

# HOW TO PREPARE FOR THE NEXT DERECHO

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# August 10, 2020 Midwest Derecho

The costliest severe thunderstorm  
event in United States history

- ▣ NOAA National Weather Service
- ▣ August 6, 2021
- ▣ <https://storymaps.arcgis.com/stories/f98352e2153b4865b99ba53b86021b65>



# Plan to Protect Yourself & Your Family

- ▣ Before you can respond as an ARES volunteer, you must first make sure you and your family are safe and secure
- ▣ Proper planning will help ensure that you will be prepared for most any emergency
- ▣ You must have the tools and plans in place to make it on your own, at least for a period of time, no matter where you are when disaster strikes
- ▣ Just like having a working smoke detector, preparing for the unexpected makes sense

# U.S. Homeland Security

## 3 Key Recommendations

- ▣ Get an emergency supply kit
- ▣ Make a family emergency plan
- ▣ Be informed about the different types of emergencies that could occur and the appropriate responses

# Family Emergency Supply Kit

- ▣ Everyone should have some basic supplies on hand in order to survive for at least three days if an emergency occurs
- ▣ Review the list and consider where you live and the unique needs of your family
- ▣ Consider having at least two emergency supply kits
  - One full kit at home
  - Smaller portable kits in your workplace, vehicle or other places you spend time (Bug Out Bag)

# Recommended Items to Include in a Basic Emergency Supply Kit:

- ▣ Water
  - One gallon of water per person per day for at least three days, for drinking and sanitation
- ▣ Food
  - At least a three-day supply of non-perishable food
- ▣ Battery-powered or hand crank FM and NOAA Weather Radio with tone alert with extra batteries
- ▣ Cell phone chargers: AC and portable battery
- ▣ Flashlight and extra batteries
- ▣ First aid kit
- ▣ Knife

# Recommended Items to Include in a Basic Emergency Supply Kit:

- ▣ Whistle to signal for help
- ▣ Dust mask, to help filter contaminated air
- ▣ Plastic sheeting and duct tape to shelter-in-place
- ▣ Toilet paper, moist towelettes, garbage bags and plastic ties for personal sanitation
- ▣ Non-sparking wrench or pliers to turn off utilities
- ▣ Can opener (if kit contains canned food)
- ▣ Local maps
- ▣ Cash and quarters

# Additional Items to Consider Adding to an Emergency Supply Kit:

- ▣ Prescription medications and glasses
- ▣ Infant formula and diapers
- ▣ Pet food, water and supplies for your pet
- ▣ Important family documents
  - Copies of insurance policies, driver's license, Social Security card, birth certificates and bank records in waterproof container / bag
- ▣ Printed emergency reference material
  - First aid book or information from [www.ready.gov](http://www.ready.gov)
- ▣ Sleeping bag or warm blanket for each person
  - May not be enough during an Iowa blizzard!
- ▣ Complete change of clothing including a long sleeved shirt, long pants and sturdy shoes
  - Consider extra cold weather gear

# Additional Items to Consider Adding to an Emergency Supply Kit:

- ▣ Household chlorine bleach and medicine dropper
  - When diluted nine parts water to one part bleach, bleach can be used as a disinfectant
  - In an emergency, you can use it to treat water by using 16 drops of regular household liquid bleach per gallon of water
  - Do not use scented, color safe or bleaches with added cleaners
- ▣ Fire extinguisher
- ▣ Matches in a waterproof container
- ▣ Personal hygiene items and hand sanitizer
- ▣ Mess kits, paper cups, plates and disposable utensils, paper towels
- ▣ Notebook, ink pen, marker and pencil
- ▣ Books, games, puzzles or other activities for children

# Even More Items to Consider Adding to an Emergency Supply Kit:

- ▣ Cord, rope, twine
- ▣ Cooking utensils
- ▣ Emergency stove, fuel, and cooking pot
- ▣ Insect repellent / sun screen
- ▣ Lantern
- ▣ Playing cards or other entertainment
- ▣ Pry bar
- ▣ Sewing kit
- ▣ Tent or hammock
- ▣ Water filter and collapsible water bag / bucket

# Grab and Go

- ▣ Assemble the items in a sturdy container that is easy to transport
  - Backpack or duffel bag
  - New trash can
  - Plastic storage bin or suitcase with wheels
- ▣ Store the kit near the door most likely used to evacuate
- ▣ Rotate food and other items with expiration dates
- ▣ Consider keeping additional two week supply of food and water for sheltering in place



