection process in areas without code departments. While this recommendation addresses housing as a first concern, a next step could be addressing commercial building fortification; a pooled regional inspection process, similar to that for home construction, could be established.

Much of coastal Alabama, from its long experience with destructive hurricanes, already has code standards for houses to withstand winds of 100 mph to 120 mph. The Tuscaloosa study conducted with UA engineers recommended “implementing hurricane region construction practices and products in tornado-prone regions” but said even stronger design and retrofit measures should be developed.

The Birmingham News noted that the Tuscaloosa study “suggests that better and relatively inexpensive construction techniques applied statewide could have saved or lessened the damage to the majority of the 23,553 houses that were destroyed or damaged on April 27.”

A push for stronger code standards has been stymied by concerns over cost. Depending on the extent of fortification and the size of the home, the cost can range from several hundred to several thousand dollars.

But some basic fortifications have just a modest cost. In Pratt City, homebuilder Stanford Smith was featured on a FEMA website report as he installed simple wind-resistance features to protect the house he was constructing against 120 mph winds. Smith’s additional cost: \$600.

Industry specialists say basic fortifications can run between 25 cents and 50 cents per square foot. For a 3,000-square-foot house, for example, the cost would range from \$750 to \$1,500. For a 2,000-square-foot home, it would be \$500 to \$1,000.

There is also a new state tax deduction for home fortification costs. It allows deduction of 50 percent of the cost or \$3,000, whichever is less.

State Insurance Commissioner Jim Ridling said the Legislature in 2010 also set up the framework for fortification grants, but it has no source of funding as yet. He says grants would be more effective than tax deductions.



Joe Songer/The Birmingham News

The Dollar General Store sign is buried in the rubble of the store in Hackleburg. Statewide fortification standards could make Alabama more attractive to the insurance industry, leading to an increase in competition. Insured losses from the April tornadoes are estimated in the \$3 billion range.



Bernard Troncale/The Birmingham News

Alabama Power reacted quickly to the tornado outbreak. In the first seven days its crews installed 6,000 distribution poles and replaced more than 4 million feet of wire.

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Ridling also sees the value of a statewide building code.

“They would be very difficult to enforce out in some rural counties, and having the right kind of inspection process (also would be difficult). But obviously that makes sense to have one statewide,” he said.

Insured losses from the April tornadoes are estimated in the \$3 billion range, surpassing the record of \$2 billion for Hurricane Ivan in 2004. That will have an impact on premiums for years to come.

“I told the people in Tuscaloosa that the likelihood that their homeowner rates are going down is zero. The likelihood they’re going up 50 percent is zero, because of the way this is going to be spread out over a number of years,” Ridling said.

Baldwin County Probate Judge Tim Russell, a veteran of the reinsurance business who is chairman of the state’s Affordable Homeowners Insurance Commission, said he wished he could be as optimistic as Ridling.

“Alabama is now No. 1 per capita in catastrophic insurance loss for the last 10 years. We were in the top 10 anyway, but now, after Ivan and Katrina, after April 27, we’ve moved to No. 1,” he said.

Carl Schneider, a Mobile insurance agent who was a co-founder of Smart Home Alabama, said the need

for a statewide home building code with compliance rules is a safety issue, not an insurance issue. He also contended that better building standards will make Alabama more attractive to the insurance industry, ultimately increasing competition and controlling costs.

Lannie Smith said Florida has created the model for a well-administered statewide building code with minimum standards. He said Hurricane Andrew, which devastated South Florida as it crossed the state in 1992, prompted Miami and Dade County to get the movement started.

Will April 27 do the same for Alabama?

POWER CONTINUITY

RECOMMENDATION: Create the “Alabama Utility Workgroup for Disaster Response,” an industry group composed of representatives from electricity, natural gas, telecommunications and water providers, whose purpose is to share best practices and improve disaster planning and preparedness.

No one likes having the power go out. No power means a whole range of things stop working. Lights, furnaces, air conditioners, refrigerators and stoves cease to function. Telephone, television, radio and computer networks are interrupted. Water and sewage treatment halts without proper backup. Traffic signals go blank. Large industries, small businesses and other entities close for the duration. It’s frustrating for people and devastating for businesses.

After the initial destruction, power outages tend to be the most frustrating part of severe-weather disasters. The April 27 tornadoes created a new chapter in the history of Alabama power outages. Tens of thousands of homes and businesses lost power. It wasn’t just falling trees knocking down local distribution lines. Tornadoes toppled at least 90 giant high-voltage transmission line towers, mangled entire substations, and caused the shutdown of the Tennessee Valley Authority’s Browns Ferry nuclear power plant and coal-fired Widows Creek plant. These problems can take weeks, not just hours or days, to fix.

Despite widespread outages, bright spots appeared in the power scenario. As the storms approached and their expected impact loomed large, Alabama Power’s established plans went into effect to augment local repair crews by bringing in additional utility personnel — from parts of Alabama, Florida, Georgia and Mississippi where no damaging winds were anticipated — and housing them near where they’d be needed when the skies cleared. Eventually 12 staging sites with up to

1,800 workers at each amounted to an electrical army ready with materials, vehicles, tools and temporary power generators.

Teams soon began working 16-hour shifts assessing damages, restoring lines, rerouting power around the worst devastation to reach other affected areas and in general putting things back to normal for as many people as possible. Alabama Power, the state's largest electrical provider, reported that in the first seven days its crews installed 6,000 distribution poles and more than 400 transmission structures, repaired or replaced eight damaged or destroyed substations, and replaced more than 4 million feet of wire. By the Wednesday after the tornadoes, the utility had restored electricity to more than 99 percent of customers.

People frustrated by losing power also tend to remember, with a sense of relief, when the power came back on. At public forums held later to gather comments for this report, many participants applauded power companies for getting the work done relatively quickly. They seemed to understand that in the worst cases, such as when huge transmission towers were twisted like pretzels, more time was needed. Many also brought up the idea of burying power lines underground to protect them from falling trees and howling winds. While buried lines are becoming more common in newer developments, they can come at a cost higher than some customers are willing to pay.

The bigger picture calls for action far broader in scope: improving the way utilities plan in advance of disasters, deal with the aftermath and work together for the common good. The Tornado Recovery Action Council recommends creating a new panel designed to enhance communication among utility providers and develop a statewide approach to responding better to natural disasters.

Big-picture solutions

By executive order, the governor should establish a working group called the Alabama Utility Workgroup for Disaster Response. Its purposes: continuously improve the state's electricity, natural gas, water and telecommunications infrastructure; enhance communication among utility providers; streamline state-led efforts on infrastructure coordination; and share best practices.

Appointed by the governor, this group would ideally include one representative from each of the following: an investor-owned electric utility such as Alabama Power; the federally owned and operated TVA, the

area's other major electricity provider; one of the many smaller electric cooperatives scattered in rural areas; one of several municipal electric authorities; a natural gas company; a telephone service company; a cable or satellite television company; a large water treatment facility (serving more than 400,000 customers); and a small water treatment facility (serving less than 400,000 customers).

A primary responsibility of this group would be to plan and execute an annual severe-weather conference hosted by the governor and the director of the state EMA. At the conference, all parties would share best practices and discuss ways to improve service and enhance communications, especially during disasters. The conference should be held early in the year, before tornado and hurricane seasons.

In addition to the annual conference, the group should meet at least twice a year to keep momentum moving toward the goal of improving utilities' statewide approach to disaster response. Additional



Photo courtesy of TVA

Workers restore TVA transmission towers in North Alabama, where the utility is a major supplier of electricity. TVA had to replace 353 transmission structures following the April tornadoes.

responsibilities would include coordinating with local authorities to establish a clear understanding of who is in charge during and immediately after disasters, assisting the state EMA in training first responders where appropriate, and enhancing communication among communities.

RECOMMENDATION: Provide incentives for businesses that purchase generators and/or design or rewire their facilities to accommodate generators as temporary power solutions.

After the April 27 tornadoes, countless stories emerged about the need for more electric generators just about everywhere.

Some first responders, utility crews, emergency management officials and others who ran low on gasoline while working in power-outage areas couldn't refill at service stations where no generators were available to pump gas from underground tanks or where facilities weren't wired to accommodate mobile generators.

Stores that managed to stay open without power became cash-only operations because credit card machines wouldn't work; but people generally don't carry as much cash as they used to and couldn't

replenish their supplies at ATMs with no power.

Cell phones, two-way radios and other forms of communication — including some needed for vital links among rescue workers, emergency responders and volunteer organizations providing aid — couldn't be recharged without power that generators might have supplied.

One community that wasn't directly affected by tornadoes but experienced a two-day power outage because of lines down elsewhere was unable to pump water from wells or operate sewage treatment facilities without a more powerful generator than the ones on hand.

Homes and businesses with built-in backup generators supposedly ready to take over during power outages found that the machines didn't always work as expected, possibly for lack of regular maintenance and test starts during long periods when not being used.

Fortunately, generators were available and performed as expected at many places where they are mandated, including hospitals and nursing homes. They were ready for duty at many local EMAs, utility facilities and National Guard stations, at Redstone Arsenal, and elsewhere.

To improve readiness for weather emergencies, a



Bob Gathany/The Huntsville Times

Extended power outages meant people sometimes had difficulty finding places to refuel vehicles. Tax incentives should be offered to encourage businesses that provide essential services — including gasoline, groceries and prescription medicines — to purchase generators, allowing them to remain open even when the power goes off.

proliferation of generators should be encouraged at an expanded range of operations deemed “essential services.”

More is better

Having more generators available to supply temporary power would solve many of these problems. “Nothing runs without power,” said Cullman City Council President and local business owner Garlan Gudger Jr., whose town and commercial and personal properties were devastated on April 27. “We need a funding plan to get more generators ... where they’re needed so we don’t shut down after storms.”

To encourage this, tax incentives should be extended to businesses offering essential services during power outages. These include gas stations so that fuel supplies are assured, pharmacies so that vital medicines can be dispensed, grocery stores so that refrigeration for critical food supplies remains available, possibly banks so that people can access funds to pay for key materials during power outages, and perhaps kidney dialysis centers so that patients requiring regular treatments to live can continue to receive them.

The incentives should help cover not only purchasing generators but also wiring new facilities or rewiring existing facilities so they can accommodate mobile generators that could be brought in when needed.

Regarding gas stations, state EMA Executive Operations Officer Jeff Byard said, “It’d be great for *all* of them to have generators, but the question is, which ones *should* have them?”

He agreed that local EMAs, in the course of preparing emergency operations plans and in collaboration with store owners, should determine which strategically located stations would be most helpful during emergencies. EMAs would also do well to keep track of large generators available from municipalities, National Guard stations, private sources and elsewhere, maintaining an inventory that could be called upon in emergencies.

Some private enterprises might not want to spend money on buying generators or wiring facilities to accommodate mobile units. Others might see opportunity, not only for the benefit of the tax incentive

“It’d be great for *all* of them to have generators, but the question is, which ones *should* have them?”

—Jeff Byard,
state EMA

but also for the improved ability to remain open, conduct business and make money rather than shutting down during power failures.

The dollar amount of such an incentive needs to be decided through cooperation among business interests, elected officials and tax revenue authorities. The offer should be limited in scope to involve essential services and community needs, not just anyone who wants a better deal on a generator; yet it should be substantial enough to motivate businesses to install generators or the wiring necessary to accommodate them.

In addition to these incentives, civic-minded industries or nonprofit organizations might be persuaded to donate funds to buy generators to support essential services. A higher priority also could be placed on acquiring generators through normal budgets as well as emergency-preparedness grants.

Keep in mind that generators present certain intrinsic problems. The initial costs can be high, well into the thousands of dollars for units big enough to run the kinds of essential services targeted by these incentives. They require regular maintenance and test starts to remain operational. Fuel to run them — whether gasoline, diesel fuel, propane or other kinds — needs to be stockpiled and changed out periodically so as not to deteriorate in storage. Having generators goes hand in hand with keeping them functional for when they’re needed and assuring the personal safety of people who work with them or near them.

AWARENESS

RECOMMENDATION: Launch an ongoing awareness campaign that educates Alabamians about how to prepare for a natural disaster and about resources available when disasters strike.

In September during a community forum to collect comments for this report, a participant suggested naming a disaster preparedness month to raise awareness. Alabama Emergency Management Agency Director Art Faulkner was there and said, “There already is one — it’s this month, right now.” Few if any others in the room knew, a clear sign that more work is

needed on raising awareness.

National Preparedness Month was created by presidential proclamation to coincide with the 10th anniversary of the 9/11 terrorist attacks. In doing so, President Barack Obama mentioned recent tornadoes in the South and Midwest that had “challenged our resilience and tested our resolve,” adding that “preparedness is a shared responsibility” requiring “a whole community approach to disaster response” and “collaboration at all levels” of government, private and nonprofit sectors.

Alabama needs a statewide and ongoing disaster awareness campaign. If people were more aware of tornadoes and more familiar with steps to take for surviving them, fewer would die or suffer serious injuries from them.

“It’s all about readiness,” said Carl Smith, whose house near Ragland in the Shoal Creek Valley was destroyed by an April 27 tornado. “We need everyone to be more educated about storms, more aware of where shelters are and what sirens mean and how to use generators safely.”

Such an awareness campaign could involve:

- Developing school curricula to further educate students about storms and shelters
- Creating public service messages to spread safety tips through print (in partnership with the Alabama Press Association), through broadcast (in partnership with the Alabama Broadcasters

Association), online, on billboards and via other media

- Offering checklists of necessities to pack in grab-and-go emergency preparedness kits for when time is of the essence
- Organizing strategic special events such as a “day of remembrance” tied to April 27
- Reaffirming the value of practice drills conducted at schools and workplaces
- Encouraging people to sign up for automated storm alerts delivered via text messages, social media networks and other digital formats
- Sponsoring seminars on how to apply for disaster relief grants, submit insurance claims and deal with contractors while rebuilding after disasters

Awareness means staying informed as severe weather approaches by tuning in to commercial broadcasts, checking online resources and, when electricity fails, listening to battery-powered radios. It means having a plan for when and where to seek shelter, and keeping basic supplies like food, water, medicine, blankets, flashlights, batteries and important documents ready to take along. It means discussing in advance where family members will reunite if separated by a storm.

Civic, educational, faith-based and other organizations could be enlisted to promote disaster awareness. Facebook, Twitter, YouTube and other social media platforms could provide conduits for delivering preparedness messages, answering questions interactively, and during actual emergencies spreading warnings and imploring people to take precautions. Any awareness programs that imply a call to action and that steer people toward enhanced safety will benefit the community at large.

Decisions must be made about who would coordinate such an umbrella campaign, handling both broad goals and specific details, relaying a consistent message, and developing an Alabama storm awareness “brand,” so to speak. Potentially an existing government agency with marketing experience could take the helm. Or a commercial advertising agency could be contracted to develop and deliver disaster awareness messages statewide and year-round.

Either way, increased awareness will go a long way in better preparing citizens to deal with future severe weather events.



Robin Conn/The Huntsville Times

An awareness campaign should educate Alabamians about how to prepare for severe weather so they are ready to protect themselves and their families. Above is damage at the Cullman County Courthouse with the clock showing the time the EF-4 tornado hit.

Sales Tax Holidays

State	Days	Items
Alabama	3	clothing & footwear computers school supplies books
Arkansas	2	clothing & footwear school supplies
Connecticut	7	clothing & footwear
Florida	3	school supplies books clothing
Iowa	2	clothing
Louisiana	2	all tangible personal property for nonbusiness use
Louisiana	2	hurricane preparedness items
Louisiana	3	firearms, ammunition & hunting supplies
Maryland	7	clothing & footwear
Maryland	3	Energy Star products
Massachusetts	2	all tangible personal property
Mississippi	2	clothing & footwear
Missouri	3	clothing computers school supplies
Missouri	7	Energy Star products
New Mexico	3	clothing computers school supplies
North Carolina	3	clothing school supplies instructional materials computers sports equipment
North Carolina	3	Energy Star products
Oklahoma	3	clothing
South Carolina	3	clothing school supplies computers bath & bed items
Tennessee	3	clothing school supplies computers
Texas	3	clothing backpacks & school supplies
Texas	3	Energy Star products incl. air conditioners
Virginia	3	clothing school supplies
Virginia	4	Energy Star products
Virginia	7	hurricane preparedness items generators

Source: Federation of Tax Administrators, state websites

RECOMMENDATION: Establish an annual sales tax holiday on certain items related to severe-weather preparedness to raise awareness and promote readiness.

One good way to promote storm readiness is to get the right supplies and tools into the hands of people who may need them during a severe-weather emergency, and one good way to do that is to offer a sales tax holiday on key items. Such a pause in collecting sales taxes, for a day or a weekend, could be scheduled for late April to tie in with increased news coverage surrounding the anniversary of Alabama's worst tornado strikes, or sometime in September, National Preparedness Month.

Exactly what items should be included is a matter to be ironed out by appropriate legislative authorities with input from the public, retailers, emergency management authorities and revenue department personnel. Severe-weather emergency essentials such as bandages, disinfectant and other first-aid supplies would be included. So would batteries, flashlights, weather radios, prepackaged tornado emergency kits and generators. Food and bottled water would probably not be exempted from tax, though they're worth considering on a limited basis.

Currently 17 states, including Alabama, most of them in the tornado- and hurricane-prone Southeast, offer sales tax holidays. Most are for school supplies, clothing and computers, though a few cover severe-weather items and energy-efficient appliances, and one is for hunting gear (Louisiana). The trend emerged in the 1990s as New York, Florida and Texas offered sales tax holidays on clothing, and then proliferated through the 2000s as other states recognized public awareness opportunities surrounding the popular events.

While detractors claim tax holidays don't encourage additional spending, but merely cause people to delay making the purchases, the excitement and attention surrounding tax holidays brings its own reward. A tax holiday remains valuable as a high-profile promotion, raising awareness by keeping the subject current and newsworthy before, during and after each tax-free period.

If people are more prepared for the next deadly storm because of the attention such events bring to bear, then a moderate loss of tax revenue will prove worthwhile. In addition to saving lives, promoting preparedness could save Alabama money in the end.

Warn

3

TORNADO
RECOVERY
ACTION
COUNCIL
of Alabama

How we make warnings more effective

Recommendations include launching an integrated warning system and upgrading the technology used by weather radios

ARMANDO FLORES heard the warning sirens twice on the morning of April 27, but he was not alarmed. He had heard them many times before.

But this time, shortly after the second sounding, a big tree crashed through his roof in western Jefferson County, stopping three feet above where he was lying in bed.

“I’ve listened before many times and nothing happened,” he said later. “That morning, I thought it was the same.”

Too many Alabamians, emergency officials suspect, were like Flores — aware of the warnings, but lulled into complacency. The storms of April 27, and the 248 deaths in our state, suggest we can do better.

“We need to learn to meet people where they are,” said John De Block, the Birmingham National Weather

Service office’s warning coordination meteorologist. “We’ve got weather information. We need to get the weather information out to people. And the spectrum of technology is always changing. We’re getting new technologies coming onboard. Old technologies are falling off the table. But we need to communicate our information to as many people as possible, learn what prompts them to take action, and then tie that all together to make sure that people get the information and that they can take action.”

Like its sister states, Alabama has what De Block calls a “spider web” of severe-weather warning systems.

Broadcasts from TV meteorologists, supplemented by local radio, cover the state, and the NWS website and other online sites give radar images and detailed

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Jeff Roberts/The Birmingham News

Fay Hyde comforts one of her grandchildren after a tornado destroyed her home in the Concord community of Jefferson County. “We knew the weather was coming, but it happened so fast,” Hyde later told The Birmingham News.

forecasts for any zip code. Every county in the state has weather sirens. Some of those counties' emergency management and law enforcement agencies use social media to pass on weather alerts. School systems have notification systems for the parents of their students, and universities have similar systems for their students and faculty. In addition, thousands of Alabama homes and businesses have National Oceanic and Atmospheric Administration weather radios, and some Alabamians receive severe-weather warnings on their cell phones, land lines or special FM receivers.

But the events of April have led first responders, researchers, weather professionals and those whose communities bore the brunt of the tornadoes to call for improvements in Alabama's warning systems.

"Anytime we have a loss of life, we can do better," said Jeff Byard, Alabama EMA executive officer.

There have been calls for more sirens and efforts made to get weather radios to special-needs populations. There also have been calls for a warning system that pinpoints its alerts on areas that are directly threatened by a storm and leaves out those that aren't.

"The more strands in the web that we have, the better the county's covered," said Daryl Lester, DeKalb County's deputy emergency management director. "Could we ever have too many tools in the toolbox? I don't think so."

Limitations of sirens

De Block said he expected to see improvement recommendations in an assessment of how the NWS warning and forecast services worked in Alabama in April. Such an assessment, by an NWS team, was issued regarding the Joplin, Mo., tornado of May 22, which killed about 160 and injured more than 1,000.

In summary, that report states the weather service "should explore evolving the warning system" to one that produces simple, credible warnings based on the expected impact of a storm and "empowers individuals to quickly make appropriate decisions."

The survey found residents there had "become desensitized or complacent" to the siren warnings.

"This suggests that initial siren activations in Joplin (and severe weather warnings in general) have lost a degree of credibility for most residents — one of the most valued characteristics for successful risk communication," stated the NWS report.

There are other issues with sirens. Entities that own them — counties, municipalities and even communities — don't always use the same criteria when deciding

Alabama leads in storm deaths

The state had the highest average number of tornado fatalities each year from 1981 through 2010.

Alabama – 6

Tennessee – 5

Arkansas, Florida, Texas – 4

Georgia, Mississippi, Missouri,

North Carolina, Oklahoma, Pennsylvania – 3

Illinois, Indiana, Kansas – 2

Top tornado states

States with the highest annual average numbers of tornadoes per 10,000 square miles, 2001-2010

Kansas – 14

Mississippi – 12

Alabama – 11

Iowa, Illinois, South Carolina – 10

Arkansas, Florida, Missouri – 9

Louisiana, Maryland, Oklahoma – 8

Storm season

Alabama sees the most tornadoes from March through May. Here are the busiest months, measured from 1950 through 2009:

April – 294

March – 234

November – 228

May – 220

February – 117

December – 102

Source: National Weather Service

Breaking through language barriers

WHEN SIRENS in northwest Alabama's Franklin County sound a tornado warning, most of them back it up with a voice message.

That message is in English, and county Emergency Management Director Roy Gober said a portion of Franklin's population may not easily understand it. That's why, he said recently, "We are currently looking into the cost of adding Spanish language to the sirens."