# Family Disaster Plan

- ▣ Neighborhood, out-of-neighborhood, and out-of-town meeting places
- ▣ Info about each family member
  - DOB, SSN, phone numbers, medical info
- ▣ Important family locations
- ▣ Insurance policy info and phone numbers
- ▣ Wallet card for each family member
  - Know who to call and where to meet in case of an emergency

Child




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**Family Emergency Plan**  **Form # 17**

Name \_\_\_\_\_ DOB \_\_\_\_\_  
 Address 1: \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
 Address 2: \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
 Home Phone: \_\_\_\_\_ E-mail: \_\_\_\_\_  
 Cell Phone: \_\_\_\_\_ Other E-mail: \_\_\_\_\_

Special Needs, Medical Conditions, Allergies, Important Information  
 \_\_\_\_\_  
 \_\_\_\_\_

**Ready** 

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**Relief / Support**

Relief Name \_\_\_\_\_  
 Address: \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
 Other Name: \_\_\_\_\_  
 Point of Contact or Special Instructions  
 \_\_\_\_\_  
 \_\_\_\_\_

Relief Emergency Plan  
 \_\_\_\_\_  
 \_\_\_\_\_

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**Parent / Guardian / Care Giver**

Name: \_\_\_\_\_ Home Phone: \_\_\_\_\_  
 Address 1: \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
 Address 2: \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
 Work Phone: \_\_\_\_\_ E-mail: \_\_\_\_\_  
 Cell Phone: \_\_\_\_\_ Other E-mail: \_\_\_\_\_

Identifying Characteristics  
 \_\_\_\_\_  
 \_\_\_\_\_

Name: \_\_\_\_\_ Home Phone: \_\_\_\_\_  
 Address 1: \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
 Address 2: \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
 Work Phone: \_\_\_\_\_ E-mail: \_\_\_\_\_  
 Cell Phone: \_\_\_\_\_ Other E-mail: \_\_\_\_\_

Identifying Characteristics  
 \_\_\_\_\_  
 \_\_\_\_\_

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**Neighborhood Emergency Meeting Place**

Name: \_\_\_\_\_  
 Address: \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_ Phone: \_\_\_\_\_  
 Point of Contact or Special Instructions  
 \_\_\_\_\_

**Out of Neighborhood Emergency Meeting Place**

Name: \_\_\_\_\_  
 Address: \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_ Phone: \_\_\_\_\_  
 Point of Contact or Special Instructions  
 \_\_\_\_\_

**Out of Town Emergency Meeting Place**

Name: \_\_\_\_\_  
 Address: \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_ Phone: \_\_\_\_\_  
 Point of Contact or Special Instructions  
 \_\_\_\_\_

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**Important Numbers or Information**

Name: \_\_\_\_\_ Phone: \_\_\_\_\_  
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 Name: \_\_\_\_\_ Phone: \_\_\_\_\_  
 Name: \_\_\_\_\_ Type: \_\_\_\_\_ Age: \_\_\_\_\_ Sex: \_\_\_\_\_  
 Name: \_\_\_\_\_ Type: \_\_\_\_\_ Age: \_\_\_\_\_

Miscellaneous Notes: \_\_\_\_\_

EMIL 411 FOR EMERGENCIES

Place additional information on the reverse side as needed.



# Be Informed

- ▣ [fema.gov](http://fema.gov)
- ▣ [ready.gov](http://ready.gov)
- ▣ [ready.iowa.gov](http://ready.iowa.gov)
- ▣ [iowahomelandsecurity.org](http://iowahomelandsecurity.org)
- ▣ [storycountyiowa.gov/ema](http://storycountyiowa.gov/ema)
- ▣ [creekstewart.com](http://creekstewart.com)



# Home Backup Power

- ▣ When power goes down, you want to be able to charge your phone, keep food cold, cook a meal and entertain yourself / family
  - \*Medical necessities\*
- ▣ Generator vs Batteries vs Solar vs Wind
- ▣ Considerations
  - Value
  - Reliability
  - Safety
  - Usage goals

# Generators

- = Cost \$400 - \$6,000
  - Lower price up front
  - Fuel and maintenance can add up after +10 years
  - Transfer switch installation
- Fuel storage and availability
- Noise and safety
- Reliability / Maintenance
- Need to be running to provide any power no matter how small the demand
- + Capable of whole house power
- + Long, continuous run time if fuel is available
- + Automatic start and transfer switch
- + Outdoor storage or small and portable