According to the U.S. census, about 4 percent of Alabama's population is Hispanic. But in some of the counties that bore the brunt of the April 27 tornadoes — such as Franklin, DeKalb and Marshall — the Hispanic share of the population is three or four times higher.

Severe-weather preparedness planners and forecasters say most people in the areas that were hit in April should have known, via television, social media, weather radio, telephone warning messages, word of mouth or other means, that bad weather was coming. But reaching Alabama's sometimes insular Hispanic communities can pose challenges. As warning systems diversify, reaching non-English-speaking residents — along with those who are deaf or hearing-impaired and those who cannot read — must be a priority.

In areas where there are higher concentrations of Hispanics, Spanish-language newspapers and radio stations offer links to those communities. Marlene Corona, who lives near Rainsville in DeKalb County, said she has heard weather information on La Doble X (WWGC), a Spanish-language AM station in Albertville. William Wiley, managing partner at WYAM, a Spanish-language AM station in the Morgan County city of Hartselle, said that in April, the bilingual deejays at the station were translating English-language weather advisories into Spanish to reach the station's thousands of listeners.

In Crossville, a DeKalb County community with a majority-Hispanic elementary school, parents are alerted by telephone in both English and Spanish of school closings due to bad weather.

One problem at Crossville, said Corona, a translator at Crossville Elementary, is that a number of residents from the Central American country of Guatemala speak a Mayan language, not Spanish. In Marshall County, numerous dialects of Spanish are spoken, and "one Spanish language does not fit all," said Anita

McBurnett, who directs that county's EMA.

EMA officials in Marshall County have attended the county Cinco de Mayo festival for the past four years to pass out information in Spanish on tornadoes and other weather threats. In Franklin County, EMA Director Gober relies on a network of Hispanic ministers to help get the weather word out.

"You can tell one of those ministers something, and in four hours all the Hispanic people in the county know it," Gober said.

John De Block, warning coordination meteorologist with the National Weather Service office in Calera, said that like most other NWS offices, his office "does not issue any bilingual products, either in text or on weather radio."

"With the growing Hispanic population and improving technology, it may be the time to examine how the warning community can find a way to translate weather products and make them available by some means," De Block said. "Traditionally, word of mouth is one of the primary means of communication in the Hispanic communities. That could be at least partially due to the language barrier. If products and services aren't available in a language you can understand, you have no choice but to wait for someone that is bilingual to understand the situation and relay it to those who are not. If the information were available in Spanish, perhaps people wouldn't wait for the word-of-mouth message and could respond to the warning and get to a place of safety well in advance of an approaching storm."

Alabama's Department of Mental Health says emergency planners should keep in mind the need for communication in multiple forms to warn individuals who are deaf or hard of hearing, or have other disabilities. When the storm has passed, the department says, those same special-needs individuals, as well as those whose first language is not English, should have information in an easily understandable form.

The department says an interpreter pool, composed of people fluent in sign language or a foreign language, should be developed to assist those who need language interpretation in preparing for and recovering from disasters. Such a pool, covering Spanish, Guatemalan languages and sign language, already exists in Marshall County.

whether to sound them. Sirens can have different tones, and in some counties the wail of the sirens is followed by a voice message.

“There is a clear need for a standard of best practices and/or guidelines for how sirens should be implemented state-wide,” states the draft of a study being done at the University of Alabama in Huntsville. The report, “Recommendations for Improved Information Dissemination During Severe Weather Events in the North Alabama Region,” is co-authored by UAH atmospheric science Professor Kevin Knupp and graduate students Stephanie Mullins and Elise Schultz.

“Variations in EMA siren procedures by county can be confusing to the public and need to be eliminated,” the report states. “Citizens that live in one county and work in another do not always understand the differences in these siren protocols, potentially leading to complacency or inaction when the citizen is indeed at risk.”

Mullins said one of the biggest problems facing those in the weather warning business is the all-too-human tendency toward “complacency and nonchalant attitudes to alerts and warnings.”

“How (do we) avoid developing or perpetuating — for lack of a better word — this disrespect to weather warning information? How do we get the public to maintain a heightened awareness as they had in the months just after the 27th, instead of it trailing off just because it’s been a while since the last ‘really bad’ weather event?”

The Tornado Recovery Action Council of Alabama proposes the following recommendations aimed at improving warning systems and research:

INTEGRATED AND PRECISE STORM ALERTS

RECOMMENDATION: Implement a statewide, integrated severe-weather alert system that provides more-precise alerts for individuals and businesses than current countywide warnings, allows individuals to enroll phone numbers, and takes advantage of smartphone technologies.

Go to any Alabama county affected by the tornadoes, and you’ll find people who were alerted to threatening weather when they heard a siren sound in their

neighborhood or a NOAA weather radio buzz in their kitchen.

But many of these same people are also likely to tell you they got a warning from Facebook or Twitter, or from a storm alert they signed up to receive on their cell phone.

Alabama and the nation’s storm warning system is better than ever, with ever more tools at its disposal. Still, in much of the state, oft-ignored sirens tend to be the go-to method for warning people of severe weather, and alerts tend to be issued for entire counties, even if affected areas are more defined.

The simple fact is that most people are lucky and have never been in the path of a tornado, even though they have been under tornado warnings many times. As a result, complacency sets in and people do not take immediate action.

The only way to change this mindset is for the state to implement an integrated severe-weather alert system that delivers more timely and precise alerts through land lines, cell phones, electronic message boards and other means.

A more reliable system would result in more people taking action

when alerts are issued. It is important to note that this system should complement existing methods of warning delivered by both the National Weather Service and broadcast meteorologists.

“This was one of the most-forecast storm systems that ever entered into the state,” said David Cantrell, assistant emergency management director in Marion County, which was hit hard by the April storms. “And there are still too many people this snuck up on.”

Part of the reason is that, while it is relatively easy to predict the possibility of tornadoes over a broad area, it is extremely difficult to know exactly where they will cause damage.

To explain how people are alerted, the National Weather Service’s De Block offers this primer on the warning system: When Weather Service radar indicates an approaching storm with the potential to spawn a tornado, NWS meteorologists alert the EMAs, media and public of the storm’s projected path. The NWS office issuing the warning also uses the Alabama Emergency Management Agency’s 800-megahertz radio frequency to alert the counties through which the storm is expected to pass.

“There are still too many people this snuck up on.”

—David Cantrell
Marion County EMA

“The warning information is also simultaneously routed through a number of private weather vendors, which often produce a radar screen snapshot that shows an outline, or polygon, of the area under direct threat,” De Block said. “EMAs may receive this information from these private vendors by an alert message, or view the warning information on weather display systems or the Internet. NWS meteorologists constantly monitor and revise the shape of the polygon, which typically allows for some normal variation in the expected path, as they track the storm’s motion. If a tornado begins to veer out of the initial polygon, meteorologists will issue a new polygon to account for the deviant motion of the storm.”

The system that would best serve Alabamians would use the latest available radar information and

technology to quickly determine the path of a severe storm and alert people in its way.

The system would send storm alerts by e-mail, by text to cell phones and by voice message. Such a system would send alerts to smartphones based on the location of the phone, not the location of the phone account. A Jefferson County resident needs to know about storms in Clanton if on business there, not about a system moving through north Birmingham. Delivery of these alerts via cell phone also gives a method of warning people whose home phone service is out because of downed utility lines.

A key component of this recommendation is the timing of the alerts. Areas should receive alerts within a half hour before the projected impact of severe weather.

Universities, students serve their state

AS A UNIVERSITY town with a famous football team, Tuscaloosa became a main focus of attention in the first hours and days after the tornadoes passed. There were grim images of massive wreckage just blocks from Bryant-Denny Stadium, and accounts of student deaths and courage amid the terror.

But the twisters’ deadly paths extended across the state, with homes, businesses and lives lost not far from other campuses, too. The widespread response from universities was immediate and did not end with the spring semester.

Higher education’s assets — from the vigor of an army

of college-age students to the expertise of faculty and staff in a range of disciplines — turned Alabama’s university communities into a vital resource in both the initial response and the long-term recovery. Students streamed into volunteer centers and hauled debris from yards. University of Alabama at Birmingham medical personnel went to Pratt City and worked through the night to triage patients. Greek organizations cooked thousands of meals.

“I was amazed to see the amount of students who helped out in our community,” said Ravi Patel, student government president at The University of Alabama in Huntsville.

University of Alabama student Matt Calderone, interning at the Tuscaloosa mayor’s office, helped open the Volunteer Reception Center for the city.

“Matt would call and say, ‘We need 30 students to go here and help with this,’” said Wahnee Sherman, director of community services in the UA student affairs office. “We sent out a lot of students over the course of the next week to help out in a variety of ways.”

Student leaders working with the Alabama Higher Education Partnership decided to focus on communities near four major universities — the University of North Alabama, UAB, Jacksonville State and the University of Alabama. Through the summer, as many as 200 students from colleges across the state performed volunteer work in this initiative, from cleaning up to giving out food with the Salvation Army



Steve Wood/UAB Creative

UAB students pitch in to clear storm debris. Alabama’s universities provided vast resources to aid in the recovery from the storms. Not only students but also faculty and staff members lent time, expertise, and muscle to projects throughout the disaster counties.

Storms change paths, and if alerts are issued too soon, the accuracy of those forecasts decreases. At the same time, people need to be given enough notice in order to protect themselves.

An aggressive statewide campaign would be necessary to give Alabamians the opportunity to sign up for this system and to list several phone numbers — home, school, work and/or cell — at which they would like to receive severe alerts. The state should consider partnering with cell phone providers to make the service easily available, and with churches and other nonprofits such as the Boy Scouts of America to ensure that people sign up for the system.

or assisting Christian ministries in Birmingham, said Whitney Wood, membership development director for the partnership.

One group of students helped with recovery efforts in Phil Campbell during the summer. “When they were finishing up, we asked if there was something else we could do. The police chief said, ‘Yes. Can you paint?’ We said sure,” Wood recalled. So plans were made to return to Phil Campbell.

The effort to aid shattered communities unfolded even as universities reached out to help their own students, faculty and staff who had lost homes or family members. With classes, finals and graduation called off, UA ran a shelter for its victims. Free meals and dorm space were provided at UAH. A tornado relief fund was formed at UAB.

The expertise of higher education came into play as the longer-term recovery kicked in.

UAB’s School of Business helped administer a “forgivable loan” program for tornado victims, with students helping identify prospective borrowers. The Alabama Vision Alliance, which includes UAB’s optometry school and eye foundation, sent a mobile eye-care unit to hard-hit areas to provide exams and new lenses.

In Birmingham, Auburn University’s Urban Studio architecture program, with design equipment, databases and maps, teamed with national experts from the American Institute of Architects to help the city’s devastated communities, particularly Pratt City, draw up a vision for a future.

Students from the University of Alabama and Auburn teamed up with Habitat for Humanity to help build

Countywide is too wide

While the National Weather Service can track storms and project a storm’s path, alerts are often issued countywide instead of being limited to the projected path.

In most counties, sirens are not technically equipped to go off only in the areas that are in the polygon. Jefferson County, in fact, is working to correct that.

As for weather radios, the signals they receive from the Weather Service carry a county code and are no more specific. The radios blare regardless of the threat’s location in a county, even if the subsequent voice alert gives more detailed information.

So if a storm’s forecast path runs along county lines,

two homes in the Tuscaloosa area, a project called “House United.” With students returning in August for the fall semester, the University of Alabama’s “Hands on Tuscaloosa” initiative, which had been in place before the tornadoes, put its focus on the more desperate recovery work.

“Because of the tornadoes, immediately after the storm I felt like our students understood what ‘community’ meant in a way that maybe they hadn’t before,” said Sherman.



Joe Songer/The Birmingham News
University of Alabama students nail down the floor of a house they’re helping build in the Holt community near Tuscaloosa. They were part of a project called House United, in which Alabama and Auburn students joined to build two houses for families who had lost their homes.

a very broad area might be put on alert.

The danger: People become complacent to the sirens or turn off their weather radios so they are not jarred out of bed in the middle of the night for a storm 50 miles away.

In the aftermath of Alabama's April 27 tornadoes, many people whose homes or communities were affected by the storms said they had become indifferent to warning sirens because the sirens had sounded repeatedly over the years and nothing had happened to their neighborhood or place of business.

That sentiment surfaced at seven community forums held by the Tornado Recovery Action Council and at a mid-October town hall meeting sponsored in Hoover by the National Weather Association. Responding to a questionnaire, nearly half of the Hoover town hall meeting's respondents said they did not rely on sirens to be aware of a severe weather threat "because they aren't specific enough for my location."

Nearly a third of the respondents said they did not rely on sirens because they can't hear the sirens indoors, and nearly all said they favored more precise warnings.

Clearly, siren warnings play a role, but we cannot rely on sirens alone. More than ever, people have more than one egg in their warning baskets, and that's why they have signed up for a Twitter feed or a warning alert on their cell phone.

"You can't really rely on one type of technology," said the Weather Service's De Block. "We've got to make [a warning] available in as many ways to as many people as possible."

Various phone alerts are free — some are available through local TV stations — and others offer additional features for a fee.

Some alerts are homegrown. In Marion County, Cantrell, the assistant EMA director, used an app on his iPhone to send text weather warnings throughout the day on April 27 to several dozen people, most of them in his hometown of Hackleburg, who had signed up to receive them. His last warning went out about 24 minutes before a tornado ripped through the town.

"I've had several folks tell me 'I wouldn't have been in the storm cellar if you hadn't told me to go,'" Cantrell said.

Warnings need to go to people via something they



Frank Couch/The Birmingham News

A statewide, integrated warning system should incorporate technologies including smartphones and electronic billboards, such as this one on Interstate 359 in Tuscaloosa.

“have with them all the time, and most people tote a cell phone all the time,” said Marion County EMA director Jimmy Mills. “That’s the first-line priority.”

Several counties have purchased a warning system called CodeRED, which uses the National Weather Service warnings to alert people in a storm’s path.

In DeKalb County, where 35 people died in the April 27 storms, about 8,000 people have signed up for the service, said Lester, the county’s deputy EMA director.

Reba Bailey and her daughter Debbi, who live in the High Point community, signed up for the alerts during a visit to the county fair in fall 2010.

On the afternoon of April 27, they got a voice message alert moments before the tornado destroyed their home, and they managed to get to a safe place. For much of the day, the Baileys had been watching storm reports on television. But by the time their phone rang, their power had been out for about an hour. They had no backup batteries for their weather radio, and no siren was near enough for them to hear its warning.

“If it hadn’t been for the phone call, we wouldn’t have had any warning whatsoever,” Reba Bailey said. About a mile from their double-wide, five people died.

Across the state in Marion County, which lost more than 20 of its residents, most of them in the small town of Hackleburg, the county commission has said it cannot afford such a system.

But quick and reliable notifications of severe weather should be a statewide standard.

De Block, for one, said it makes sense that Alabama set up its own alert system in which people could enroll at no charge to receive text or voice warnings specific to their area.

With our history of deadly tornadoes, it seems like a logical step.

WEATHER RADIOS

RECOMMENDATION: Push for the development of technology to transmit localized warnings through weather radios. Promote their use and upkeep, and develop a system to purchase and distribute them, with a priority focus on Alabama’s special-needs population.

NOAA weather radios can be effective warning devices. They sound an alarm based on information they receive directly from a National Weather Service transmitter, and a computer-generated voice message detailing the area under threat follows that alarm.

On April 27, after the power went out in his High Point home, Dean Mitchell used his battery-operated weather



TRAC photo

Weather radios are a key component of Alabama’s warning system, but their alerts, which now go out countywide, should be more precisely targeted.

radio to monitor the progress of the approaching storm. The radio was blaring with warnings, but Mitchell did not become concerned until it issued one for Rainsville, 12 miles to the southwest.

“I said, ‘Evelyn, that’s getting too close,’” he recalled telling his wife. “‘We’re going to have to watch it.’” A few minutes later, the couple huddled in the walk-in closet they had set up to be their safe room. Two trees fell on their home.

While weather radios can help people, as was the case with the Mitchells, they still can be more effective. The National Weather Service warnings are transmitted with a countywide code, and thus the radios sound on a countywide basis, not just in the area under threat.

The Tornado Recovery Action Council recommends that the Weather Service develop the technology to send area-specific warnings to weather radios, and that manufacturers build radios capable of receiving and transmitting those warnings. Continuing the system in which radios buzz throughout a county is not as effective and can cause users to turn them off or not listen to them.

“Treating storm-based warnings as county-based warnings neutralizes the progress of storm-based warnings and can be confusing, even frustrating, to the public,” states the University of Alabama in Huntsville student-faculty study on ways to improve weather warnings.

One Alabama meteorologist familiar with the weather radio warning system said its redesign is “fruit

that's ripe for the picking. To me, it seems like a no-brainer that we need to develop this technology and institute it as soon as possible."

The Tornado Recovery Action Council recommends that, once a new system is in place and weather radios are equipped to issue more precise warnings, the state and counties work with nonprofit organizations and local media to promote their use and distribute them to the homebound and other special-needs populations. A sales tax holiday for disaster preparation items would give people an incentive to purchase radios.

In Marshall County, the local EMA worked with the county commission and the local council on aging to get 100 radios, programmed and equipped with backup batteries, to the elderly and homebound. Emergency Management Director Anita McBurnett said every school in the state should have a weather radio, and her agency has made sure that every school in her county does.

In post-April 27 comments, Birmingham meteorologist James Spann has been calling for weather radio improvements.

"The NOAA weather radio must be upgraded to the polygon warning system soon, or it will become obsolete," Spann said late last year. "Why hasn't NOAA upgraded their system so the receiver manufacturers can produce models with GPS included so they sound only when the receiver is in a warning polygon?"

ATMOSPHERIC RESEARCH

RECOMMENDATION: Pursue funding to conduct academic research in Alabama on the factors responsible for the generation and maintenance of tornadoes in order to better understand the conditions that produce, strengthen and direct tornadoes; research focus would include the relative importance of topography, differential surface roughness and gravity waves.

Even before 62 tornadoes hit their state on April 27, Alabamians knew all too well that they lived in a twister target.

National Weather Service maps show Alabama in the heart of the nation's tornado-prone zone. Over the years,



Joe Songer/The Birmingham News

Sirens like the battered one at top right still constitute a major component of the severe weather warning system. In rural areas, such as this one in Calhoun County, they may not be audible everywhere. And newer technologies using weather radios and smartphones can focus warnings more precisely.

the state has seen tornado-inflicted deaths, injuries and damage in places like Huntsville, Goshen, Enterprise, Tuscaloosa and Jefferson County. Now, because of April 27, University of Alabama in Huntsville Professor Kevin Knupp says Alabama may be the state with “the highest frequency of strong tornadoes.”

“We have looked at various metrics that place the outbreak in perspective,” Knupp said. “It is No. 1 in total tornadoes in a 24-hour period and in fatalities, surpassing the so-called Jumbo Outbreak of April 3-4, 1974.”

Even before April 27, Weather Service data showed Alabama among the states with the highest number of tornado-related deaths from 2001 to 2010. It also is part of another select group: states with the highest number of tornado watches per year.

Tornadoes cannot be prevented, but better knowledge of their patterns and destructiveness can help people better prepare for them and build homes that can have a greater chance of withstanding them. At some of Alabama’s universities, scientists and engineers have been conducting research along those lines, and the Tornado Recovery Action Council recommends that such research be expanded and given the necessary funding.

Some funding came in pretty quickly. Not long after the April 27 tornadoes, the National Science Foundation issued a grant to a research team that examined more than 150 structures damaged in the Tuscaloosa area. Three University of Alabama engineering professors participated in the study, which examined how construction techniques could better strengthen buildings against wind damage.

At some universities, storm-related research is part of the ongoing focus of some faculty members.

At Auburn, geography Associate Professor Philip Chaney is studying why people don’t always take cover when a severe storm threatens. He and some

of his colleagues interviewed more than 100 people in the DeKalb County town of Rainsville in May. An early analysis showed that those who lived in mobile homes were not as prepared for a tornado as those who lived in more permanent structures, he said.

“Another issue we are evaluating is whether or not people knew how much time they had before the tornado hit their community ... and how that information influenced their decision about what to do for shelter,” he said.

The state’s center of severe-storm research is at the University of Alabama in Huntsville, where Knupp, a professor in the atmospheric science department, has been studying tornadoes for

years and is an adviser to a severe-storm research group.

The research group, which does extensive field research, studies not only severe weather in North Alabama but also the spinoff storms and flooding that hurricanes can produce after they hit the state’s coast and move inland.

Knupp said the atmospheric science department received over \$4 million from Congress from fiscal 2006 through fiscal 2009, and the funds helped the department ramp up “research instrumentation and a nationally recognized research program that made a lot of progress in a short amount of time.”

But the funding has fallen off just as the department’s student and faculty researchers are primed to test and refine some of the theories they have formulated on factors that influence a tornado’s formation, change in intensity, direction and destructive potential. If tested and proven, the theories could mean more accurate and timely tornado warnings, Knupp said.

“We collected a gold mine of data on a wide spectrum of tornadic storms on the 27th,” Knupp said. Now his department needs additional dollars to sift through the data and find its valuable nuggets, and to leverage its potential for more long-term research funding.

University research can lead to more accurate and timely tornado warnings.

Respond

4

How we improve our initial response

Recommendations include upgrading communications and emergency management training and making better use of volunteer resources

THREE WAVES OF tornadoes and violent thunderstorms hit Alabama on April 27, in the morning, at midday and in the afternoon. The storm knocked out power and communications. It blew down trees that blocked roadways, and poured down rains that flooded streets. It destroyed homes and businesses. It killed, injured and psychologically devastated people. It was a catastrophe that struck the entire northern half of Alabama, a state that is used to dealing with tornadoes and violent storms of a much smaller scale.

Emergency managers, trauma coordinators, volunteers, hospital workers, police and firefighters all responded, many braving the weather and selflessly

leaving behind their own families and homes in a time of great danger. Some were inadvertently directed into harms' way as they moved to help with rescue operations in areas slammed by the storm's morning wave. For example, Huntsville weathered the storm's first onslaught in relatively good shape, but nearby Marshall County was hit hard. So Huntsville dispatched firefighters and 10 police units to help.

"They were caught in yet another tornado," recalled Rex Reynolds, a veteran police chief and now Huntsville city administrator. And by then, Huntsville had been hammered and needed the first responders who had been dispatched to Marshall County.

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Joe Songer/The Birmingham News

Cary Baker, pastor of Grantswood Baptist Church, clears trees with his chain saw in the front yard of a home in Moody in St. Clair County after the storms of April 27. Volunteers from churches and other religious groups did heroic amounts of work in Alabama.

“This was like a combat environment,” said Army Col. Jim Hamilton, garrison commander at Redstone Arsenal. “We all want to rush to the sound of guns and do something, but that’s probably where you don’t need to be.”

Speaking at a symposium on the storm, Hamilton said staging a response to an event like the April 27 storm requires tough decisions, along with a well-practiced and effective allocation of scarce resources. “You’ve got to have a system in place ahead of time,” he said. “There are thousands of things that all need to be done, and they can’t all be No. 1. The hardest decisions are to withhold resources.”

Successes, failures

Amid the melee of April 27, many things went well. The state Emergency Management Agency activated early, and the response by the Alabama National Guard was phenomenal.

Gov. Robert Bentley, in his role as commander in chief, made a wise decision in bringing the guard into action in the immediate aftermath of the storms. There were nearly 3,000 troops on the ground at the peak of mobilization.

Elected officials from places like Madison County pulled together to establish order out of chaos. “We needed each other in different ways,” explained Paul Finley, mayor of the city of Madison. Churches and civic groups quickly organized to help, and individual volunteers seemed to come from everywhere and were willing to do anything. People even had good things to say about the Federal Emergency Management Agency, although there were complaints, too.

In Pratt City, long before the storms struck there had been an active effort to give people Community Emergency Response Team (CERT) training. So some key citizens in that community knew what to do when disaster struck. “I think it really paid off,” said Dr. Thomas Ellison of the U.S. Medical Reserve Corps. The response was nothing like the disaster within a disaster that occurred with Hurricane Katrina, he said. “I didn’t see anything that was massively wrong with this,” Ellison said.

But there were problems.

During disasters, Alabama depends upon EMA directors at the county level to establish communications, monitor needs and request help from the state EMA, if necessary. The position of county EMA director is pivotal in establishing a quick and effective response and recovery. During and after the April 27



Mark Almond/The Birmingham News

An Alabama Power truck drives past a destroyed medical clinic in the Walker County community of Cordova. Getting medical care for the injured after the tornadoes was a challenge in both rural and urban areas. Some hospitals were overwhelmed while others were underused.

tornadoes, Alabama’s network of county EMA directors functioned well in many instances, but failure points were revealed. Some city officials bypassed county EMA directors and went directly to the state EMA for assistance because they didn’t understand the EMA’s “response structure” or because the structure wasn’t functioning properly.

When a mass casualty event occurs, as it did on April 27, fire departments, ambulance services, dispatchers and hospitals rely upon a system that ensures the best possible medical care for the largest number of people. Developed in the wake of 9/11, it is part of the National Incident Management System, or NIMS. The emergency management doctrines defined by NIMS operate on many levels. During the April tornadoes, the execution of NIMS, or lack thereof, was critical, particularly in the triage and routing of trauma patients throughout the state. Some hospitals were overwhelmed with patients while others were underutilized.

Calling in the Guard

THE APRIL 27 TORNADOES triggered the largest domestic response of the Alabama National Guard in state history. At the peak of activity, on May 5, about 3,000 Guard personnel were deployed in 19 counties throughout Alabama.

The response was swift, effective and massive. Within 35 minutes of tornado impacts, guard members were patrolling Tuscaloosa and Cullman. Overall, the guard responded to more than 100 requests for assistance after the storm. In Jefferson and St. Clair counties alone, it distributed more than 77,000 bags of ice, 43,000 cases of bottled water, 41,000 cases of meal kits and 32,000 boxes of tarpaulins.

It was an impressive display of military support.

Lt. Col. Jim Hawkins, deputy director of military support for the Alabama National Guard, which falls under the direction of the governor, recorded some of his impressions on May 11 while touring disaster zones.

“A few of us have done this type of mission before, but most were brand new,” Hawkins wrote. “They have performed flawlessly in a horrible situation. I am so proud of them. Our troops have done amazing things out there, and they are still hard at work.”

He noted that from the air, Hackleburg looked as if it had been hit by a small nuclear weapon. From the



Bernard Troncale/The Birmingham News

At peak, nearly 3,000 National Guard troops responded following the April 27 tornadoes. One of their commanders proudly said, “They have performed flawlessly in a horrible situation.”

ground, he described volunteers swarming over the area helping with recovery.

“Flying back to Montgomery now,” he wrote. “I don’t know what to think. ... Execution was nearly flawless. But it is a drop in the well of need out here. I am tired, sick, proud, sad, hopeful. ... It has been a long two weeks in the EOC (Emergency Operations Center) but not as long as in Hackleburg.”

The response also revealed that civilian authorities in Alabama could be providing a little better support for the guard. There was a fair amount of confusion among civilian authorities about exactly how to use the National Guard — and what its limitations are.

“We can do a lot of things, but we shouldn’t be the first option,” Hawkins explained later. The reason is simple: Using the National Guard can be expensive. It costs about \$250 a day to keep a soldier in the field. So a company of 100 soldiers costs \$25,000 a day.

Some requests for help lacked specificity. An arbitrary request for 100 soldiers can waste time and resources when the actual need might be met with four soldiers and a generator.

“If we can get counties to ask for capabilities instead of specific troop numbers or units, we can better meet their needs,” Hawkins said. “This will also greatly speed up the process because we won’t have to go back and forth with the county trying to find out what they actually need.”

Following April’s storms, the National Guard reviewed its application process and prepared to publish “A County EMA Guide to Requesting Alabama National Guard Support.”

Also, there were complaints about soldiers not being paid in a timely manner. When deployed within the state, members of the guard are essentially paid as state employees instead of through normal military channels. However, no direct-deposit system was in place, so checks had to be picked up and distributed manually. Guard officials have reviewed the process and made recommendations for fixing it.

Cell phone, land-line telephone and Internet systems failed throughout Alabama on April 27, creating a crisis of communications among first responders. Radio channels clogged with a babble of constant, overlapping traffic. Some agencies were unable to communicate with each other simply because they operated on different frequencies or used different names for the same radio channel.

The volunteer spirit

An army of volunteers poured into disaster-stricken areas after April 27. About 70,000 of them trooped through Volunteer Reception Centers set up around the state. And then there were the volunteers who worked through organizations like the Salvation Army, churches and the American Red Cross. They are yet to be counted, but there were vast numbers of them. In all, volunteers made a huge impact on response and recovery, saving the government millions upon millions of dollars and easing the suffering of countless storm victims. It was an effort that reflected the best in people, but there is room for improvement, particularly when it comes to better organizing of volunteers and ensuring that they are sent to places with the greatest needs.

It may be tough to do, but Alabama must reap wisdom from that terrible wind and rain of April 27.

“Internalize the experience at the state level, at the local level,” one emergency management expert said. “You can never replace the loss of life, but from my perspective as an emergency manager, you can’t put a price tag on the experience that my staff has gained, from junior to senior. It is leadership and movement. Adapt, overcome and improvise. That’s what we do best.”

We must use the experience of April 27 to sharpen and focus Alabama’s response to disasters. The Tornado Recovery Action Council of Alabama proposes the following recommendations aimed at improving response:

EMERGENCY MANAGEMENT TRAINING

RECOMMENDATION: Require more accountability by establishing minimum standards and better training for county EMA directors. Conduct a needs assessment of each county EMA.

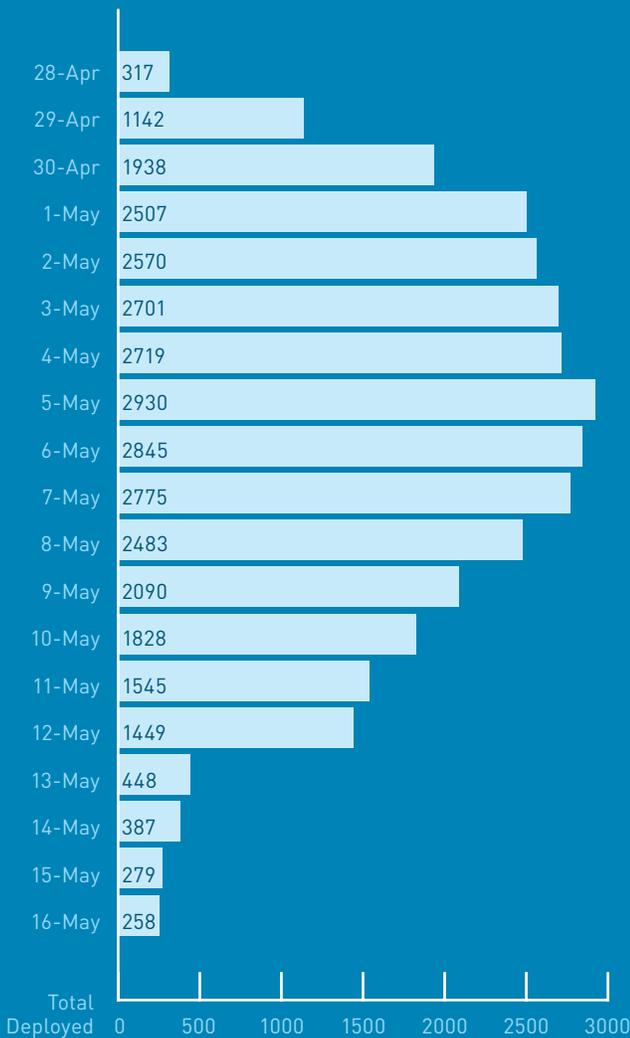
There is no statewide minimum standard for county EMA directors in Alabama. They generally are appointed by county commissions or work under a combined board composed of officials from several municipalities and a county. In 2007, the state Legislature provided a training incentive for county EMA directors. They receive increased pay for gaining the education and experience to become a Certified Local Emergency Manager (CLEM).

As established by Act 2007-462, the CLEM voluntary standard includes:

- 1) Two years of college-level education (64 semester or 96 quarter hours). These hours do not have to be

MILITARY SUPPORT

The Alabama National Guard quickly deployed in response to the April 27 storms, with the number of troops peaking on May 5.



Source: Lt. Col. Jim Hawkins, deputy director of military support, Alabama National Guard

on a transcript, only applicable to a transcript at an accredited institution of higher education.

2) Three years of work experience in emergency response, emergency management or qualified military service.

3) Two hundred hours of course work in emergency management, as established by the state EMA director.

There are 66 county EMA directors in Alabama. Many of them are CLEM certified, but others are not, officials say.

The CLEM voluntary standard could become the basis for a mandatory standard, but that should be decided after consideration by the state EMA director and officials from the Association of County Commissions of Alabama and the Alabama Association of Emergency Managers.

It's a difficult but necessary decision. Emergency management experts say it is impossible to pin down exactly what makes a good, effective county EMA director, but leadership tempered with training, intelligence and common sense is good start.

Education alone is not a sure predictor for a county EMA director's performance. Some are highly educated but lack operational sense, one seasoned emergency manager said. Others may have just a high school education but bring with them an extraordinarily high level of leadership and ability.

The same is true for experience. "We've had directors who have been in that position for years and might not have done as well as they should have done," the official said. "For some, this was their first disaster, and their performance was outstanding."

Are local governments ready?

IN THE WINSTON COUNTY city of Haleyville, Mayor Ken Sunseri said, officials have put together the city's first-ever disaster-preparedness plan. Sunseri said the 180-page plan was prepared in response to the April 27 tornado that destroyed or damaged about 70 homes or businesses and left most of the city without power for at least three days.

In the days prior to the storm, the city had taken many steps to be ready, including the holding of a meeting of all department heads, the designation of the fire department as the emergency operations center, the fueling of all city vehicles, and the identification of "critical areas" such as the hospital, schools, assisted-living facilities and nursing homes. On the day the storm arrived, the city opened its shelter at 3 a.m.

"No matter how well you've prepared, there's always something that will come up," Sunseri said. The key, he said, is to learn from each experience and be better prepared for the next one.

"Every day you have a potential for a disaster," he said. "It could be a fuel truck or a train wreck. You have to do basic planning for all of it."

Following is a partial checklist of major emergency-management elements the state Emergency Management Agency recommends for municipal officials. They derive from studies conducted by the International City/County Management Association and the Federal Emergency Management Agency.

- Have you personally reviewed the city-county emergency operations plans in the past 12 months?
- Do you have a clear understanding of your authority and responsibilities in disaster situations?
- Have you participated within the past two years in an emergency training and/or exercise of the emergency plan?
- Is there a provision in the emergency plan for a single news media point of contact (e.g., public information officer) during an emergency or disaster operation?
- Does the community have adequate accounting and disaster record-keeping procedures to document the community's requests for reimbursement under state and federal emergency assistance programs?
- Does the emergency operations plan contain lines of succession (at least two backups) for key officials, and has the authority to act in their stead been pre-delegated?
- Are your mutual aid agreements with other communities effective and current?
- Are emergency exercises conducted to include schools, special-care facilities, hospitals and those industries that have extremely hazardous materials?

It helps to understand the role that county EMA directors must master. When a disaster is declared, the governor can become a sort of supreme commander in the state for 60 days, essentially holding power over all emergency management officials. That's the law, but in reality, emergency management is a process that works from the bottom up, through the National Incident Management System. It's a response system that recognizes that officials closest to a disaster are best at evaluating needs and providing hands-on management.

The highest-level elected official — usually a mayor or county commission chairman — is in charge of a disaster area. Such officials have resources and the ability to direct them, but when those resources are depleted, the officials are supposed to work through the county EMA director to request state help. In turn, the state EMA can access resources from the federal government. The NIMS doctrine creates the structure and language to make this system work. If county EMA directors fail to use NIMS, breakdowns occur.

For the April 27 storms, NIMS was not used in all counties. That's not surprising. Few people expected a storm of that magnitude. In the wake of dozens of tornadoes, there was confusion, lack of communication and destruction of emergency management infrastructure. Some elected public officials in hard-hit areas were stunned. "They were just so absolutely shellshocked, inundated," recalled the head of one state agency. "It just took a few days for them to recover from the shock."

The shock is over, and it's time to improve the system by strengthening training and relationships. The state EMA recognizes that and recently added requirements in grant applications that county EMAs participate in three annual drills. The state EMA controls the flow of federal money to county EMAs. It is appropriate for the state EMA to use this power to make county EMA directors accountable for enacting NIMS doctrine.

Relationships between a county EMA director and mayors must be strong, too, for the system to work.

For example, there was confusion among some city officials about where to call for help with security. In a Montgomery meeting of state officials, one official said he went to Cordova the day after the disaster, and security was good. Then he went to another town in the

same county on April 29, and there had been looting the night before. The only two public officials available to maintain order were the mayor and police chief. "I don't think they knew who to call," he said.

So we need better training for elected officials, and the state EMA is developing a comprehensive course for them on how NIMS operates and how they can use the system during a disaster.

Defining vulnerabilities

It is also necessary for county EMAs and municipalities to assess their emergency needs. Emergency management officials call this a "gap analysis," and not all counties and municipalities have done this in the past. The process involves looking at disaster scenarios like April 27 and then determining if there are enough resources on hand. Officials should know the gaps between what they have and what they need in a disaster. It doesn't mean those gaps must be filled, but it does

mean that public officials must be aware of these weaknesses. In turn, the state EMA can assess trends and prepare for filling gaps as necessary in a disaster.

The state EMA is ready and willing to provide assistance to counties and cities in conducting these gap analyses, or, in military parlance, after-action reports that include lessons learned. Coincidentally, it is also time for cities, counties and the state to

update emergency operations plans, which they do every two years. Lessons learned from the storm and information about gaps should be incorporated into these updates.

In addition, the state EMA is already asking counties to identify locations that could be used in future emergencies as sites for disaster recovery centers. These centers are a joint operation of state and federal agencies and provide a central location where disaster victims can access critical services such as FEMA grants and other aid. "At our peak, we had 51 disaster recovery centers up and running at one time," one state EMA official said. That's easily a state record and far more centers than the federal government is used to operating in a disaster, the official noted. Nonetheless, there should be more thought and preparation given to establishing these centers quickly and at appropriate sites.

The shock is over, and it's time to improve the system.

Helping hands extended across Alabama

THE WORST OF TIMES often bring out the best in people. Alabamians proved this during the hours, days and weeks following the April 27 tornadoes. Countless stories emerged about neighbors helping neighbors, even ones they hadn't known before.

"I have never been more proud to be an Alabamian," Gov. Robert Bentley said. "Since this tragedy, we have seen the true character of our state. Alabamians care about one another. We take care of each other."

First responders — firefighters, police and emergency medical personnel — jumped into action immediately. Utility crews, hospital staffs, Alabama National Guard members, faith-based organizations and others responded quickly too. Donations of essential supplies quickly piled up, ready to go where needed.

Inspirational tales soon poured in. A neighbor with a chain saw gallantly cleared fallen trees to reach an elderly couple stranded in their battered Hanceville home. Alert neighbors checked on a pair knocked unconscious at their secluded Lake Martin house, providing first aid and transportation via bass boat to Alexander City for treatment at Russell Medical Center. Huntsville cosmetology students offered free haircuts to people displaced by storms.

Such individual acts of kindness collectively speak volumes about the community. Larger institutional heroes pitched in too.

- Autoworkers idled by a parts shortage caused by March's earthquake and tsunami in Japan were dispatched on company time to help clear storm debris and unload donated materials. More than 1,600 workers from Honda's assembly plant in Lincoln assisted communities in the surrounding four-county area during May and June. Workers from Toyota's engine plant in Huntsville logged 26,000-plus hours assisting as needed throughout northern Alabama from May through September.
- More than 1,500 medical professionals with

the Civilian Volunteer Medical Reserve Corps — physicians, nurses, pharmacists, dentists, veterinarians, epidemiologists, chaplains — began assisting the day after the storms everywhere from Tuscaloosa to Pratt City to Wetumpka.

- The nonprofit group Alabama Forever, created in response to the storms, rustled up 90 sets of shoulder pads and helmets to replace tornado-ruined gear for the Pleasant Grove Youth Football Association.



Mark Almond/The Birmingham News

This message in front of an obliterated home in the Walker County town of Sipsev expresses a widespread sentiment among victims of the storms. Alabamians did whatever they could to help. As Gov. Robert Bentley said, "We take care of each other."

- A Facebook request seeking helpers to unload a train car full of bottled water sent from Florida to North Alabama quickly attracted 200 volunteers.

- Employees of Cohens Electronics and Appliances in Montgomery refinished damaged floors in 12 cabins and replaced ruined furniture in 48 bedrooms at Children's Harbor, an Elmore County camp serving seriously ill children and their families.

- The Birmingham Association of Realtors planted saplings to replace more than 100 uprooted trees in North Smithfield, Concord, Fultondale and Cahaba Heights in Jefferson County.

Not all the neighborliness came from close neighbors. A Michigan group driving south to the beach stopped in Cullman for several days to sweep broken glass from streets and pile debris for removal.

Citizens of Centralia in Washington state hired a professional driver to deliver a tractor-trailer load of donated supplies to Cullman simply because it's a similar-size town. Amish volunteers from Pennsylvania arrived on Sand Mountain to cut and stack downed trees, including some that fell on and around the High Point home of songwriter Dean Mitchell, who expressed his gratitude by giving an impromptu concert.

"Volunteers from every corner of the state offered hope and support to their fellow citizens in a time of almost unendurable adversity and helped make it bearable," Gov. Bentley said.

RADIO COMMUNICATIONS

RECOMMENDATION: Emergency response agencies should keep updated local tactical interoperable communications plans and train personnel in those standards. All exercises should include communication elements to ensure that these plans work in the field.

Ask Jonathan Buttram, a volunteer firefighter from Geraldine in DeKalb County, about communications on April 27, and he'll tell you what happened when he tried to use his department's radio system.

"Everybody was trying to talk all at once," he said during a community hearing sponsored by the Tornado Recovery Action Council. "We could not communicate."

Art Faulkner, director of the Alabama Emergency Management Agency, said communication failures after the April 27 storms were a problem for first responders. "I think in some areas it was a huge problem because their normal means of communications was gone, the infrastructure, everything.

"They had no backups. They never read the plan that says if you lose your radio system, here's what you do."

Faulkner said that before the storm, the state EMA provided funding for every county to develop a tactical interoperable communications plan, which sets guidelines and standards for communications in a disaster. The plans incorporate the National Incident Management System and are designed to prevent overlapping chatter. "You're going to have people coming into the area talking, and everybody can't be on the same channel," he said.

During a disaster, a leader must decide which channels should be used for what type of communications, Faulkner said. Training is the key. The state EMA offers a course for communications leaders, and it is willing and ready to provide the training.

"It's really simple," Faulkner said. "All emergency response agencies should take their local tactical interoperable communications plan and, one, make sure it's up-to-date. Two, make sure they have trained to utilize that plan. Three, include a communications element in their exercises to ensure that what they have planned works properly."

Chuck Murph, a communications expert with the state Department of Homeland Security, said communication problems have "plagued first responders here in Alabama for many years. I would categorize it as an epidemic."

Local tactical communications plans do provide for the use of common nomenclature for channels, as contained in the National Interoperability Field



Photo courtesy of the Office of the Governor

The state Emergency Management Agency provided funds for every county to develop a disaster communications plan. Still, some areas had trouble coping with communications failures, said EMA Director Art Faulkner, shown here conferring with Gov. Robert Bentley. "They never read the plan that says if you lose your radio system, here's what you do."

Operations Guide, and that needs to be implemented, Murph said. "One of the issues during the tornadoes was the fact that many law enforcement officials may have been carrying a hand-held radio that actually had the same frequency as one carried by a volunteer firefighter. But they called them two different things." That created plenty of confusion and missed communications.

Then there is a more technically complicated problem of agencies operating on different bandwidths. For example, volunteer fire departments often use UHF radios, and state troopers and sheriff's departments often use VHF radios. They can't directly talk to each other. But the state EMA has a "strategic technology reserve" that was acquired just before the April 27 storms. It includes bridging equipment that can patch bands together, and a cache of radios that can talk on both UHF and VHF bands. "So they can communicate with each other," Murph said.

The equipment was deployed and used at some of the hardest-hit areas after the tornadoes. There are limits to range and use, but it helps. "I think it would be wise ... that we continue to build out the strategic technology reserve," Murph said.