# Generators



# Backup Batteries

- Cost \$1,000 - the sky is the limit!
- Whole house power is expensive
- Big capacity is not portable and needs lots of indoor space
- Inverter adds complexity
- + Reliable
- + Quiet and relatively safe
- + Power delivery matches demand – no waste
- + Easy to keep full, rechargeable by other methods
- + Automatic switchover available

# Backup Batteries



# Solar

- Starting cost for 6-kW system in Iowa
  - \$14,160
  - Average cost per watt \$2.53
  - 2021 Federal tax credit \$3,115
- Whole house solar is a big investment
- Grid tie system is not typically available during a grid-down situation
- Need backup batteries for overnight or grid-down
- + Very reliable
- + Very little maintenance
- + Quiet and very safe
- + Complements backup batteries

# Solar



# Wind

- 10-kilowatt turbine \$50,000 - \$80,000
- Mount 30 feet above anything within 500 feet
- Noise and aesthetics
- Grid tie system is not typically available during a grid-down situation
- Need backup batteries for overnight or grid-down
- = Maintenance
- = Great for rural areas, not so in urban areas
- = Great for central Iowa, not so in southern Iowa
- = Reliable (until the derecho)
- + Complements backup batteries



# Portable Battery Packs

- Cost \$200 - \$6,000
- Lead acid options are heavy, not very power dense
- + Lithium options are lighter, more power density
- + Very Portable
- + On board AC inverter, 12v DC and USB
- + Reliable
- + Quiet and safe
- + Power delivery matches demand – no waste
- + Easy to keep full, rechargeable by other methods

# Portable Battery Packs



# Home Backup Power

- ▣ Generator vs Batteries vs Solar vs Wind
- ▣ What is the best option?
- ▣ Considerations
  - Value
  - Reliability
  - Safety
  - Usage goals
- ▣ My current solution is a combination of portable generator and portable battery pack

# Home Radio Station Preparedness

- ▣ Derecho took down several towers and many wire antennas
- ▣ Keep a portable or temporary solution ready so you can get back on the air quickly
- ▣ HF
  - Simple 40m and 80m trap or link dipole
  - 100' of RG-8x
  - Collapsible mast or painters pole and guys
- ▣ VHF/UHF consider options for your mast
  - What is your simplex range with no repeaters?
  - Lower loss coax

# Now That Your Home is Prepared...

- ▣ Emcomm volunteers also need to consider the potential hazards and limitations when planning their equipment and supplies
- ▣ AC power, or just the batteries you bring?
- ▣ Safe drinking water, or only what's in your canteen?
- ▣ Outdoor location, or deep inside a structure?
- ▣ Repeaters, or simplex only?
- ▣ Conditions are not always known in advance, particularly during the early stages of an emergency

# Being Prepared for an Emergency Communications Deployment

- ▣ Involves a wide range of considerations
  - Radio equipment
  - Power sources
  - Clothing and personal gear
  - Food and water
  - Specialized training
  - Served agency needs
- ▣ There is no one size fits all checklist
- ▣ Review plans to help you visualize the mission



# Story County ARES

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## Welcome to the online home of Story County ARES

### What is the Amateur Radio Emergency Service® (ARES)?

The Amateur Radio Emergency Service® (ARES) consists of licensed amateurs who have voluntarily registered their qualifications and equipment in advance, with their local ARES leadership, for communications duty in the public service when disaster strikes. Members continually hone their skills through training and exercises and maintain their own radio equipment, digital communications equipment, backup power systems, and associated supplies to be ready at a moment's notice, all at their own expense.

In addition to providing emergency radio communications and support within Story County, Iowa when activated through the agencies we serve, Story County ARES is also available to provide communications support for non-commercial community events such as bike-a-thons, races, parades, and similar activities.

In addition to providing communications support to local events in Story County, many of our members have experience supporting large-scale events throughout the central Iowa area.