The need for a plan B

Included in communications planning is also the concept of redundancy practiced by the Alabama National Guard. The guard uses a primary system and a variety of backup systems including inexpensive, hand-held walkie-talkies, which are far better than nothing in extreme emergencies. It uses layers of communication systems.

It's worth noting that many state and local agencies, including the guard, rely upon SouthernLINC Wireless, a cell phone provider that was created to serve Alabama Power utility recovery operations. That system is "hardened" against storms through a variety of means, including backup generators at all tower sites to keep equipment going when power is lost.

But the April 27 storm was so fierce that even SouthernLINC had trouble keeping its system up and running. "This is the only storm in which we lost a tower, and we lost two," said John Heerten of SouthernLINC. When towers are destroyed, cell phone providers often rely on portable cellular towers on wheels to maintain service, but many providers didn't have enough of those available after the April 27 tornadoes. Even SouthernLINC, which prides itself on quick restoration of service after a storm, was stretched thin. "This is the only storm that I used every bit of hardware I've got," Heerten said.

If towers weren't destroyed, many cell phone providers managed to maintain coverage early in the disaster with battery and generator backup systems powering equipment. But after about five or six hours, those systems failed because they just aren't intended for long-term use. When cell phones were working, circuits were often overloaded, and people were unable to call. However, many cell phone users found that they were able to send text messages when voice service wasn't available.

In Huntsville, city officials managed to re-establish an Internet connection and found that they could communicate with their workforce and the public through a Facebook page and a Twitter account. It was an unusual system of communications, but it worked. Residents used cell phones to call relatives or friends outside the disaster zone and asked them to check the Internet for updates from the city.

Officials in Huntsville also learned that when the Internet crashes, paper forms and maps are suddenly needed again. So they are working to ensure that a supply of those materials remains available for future disasters. Other communities learned during the disaster that backup communications could come from a variety of sources, including ham radios.

Changes since 9/11

Alabama is not the only place with communication problems during a disaster. The problem surfaced during 9/11, and plenty of money has been spent trying to solve it. Most notable has been the fielding of P25 radios that can be programmed with communications priorities. For example, a commander's transmissions could be given priority over other transmissions. It's essentially a system that is designed to automatically sort out communications. It would not be a cure-all, and it would be very expensive because it requires infrastructure for transmission and handsets that cost about \$3,500 each.

"A system to cover all first responders in this state is priced at somewhere around \$220 million," Murph said. "It's just something that for some many years has just not been addressed. Now we've really got to the point that it's a massive project. The money is just not there."

Nonetheless, agencies in communities like Huntsville/Madison County have pooled resources and are investing in P25 switching equipment, which costs

about \$1.5 million a unit, and other infrastructure, such as towers with electronic repeating equipment. People building these P25 systems hope to eventually link them together and enlist agencies in other areas into cooperative relationships to allow cost-sharing and the creation of a statewide, interoperable network.

Authorities agree that a P25 system is a worthwhile, long-term goal, but while it's being constructed, there are things Alabama can do to improve communications among first responders.

"This is the only storm that I used every bit of hardware I've got."

—John Heerten,
SouthernLINC Wireless

HEALTH CARE

RECOMMENDATION: Conduct unannounced regional and multiregional mass casualty drills for the triage and transportation of patients from disaster areas; focus on the use of the National Incident Management System.

Authorities say there is often confusion in trying to get the right patients to the right hospitals after a disaster. Communication is usually poor, and coordination among ambulance services is difficult. But Alabama must do more to ensure that no single hospital is overwhelmed.

For example, in Madison County, the storm knocked out power, crashed the Internet and crippled communication systems. Amid the chaos, ambulances ended up taking most patients to Huntsville Hospital, the region's only Level 1 trauma center.

"We bombarded Huntsville Hospital," said Don Webster, chief operating officer for the ambulance

service HEMSI. "Our triage and transportation decisions weren't as coordinated as they should have been."

Just down Whitesburg Drive sat Crestwood Medical Center with its staff on high alert, waiting for casualties that didn't come — until Huntsville Hospital had been overwhelmed. "I got a phone call from the CEO of Huntsville Hospital saying, 'Hey, can't y'all take some patients?'" said Dr. Pam Hudson, CEO of Crestwood. "So we began getting those patients."

Better communication needs to take place earlier so one hospital doesn't get a crushing load of patients, she said. "We can't think of things the way we used to: 'We'll send 40 patients over there, and when they're overloaded, we'll send the next 20 to Crestwood.' That won't work."

Don't misunderstand. Huntsville first responders did function well and adapted to needs. For instance, they routed buses to central locations so they could transport large numbers of casualties with minor



Joe Songer/The Birmingham News

National Guard troops and local firefighters carry a tent that they plan to use for food service in Hackleburg. In the tornadoes' aftermath, many first responders had difficulty communicating with each other. One expert called the problem an "epidemic."

injuries to medical care without tying up ambulances. About 500 people in Madison County got to treatment that way.

Meanwhile, in Tuscaloosa, communications and command and control were devastated when the county EMA, Red Cross and Salvation Army offices were all destroyed by the storm. Travis Parker, chief of emergency medical services for Tuscaloosa Fire and Rescue Service, was near the Alberta City community

when that area was hit.

“It looked like a bomb dropped in there,” he recalled during a Birmingham conference on the disaster. He established an aid station where wounded could be treated, triaged and prepared for transport. But DCH Regional Medical Center, a 583-bed hospital, filled up so quickly that it could take only the most seriously injured patients. “Everybody else had to stay on the scene with us.

The best-kept secret in Alabama

THE CALL FROM CULLMAN Police Chief Kenny Culpepper was urgent, Hanceville Mayor Kenny Nail recalled: “I’m in desperate need. I’m running out of fuel.”

Within 24 hours after the tornadoes knocked out power across North Alabama, leaving patrol cars unable to get gas from pumps, Nail helped arrange for two tanker trucks full of fuel to make crucial deliveries. The trucks’ source: Alabama’s Surplus Property Division, a little-known agency that looms big in times of disaster.

The agency, a division of the Alabama Department of Economic and Community Affairs, supplied the tanker trucks to make both gasoline and diesel fuel available to law enforcement personnel and other first responders in the immediate aftermath of the storms. It also provided vital heavy equipment to dig out and remove wreckage — an excavator for Bridgeport, forklifts and a bucket truck for Cullman, backhoes for Ider, dump trucks for Hackleburg.

It provided generators and other essentials for those arranging shelter and food for the homeless. Calhoun County, for example, got nine tents, 192 pillows, 16 tables, 15 cases of baby bottles, 24 single-burner stoves, dinnerware and cookware, and 360 plastic jugs.

Hackleburg, which had its police and fire department offices destroyed and two patrol cars totaled, got travel trailers, cabinets, laptops and office equipment to restore its center of operations, as well as a patrol car for its small, banged-up fleet. Five months after the disaster, the trailers and furnishings helped Hackleburg Police Chief Kenny Hallmark move out of temporary rental space from the Federal Emergency Management Agency that was too costly at \$3,850 a month.

“If it wasn’t for Surplus Property, the town of Hackleburg would be in dire straits,” Hallmark said.

Shane Bailey, who is in charge of the division, said its inventory includes property no longer needed by state agencies as well as property acquired from the federal General Services Administration in an allocation process involving all states. If a state has just had a federally declared disaster, it gets first shot at vehicles and equipment.

But Bailey, who has been with Surplus Property for 13 years, said the agency needs a bigger inventory of dump trucks, scoop loaders, backhoes and similar equipment for urgent delivery after a tornado or other disaster. Getting priority from the GSA is good, but it still can take days or weeks for the vehicles and equipment to arrive.

The division, which can sell the supplies to 2,400 eligible entities such as nonprofits, local governments and school systems, does not have the budget to expand its disaster emergency response stockpile. While it typically is paid the cost for delivery of surplus goods, it did not charge for much of the emergency equipment it shipped to counties after April 27.

The Governor’s Office and the Finance Department helped cover about \$50,000 in costs, Bailey said. And some of the trucks and forklifts were to be returned after cleanup was completed. Of the two tanker trucks sent to North Alabama, one is being maintained in Hanceville for use by a deployment team in any future emergency in the area, or elsewhere in the state or Southeast if the need is great.

Bailey said former Gov. Bob Riley toured a Surplus Property warehouse while in office and declared: “This has got to be the best-kept secret in Alabama.”

Bailey’s reply: “We don’t want to be a secret. That’s the last thing we want.”



Photo courtesy of the Office of the Governor

The devastating Tuscaloosa tornado passed terrifyingly close to DCH Regional Medical Center, standing in the background.

“We were good for a long time,” he said. The temperature dropped, rain fell and night came. And the aid station offered a rare light in the frightening aftermath of the storm. It attracted people whose houses had been seriously damaged or destroyed. “All of a sudden we didn’t just have 60 patients,” Parker said. “We had 250 people, with most of those wanting to go somewhere. Our guys were overwhelmed.” It was a long, tough night.

The same was true at DCH.

Patients poured into the hospital on foot, by ambulance and aboard pickup trucks. After two hours, the staff had seen 450 patients. “We knew we were in trouble,” Patrice Jones, chief nurse at DCH, said during a Birmingham conference on the disaster.

Amid a carnage of mud and blood, children began walking into the hospital unaccompanied by adults. “We had so many children come in,” Jones said. “We had to set the ones aside who weren’t injured so we could take care of the injured. And that’s really tough for a nurse to

do. The children haunt my memory.”

Staff set up a mini-emergency room in an auditorium, which proved to be a poor location because it lacked power, running water and medical supplies. Then they opened a treatment area in the endoscopy clinic. They brought patients into the cafeteria to treat them, and the X-ray department became a small treatment area of its own because of the number of patients who had been sent there for X-rays.

“A big lesson learned for us was that we need to have better strategic placement of where we open those alternate treatment sites in the future,” Jones said.

Empty beds up the road

In Jefferson County, about 50 miles up the interstate from Tuscaloosa, a massive medical community of more than a dozen hospitals was on high alert and ready to take patients, even though tornadoes had also torn deadly paths through that area.

For example, a tornado ripped through Pleasant Grove, and a command center was quickly established at the fire department. Alan Bowman, operations supervisor for Rural/Metro ambulance services, was drafted to head emergency services.

Paramedics treated patients, and Bowman worked on triage. Charles King, market general manager for Rural/Metro, arrived and began directing ambulances. “I controlled all the ambulances that came into the zone,” he explained. “I had them staged. If they needed an ALS (advanced life support) ambulance, I had one. If they needed a BLS (basic life support) ambulance, I had one.”

And the ambulance drivers were communicating via SouthernLINC cell phones with the Alabama Trauma Communications Center, which provided directions to appropriate hospitals. “We did that so we didn’t overload one hospital,” King said. “We did what we had to do, but we kept the system going.”

Joe Acker, head of the Alabama Trauma Communications Center, said such coordination under pressure is the product of working the NIMS every day,

and drilling and practicing. “I’m not saying we’re doing everything right, but it worked great. Maybe it’s because we practice it so much here. We do it on every scene.”

A few ambulances and paramedics were dispatched to Tuscaloosa, but there weren’t many calls from that area for assistance, Acker said. He did get calls from Jefferson County hospitals telling him they were ready and able to take patients.

The state’s largest emergency department, at UAB Hospital, felt the strain but managed, largely because so many of the institution’s health care workers heard about the disaster and came in to help without being called. “I remember thinking, ‘What are we going to do with all these people who are just standing around?’” said India Alford, nurse manager for the UAB emergency department. “Quickly that changed when we began to receive some of the first patients. Patients started to come and come and come. It was a train that never stopped.”

Normal emergency room space filled, and recovery bays in operating rooms were opened to handle the overflow. It was tough, but UAB managed. “It was my

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Joe Songer/The Birmingham News

This Salvation Army Disaster Relief Center offered everything from food and clothing to toys and cleaning supplies. Help also came through such new channels as social media. However, the storm exposed a need for coordination of those powerful tools. A Twitter or Facebook request for diapers might have left one location buried, while other areas remained bereft.

absolute proudest moment of being associated with the ER and staff,” Alford said.

Emergency room doctors and nurses at Children’s of Alabama cared for 60 young patients injured in the storm. Fortunately, on April 27 the hospital was not filled to capacity, as it often is. An after-action report from Children’s noted that there could be a need in future disasters to move critically injured children to more distant locations. “The few adult referral hospitals in the region with the needed major trauma capabilities already seemed to be at capacity dealing with adult victims so we did not expect any significant surge capacity to exist for young children outside our hospital,” the report said.

Drills and training

Overall, Acker and other authorities believe the system for routing patients can be improved statewide if NIMS is drilled and trained into first responders. “This is the first time we’ve had multiple regions involved in a mass casualty incident,” Acker said. “We need to do regional drills, and we need to do multiregional drills, too.”

Drills should be unannounced, and involve triage and movement of patients across jurisdictional boundaries. In the process, communications among first responders must be improved at all levels, and the state EMA is willing and eager to provide training for that. Communication must also be improved among the Alabama Trauma Communications Center, the state EMA’s emergency operations center and the state Department of Public Health’s Incident Management System, a Web-based program that is designed to provide real-time monitoring of health institutions like hospitals, nursing homes and EMS providers.

The day after the storm, on April 28, the state was supposed to have participated in a multistate emergency drill for an earthquake, the Great Central U.S. Shakeout. Of course, the drill was canceled in Alabama and other tornado-ravaged states, but it went on elsewhere because people understood the vital necessity for continuing to improve disaster response.

VOLUNTEERS

RECOMMENDATION: Move forward with plans by the Governor’s Office of Faith-Based and Community Initiatives to rebrand the office as Serve Alabama, and more clearly state its mission of coordinating volunteer services.

Volunteers are great, but they can be difficult to organize, particularly when they are unaffiliated and

untrained. For example, consider what happened in Tuscaloosa the first Saturday after the Wednesday storm.

Brooke Fussell of the Governor’s Office of Faith-Based and Community Initiatives knew ahead of time that volunteers would pour into the area. The media, University of Alabama alumni, and Facebook and Twitter were all energized. It was clear that people wanted to help the community recover, and they were coming that weekend. But nobody knew how many would actually show up.

“We had a feeling it was coming, but you never know what kind of response you’re going to get,” said Fussell, director of disaster preparedness and response. “It was all individuals.”

Michael Dillaber of Mobile, then president of Alabama’s Voluntary Organizations Active in Disaster (VOAD), had helped set up a Volunteer Reception Center in Tuscaloosa to register, organize and deploy the volunteers. “I remember standing in that room saying, ‘I hope this works,’” he said.

Typically, a volunteer reception center can handle between 500 and 1,000 volunteers a day, and two centers were quickly established in Tuscaloosa. Dillaber thought that perhaps 10,000 people, at maximum, might show up that Saturday.

That was a fairly accurate estimate, considering that 12,000 came Saturday and then 8,000 on Sunday. Although stretched, the system worked, and it demonstrated the absolute necessity of setting the stage for volunteers after a disaster. It also demonstrated the difficulty of trying to organize individual volunteers not attached to a group.

One state official noted that after the storm, individual volunteers tended to accumulate in places mentioned most often in the news, like Tuscaloosa. Unfortunately, some other, less-publicized areas needed help too, and it was slow in coming.

For example, at High Point in DeKalb County about 100 volunteers gathered in the parking lot of the community’s badly damaged convenience store within hours of the storm’s passing. They helped with rescue and then went home. The next day, a state senator dropped off water. A few days later, an official from across the county showed up and took water and ice from the store for distribution elsewhere, said a woman who operated the business. So the next day, she said, “I had a man who cried because he couldn’t get a drink of water.”

Then it seemed like the world forgot about High Point. “We’re out in the middle of nowhere,” another resident



Michelle Campbell/The Birmingham News

The Red Cross played an important role in the aftermath of the April 27 tornadoes. The group reported that the outbreak destroyed or severely damaged more than 13,500 housing units in Alabama.

said during the public meeting in Rainsville held by the Tornado Recovery Action Council. Three weeks after the storm, some people in the community were still sleeping under tarps. Eventually, a church-affiliated volunteer group that had gotten lost stopped to provide the community with desperately needed help.

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An expanded mission

Jon Mason, director of the Governor's Office of Faith-Based and Community Initiatives, said coordinating volunteers "is like herding cats, especially the unaffiliated, spontaneous volunteers."

It's much of the reason his office is undergoing a transformation and rebranding — to better focus and organize volunteer efforts. That's necessary to avoid waste and duplication, and help volunteers get to places where needs are greatest.

Mason is working to re-create his office and website as Serve Alabama. Established under executive order, the office will continue its central function: management of the state AmeriCorps, a federally sponsored program with a mission to improve the nation with volunteerism and service. Members address critical needs in communities. They may tutor and mentor disadvantaged youths, fight illiteracy, improve health services, build affordable housing, teach computer skills, clean parks and streams, operate after-school programs, or help communities respond to disasters.

"Essentially, we're the office of volunteerism for Alabama," Mason said. "We have nine different

AmeriCorps programs across the state."

Beyond that, the office is mobilized during a disaster and takes on a mission much broader than AmeriCorps. It must help manage those thousands of volunteers who show up in places like Tuscaloosa.

Gaps in North Alabama

One of the problems that occurred in Tuscaloosa was that it needed a larger core of trained volunteers beforehand to organize the untrained volunteers. There is a chapter of VOAD — a volunteer organization that manages volunteers — that covers several counties in West Alabama, but that resource was spread too thin after the storm.

Mason and other volunteer leaders in Alabama want every county EMA office in the state to establish a position, either paid or unpaid, to organize volunteers, most likely through VOAD chapters. Many EMA offices in South Alabama have already done this as part their response systems for hurricanes, but there are big gaps in North Alabama. Those gaps must be filled. Volunteer coordinators can work in tandem with county EMAs to inventory and establish communications with organized churches and civic groups, and when necessary establish Volunteer Reception Centers for registering and organizing unaffiliated, individual volunteers.

These volunteer managers can also help establish standards for the use of social media. After the April 27 storm, volunteers were mobilized through online entities like Facebook and Twitter. Unfortunately, such an organic communication system can lead to problems. For example, somebody in a disaster area might send out a Tweet for diapers, and somebody in Indiana might dispatch a truckload of diapers to the area. But somebody in Illinois and Missouri might be doing the same thing. Things like that happened after April 27, not to mention the rumors and misinformation that proliferated on social media sites.

Mason believes that social media standards would be tough if not impossible to enforce from the top down, but that it is possible to create an effective methodology that would work if adopted by organized volunteer groups. That would be part of the mission of county volunteer managers working out of EMA offices, he said. He's right. A method for sorting wheat from chaff on social media is badly needed, along with a system for using social media effectively to help direct volunteers and donations.

The April 27 storms created a new generation of volunteers, and Mason's office is considering a

summit to help get them organized. That's a good idea. Volunteerism after April 27 provided the state with hope and pride, and it's a movement that must be nurtured, cultivated and coordinated for use in future disasters.

RECOMMENDATION: Elevate a VOAD leader to a high-level position within the state EMA command structure, and increase the number of VOAD chapters with the goal of one for each county.

VOAD was formed after Hurricane Camille revealed poor coordination among the many volunteer organizations responding to that 1969 disaster on the Gulf Coast. It was created to prevent duplication of effort, fill unmet needs and provide training, and it has evolved into the voice of nonprofit organizations and volunteers who work in disaster preparedness, response, relief, recovery and mitigation.

National VOAD is the primary point of contact for voluntary organizations in the National Response Coordination Center at FEMA headquarters. It is a signatory to the National Response Plan. It should be cast in the same role at the state level in Alabama.

VOAD's diverse national membership includes volunteer organizations such as the American Red Cross, Adventist Community Services, Churches of Scientology Disaster Response, the Salvation Army, Catholic Charities USA, the Humane Society of the

United States, the Jewish Federations of North America, Latter-day Saint Charities, Mennonite Disaster Service, Presbyterian Disaster Assistance, the Southern Baptist Convention, the United Methodist Committee on Relief, United Way Worldwide and the National Baptist Convention, USA.

Dillaber, the immediate past president of Alabama VOAD, served as a liaison between the state and volunteers, both organized and individual, after the April 27 storm. Dillaber said VOAD's position in EMA should be "better fleshed out to talk about coordinating volunteer response." VOAD is currently defined in Alabama's emergency operations plan as an "emergency support annex" dealing mainly with spontaneous volunteers and unsolicited donations.

However, Dillaber said Alabama VOAD's relationship with the state EMA has grown through Jeff Byard, a senior administrator for Alabama EMA. "Prior to him coming, we didn't have that kind of access to EMA," Dillaber said.

Byard agreed that VOAD plays a key role in disaster response and recovery, and said Dillaber is on the floor of the state's emergency operations center when it is activated. "VOAD heads our special operations troops," Byard said. "What I mean by that is they can go places where we can't go all the time ... like private property."



Joe Songer/The Birmingham News

Donations flooded into Alabama for months after April 27; these diapers and baby wipes were awaiting distribution on July 20. Alabama should make better use of Voluntary Organizations Active in Disaster, a group that organizes volunteers, ensuring that the stream of aid continues after the initial surge of enthusiasm has subsided.

'The more local, the better'

Dillaber said that in addition to having a permanent top role at EMA, VOAD should also be seen as a true partner with the Governor's Office of Faith-Based and Community Initiatives. To carry out its mission of organizing volunteers, the office needs VOAD. And for VOAD to carry out its mission of organizing volunteers, it needs the Governor's Office of Faith-Based and Community Initiatives to add legitimacy to its efforts.

VOAD chapters at the county level already saturate most of South Alabama because of the constant threat of hurricanes, Dillaber said. But many county EMA directors in North Alabama have been reluctant to partner individually with VOAD chapters, and so VOADs formed to serve larger, multicounty regions. That should change.

"We've been trying to do this for five years ... to increase the number of VOADs that serve our state," Dillaber said. "I think what we learned from these tornadoes was that regional VOADS are OK, but when you have a widespread disaster, the more local, the better."

VOADs are essential to organizing a volunteer response, he said.

"When a disaster hits, the volunteers are going to show up," he said. "The question is: Are you going to manage them, or are you going to let that become a disaster within a disaster? We saw that to some extent in Tuscaloosa because all the infrastructure was damaged. ... The main players were knocked to their knees."

Before the storm, Tuscaloosa was served by a regional VOAD, Dillaber said. "They've done a great job in the past of covering single disaster sites," he said. "But when Tuscaloosa got hit and their Red Cross went down and their Salvation Army went down, their communications went down ... you had mayhem. It wasn't that people weren't doing good stuff because they were. But you had a lot of duplication ... and wasted resources that we would have probably used in other parts of the state."

The disaster clarified the need for Tuscaloosa to have its own VOAD, he said. But the same thing happened in

Birmingham to a certain extent. "Birmingham has a VOAD, but it did not really include things down to the level of those individual churches and groups that are involved in the community," Dillaber said.

So the state needs to increase the number of local VOAD chapters, particularly in North Alabama, and the local VOAD chapters that do exist must be encouraged to sink their roots deeper into communities. County EMA offices can and should encourage the growth and development of VOAD chapters.

In addition, Alabama should better define VOAD's role. It should be done in two ways. The Office of Faith-Based and Community Initiatives is now reorganizing and rewriting the executive order that it operates under. VOAD's role should be written into that order. In addition, the state EMA is updating its emergency operations plan, and VOAD's role should be redefined and enhanced in that document.

VOAD is needed to coordinate a growing number of organized and trained volunteers. Organized volunteers can be mobilized faster and work more effectively than untrained, often poorly outfitted individuals who show up at disaster sites to help.

For example, the most recent newsletter from the Alabama Board of Medical Examiners promotes a system in which doctors can preregister for volunteer service during a disaster. This is part of a nationwide effort to solve a long-standing licensure problem regarding out-of-state doctors practicing in disaster zones. Now, the Alabama Department of Public Health, working through the Alabama Responds online registration system, preregisters state doctors and links into a national network where other doctors are preregistered. The system ensures a quick check of credentials, allowing doctors to practice outside their home states during disasters.

"Having a long list of volunteer physicians and physician assistants already certified by the state health office is a real advantage," Larry Dixon, executive director of the State Board of Medical Examiners, wrote in the organization's July-September newsletter promoting the system.

Alabama must build on this trend toward better-organized volunteers.

Recover

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How we come back even stronger

Recommendations include offering low-interest loans for home construction and providing incentives for businesses to rebuild or expand

ACROSS ALABAMA, a common refrain was heard as tornado-stricken communities set about to rebuild and recover: We will not only come back, but we will be better than before.

To that end, the recovery from the April 27 tornadoes necessarily is focusing in part on two vital areas that suffered massive losses — housing and small businesses — along with overall economic renewal. Communities partnering with experts, agencies and volunteers are trying to develop an enhanced, more attractive future in both residential and commercial sectors.

The job is daunting.

Housing losses were so extensive that an exact count

was difficult, but the American Red Cross estimated that nearly 8,000 housing units were destroyed and nearly 6,000 suffered major damage; at least one-third of these were in Tuscaloosa County, by far the hardest hit of the 43 disaster counties. Other reports put the statewide housing losses even higher and noted they fell disproportionately on some of the state's most vulnerable residents.

The blow to business was equally severe. The Department of Industrial Relations reported nearly 7,000 unemployment compensation claims filed due to the disaster by mid-September. While many workers were able to return to jobs or find work over the summer, DIR Director Tom Surtees said the state

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Joe Songer/The Birmingham News

Long-term recovery includes the tough task of rebuilding, including here in Hackleburg, which was hit by the strongest tornado of the day. Jean Shackelford cuts insulation in downtown Hackleburg as ductwork is cut in the background.

was still paying \$100,000 a week to disaster victims in the fall — funds not being reimbursed by the Federal Emergency Management Agency but coming from Alabama businesses already struggling to add jobs in a difficult national economic climate.

Nearly 1,000 businesses applied for Small Business Association loans, but only 169 were approved by mid-October.

New initiatives

Federal and state programs to assist with disaster housing needs and business recovery are limited. The Tornado Recovery Action Council recommends steps that can be taken in both areas to help provide affordable housing and renewed business operations for those most in need of financial aid.

Two initiatives would focus in part or entirely on housing: For the long term, a nonprofit organization could be established, similar to a successful one created after Hurricane Katrina on the Mississippi coast, to provide innovative funding sources for housing and businesses; and in the shorter term, state recovery officials could make sure federal funds going to the Alabama Housing Finance Authority are allocated to the maximum extent possible for housing units in tornado-stricken communities.

For small businesses, three programs put in place by Iowa and Kansas after recent disasters are possible models for Alabama: They provide loans, grants and tax credits to help businesses resume or start operations in disaster areas.

Before homes can be restored and businesses return, a key to any successful disaster recovery is the expedited removal of mountains of wreckage and debris. The Tornado Recovery Action Council also recommends that local governments uniformly give top priority to preparing and maintaining pre-event debris removal contracts to avoid the delays and inflated costs that can occur without them.

In the initial months after the storms, there were obstacles to the recovery, including some significant complaints, many heard at Tornado Recovery Action Council forums: too much FEMA red tape and poorly worded housing grant rejection letters, slow and inadequate responses from homeowner's insurance companies, and a FEMA policy to tear down newly built temporary school shelters if local governments didn't buy them. In Cordova, a city ban on single-wide trailers halted the use of FEMA trailers for temporary housing, setting off a heated dispute.

Preliminary economic and fiscal impact of the April 27 tornadoes

Initial losses in 2011:

- Between 5,600 and 13,200 jobs are lost, a reduction of 0.2 to 0.5 percent in employment statewide.
- State tax collections drop between \$19.1 million and \$44.5 million.
- Local sales tax collections drop between \$4.4 million and \$10.2 million.
- Alabama's gross domestic product drops between \$835 million and \$1.3 billion, or up to 0.7 percent.

Recovery gains projected for late 2011:

- Cleanup and rebuilding will add 51,700 jobs.
- State tax collections will increase \$83 million.
- Local sales tax receipts will increase \$31 million.
- Alabama's GDP will gain \$2.9 billion, or 1.6 percent.

Recovery gains projected for 2012:

- Rebuilding will add between 36,900 and 73,800 jobs.
- State tax collections will increase between \$63.2 million and \$126.5 million.
- Local sales tax collections will increase between \$23.6 million and \$47.2 million.
- Alabama's GDP will gain between \$1.9 billion and \$3.9 billion.

Source: Report by Samuel Addy and Ahmad Ijaz of the Center for Business and Economic Research at the University of Alabama



Jeff Roberts/The Birmingham News

The Birmingham Association of Realtors planted trees in the North Smithfield community in mid-October. The group also planted trees in Cahaba Heights, Concord and Fultondale as part of Jefferson County's recovery process.

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But a lot went right, too. Those FEMA rejection letters — to the amazement of state Emergency Management Agency officials — were changed nationally to make clear they weren't final, after the personal intervention of Gov. Robert Bentley. The school shelter policy also was shelved. And state regulators said insurance companies, with a massive task and unprecedented losses, generally performed well, with mediation available for unresolved claims.

Cordova may have had a problem, but overall most victims were able to be placed quickly in emergency shelters and later temporary housing.

In some communities, said Alabama EMA Director Art Faulkner, "They didn't want the temporary housing units and they didn't want the rental assistance. They simply moved in with another family member.

"There were people who didn't even want to leave what they had. They got to rebuilding their house. You saw that a lot," he said.

A concern in some communities is that wrecked houses will not be rebuilt, that owners fearful of more tornadoes won't return, leaving empty lots and abandoned streets.

"A lot of the houses were rental homes; a lot didn't have insurance; a lot aren't coming back to the neighborhood," said Clarence Ford, president of the

North Pratt neighborhood in Jefferson County.

But he and others were hopeful that input from experts with the American Institute of Architects will help turn vacant properties into appealing parks or green spaces that can give Pratt City a brighter future.

Tuscaloosa and other communities also took the tornado devastation as an opportunity to rebuild with street and zone changes aimed at making both residential and commercial areas more attractive than before. Tuscaloosa Forward, with an interactive online site that could serve as a model for others, was formed to create an innovative blueprint for renewal.

"It's good to have a vision; you need to have a vision," said Brock Corder, president of The Builders Group and a member of Tuscaloosa Forward. But he cautioned that overly restrictive zoning codes could leave properties vacant for years.

Economic gains

In purely fiscal terms, a preliminary report by the University of Alabama's Center for Business and Economic Research found a possible upside from the recovery. After the initial job losses, drops in tax revenues and downward slide in the state's gross domestic product, Alabama eventually will see gains in all three areas beyond what it would have experienced without the storms, according to the report.

These gains — ranging from \$1.9 billion to as much as \$3.9 billion in growth in Alabama's GDP in 2012 — are mostly from hundreds of millions of dollars from federal sources flowing into the state and an estimated \$3 billion or more in insurance claim payments, according to the findings by Samuel Addy and Ahmad Ijaz. While storm damages are localized, the positive economic impact of the recovery will be more widespread, they said.

In the initial months after the tornadoes, there was a sharp increase in home repair work, a boon to a stagnant industry; renovation and repair permits in Madison County jumped from 400 in the four-month period after April 27 of 2010 to 891 during the same span of 2011, according to figures from Southern Exposure Information. New home construction, however, is not expected to see sizable gains in the home building industry until 2012.

"I don't think we're ever going to see a big spike, but there will be slow progress," said Ron Parrish, executive director of the Home Builders Association of Tuscaloosa.

Timber and agriculture losses

The federally supported cleanup did not extend to the massive amounts of timber ripped apart and uprooted across more than 200,000 acres by the April tornadoes.

State Forester Linda Casey said that an unprecedented amount of timber — 12.6 million tons, enough to feed four large pulp mills for a year — was left on the ground. Less than 1 million tons was cleared, partly because the market for lumber has been hit hard by the recession and trees torn apart by storms mostly aren't suitable for sawmill products.

About 11.6 million tons of the downed timber remained on the ground.

"Most of it, quite honestly, is just going to be there until it rots or is burned," Casey said, and a major concern has been the risk of fire.

The other major agricultural industry harmed by the tornadoes was poultry, with 215 chicken houses destroyed and 500 more heavily damaged. About 3.2 million chickens were lost, but the state produces some 21 million chickens a week, so the losses were not viewed as crippling.

In the dead-poultry cleanup, there were some complaints about a lack of help for farmers and restrictions on disposal. Huck Carroll, communications director for the Alabama Poultry and Egg Association, said contracts generally don't require big companies

to help with cleanups, but Tyson was one that did in Alabama.

For most industries, detailed and well-rehearsed backup plans and emergency procedures have long been a key to avoiding an extended or even partial shutdown in a disaster. Now formalized as the Business Continuity Plan, or BCP, the process has evolved into a cottage industry with a wealth of good ideas, strategies and best practices for businesses of all sizes. Even the smallest businesses should have one.

One company that had a plan on April 27 was the VF Corp., which operated a 150-employee Wrangler plant in the North Alabama town of Hackleburg. After a tornado tore through Hackleburg and destroyed the jeans distribution facility, VF was able to bring its employees critical supplies — water, food, tarps, clothes, generators — and kept them on the payroll by eventually shifting work to an old VF sewing plant in Hackleburg and a VF plant in Holly Pond.

The state approved legislation offering incentives to companies damaged by the storm — tax abatements and credits — and VF plans to open a new plant in Hackleburg in 2013, with an additional 50 employees expected as the business grows.

The Tornado Recovery Action Council of Alabama proposes the following recommendations aimed at improving recovery:



Joe Songer/The Birmingham News

Logging trailers loaded with timber wait to be hauled away. Timber companies and private landowners rushed to salvage tornado-damaged timber before it was ruined, but a slow lumber market affected how much was cleared.

HOUSING

RECOMMENDATION: Establish a nonprofit organization to seek federal and private funds for a statewide program offering low-interest loans and other financial assistance to build homes and construct or expand businesses after disasters.

Pursuing federal and private funds, a nonprofit corporation could offer low-interest loans and other financial assistance to build homes and construct or expand businesses. The nonprofit would focus first on recovery from the April tornadoes but would be in place long term to aid in community renewal anywhere in the state after other disasters. It would help provide affordable housing to lower-income residents and extend credit to businesses.

The model for this program is the Gulf Coast Renaissance Corp. that was formed in Mississippi after Hurricane Katrina demolished homes and buildings on the coast in August 2005.

As described by CEO Kimberly La Rosa, who arrived in August 2007, it was not until a year after she began work that the corporation got its first allotment of federal Community Development Block Grant funding for Katrina recovery. But in the next three years, the corporation closed on 720 home sales, and this year it

began providing assistance through a small-business development loan fund.

It has taken innovative approaches to lending. In one program, an employer-assisted initiative called REACH, a company like Mississippi Power would provide an income-eligible worker for the utility with \$10,000 for a down payment on a home. GCRC would provide an additional \$30,000, an amount that would be forgiven after 10 years. If the house were to be sold before then, the \$30,000 would go back to the GCRC.

La Rosa said the corporation can also provide second mortgages and pledge to buy back a house and sell it if the owner is unable to make payments, assuring banks they would not lose money.

For the housing program, "MyHome MyCoast," the corporation works with nonprofits at the grassroots level to help identify eligible applicants.

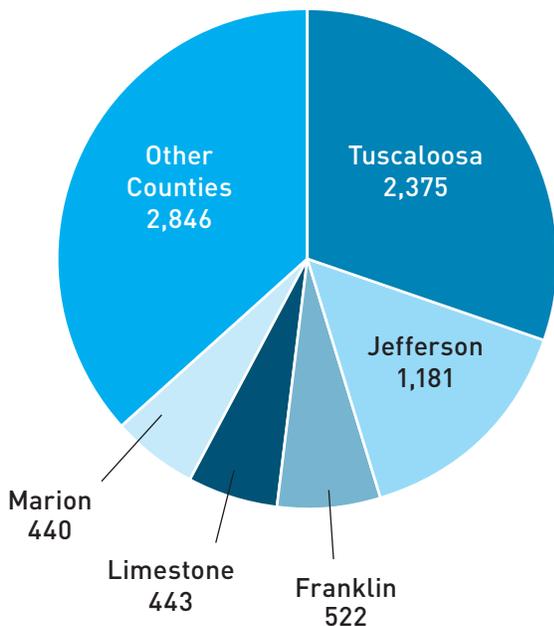
The corporation also has a loan loss reserve made up of private funds, which allows it to promise a home buyback if necessary. La Rosa said the corporation's delinquency rate on the 720 home sales is less than 1 percent and it has had to buy back only two homes, whose owners had died.

In 2010, the GCRC gained status as a Community Development Financial Institution, or CDFI, and began

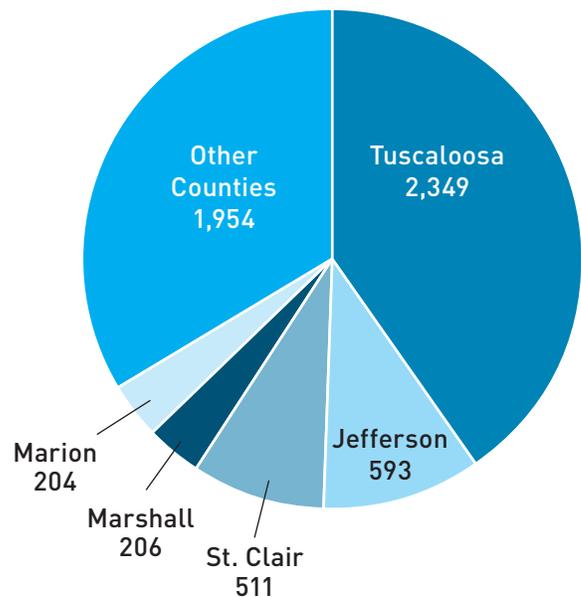
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HOUSING LOSSES

Alabama housing units destroyed in the storms of April 27 by county: **7,807**



Housing units with major damage by county: **5,817**



Source: American Red Cross



Joe Songer/The Birmingham News

Getting disaster-assistance help can be daunting, as these books full of disaster-assistance forms at the Pratt City Disaster Relief Center indicate. The Rev. Eric Harris, left, and the Rev. Robert Kelly helped get tornado survivors registered with FEMA before its deadline.

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providing assistance through its small-business development fund. As a CDFI, it could apply for as much as \$2 million a year from the U.S. Treasury, if it made a 100 percent match. La Rosa said the corporation was able to use its loan portfolio as an asset for the match.

While getting CDFI status can be a difficult process, it is important that the newly formed nonprofit corporation pursue it. Where it can, the state should also encourage other lending institutions in underserved markets to do the same. Alabama currently lags behind others in the region in creation of CDFIs, missing out on potentially millions in federal and private funds each year.

A 2010 report from the Federal Reserve Bank of Richmond, "CDFIs in the Southeast," showed that Alabama, with five CDFIs, was next to last despite the state's ranking among the lowest in personal per-capita income. West Virginia had the lowest number of CDFIs with four, but Mississippi had 10, Kentucky 11 and Louisiana 18.

CDFIs are banks, credit unions, loan funds and venture capital funds that help low-income people in underserved markets to purchase homes and start businesses. They can be for-profit or not-for-profit. The report did not break out the amount of funding going to

CDFIs in each state, but leaders of nonprofits familiar with the program say Alabama is considerably behind some others in the region.

Along with receiving U.S. Treasury grants, CDFIs in the Southeast can receive private funds, such as those from the Mary Reynolds Babcock Foundation, which do not require a match. A key resource on growing CDFIs is a 2011 report for the foundation, "Community Development Financial Institutions: A Study on Growth and Sustainability," by Bethany Chaney, available on the foundation's website, mrbf.org.

The idea for the Renaissance Corp. was hatched by the Gulf Coast Business Council, a 501(c)(6) organization formed after Katrina and made up of more than 200 of the top business and economic leaders in three Mississippi coastal counties.

They formed a council subcommittee focusing on recovery, La Rosa said, but needed to create a wholly separate nonprofit organization to handle housing funds. As a 501(c)(3), the Renaissance Corp. can tap recovery funds but is restricted from doing the kind of lobbying done by the Business Council.

The nonprofit corporation envisioned for Alabama might be patterned after the GCRC model but could have

Rebuilding offers chance for sustainability

REPLACING STRUCTURES blown away by tornadoes represents the chance to build back something better. Why not find — in the wake of devastation — opportunities to improve homes, businesses and entire communities through designs, materials and techniques that strengthen them environmentally, economically and socially?

That's the thought behind sustainable building, a concept gaining momentum in design circles and among urban planners. Projects range from the famously successful tornado recovery under way in Greensburg, Kan., to the potential success story germinating in Birmingham's tornado-pounded Pratt City area.

Sustainable building can mean installing energy-efficient furnaces, air conditioners and appliances to lower utility bills; harnessing renewable solar and wind energy; landscaping with native plants that survive on minimal care; and using locally produced building materials that require less fuel to transport. On a broader level, it can involve creating parks and greenbelts to encourage healthy walking and biking and getting to know neighbors.

Sustainability has become a bigger part of the conversation in Alabama post-April 27. Unprompted, people brought up the topic at the Tornado Recovery Action Council's public forums. Civic organizations,

chambers of commerce and city halls see advantages to encouraging sustainability measures that can improve community health. Faith-based communities, expressing a sense of duty to care for all of God's creation, have introduced energy efficiency and land stewardship concepts into buildings erected and lessons taught.

Federal agencies, including the Centers for Disease Control and Prevention, promote and support healthy-community design concepts that lead to improved physical and social environments.

After April 27, the Federal Emergency Management Agency worked closely with local long-term recovery task forces, holding public sessions with proposals spread over tables and pens provided for citizens to sketch out their ideas for enhancing their downtowns and neighborhoods in the rebuilding effort. These working papers included architectural drawings of curving streets to slow traffic and green spaces and other features to encourage healthy communities.

In Kansas, residents of Greensburg, a farming town nearly obliterated by a deadly 2007 tornado, saw opportunities in devastation. They went "green" on a communitywide scale, turning Greensburg into a model of environmentally conscious planning and construction.

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Hal Yeager/The Birmingham News

Residents got an up-close look at plans to revitalize Pratt City during an October presentation.

Greensburg invested in solar, wind and geothermal technologies to produce cleaner electricity; made wide use of energy-efficient building materials; poured more storm-resistant concrete; installed advanced insulation and windows at every opportunity; and took better advantage of natural sunlight through the positioning of buildings.

Homes, banks, churches, car dealerships, funeral homes, the county courthouse and a consolidated school were all rebuilt or remodeled with energy savings in mind. Every streetlight now uses light-emitting diodes, vastly reducing energy use and maintenance costs. A tornado-hit cornerstone of the community, the John Deere dealership, reopened with top-rated Leadership in Energy and Environmental Design (LEED) certification.

If Greensburg could do it, why can't Alabama towns too? That idea is on the table in several tornado-pounded areas, including Cordova, where architects with Auburn University's Urban Studio are working with residents to develop a master plan laced with sustainable elements. The concept also shows promise in hard-hit Pratt City, a former coal-mining and steel-milling community in western Birmingham.

A volunteer team assembled by the American Institute of Architects recently drew upon citizen input and sustainable-design concepts to draft plans for revitalizing Pratt City. "There is the potential to change the narrative about Pratt from a place in decline to one that is stable and growing and desirable," said Mark Shapiro, a Seattle-based architect involved in the project.

The vision for Pratt City includes linear green spaces connecting residential areas, retail districts and a cleaned-up Village Creek to encourage walking and biking. It includes more-resilient houses, a health center, recreational facilities, a heritage trail highlighting local industry and civil rights history, natural buffers to mitigate noise from highways and railroads, and strategically placed community storm shelters. Bike routes, sidewalks and attractive landscaping are in the plans.

This kind of forward thinking can turn a tornado tragedy into an urban planning triumph. Wouldn't that be a happy ending?

statewide reach for all its lending and grant programs, focusing first on the disaster areas from the April tornadoes. Working with corporate and community foundations across all regions, it would be in place to provide recovery assistance for subsequent disasters in Alabama.

RECOMMENDATION: Coordinate with the Alabama Housing Finance Authority to maximize the use of its funds to provide low-interest mortgages to qualified homebuyers and to provide multifamily housing for low-income residents in disaster areas.

For the shorter term, officials with the state's ongoing disaster recovery effort should coordinate with the Alabama Housing Finance Authority to make sure AHFA funds address housing needs of tornado victims to the maximum extent possible. If necessary, the governor could ask the AHFA board to set aside a portion of its funds for disaster housing over the next two or three years.

Federal funds going to the AHFA since its inception in 1980 have helped more than 122,000 low- and moderate-income residents, or about 4,000 a year on average, find affordable housing. This money could be a key source for housing needs in disaster areas.

Executive Director Robert Strickland said the housing needs in the hardest-hit disaster counties create the likelihood that AHFA financing will go in significant measure to housing developments there.