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## Downloads

### *Membership and policy documents*

[Story County ARES Member Application](#)

[Story County ARES Member Standards Policy](#)

[ARRL Iowa Section ARES Code of Conduct](#)

### *Resource and reference materials*

[Story County ARES Emergency Operations Plan](#)

[10/1/2020 SCARC Presentation: Basic Communication Skills for Emergency Operations](#)

[10/3/2019 SCARC Presentation: Communicating When Your Plan Falls Through](#)

[10/4/2018 SCARC Presentation: Cross-Band Repeaters for Emergency Communications](#)

[3/29/2018 Story ARES Presentation: March 2018 ARES Meeting](#)

# Go Kits

- ▣ Last thing you should need to do when a call for assistance comes is think of and locate all the items and equipment you might need
- ▣ Any experienced emergency responder knows how important it is to keep a kit of the items they need ready to go at a moment's notice
- ▣ Your “go kit” could be your smaller portable emergency kit or “Bug Out Bag” plus your radio equipment

# Without a Go Kit

- ▣ You will almost certainly leave something important at home
- ▣ Bring items that will not do the job
- ▣ Gathering and packing your equipment at the last moment also wastes precious time
- ▣ Think through each probable deployment ahead of time, and the range of situations you might encounter

# Basic Questions to Consider

- ▣ Which networks will you need to join, and which equipment will you need to do so?
- ▣ Will you need to be able to relocate quickly, or can you bring a ton of gear?
- ▣ Is your assignment at a fixed location or will you be mobile?
- ▣ Will you be on foot, or near your vehicle?

# Basic Questions to Consider

- ▣ Will you be in a building with reliable power and working toilets, or in a tent away from civilization?
- ▣ What sort of weather or other conditions might be encountered?
- ▣ Where will food and water come from? Are sanitary facilities available?
- ▣ Will there be a place to sleep?
- ▣ Can some items do “double duty” to save space and weight?

# 2 Types of Go Kits

- ▣ Most go kits fit into two categories:
  - 24-hour rapid response go kit
  - 72-hour go kit for longer-term emergencies
- ▣ Many people's 72-hour go kits add more of the items that they will use up, such as clothing, food, water, and batteries to their 24-hour go kit
- ▣ Everyone has their own favorite list of items to keep in a go kit

# Go Kit Idea List

- ▣ Something to put it in - one or more backpacks, suitcases, plastic storage tubs, etc
- ▣ Package individual items in zip lock bags or plastic kitchen containers
- ▣ Label all items in case you loan or forget something
- ▣ If you remove something or don't normally keep it in your go bag, make a list of items to grab
  - Put a stick with a tag coming out of the pocket



# 24-hour and 72-hour Kits

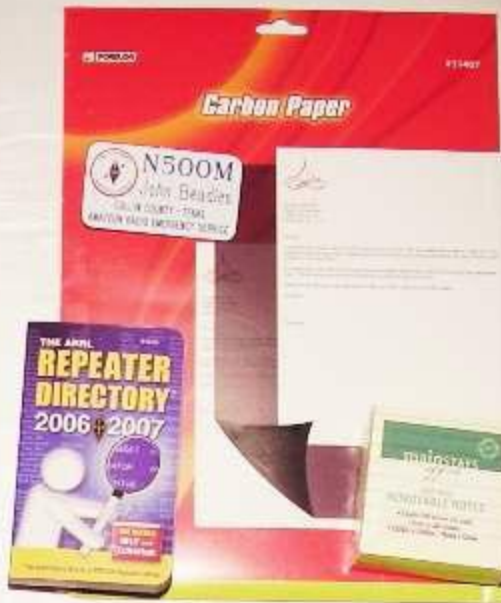
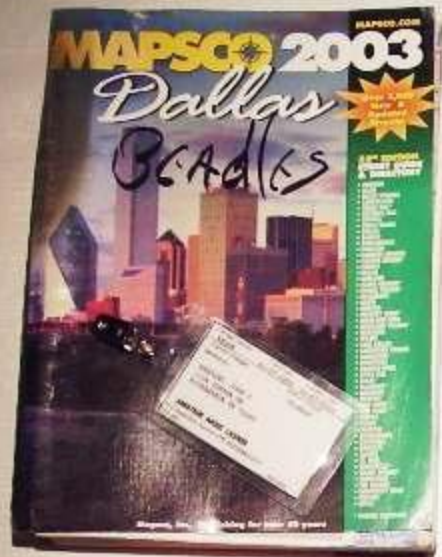