The authority receives comments from residents, officials, nonprofits and others as it weighs where federal HOME Investment Partnerships funds should go. Strickland said the impact of the tornadoes would likely keep housing needs in disaster counties prominent in AHFA work in 2012, but the amount of federal funding is being cut back.

The authority typically provides low-interest, 30-year, fixed-rate mortgages to income-eligible homebuyers. In a separate program it helps developers finance multifamily projects creating affordable rental housing for low-income families.

There is a need for funds to help finance both single-family housing and multifamily rental units in the recovery. And there is precedent for AHFA funds to be used by the state for a targeted housing program.

In 2001, in response to a request by the governor, AHFA's board agreed to commit part of its HOME program and housing credit allocations to provide housing in the state's settlement of a lawsuit seeking mental health system reforms. AHFA says that during



Joe Songer/The Birmingham News

Three months after the April 27 tornado outbreak, Cullman prepared for a major rebuild in the downtown area hit hardest by an EF-4 tornado. Alabama could consider economic development programs used by other tornado-prone states to help businesses return.

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its 2001 and 2002 multifamily funding cycles, it provided affordable housing for more than 600 individuals in the mental health system.

If AHFA funds are used in a targeted disaster housing program, they could be directed to smaller communities that don't receive HUD funding as "entitlement" cities and counties.

AHFA already is playing a role in the 43 disaster counties through its ongoing programs. Under the Hardest Hit Alabama program announced in February, 442 unemployed homeowners living in the disaster counties have received help with monthly mortgage payments, though it is not known precisely how many are tornado victims.

AHFA also approved multifamily housing developments in June, with 11 of the 16 projects located in the disaster area. Applicants for the funding were required to show evidence of the need for the housing.

Ashley Kerr, who works with Collaborative Solutions in Birmingham and was a member of the state's Long Term Community Recovery task force on housing, said people with very low incomes are struggling to find affordable living quarters.

"We knew there was a tremendous lack of affordable housing in Alabama, and the tornadoes have made the situation much worse," she said.

ECONOMIC RECOVERY

RECOMMENDATION: Provide incentives for businesses to rebuild or expand through loans, grants and tax credits. Three programs that could serve as possible models offer eligible businesses zero-interest loans, with a provision that the loan can be forgiven; allocate grants for disaster-related recovery costs not covered by federal or other sources; and provide investment tax credits for businesses damaged in a disaster.

Small businesses bore the brunt of the tornado destruction in the commercial sector, with many being mom-and-pop shops employing fewer than 10 workers.

The city of Cullman offers a snapshot. The Department of Industrial Relations' unofficial tally of the impact on employers listed 180 businesses in Cullman with some degree of damage, including 69 that were destroyed or had major damage.

Typical of those 69 were these: a tire shop with 10 workers, a shoe repair shop with four, a cafe with eight, a florist with five, a barbershop with two, a gun shop with five, a plumber with five and a locksmith with five. In short, the backbone of an enterprising community was left in desperate need.

The Small Business Administration has long been a key recovery agency, providing loans to repair or replace property and inventory lost in a disaster. The federal program seeks to offer low-interest, long-term

loans for businesses of any size, with loans for as much as \$2 million.

After the Alabama tornadoes, FEMA reported that 956 applications for SBA loans to businesses were received, with 169 approved during the first six months totaling \$22.5 million, or an average of about \$133,000 per loan.

For many small, family-run businesses, a loan of any size at any interest rate may not be a viable option due to uncertainty over whether it can be paid back. Some may need additional financial support to gain the confidence to take on debt.

Three disaster-aid programs in Iowa and Kansas that help small businesses may offer possible models for Alabama. Both states are less populous than Alabama and were faced with major disaster recovery challenges in recent years.

1. Iowa's **Jumpstart Small Business** program was launched in 2008 after an EF-5 tornado in May and catastrophic flooding beginning in June that year.

Under the program, eligible small businesses damaged by a disaster could apply for zero-interest loans that equal 25 percent of the SBA loan they received, up to \$50,000. The state loan was forgiven if the business reopened within 12 months of receiving

funds. If the program is made applicable in Alabama, a provision could state that the 12-month clock would not begin running until a loan applicant has been given local government approval to rebuild or reopen; where cities are still working on redevelopment zones and rules, this would keep applicants from missing the deadline through no fault of their own.

Community Development Block Grant funds eventually were used to finance the Iowa Jumpstart loans, which were administered by local governments. But before the federal CDBG money was available, Iowa's governor and executive council transferred funds from other state programs for use immediately in the disaster recovery.

The loan funds were provided to the local governments based on the percentage of SBA loans received in the jurisdiction or disaster area. The program opened in September 2008, with a cutoff date of April 15, 2009, for business applications.

2. Iowa's **Community Disaster Grant** program, also launched after the tornado and floods of 2008, provided state funds to eligible recipients for disaster-related costs not otherwise funded by federal or nonfederal sources. The grants could be used to assist small businesses, to replace or rehabilitate housing, to



Mike Kittrell/Mobile Press-Register

Adults were not the only ones who needed help in the recovery process. A banner is made as part of an art therapy project for Holt Elementary students.

Church volunteers heed the call to help

THE APRIL 27 TORNADOES triggered a strong surge of volunteerism among many Alabamians, largely through churches. These volunteers played a significant role in recovery and saved the government much time, money and effort.

Nationally, many church groups, such as the Southern Baptist Convention, field teams of volunteers after a disaster. These are often well-trained workers who know how to use chain saws or have other skills needed in quick rescue and response. The closer these groups are to a disaster, the better, and local churches have been organizing these quick-response teams as part of community outreach efforts.

A good example is the Journey Men's Ministry at The Rock Family Worship Center, a nondenominational church in Huntsville. Before the storm, the ministry had one trailer and a cadre of volunteers poised to help in disasters. Since then, the ministry has served as a catalyst for a growing coalition of about 20 churches with 10 trailers and scores of disaster recovery volunteers.

"We didn't realize what our weaknesses were until after April 27," said Greg Nelson, who pastors the ministry. "If one good thing came out of that storm, it's that we're much more prepared now."

Shortly after the storm, volunteers with the Journey Men's Ministry parked their single trailer next to a community center near Harvest in Madison County. The trailer served as a staging point for recovery operations in the Lockhart Road area, where dozens of homes were destroyed or seriously damaged. "Most everybody in that area was either not insured or underinsured," Nelson said. "We sort of adopted that area."

But other areas needed the same kind of help, and they weren't getting it. "If we had other trailers and other resources at the time, we could have had those trailers put in other areas that needed them as bad as Lockhart did."

So after the storm, churches began organizing and raising money to purchase more trailers and recovery supplies for the next storm. They raised about \$130,000, enough for 10 trailers, which were being outfitted in October. Trailers will be given to churches that will keep them maintained and ready to go with a group of trained volunteers.

"And they're not limited to Madison County," Nelson said. "If we'd had them ready for the Joplin [Missouri] tornado, it would have been a great honor to carry eight or nine trailers over there to help those folks out."

The trailers are the first phase of a four-phase project, Nelson said. Next year, churches in the Huntsville area hope to build disaster relief trailers outfitted with kitchens. The year after that, they plan to build a system of portable showers. And the following year, they hope to complete the project with construction of mobile laundry units. For training, Nelson hopes to partner with the Southern Baptist Convention, which has had a strong disaster response ministry in place for many years.

"We just want this thing to be the best that it can be," Nelson said.

In Tuscaloosa, churches quickly organized to provide relief there, too. Tracy Gatewood, who worked as a communications coordinator with that effort, said a group of about 25 people gathered at Calvary Baptist Church shortly after the storm and mapped out a strategy for relief. They focused on impoverished areas in Rosedale and Alberta City where earlier outreach work by churches had established relationships with residents.

As a communications coordinator, Gatewood monitored and contributed to an ongoing Internet-based conversation in which people discussed community needs and how to best use resources. "As we heard about needs, we could send out mass e-mails," Gatewood said.

They tried to avoid duplication of effort, but the communication system was makeshift. So there were difficulties. "There were a lot of things that just went to waste," Gatewood said.

Still, the storm provided a great moment of triumph for faith-based volunteers, allowing them to draw upon the power of their religious values and make a real difference in the lives of others.

"They were functioning at their highest and best capabilities," Gatewood said. "Churches are healers."

upgrade damaged public infrastructure and to assist nonprofits.

The grants were allocated from state funds and were disbursed to cities and counties based on their pro-rata share of federal disaster assistance, including SBA loans. With a cutoff date of April 1, 2009, for applications, the program was administered by Iowa's Homeland Security and Emergency Management Division.

Iowa officials familiar with the program cautioned that, in retrospect, the language creating it needed clearer wording on eligibility and reporting requirements.

3. Kansas established its Declared Disaster Capital Investment tax credit program after severe storms, tornadoes and flooding in June 2007. It provided nonrefundable and partly refundable investment tax credits.

Nonrefundable tax credits were provided to businesses for up to 10 percent of the capital investment made to construct, equip, repair or enlarge a business facility damaged in a disaster.

The credit amount could be carried forward to the next year for up to 10 years, with a maximum of \$100,000 in total tax credits. Alternatively, businesses could elect to receive a refundable credit for 50 percent of the tax credit earned. Kansas statutorily allocated funds for this credit each year, with a maximum of \$5 million in any one fiscal year.

The capital investment had to be made within a three-year period ending in June 2010, meaning total credits and state allocations could amount to \$15 million. The Kansas Revenue Department oversaw the process, with \$9.4 million in preapproved credits the first year.

Alabama already has created a new ADECA-managed small-business loan program that is to receive \$31 million in federal funds over the next few years. ADECA's Kim Ward said \$10.3 million, the first of three equal installments, arrived in October for small-business loans in underserved and disaster areas in Alabama.

The program will give banks greater confidence in making loans by:

- Guaranteeing up to 50 percent of a loan. Loans are expected to be in the \$50,000 to \$200,000 range, but could be for more than \$200,000.
- Purchasing up to 25 percent of a loan, or providing up to 10 percent of a loan for the borrower's equity.
- Creating a loan loss reserve, with the state putting

in between 2 percent and 7 percent of each loan and the bank matching that amount.

The Community Development Block Grant program manager at ADECA, Shabbir Olia, said he is not optimistic that Congress will approve any significant additional CDBG funds — a key source of help after previous disasters — for the tornado recovery.

Federal legislation pending in Congress in late 2011 would provide additional tax relief and assistance to disaster victims in Alabama and eight other states. Proposed by U.S. Sen. Richard Shelby of Alabama, its provisions include a range of programs for businesses and housing in disaster areas. One would give Alabama the authority to issue \$3.2 billion in tax-exempt bonds to pay for building or renovating nonresidential property, low-income rental housing, low-income single-family residential housing and utility property.



Dave Dieter/The Huntsville Times
Volunteers were given wristbands after registering to help in a disaster zone. They worked with a buddy system and had their wristbands collected at the end of the day to make sure everyone was accounted for.



Joe Songer/The Birmingham News

A private contractor removes tornado debris in Calhoun County. Local governments paid varying prices for cleanup from the April 27 storms. Pre-event contracts can help reduce delays and costs.

With or without more government aid, the traditional resilience of the small-business operator likely will be a factor in returning the buzz of commerce to town squares and commercial districts left in disarray. But the type of businesses being opened by small or family-run operations may look a little different.

“A lot of them may have just taken the opportunity to close down that particular business and start something new,” said Rosemary Elebash, state director of the National Federation of Independent Businesses. “That’s typically the thing about small-business owners; they just move on to the next thing.

“They can do that. They don’t have a board of directors to deal with. They’re not being traded on the stock market. If they decide one day they don’t want to be in the dry-cleaning business and the next day they decide they want to be in the grocery store business, they can do that.”

DEBRIS REMOVAL

RECOMMENDATION: Local governments should prepare pre-event contracts for debris removal and disposal that require compliance with all environmental guidelines.

One of the most important elements in disaster recovery is visual. With the dawn of April 28, nightmarish landscapes of wreckage and debris were wrenching sights for victims and responders. But as blocks became noticeably clear and streets passable, the prospect of recovery could be felt across communities.

“You want to see progress,” says Jeff Byard, executive officer of the state EMA and Alabama’s coordinating officer for the recovery.

With the crucial help of the U.S. Army Corps of Engineers and a pilot program authorized by FEMA, debris removal largely was a success story in Alabama. There were delays, frustrations and complaints, but 10 million cubic yards of debris was hauled away, removing public-safety and health threats and hastening the recovery.

Local governments also successfully managed debris removal — as an alternative to using the corps — but the massive extent of cleanup challenges and the need to move quickly underscored the importance of having contracts in place before disasters arrive.

While the state EMA encourages pre-event contracts, there is no uniform compliance by towns and cities.

Mike Evans, deputy director of the Mobile County EMA, recalled a city official in southeast Alabama listing pre-event debris removal contracts as the most important step he wished had been taken before a deadly tornado struck his community. Trying to draw up, bid and sign contracts amid the chaos after a disaster is not the way to go, Evans said.

The state EMA has prepared detailed guidelines on what the contracts should include, such as requirements that bidders provide copies of licenses and proof of insurance and bonding. These guidelines were posted on the website of the Alabama League of Municipalities.

The EMA has also provided a sample draft contract to the Association of County Commissions of Alabama. It includes requirements that contractors have all applicable environmental and regulatory permits before beginning the cleanup.

It is important that smaller towns, if their resources are limited, give their county’s EMA written permission to establish the pre-event contracts for their jurisdiction.

There are two ways to prepare pre-event contracts: Local governments may want to have contracts put

out for bid and signed in advance of a disaster; or they may want to prepare draft contracts, covering all contingencies but leaving the vendor and cost open for bidding after the scope of a disaster has been assessed.

State EMA Director Faulkner said contracts signed in advance cannot be for longer than 36 months, with 12-month renewals twice, and local governments can opt out to let Army engineers run the operation.

“Any kind of signed contract you can have when it’s sunny outside, the better rate you’re going to get,” said Byard. Also, such a contract allows the contractor to take part in preparation exercises. “You can walk through different scenarios,” he said.

North Alabama’s ‘Hurricane’

In Mobile County, where competition is heavy for debris removal among vendors from the Florida Panhandle to the Mississippi coast, it is standard for pre-event contracts to be bid and signed in preparation for hurricanes, Evans said.

In Tuscaloosa, city Environmental Services Director Shane Daugherty said it has worked better for the city not to sign contracts in advance but to have draft documents ready. The city has helicopters to assess the extent of damages and debris for removal; with draft contracts in hand, bidding can be expedited. Daugherty said there has never been a shortage of vendors seeking the work.

Some cities may do better bidding and signing contracts in advance. But Daugherty, with 22 years of experience, said using draft contracts with blanks to be filled in after the disaster “has always worked to our advantage.”

In Birmingham, differences between the city council and mayor over debris removal contracts delayed their signing for about four weeks after the tornadoes. But the city got high marks from environmentalists for opting to recycle debris in a way that allows the various materials to be reused rather than take up landfill space.

There were hitches with the pilot FEMA-authorized debris removal program, code-named “Operation Clean Sweep.” Some areas thick with debris were missed, others were reached too slowly, and the likely cost was never made clear in advance by Army engineers. But generally it was cheered by state and local EMA teams.

The program allowed for federal reimbursement of the cost of moving debris from private property to curbsides or rights of way. In the past, property owners would have to arrange and pay for moving home and tree wreckage from their lots or yards to the curb.



Robin Conn/The Huntsville Times
A volunteer cuts up a tree while helping clear tornado damage at a home in North Alabama.

But with the catastrophic nature of the April 27 storms, this would have created a huge, time-consuming logistical problem for many counties and cities needing the storm wreckage to be removed in a systematic, expedited way.

The Army Corps of Engineers had never been asked to manage debris removal in Alabama after a tornado. In the past, if it played a role at all, it was after a hurricane.

“This was a hurricane in North Alabama,” said Byard.

Faulkner said most local governments opted to have the Army engineers manage the operation because it freed officials to concentrate on other urgent needs. Also, many governments with small road crews simply did not have the personnel for the massive job, he said.

Army engineers relied on the National Geospatial-Intelligence Agency to provide satellite images of grids on a map of disaster areas. These images helped pinpoint those grids with heavy-enough debris to be approved for reimbursed removal. But the satellite images were not always reliable, said Cullman County EMA Director Phyllis Little.

“In this part of Alabama we get afternoon thunderstorms, and those satellites don’t see through the clouds,” she said.

Little gave congressional testimony about the need for a backup system using personnel on the ground. She said one grid was not “turned on” for debris removal even when a FEMA liaison twice took photographs to agency officials and told them it should qualify.

Supporting long-term recovery

IN TUSCALOOSA COUNTY, volunteers and private resources will be needed to rebuild or repair about 2,500 homes that were destroyed or left uninhabitable by the April tornadoes. That's the count of the faith-based disaster cooperative Compassion Coalition, which has settled in for the long haul.

How long?

Nancy Green, the mobilization chairwoman for the coalition, said it plans to be on the job for five years, with the major push over the first 18 months.

There is no quick turnaround from the devastation left by storms across 43 Alabama counties, not in housing, commerce or emotional health, nor a quick way to carry out inspired initiatives to make communities more rewarding places to live than before.

State government has acted accordingly. In the immediate aftermath of the storms, Gov. Robert Bentley put in place a Long Term Community Recovery team to bring a wide range of expertise and skills to key areas: Community Planning & Capacity Building, Economic Development, Health & Social Services, Housing, Infrastructure Systems, and Natural & Cultural Resources.

Coordinated by the Alabama Department of Economic and Community Affairs, it was joined by scores of experienced disaster recovery volunteers, technical specialists from many disciplines, civic leaders, and local, state and federal officials. These task forces, holding monthly meetings, played a crucial support role in the initial phase as the first response turned into the more drawn-out recovery.

ADECA Director Jim Byard said the task forces were able to connect disaster communities to potential resources as well as connect organizations that wanted to help, such as homebuilders, with areas where they could do the most good.

Task force members, for example, helped identify mental health and family needs and then reached out to the organizations that could best respond.

Through the task forces, Byard said, programs were developed that assisted the most vulnerable storm victims. After a concern was raised at one session, he said, staffers were put in place to assist people without bank accounts in managing large lump-sum FEMA payments.

"We wanted to try to help these people before they got these payments," Byard said.

Gavin Smith, who was director of the Office of Recovery and Renewal in Mississippi after Hurricane Katrina, noted that for the long term the state needs "an implementation arm" to connect policy decisions at the capital with programs at the grassroots level in disaster communities.

In Alabama, the core of that effort was formed on Oct. 16 with the hiring of three full-time, dedicated LTCR staffers, with Rocky Milliman the disaster recovery coordinator. Milliman's team, with two more to be added, will be assisted by about nine federal staffers. Five of them are expected to be "embedded" in Cordova, Hackleburg, Holt, Phil Campbell and Rainsville — a signal by FEMA that the devastation of April 27 was no ordinary disaster.

Byard said embedding federal staff long term in disaster communities is something of "a test case" by FEMA, which was asked by each of the communities to provide the hands-on assistance.

As described by ADECA, the LTCR staff is "to provide coordination for all local, state, federal and nonprofit groups working to assist disaster-stricken communities." Its goal is to identify all available assistance, eliminate duplication, clarify the types of projects eligible for support and set benchmarks to move the recovery effort forward.

The staff is also working with state agencies and nonprofits to train community leaders in a wide range of areas, such as grant-writing, and help residents with issues such as tax provisions related to disaster recovery.

Along with providing support across the 43 disaster counties, the state has joined with federal officials in developing individual recovery plans for nine small, mostly rural and hard-hit communities. These nine — the five getting embedded federal staffers, plus Pleasant Grove, Sipsey, Geiger, and the Concord, McDonald Chapel and North Smithfield areas of Jefferson County — signed on for assistance they would be hard-pressed to secure by themselves.

Working hands-on with residents at community meetings and design workshops, state and federal officials guided the drafting of recovery plans for public review and approval. These include thumbnail

histories, candid notes on assets and deficiencies, a step-by-step accounting of how visions of the future were drawn, and detailed listings and explanations of long-term goals, strategies and possible resources, financial and otherwise.

Many goals were common to all plans: create a housing resource center with case managers, legal aides and nonprofit staffers to help in the home-buying process; install community safe rooms that can hold 80 to 100 people each; rebuild a more attractive and user-friendly downtown, with more youth activity centers, athletic fields, civic venues and parks.

Some recovery goals were specific to a community. Geiger in rural Sumter County, for example, wants a town website for residents to keep track of civic events. It also wants to promote the cultivation of bamboo — an increasingly important construction material — to provide more agriculture-sector jobs.

For Holt, an unincorporated community with 4,445 residents, a key issue is whether it should incorporate or possibly negotiate with Tuscaloosa on annexation. It also wants to develop commercial docks and an adjacent industrial park.

In Phil Campbell, where the only doctor's office and pharmacy were damaged and few mental health resources are available, a key initiative is to seek volunteer medical professionals to provide care for free or on a sliding scale based on income. It also wants to partner with churches to provide transportation to health care offices and team with Hackleburg's health and social services working group for joint projects.

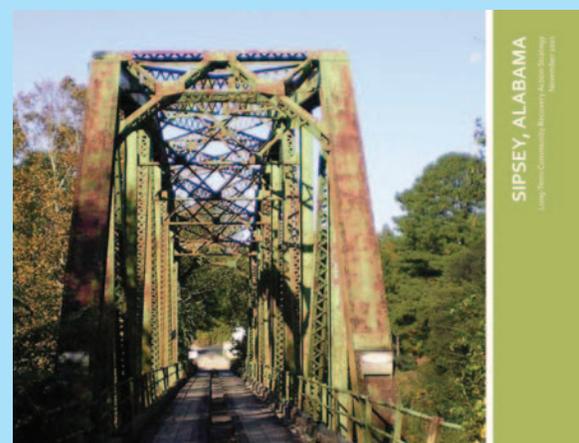
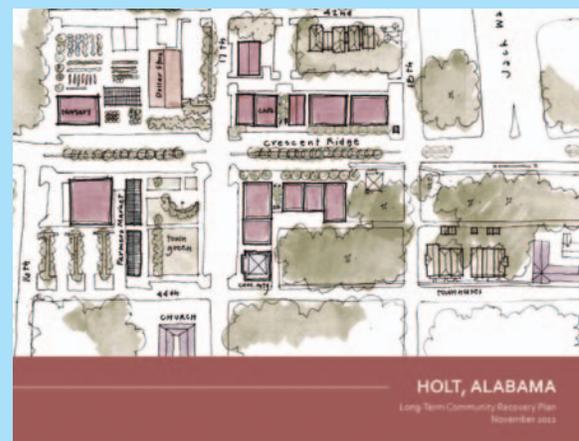
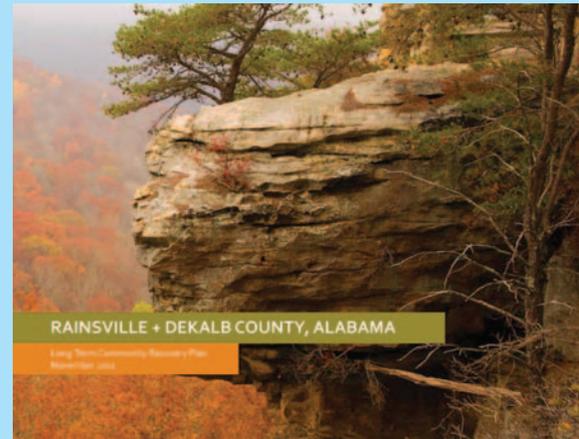
A main concern of the three small Jefferson County communities is blight — including wrecked and abandoned houses left by tornadoes in 1977 and 1998.

Recovery for many communities is a second chance. After losing factory and mill jobs and slowly falling into decline over decades, some have taken the storms as a wake-up call for renewal.

The recovery plans are viewed by ADECA as fluid documents that can change as necessary, but they provide an essential blueprint for local efforts.

Smith, a University of North Carolina at Chapel Hill research professor and author of a recent book on disaster recovery planning, says it is crucial that the state's recovery office connect with field staff to make sure programs fit local needs.

There is no "one size fits all," he says, and no "silver bullet."



Some tornado-hit areas have seized on the storms as an opportunity to remake their communities. As part of the Long Term Community Recovery process, plans were drawn up for more attractive, prosperous places to live.



Joe Songer/The Birmingham News

Residents filled Government Plaza to take part in the Spirit of Tuscaloosa candlelight vigil in June. Mayor Walt Maddox, speaking before the candles were lit, said: “Our best is grounded in a confident hope that has given us strength to face adversity, the compassion to reach out to fellow citizens and the faith to believe that tomorrow will be better than today.”

She said the operation was slow getting to streets where the storm’s destruction of historic homes and 100-year-old oaks needed attention. But she emphasized that Operation Clean Sweep was a pilot program and understandably had some bugs.

If they’re fixed, she said, “it can be a great tool.”

At the Tornado Recovery Action Council forum at Children’s Harbor, some Lake Martin residents complained that submerged debris was not removed in the U.S. Army Corps of Engineers cleanup and was a safety hazard. “I can stand in my yard and see washing machines,” said Joyce Parkes, whose home on a Lake Martin inlet was blown apart by the tornado. “Our grandchildren can’t swim in our lake.”

Faulkner said later that the submerged debris was to be removed when Alabama Power lowers the lake level for the winter period.

The most persistent problem in the debris removal

operation was wreckage left for months on private property. In some cases this was because of difficulties locating the owner, but in many it was due to disputes between the property owner and an insurance company. The wrecked home or building was viewed as evidence and couldn’t be moved without a court declaring it a public nuisance or safety threat.

City and county officials also were frustrated that the Army Corps of Engineers would not give an estimate of what it eventually would cost the local governments for the corps to manage the debris removal.

Army engineers were dealing with many variables from grid to grid, including the distance to landfills capable of handling massive amounts of wreckage and trash. Byard said the benefits were worth the cost.

“It allowed the leadership in Tuscaloosa to focus purely on humanitarian needs,” he said.

In Summary

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Prepare

STORM SHELTERS & SAFE ROOMS

Increase the number of storm shelters available to the public and publicize their locations so people know where to go when severe weather approaches.

There aren't enough storm shelters, and people often don't know about them. That should be corrected. More shelters — either those specifically designed to withstand fierce winds and flying debris or other structures where taking refuge improves chances of surviving killer storms — should be designated where they already stand, built where none currently serve and publicized better.

Offer incentives to add safe rooms to new construction as well as existing homes and businesses.

Structurally reinforced safe rooms for sheltering in place greatly enhance chances of survival and should be cornerstones of tornado preparedness. A tax credit incentive could be modeled on other successful programs that reward, for example, the purchase of energy-efficient HVAC systems, windows, insulation or solar panels.

Work with industry representatives to require that community storm shelters be included at any new apartment complexes and mobile home communities built in tornado-prone regions, and offer incentives for adding them to existing facilities.

More should be done to promote tornado safety in densely populated residential areas, such as apartment complexes, and communities with structures prone to serious damage from tornadoes. Requiring or offering incentives for shelter construction would help save lives.

FORTIFICATION STANDARDS

Establish statewide fortification standards for construction of new, rebuilt and extensively remodeled homes to save lives and property when tornadoes or other forms of severe weather move through Alabama; provide in the code inspection procedures and enforcement rules that apply statewide.

Away from the coast, many new and rebuilt homes in Alabama are not subject to building codes with fortification standards that could help them withstand high winds. Some of the damage suffered on April 27 was preventable with design techniques that are relatively inexpensive. Implementing statewide fortification standards would provide greater safety and could mitigate increases in homeowner insurance costs due to violent weather.

POWER CONTINUITY

Create the “Alabama Utility Workgroup for Disaster Response,” an industry group composed of representatives from electricity, natural gas, telecommunications and water providers, whose purpose is to share best practices and improve disaster planning and preparedness.

Communication among utilities before, during and after severe weather is critical. The governor by executive order should establish a working group to improve the state's utility infrastructure, enhance communication among utility providers, streamline state-led efforts on infrastructure coordination and share best practices.

Provide incentives for businesses that purchase generators and/or design or rewire their facilities to accommodate generators as temporary power solutions.

Having more generators available to supply temporary power and having more essential services wired to accommodate mobile generators would solve many problems during the immediate aftermath of major storms. To improve readiness for weather emergencies, a proliferation of generators and generator hookup capacity should be encouraged through tax incentives.

AWARENESS**Launch an ongoing awareness campaign that educates Alabamians about how to prepare for a natural disaster and about resources available when disasters strike.**

Alabama needs a statewide and ongoing disaster awareness campaign. If people were more aware of tornadoes and more familiar with steps to take to survive them, fewer people would die or suffer serious injuries.

Establish an annual sales tax holiday on certain items related to severe-weather preparedness to raise awareness and promote readiness.

One good way to promote storm readiness is to get the right supplies and tools into the hands of people who may need them during a severe-weather emergency, and one good way to do that is to offer a sales tax holiday on key items. Such a pause in collecting sales taxes, for a day or a weekend, could take place in late April to tie in with increased news coverage surrounding the anniversary of Alabama's worst tornado strikes or sometime in September, National Preparedness Month.

Warn

INTEGRATED AND PRECISE STORM ALERTS

Implement a statewide, integrated severe-weather alert system that provides more-precise alerts for individuals and businesses than current countywide warnings, allows individuals to enroll phone numbers, and takes advantage of smartphone technologies.

Far too often, Alabamians are complacent about weather warnings. To change this mindset, the state should adopt an integrated, statewide severe-weather alert system that complements the warning methods used by both the National Weather Service and broadcast meteorologists. Such a system would use the latest available radar information and technology to deliver more timely and precise alerts through sirens, land lines, cell phones, electronic message boards and other means. An aggressive sign-up campaign would be launched to give people an opportunity to enroll for the alerts.

WEATHER RADIOS

Push for the development of technology to transmit localized warnings through weather radios. Promote their use and upkeep, and develop a system to purchase and distribute them, with a priority focus on Alabama's special-needs population.

Weather radios are useful in alerting people to an approaching storm, but the technology needs to be improved. National Weather Service warnings are transmitted to the radios with a countywide code, and thus the radios sound on a countywide basis, not just in the area under threat. The Weather Service should develop the technology to send area-specific warnings to weather radios. The state and counties should work with nonprofits and others to promote the use of weather radios and distribute them to the homebound and other special-needs populations.

ATMOSPHERIC RESEARCH

Pursue funding to conduct academic research in Alabama on the factors responsible for the generation and maintenance of tornadoes in order to better understand the conditions that produce, strengthen and direct tornadoes; research focus would include the relative importance of topography, differential surface roughness and gravity waves.

Tornadoes are a fact of life in Alabama, but better knowledge of their patterns and destructive force can help people better prepare. At some of Alabama's universities, scientists and engineers have been conducting research along those lines. Such research should be expanded and given the necessary funding.

Respond

EMERGENCY MANAGEMENT TRAINING

Require more accountability by establishing minimum standards and better training for county EMA directors. Conduct a needs assessment of each county EMA.

During times of disaster, Alabama depends upon a network of emergency management agency directors in every county, but there are no minimum standards for the position and no required training. That should be corrected. A standard should be adopted, and county EMA directors should be better trained in the National Incident Management System. In addition, each county EMA should assess emergency needs to determine strengths and weaknesses so they can better prepare for and respond to the next disaster.

RADIO COMMUNICATIONS

Emergency response agencies should keep updated local tactical interoperable communications plans and train personnel in those standards. All exercises should include communication elements to ensure that these plans work in the field.

Communications can be difficult during and after a disaster because of a multitude of different radios and protocols among emergency response agencies. Having a good plan in place beforehand can minimize confusion and save lives. Every emergency response agency should have such a plan, and the plans should be tested to ensure they work when the next disaster strikes.

HEALTH CARE

Conduct unannounced regional and multiregional mass casualty drills for the triage and transportation of patients from disaster areas; focus on the use of the National Incident Management System.

Some hospitals were overloaded with patients and others were underutilized during the April 27 disaster. Emergency response agencies should do a better job of routing injured disaster victims to appropriate hospitals so no single hospital is overwhelmed. To ensure that this system of triage and transfer works correctly, unannounced drills should be conducted statewide so first responders know how to effectively send patients outside local jurisdictions when necessary.

VOLUNTEERS

Move forward with plans by the Governor's Office of Faith-Based and Community Initiatives to rebrand the office as Serve Alabama, and more clearly state its mission of coordinating volunteer services.

Before the April 27 disaster, the Governor's Office of Faith-Based and Community Initiatives was reorganizing into an agency focused clearly upon coordinating volunteers and volunteer agencies. The disaster showed what a big job that can be and what gaps there were in volunteer coverage in some areas of the state.

Elevate a VOAD leader to a high-level position within the state EMA command structure, and increase the number of VOAD chapters with the goal of one for each county.

Voluntary Organizations Active in Disaster (VOAD) is a volunteer organization created to organize volunteers. The state Emergency Management Agency had been working with VOAD closely before the April 27 disaster, but the storm showed the critical need for VOAD. The state should cement the relationship with state VOAD and utilize the organization's unique ability to coordinate individual volunteers and volunteer groups.

Recover

HOUSING

Establish a nonprofit organization to seek federal and private funds for a statewide program offering low-interest loans and other financial assistance to build homes and construct or expand businesses after disasters.

A nonprofit geared to assist in long-term disaster recovery across Alabama could be modeled after the Gulf Coast Renaissance Corp., which has used innovative programs to boost housing and the economy on the Mississippi Coast after Hurricane Katrina. Along with getting 501(c)(3) status to help finance disaster-area housing programs, the Alabama nonprofit should also seek to become a Community Development Financial Institution. As a CDFI, it can seek grants from the U.S. treasury and private foundations to aid business development in underserved areas.

Coordinate with the Alabama Housing Finance Authority to maximize the use of its funds to provide low-interest mortgages to qualified homebuyers and to provide multifamily housing for low-income residents in disaster areas.

Federal funds handled by the AHFA could be targeted to tornado-stricken communities in Alabama. If necessary, the governor could ask the AHFA board to set aside a portion of its funds for disaster housing over the next several years.

ECONOMIC RECOVERY

Provide incentives for businesses to rebuild or expand through loans, grants and tax credits. Three programs that could serve as possible models offer eligible businesses zero-interest loans, with a provision that the loan can be forgiven; allocate grants for disaster-related recovery costs not covered by federal or other sources; and provide investment tax credits for businesses damaged in a disaster.

After storms and flooding in 2008, Iowa offered zero-interest loans that could be forgiven if the business reopened by a certain date, and it provided direct grants to businesses from state-allocated funds; the amount distributed in a given area for both programs was based on the percentage of federal assistance a disaster area received. Kansas, after tornadoes and flooding in 2007, launched a three-year program offering various tax credits and refunds for business investments in its disaster areas; the state's obligation was capped at \$5 million in each of the three years.

DEBRIS REMOVAL

Local governments should prepare pre-event contracts for debris removal and disposal that require compliance with all environmental guidelines.

Clearing away wreckage and debris is a crucial step for communities to begin recovering from disasters. But many local governments in Alabama do not prepare contracts in advance for vendors to haul off the debris and for landfills to receive it. Using state Emergency Management Agency guidelines, municipalities and counties should approve pre-event contracts to avoid possible delays and inflated costs amid the chaos after disaster strikes.

Forum Reports

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INTRODUCTION

In the aftermath of the severe weather that devastated Alabama on April 27, 2011, Governor Robert Bentley formed The Tornado Recovery Action Council (TRAC). Tasked with “soliciting feedback from individuals, businesses, local governments and non-profit organizations across Alabama to better understand the magnitude of the disaster and the needs of the people,” TRAC identified and implemented a series of stakeholder engagement and data collection mechanisms. TRAC engaged the public through Community Forums and engaged Alabama’s cabinet-level leadership through a survey and symposium.

Clarus Consulting Group (Clarus) of Birmingham, AL was selected by TRAC to design and facilitate the seven Community Forums and the Cabinet Member Symposium. Following each of the Community Forums and the Cabinet Member Symposium, Clarus provided TRAC a detailed summary report of stakeholder feedback to inform TRAC’s pending recommendations to the Governor regarding Alabama’s long-term recovery efforts.

The purpose of this final summary report is to provide TRAC a high-level, thematic summary of all stakeholder feedback and a series of observations made by Clarus. A consolidated list of recommendations derived from the Community Forums can be found in Attachment I. A summary report that details the discussions and feedback from the Cabinet Member Symposium can be found in Attachment II.

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COMMUNITY FORUMS

TRAC conducted a series of **seven community forums** in the areas of the state most directly affected by the severe weather and tornados on April 27, 2011. Held over a three week period, the forums engaged more than 200 community members in and around:

- Rainsville/Fort Payne (9/12/11)
- Hackleburg/Phil Campbell (9/13/11)
- Tuscaloosa (9/19/11)
- Pratt City/Pleasant Grove (9/20/11)
- Cullman (9/22/11)
- Elmore/Tallapoosa Counties (9/26/11)
- Shoal Creek Valley (9/29/11)

These forums provided an opportunity for members of the public to share feedback on preparedness, warnings, the immediate response, and community rebuilding as they relate to the April 27, 2011 tornadoes.

Facilitated by and designed in coordination with Clarus, each forum utilized small group, roundtable discussions to allow individual attendees to participate in active discussion around each of the following questions:

- 1) When you consider your community’s preparedness for the events of April 27th:
 - a) How were you warned of the storm and how effective was the warning?
 - b) Knowing what you know now, what would you want your community to do differently to warn and to be prepared? What will you do differently?



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- 2) In the aftermath of April 27th:
 - a) What went well in the immediate response to the event?
 - b) What did not go as well?

- 3) As your community rebuilds after April 27th:
 - a) How can your community become stronger through its recovery and rebuilding?
 - b) What are the obstacles to a full recovery and how can those obstacles be addressed?

COMMUNITY FORUMS: THEMATIC SUMMARY

The Community Forum Recommendation Report found in Attachment I consolidates specific recommendations that community forum attendees provided and those derived from forum discussions.

*This summary synthesizes the **most common themes** that emerged from discussions across the community forums. In the section below, the forum discussion themes are aligned with the four pillars of TRAC's pending recommendations: **Prepare, Warn, Respond, and Recover**.*

PREPARE

Community forum attendees cited the need for greater community, business, and individual-level **planning** to support severe weather preparedness. On the individual level, this preparedness planning, as referenced by forum participants, included having **appropriate supplies available**, identifying where to seek shelter within homes and the community, and knowing where to find resources and assistance following a severe weather event.

On the community level, the **need for more severe weather shelters, generators, and equipment** was identified. Another often-cited aspect of community preparedness is the **need to clarify and promote shared understanding regarding chain of command and leadership structure** in advance of a disaster.

Improved communication and consistent messaging regarding all aspects of preparedness emerged as an opportunity to improve severe weather readiness levels. As an off-shoot of a communication-centric preparedness initiative, it was noted in several instances that preparedness planning could be supported by **community education initiatives** involving government and faith-based institutions.

WARN

Overall, community forum attendees described severe weather warnings as effective. These warnings included weather sirens, media broadcasts, online information, and person-to-person communication. However, participants cited a number of opportunities to **improve the effectiveness of the warning system**. These suggestions include increasing the number of weather sirens, customizing weather sirens to indicate the specific area in danger, and instituting automated (phone/text message/email) warning systems. Many participants acknowledged the impact of **complacency** as a result of frequent warnings and warnings across broad geographical areas.

Another key theme among forum discussions related to warning systems was the importance of **sustaining access to electricity** through battery and generator use. The use of batteries and generators allowed community members to continue to receive timely, accurate information via radio, television, and other communication vehicles. This important component of warning effectiveness relates directly to the need for improved planning and preparedness as noted above.



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RESPOND

Across communities, forum participants **praised first responders** for their efforts in the immediate aftermath of the storm. Utility companies were also recognized for their quick response. Participants at each forum also noted the importance of efforts by volunteers, faith-based organizations, and other community organizations. The collective response of various community entities and members generated a sense of community, unity, and pride across the affected communities.

Attendees recognized that they must be prepared to manage the **first few critical hours** after an event during which it may be difficult for first responders to reach them.

Communities with a clear plan for **logistical management** fared much better than those without one. The need for a pre-existing plan to manage people and resources was emphasized repeatedly, through stories of both the logistical successes and frustrations encountered. Churches were often cited for both their contributions to logistical management and for their untapped potential to do so.

Forum attendees noted several opportunities to strengthen future severe weather response efforts. These include:

- Greater access to equipment and resources, especially large generators
- Increased coordination between responding agencies
- Improved clarity of leadership and responsibility

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Improved communication, including access to accurate information, was one of the most often cited opportunities to strengthen future response efforts.

RECOVER

Participants from each forum identified opportunities to strengthen their communities through rebuilding and recovery efforts. From exploring the **sustainment of volunteerism** to the implementation of **improved building codes** and the creation of new community organizations to the effective use of **urban planning tools**, communities affected by the April 27th tornadoes are seeking ways to emerge renewed and bettered for the future. Many communities are focused on how to incorporate economic development into their recovery plans. In connection with recovery and rebuilding efforts, forum attendees identified obstacles their communities must overcome in order to maximize the opportunities presented. These challenges include:

- Limited access to funding
- Lack of clear leadership and decision-making
- Barriers to effective communication between agencies
- Need for better management of resources and identification of needs
- Practical constraints like remaining debris and road damage
- Decreases in population in the aftermath of the storm

While the early response of government has been appreciated, the long-term services of public agencies have served as a source of frustration. **Participants cited difficulties in obtaining information, bureaucratic processes for accessing services, and inequities in eligibility.** The lack of a well-developed understanding of options for recovery appeared both through comments from participants and the absence of references to some opportunities, ranging from economic development planning and urban planning to green and sustainable (including storm-resistant) rebuilding practices.



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CABINET MEMBER SYMPOSIUM

On Wednesday, October 5th, TRAC held a symposium attended by members of the Governor's Cabinet and other subject matter experts at the State Department of Archives and History in Montgomery, Alabama. Approximately 35 participants, representing 19 agencies, attended the meeting. Attendees shared their feedback on agency coordination and responsiveness related to the April 27, 2011 tornadoes.

After being divided into two groups by agency relevance to the immediate or long-term response, the cabinet members addressed the following questions:

Group 1

With a focus on the immediate response to an event like that on April 27, 2011:

- a) How can the various federal, state, and local agencies be better coordinated?
- b) How best should volunteer support be coordinated?

Group 2

With a focus on longer-term recovery following an event like that on April 27, 2011:

- a) How can the various federal, state and local agencies be better coordinated?
- b) What specific steps can we take to deliver services more quickly?

CABINET MEMBER SYMPOSIUM: THEMATIC SUMMARY

The *Cabinet Member Symposium Summary Report* found in Attachment II includes a detailed summary of symposium discussions. Key themes that emerged from the symposium discussions are listed below:

Group 1

- **Develop interagency relationships and statewide communication systems to support interoperability** in advance of disaster response
- Provide **disaster response training statewide and at the community level**
- **Strengthen local capacity and infrastructure** to support consistent implementation of response activities
- **Maximize expertise, experience, and capacity of trained volunteers and self-deployed first responders** through volunteer coordination, local community communication, and partnerships with other states' government agencies and national professional organizations

Group 2

- **Provide incoming cabinet members with training and education on disaster response** coordination, roles, and responsibilities immediately following appointment



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- Institute **ongoing interagency communication** to sustain relationships and foster development of new relationships and coordination opportunities
- Assess state agency staff capacity to respond to disasters or emergencies and **have contingency plans to acquire additional staff or realign staff activities in times of disaster response**
- **Identify an individual with tenure at each state agency to serve as the agency's emergency response coordinator and contact**
- Utilize care providers by **temporarily loosening state licensing requirements** so that professionals licensed in other states can provide services (counselors, nurses, and other care providers)
- **Create plans for Disaster Response Centers** (separate from staging areas) that include clear identification of leadership roles, coordination of volunteers, individual needs assessments, allocation of donations and resources, and coordination of services provided by state agencies

CONSULTANT OBSERVATIONS

Having facilitated all eight stakeholder engagement opportunities in coordination with TRAC, Clarus had the unique opportunity to hear first-hand how communities, individuals, and state leadership were affected by, immediately responded to, and continue to recover following the severe weather on April 27, 2011. Clarus was charged with synthesizing this feedback in a series of summary reports (as found in Attachment II) to inform TRAC's recommendation development. In addition to the substantive recommendations that were offered by forum and symposium attendees (as detailed in the preceding sections and attachments to this report), Clarus observed the emergence of consistent high-level themes that TRAC may want to consider when formulating recommendations to support Alabama's recovery efforts, as listed below.