# Information

- ▣ ID cards and other authorizations
- ▣ Copy of Amateur Radio license
- ▣ Copies of FEMA Course Certificates
- ▣ Frequency lists and net schedules
- ▣ Maps, both street and topographic
- ▣ Key phone numbers, email and internet addresses
- ▣ Contact information for other members in your group, EC, AEC, DEC, SEC, and others
- ▣ Copy of emergency plans
- ▣ Resource lists: who to call for which kinds of problems

# Operating Supplies

- ▣ Pens, pencils, pencil sharpener
- ▣ Preprinted message forms
- ▣ Log sheets or book
- ▣ Standard forms used by the served agency
  - ICS-213
  - Story Co. Damage Report
- ▣ Letter or legal size notepads
- ▣ Sticky notes
- ▣ Paper clips and rubber bands
- ▣ Blank envelopes
- ▣ Stapler and spare staples



# Radio Pack



# Go Box



# Training & Education

- ▣ The more you know, the more effective and valuable you will be
- ▣ ICS-100 Introduction to Incident Command System
- ▣ IS-700 National Incident Management System (NIMS) An Introduction
- ▣ IS-200 ICS for Single Resources and Initial Action Incidents
- ▣ ARRL EC-001 Introduction to Emergency Communication
- ▣ Take served agency job-specific training
- ▣ Learn how the served agency's organization works
- ▣ Learn their needs and how you can best meet them



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## Links

### [Training](#)

[ARES Monthly E-Letter](#)

[ARRL EC-001 Introduction to Emergency Communication](#)

[FEMA – Emergency Management Institute Independent Study](#)

Recommended Courses:

[IS-100.C: Introduction to Incident Command System](#)

[IS-200.C: Basic Incident Command System for Initial Response](#)

[IS-700.B: An Introduction to the National Incident Management System](#)

# Local ARES Training

- ▣ General or agency-specific training in message handling and net operations under emergency conditions
- ▣ Become familiar with ARES equipment setup and operation in the field
- ▣ On your own, set up and test your personal equipment under field conditions to be sure it works as expected

# Drills and Exercises

- ▣ Participate in any drills or exercises offered in your area
- ▣ Some are designed to introduce or test specific skills or systems, others to test the entire response
  - ARRL's Field Day
  - ARES Simulated Emergency Test
- ▣ Public service events are the most realistic communications practice we experience outside of a real communications emergency

# Helpful Documents

- ▣ [storyares.org/downloads](http://storyares.org/downloads)
  - Story County ARES Emergency Operations Plan
  - ARES Field Resources Manual
  - ARES Public Service Communications Manual
- ▣ [cisa.gov/safecom/field-operations-guides](http://cisa.gov/safecom/field-operations-guides)
  - Auxiliary Communications Field Operations Guide (AUXFOG)
  - National Interoperability Field Operations Guide (NIFOG)
- ▣ ARRL Public Service / Field Services Forms  
[arrl.org/public-service-field-services-forms](http://arrl.org/public-service-field-services-forms)

# ARES Training Links

- ▣ FEMA - Emergency Management Institute  
[training.fema.gov/is/](http://training.fema.gov/is/)
- ▣ American Red Cross Classes  
[redcross.org/take-a-class](http://redcross.org/take-a-class)
- ▣ ARES Monthly E-Letter  
[arrrl.org/ares-el](http://arrrl.org/ares-el)
- ▣ John Jacobs, W7DBO  
[w7dbo.net](http://w7dbo.net)  
[fieldradiopodcast.org](http://fieldradiopodcast.org)  
YouTube: Field Radio Podcast

# Review:

- ▣ 2020 Derecho was the costliest severe thunderstorm event in United States history
- ▣ Most extreme damaging wind gusts (100+ mph)
  - Portions of central and eastern Iowa as well a few isolated locations in Illinois
  - Covered an area of at least 2,000 square miles
  - Home to over 300 thousand people
  - Peak estimated wind gusts were among the highest known to have occurred in a derecho
    - ▣ Around 140 mph

# Review:

- ▣ If your family is prepared, then you are more likely to respond and focus on your assignment
- ▣ Pre-planning and physical preparation are essential to an effective and timely emergency response
- ▣ Keep a stocked and updated "go kit" ready to go at a moments notice
- ▣ Be sure your kit is adequate for the types of deployments you are most likely to encounter
- ▣ Information is as important as equipment
- ▣ Keep updated lists of contact information, frequencies, and other resources on hand as well as copies of Emergency Operations Plans

# Questions?

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