COMMUNICATION: The important role communication plays was referenced by forum and symposium attendees in connection with all four TRAC focus areas: prepare, warn, respond, and recover. The State has an opportunity to improve interagency disaster-related communication and information sharing, in addition to taking a leadership role to ensure consistent severe weather preparedness messages are rolled out across the state. The severe weather and tornado preparedness messaging could be managed through a multimedia statewide PSA campaign that is augmented by community-level communication and branded collateral materials (checklists, contact information, family plan templates, etc.). In light of the April 27th disaster and tragedies, public audiences are primed to receive these messages and act in response, especially in anticipation of the 2012 tornado season.

DIASER PREPAREDNESS TRAINING: At the Cabinet Member Symposium, attendees made it clear that the disaster response training state agencies underwent in 2010-2011 played a significant role in their ability to respond effectively and efficiently to the events of April 27th. The State has an opportunity to encourage ongoing state and local-level preparedness training by leveraging already existing curriculums and training opportunities. Alabama has a notable advantage in that the National Center for Disaster Preparedness (CDP) is located in Anniston, AL. The CDP offers cost-effective opportunities for Alabama agencies, municipalities, and local leadership to prepare for disaster response. This story relates how a hospital administrator in Joplin, MO, leveraged his CDP training when responding to the tornadic event on May 22, 2011: <http://cdp.dhs.gov/news/impact/joplin.html>.

FAITH-BASED & CIVIC ORGANIZATIONS: One of the recurrent themes from the forums has been the role of the faith-based community. While there will be a number of recommendations about the potential role of churches, some consideration also can be given to creating a systematic and ongoing role for the faith-based community, from preparation to rebuilding. There are a number of existing models that could serve as a framework for the system.



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Including a variety of secular organizations in the program will extend services to populations not connected to the faith community.

INCORPORATING A LONG-TERM VISION: In analyzing stakeholder feedback, a consideration of what is not said is as significant as what is said. There has been an impressive range of ideas and suggestions for improvement in disaster response. Understandably, the largest focus has been on addressing the immediate impacts of an event, and returning communities to functioning as soon as possible. There also has been much productive discussion of what an effective warning system and immediate response system might look like. Nevertheless, across all the forums, Clarus heard little discussion of a long-term vision for prepared communities or rebuilt communities. The opportunity for achieving true community-based responsibility and sustainability depends on creating ongoing systems in which communities have access to information about what is possible, and systems are in place to use that information consistently. In connection with recovery efforts, there are two areas which could benefit from additional long-term thinking. First, as communities consider rebuilding, many are focused on the opportunity to support new economic development, but few know how to access related resources. Second, communities sometimes acknowledge a desire to rebuild sustainably and durably, but beyond that recognition, there is not much understanding about what is possible or how to access information about best practices. The State has an opportunity to provide information, training, assessment support, planning process frameworks, and access to subject matter experts to affected communities as they navigate rebuilding and recovery decisions.

STAKEHOLDER ENGAGEMENT: TRAC's community forums engaged a wide-range of community stakeholders. It is important that TRAC both "close the communication loop" and maintain stakeholder ownership of recovery processes by using contact information provided by attendees at community forums to express gratitude for time and feedback and share reports resulting from TRAC's efforts. An email to community forum attendees would be a cost-effective mechanism of delivering messages and information (with limited hard copy communication necessary for attendees without email addresses).



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ATTACHMENT I

COMMUNITY FORUM RECOMMENDATIONS

The following lists, organized along the Prepare, Warn, Respond, and Recover framework, consolidate the specific recommendations that community forum attendees provided and those derived from forum discussions. Although these recommendations were shared in the context of individual communities affected by the events of April 27th, there is an opportunity to leverage collective insights across communities to identify and implement recommendations for the benefit of the entire state.

PREPARE

Participants and communities varied greatly in their level of preparedness for both the storms and the aftermath of those storms. Suggestions around preparedness were directed at both individual and community preparedness. These suggestions included:

- **Provide expert assessment of preparedness at the community level**
- **Assess availability of storm shelters for severe weather events:**
 - Build more community shelters
 - Identify existing community shelters
 - Raise community awareness regarding shelter locations
 - Create neighborhood shelters
 - Assist community members in their efforts to create safe zones in the home
 - Provide media outlets with information about where shelters are located
 - Revisit FEMA building guidelines for financing shelters in rural areas
 - Identify shelters in the faith-based community
 - Address liability issues for businesses and churches that have structures that can provide shelter
- **Utilize Department of Homeland Security training for first responders out of the FEMA Center for Domestic Preparedness in Anniston, Alabama**
- **Increase awareness at community level:**
 - Designate a disaster preparedness month
 - Create a public awareness campaign similar to the Anniston Chemical Agent Disposal Facility campaign
 - Provide severe weather preparedness kits for individuals and families
 - Provide multi-lingual education
 - Include non-traditional educational tools such as radio soap operas
 - Create a curriculum to be used by a variety of organizations to promote preparedness
 - Recruit faith-based organizations to promote preparedness among their members
 - Use school-based curricula that encourage students to educate their families on preparedness
- **Provide community education around individual preparedness and instruction on:**
 - Communication planning:
 - Understand function of landline compared to mobile phones
 - Portable telephones on a landlines do not work in a power outage
 - List of contact numbers in hardcopy and in mobile phone
 - Locations to charge mobile phones in a power outage
 - Who to call and check on, if you don't check in what to do, and people in other areas you can check in with



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- Where to take shelter during severe weather
- Which documents to copy and keep in a separate location and which to keep with you
- What supplies to have on hand:
 - Documents
 - Identification
 - Cash
 - Water
 - Batteries
 - Contact list
 - Shoes and clothing
 - Radio
 - Flashlight
 - Mobile phone

WARN

Suggestions for improving the severe weather warning systems and their effectiveness included:

- **Weather Sirens:**
 - Install additional weather sirens over a broader geographic range
 - Create ability for sirens to be remotely activated
 - Perform regular maintenance to ensure sirens are in working order
 - Program sirens so that they provide geographically-specific information
 - Create warning signals that are unique to a specific threat (e.g. different tones for tornado warnings versus tornado watches)
- **Warning Communication Systems:**
 - Send warnings via automated text and telephone alerts
 - Create smart phone applications that are geographically-specific using GPS data to warn of severe weather (particularly useful for travelers)
 - Provide consistent message across media outlets (ensure radio and television communicate consistent messages)
 - Provide generators to media outlets, particularly radio stations, to maintain operation in a power outage
 - Encourage preparedness to support warning systems, e.g. battery-operated radios and batteries

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RESPOND

Participants at the seven community forums identified the following opportunities to improve the immediate response to severe weather events and other disasters.

- **Prepare communities to respond efficiently and effectively:**
 - Provide assessment at the community level
 - Assist communities in developing disaster response plans
 - Provide disaster preparedness templates for community planning
 - Assign response roles and responsibilities in connection with overlapping jurisdictions and shared resources, like lakes
 - Create statewide database (broken down by zip code) of equipment and trained personnel
 - Create registry of volunteers



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- Create voluntary database of individuals with special needs that require unique assistance in times of disaster and coordinate response efforts to provide this assistance
- Assess hospitals for their ability to function in a disaster
- Create system for allocating donations and resources so that smaller communities are not overlooked
- Improve ability to match donations to needs
- **Increase number of disaster staging areas and ensure they are:**
 - Regionally located
 - Well-equipped with staff, generators, water, and fuel
 - Possess accurate inventory of equipment, lists of first responders, and list of volunteer first responders
- **Create statewide first responder communication system so that first responders from different communities can communicate with each other**
- **Create partnership between VOAD and Governor's Office of Faith-Based & Community Initiatives:**
 - Pre-assign churches and organizations to communities or tasks
 - Facilitate response partnerships between communities (adopting one another)
- **Provide case managers for each family to include:**
 - Assistance with insurance forms and FEMA paperwork
 - Access to faith-based and other community resources
 - Instruction on how to find a contractor
 - Utilization of social workers and trained volunteers to provide services

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RECOVER

Looking beyond immediate response efforts, forum participants provided the following recommendations to support long-term recovery in their communities.

- **Engage residents in the community planning process, provide assistance related to rebuilding, and improve stakeholder communication:**
 - Make sure diversity of the community is represented in rebuilding process
 - Create structure for flow of information so people know where to turn for accurate information
 - Create contractor registry
 - Provide loan and mortgage education
 - Provide regular communication regarding rebuilding process
 - Provide assistance with insurance negotiations and paperwork
 - Clarify information related to building codes, zoning, and ordinances
 - Provide accurate timeline that sets reasonable expectations for rebuilding process
- **Address economic development considerations in recovery processes:**
 - Assess economic needs of community
 - Provide economic incentives for businesses to rebuild in disaster areas
 - Provide economic incentives for individuals to rebuild in disaster areas
- **Seize opportunity to revise building codes and zone use and encourage safety and community beautification:**
 - Develop strategic plans for improved rebuilding not just replacement of structures
 - Consider underground utilities
 - Create mixed-use zoning areas
 - Build sidewalks and install street lights
 - Encourage beautification efforts including green spaces and improved building facades



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- Create partnerships with green-technology companies to recycle storm debris
- Rebuild homes to include safe zones
- **Utilize community resources to support rebuilding efforts:**
 - Recruit universities to design courses around helping communities recover
 - Access trained volunteers to aid architectural planning and community design
- **Celebrate rebuilding successes and actively document the recovery process**



ATTACHMENT II

CABINET MEMBER SYMPOSIUM SUMMARY REPORT

On Wednesday, October 5th, the Tornado Recovery Action Council (TRAC) held a symposium attended by members of the Governor's Cabinet and other subject matter experts at the State Department of Archives and History in Montgomery, Alabama. Approximately 35 participants, representing 19 agencies, attended the meeting. Attendees shared their feedback on agency coordination and responsiveness related to the April 27, 2011 tornadoes.

TRAC's Executive Director, Ron Gray, opened the symposium by explaining TRAC's mission. He then turned the symposium over to the lead facilitator, Cathy Wright of Clarus Consulting Group. Ms. Wright described the discussion format, which included two small group discussions facilitated by Clarus team members. Participants were assigned to discussion groups based on their agency's role in connection with the response to the severe weather events of April 27th, 2011. Agencies responsible for the immediate response gathered for discussion, while agencies representing longer-term recovery efforts met for discussion in an adjacent room. Each group discussed two predetermined questions. Participants were given approximately 15 minutes per question for discussion before reporting highlights from their discussion to the larger group. Below is a summary of the discussion, detailed by group and by question.

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Group I

Participants in this group represented agencies focused on immediate response efforts as it relates to the events of April 27th. These agencies were:

- Department of Senior Services
- Medicaid Agency
- Department of Corrections
- Department of Homeland Security
- Department of Public Safety
- Department of Conservation and Natural Resources
- Department of Transportation
- Alcohol Beverage Control
- Banking Department
- Alabama National Guard
- Emergency Management Agency
- Department of Insurance
- Governor's Office

With a focus on the immediate response to an event like that on April 27, 2011:

a) How can the various federal, state, and local agencies be better coordinated?

Symposium participants were very complimentary of the immediate response efforts of state agencies and their leadership. In general, symposium attendees indicated that **agency-to-agency coordination at the state level went well.**



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According to attendees, **emergency response training contributed significantly to Alabama’s state agencies’ preparedness level.** In April 2011, state agencies were in the final months of a two-year catastrophic-planning exercise. This exercise was scheduled to conclude on a national level in May 2011. Although the events of April 27th prevented Alabama’s agencies from completing the training, agency representatives indicated that the timeliness and relevance of the disaster training exercises enhanced their ability to respond effectively to the events of April 27th.

Following severe thunderstorms in the morning and in anticipation of continued severe weather threats, Governor Bentley declared a State of Emergency for Alabama mid-day on April 27th. This **declaration allowed the Emergency Management Agency (EMA) and other state agencies to institute emergency operations and prepare for the still-pending severe weather threat.** Participants in the symposium praised the Governor for his forward-thinking, sharing that it allowed the appropriate agencies to “get ahead” of the response necessary and begin coordinating services.

Although participants felt strongly that coordination efforts at the state level were exceptional, several attendees pointed out that a **state agency’s response effectiveness relied heavily on the infrastructure, coordination of services, and general preparedness that existed at the local level.** As communities have differing degrees of infrastructure and resources, the effectiveness of service delivery and emergency response implementation at the local level varied.

When discussing opportunities to improve preparedness levels and coordination between agencies, participants noted that preparedness training and coordination requires funding, which is currently limited. **A lack of funding results in the need for innovation and creativity** in order to maximize service delivery and coordination efforts.

Participants in the symposium made several suggestions for strengthening interagency coordination, including:

- Designate one point of contact to oversee the coordination of the collective health and human services response in times of emergency
- Identify disaster coordinators within each agency that interface and coordinate efforts with EMA
- Schedule regular communication and meetings between agencies to encourage relationship development, support interoperability, and foster trust (To quote an attendee: “You don’t want to meet someone for the first time in the midst of a disaster.”)
- Provide additional opportunities for state agencies to interact with representatives of other state and federal agencies
- Participate in regularly scheduled mock training exercises at the state and local levels to improve overall preparedness
- Engage all agencies in Emergency Operations Plan revisions and development
- Provide training to establish common incident response terminology across agencies
- Install state-wide, first responder communication system in advance of a catastrophic event. (According to a meeting attendee, without a shared and reliable communication system in place, “at best you have a delay in response time; at worst you lose lives.”)

b) How best should volunteer support be coordinated?

Participants in the symposium identified three types of volunteers who were present in the affected communities on or after April 27th. These included:



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- Members of the general public
- First responders who self-deployed
- First responders from other states/areas that were requested by local officials without informing or coordinating with agencies at the state level

Attendees referenced current effective volunteer coordination efforts that include the Governor's Office of Faith-based and Community Initiatives and Alabama's Volunteer Organizations Active in Disaster (VOAD).

Symposium participants noted the **important services that trained volunteers can provide in an emergency response situation**. Also, one participant reported that another advantage of volunteer involvement is that volunteers do not have the same limitations regarding delivery of services (e.g. tree or debris removal) on private property that first responders are subject to.

Symposium attendees made multiple recommendations regarding the coordination of volunteer support in an emergency situation. These included:

- Develop partnerships and reciprocal agreements with other states and professional organizations to provide trained volunteers to augment the services provided by state agencies
- Provide opportunity for first responders from other states to volunteer and be deployed in a coordinated fashion so that services and trained volunteers are distributed appropriately
- Create and promote a system that allows communities to access trained volunteers
- Educate local community leaders about who to call for help with service coordination and volunteer needs and what needs state agencies are able to support
- Educate communities regarding the statewide volunteer hotline
- Incorporate social media into the volunteer coordination planning process as:
 - Used wisely it can provide direction for volunteers
 - Used without oversight it can result in an inequitable distribution of resources and incite chaos and confusion

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Group II

Participants in this group represented agencies focused on long-term recovery as it relates to the events of April 27th. These agencies were:

- Department of Tourism and Travel
- Department of Mental Health
- Department of Revenue
- Department of Industrial Relations
- Alabama National Guard
- Department of Human Resources
- Alabama Development Office
- Alabama Department of Economic and Community Affairs

With a focus on longer-term recovery following an event like that on April 27, 2011:

- a) **How can the various federal, state and local agencies be better coordinated?**



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Symposium participants expressed generally positive feelings with respect to interagency coordination and indicated that their recommendations focused on enhancement rather than remediation. Opportunities for interagency effort enhancement focused on providing greater clarity around, additional training to improve, and more resources to support recovery services and the coordination of those services.

Attendees noted that the severe weather events of April 27th occurred relatively early in the current administration's tenure. That timing alone presented a challenge for attendees because many were new to their roles as cabinet members. Cabinet members acknowledged that with each change in administration there is a risk of losing institutional knowledge. They also expressed the **need for additional training pertaining to interagency coordination and emergency response to occur immediately following a change of administration.**

Symposium participants perceived that for agencies regularly involved in the immediate response to a disaster, leadership and structure in an emergency response environment are better solidified and understood. But for agencies that focus on long-term recovery, additional education is needed to clarify roles and leadership responsibilities related to incident command. Many participants lacked a firm understanding of the EMA reporting structure. Attendees also cited the need for **further clarification and education regarding each state agency's specific responsibilities in connection with response and recovery efforts,** particularly where there is an overlap of services among agencies.

In addition to recommending initial training to ensure new cabinet members understand the basic structure of interagency emergency response, participants also indicated a **need for on-going disaster response training.** Specifically, cabinet members requested that "dress rehearsal-style" training take place in early 2012 in advance of the next tornado season. Attendees acknowledged that in the event of a disaster, productive interagency relationships provide a solid foundation for coordination of services. Therefore, fostering those relationships and providing ongoing opportunities for interagency coordination and training will serve to improve disaster response efforts.

Sustaining improvements in interagency and stakeholder communication emerged as an opportunity to enhance state agency response and recovery efforts. Cabinet members in attendance praised the interagency communication systems that were implemented in the days following the storms. For example, cabinet conference calls were conducted daily and later weekly to promote coordination. Attendees enthusiastically endorsed those efforts with one participant noting, "I got answers to questions I didn't know I had." These conference calls were credited with helping cabinet members work through the challenges of new roles and responsibilities. These regularly scheduled calls also communicated clear, consistent messages from the Governor's office, which served to dispel rumors and address concerns. Those regularly occurring conference calls kept the Governor's message fresh in the minds of cabinet members and enabled the effective communication of that message to local communities.

In the immediate aftermath of April 27th, the Governor made daily calls to legislators, mayors, and county commissioners. Additionally, the Governor's representatives were present in the affected communities, talking to residents about their needs and concerns. Many of the cabinet members in attendance indicated that one of the most important roles they played in connection with the response was to represent the Governor on the community level. This **local level participation led to increased public awareness, confidence, and hope.** According to symposium attendees, community residents repeatedly expressed their gratitude that the Governor and his representatives came to their community.



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Participants discussed the need for **clarity about who is in charge at the local level** following a disaster. One participant noted that the EMA should be clearly identified as the lead and take on the role of communicating and coordinating efforts.

Symposium participants had several recommendations related to improved communication including:

- Create and maintain a database of current contact information for elected officials, as well as agency staff members, including personal mobile telephone numbers, in addition to office phone numbers and email
- Provide routine updates to cabinet members
- Conduct regularly scheduled interagency conference calls
- Conduct monthly conference calls with mayors and county commissioners regarding ongoing rebuilding efforts
- Establish mechanism for sharing information between various levels of government
- Create plan to effectively utilize social media
- Create centralized communication delivery mechanism to reduce the amount of misinformation after a disaster

An additional challenge to agency coordination efforts identified by symposium participants was the **increased burden on staff that occurs in a disaster response scenario**. As disaster coordination is typically an auxiliary duty for a staff member, in the event of a disaster, agency staff are often tasked beyond capacity. Cabinet members reported a **need for a dedicated staff member to coordinate disaster response efforts** and/or a mechanism for staff's regular duties to cease or be managed in an alternative manner. Furthermore, attendees specified that the disaster response coordinator in each agency should be a seasoned staff member who possesses institutional knowledge and an awareness of interagency coordination best practices, not someone who lacks tenure with the agency. Attendees also noted that this staff member should be training and coordinating with key stakeholders regularly before a disaster occurs to ensure collective preparedness to discharge responsibilities.

Additionally, with respect to economic recovery, symposium participants suggested that the Governor **appoint an individual with responsibility for assessing the economic recovery needs of communities in disaster-stricken areas**. Attendees identified a current need to support independent businesses that closed as a result of the events of April 27th, which has served to increase the unemployment burden.

Symposium participants cited other specific opportunities to improve coordination of services including:

- Increase number of well-equipped disaster staging areas around state
- Improve the referral process to reduce "revolving door effect" where clients are referred to multiple agencies only to end up back where they started
- Establish standardized expectations for referral and request response times
- Improve information sharing between agencies
- Add staff to coordinate various services, e.g. mental health, substance abuse, etc.
- Provide additional resources so that routine operations can continue in addition to disaster response and recovery efforts
- Provide dedicated staff for disaster response to ensure readiness
- Provide additional training and education on state agency emergency response efforts and coordination to new cabinet members



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- Provide funding mechanism that allows state agencies to access skilled assistance that is available but underutilized due to funding limitations

b) What specific steps can we take to deliver services more quickly?

In discussing mechanisms to expedite post-disaster service delivery, the role of Disaster Recovery Centers received considerable attention. Several cabinet members suggested that Disaster Recovery Centers should be established in each affected community following a disaster and should include:

- Representatives from all service/aid agencies
- Interpreter services
- Volunteer registration and credentialing
- Volunteer deployment
- Resource distribution

One of the challenges of providing post-disaster services relates to state professional licensing issues. Care providers, such as therapists, health care providers, and interpreters, licensed in other states were not eligible to function professionally in Alabama. Cabinet members suggested that there be a means to temporarily:

- License these providers
- Suspend licensing requirements
- Accept licensure from other states

According to participants, there should also be a **process to suspend or expedite some processes, especially those regarding federal assistance, so that resources can be allocated quickly**. There were some aberrant outcomes including funding to support transportation of dialysis patients to function centers but restrictions in the use of funding to support their transportation home.

Although participants were pleased with the overall efforts to coordinate and deliver services in a timely manner, several attendees noted that no matter how well prepared agencies were on a state level, **service delivery was only as effective as the local community infrastructure allowed**. In small communities, a lack of infrastructure and a lack of identified leadership created challenges to providing services. Participants suggested that communities, particularly unincorporated areas, work with the established League of Municipalities and Association of County Commissions to develop disaster plans. State-level agencies should work with local sheriff's offices to offer support for the sheriff's emergency and disaster response plan.

Discussion regarding improving the timeliness of services included next steps. Suggestions for moving forward included:

- Expedite funding
- Temporarily suspend rules for fund disbursement in order to fund post-disaster services
- Enhance disaster recovery centers so that they provide:
 - "One stop shopping" with respect to services
 - Volunteer registration, identification, and coordination
- Create plan for coordinating county, state, federal and faith-based organizations in a disaster
- Provide back-up generators for essential services like dialysis centers



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- Enhance interpreter pools
- Establish alternative communication plan for deaf and hard of hearing population
- Develop mechanism for coordinating faith-based and volunteer services

“We cannot and we will not let these people down. As leaders of this state, we will see that Alabama is rebuilt.”

- Governor Robert Bentley

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