



Utah ARRL Communication Plan Notes

FAQ & discussion material for training of operators

You're reading this probably because you are involved in emergency radio communications. Some readers will spend a great amount of time focused on emergency response and preparation and other readers may only be mildly interested. What's also important to know is that many readers will change their priorities and become more or less focused on emergency communications over the next months or years – in short, our interests and focus will change!

This is a companion document to the Utah ARRL Communications Plan. That document contains a two-page "large-scale" plan and a two-page plan for each of Utah's 29 counties. The overall plan may also contain material from select organizations that rely heavily on Amateur Radio. The purpose of the Utah ARRL Communications Plan is to offer some guidance where none exists. The plan has origins in requests of various county and state Amateur Radio emergency communications leaders to at least give some framework as to how we can work together in times of severe stress. The overall plan is intended to be simple enough to be put on a wallet-size card for easy reference.

One significant challenge is that many Amateur Radio groups exist and all (or none) claim authority to act in the name of Amateur Radio! The ARRL forum is currently the best umbrella organization for Utah and surrounding states. ARRL is recognized by many national agencies and groups. Is it the best forum for this plan? At present, yes, but as politics and organizations change, sponsorship of the plan could also change. Amateur Radio operators are encouraged to get beyond the "politics" of who wears what hat and find ways to get involved and cooperate. To borrow a guide from another group: "This we do that others may live." To dismiss a plan because it "belongs" to one group is simply silly. You are not expected to be an ARRL member to respond as an Amateur Radio operator in times of emergency! What you are asked is that you do the very best you can and represent Amateur Radio as a cadre of volunteers who take their role to a professional level.

The concept is that you (the Amateur Radio operator) might have the complete plan available at home or in your emergency materials. In the event of a large-scale event, you could pluck the appropriate page from the document and it would serve as a reminder and guide for your response. If, for example, you are asked to assist in another county the two-page county plan would serve again as a guide for what is expected of you as you respond to help that county.

No plan can cover every contingency or answer every question. Much depends on operator education and experience. It is important to learn lessons

of the past, prepare for unique challenges of the future – but live in the present! You will be pulled in every direction as you hear claims that one mode or frequency is better or more important than another mode or frequency. The common sense approach is to be flexible and use what works to save lives and protect property.

Many Amateur Radio operators will spend time being prepared and never be called upon to serve during an emergency. Others (usually a very small number) will find themselves “burned out” from too many events. Often the question is asked: Why prepare? The simple answer is that you find peace of mind knowing you are prepared to at a minimum to lessen an emergency’s impact on yourself and your family. The more complex answer depends on what motivates us to prepare. Some enjoy the possibility of saving lives and being of service to others. Some enjoy the challenge of finding new ways to be prepared. Others enjoy teaching and working with others. The motivation is purely personal! What should be a focus is to enjoy Amateur Radio!

As you read the complete plan and then look through these notes, remember that it is not a perfect thing. It is better than having no guide and it will change as others contribute thoughts and ideas. Use these “notes” as you teach others about how best to respond as Amateur Radio operators – “when all else fails.”

Assumptions:

- Amateur Radio is a significant communications resource for the State of Utah and its citizens.
- The actual emergency plan is designed to be concise (two pages) making it easy to incorporate into other planning documents.
- The emergency plan will be “generic” and not based on one individual or organization for implementation or activation .
- This plan will **ONLY** apply to significant and large-scale emergency situations! This does NOT apply to scheduled events such as parades, marathons, races, etc.
- There are few operators who are prepared to quickly respond.
- There are many operators who, in times of emergency, will volunteer their assistance even though they are not formally affiliated with a specific club or organization.
- Amateur Radio’s primary use will be “when all else fails” – i.e. normal communications systems have failed or are overloaded.
- Amateur Radio will be a short-term solution and involvement will decrease as normal systems come back on line.

- This plan applies ONLY to significant and large-scale events defined as multi-county or multi-city and affect or have the potential to affect large numbers of people or disrupt major transportation systems.
- This plan enables LOCAL emergency communications groups to respond as needed and use frequencies as outlined.
- There are many local Amateur Radio operators who, in times of emergency, will be reluctant to serve other than with groups to which they are affiliated. This plan allows and encourages operators to serve where needed and where their skills can best be used.
- There is an adequate number of frequencies available in the UHF and VHF spectrum to support emergency communications needs.
- If out-of-area assistance is required, this plan allows efficient integration and meaningful use of these resources.
- There will be many operators unfamiliar with net operations and/or how to use their equipment.
- The goal is to reduce on-the-air disputes over frequency assignment, use, and allocation and create an atmosphere of “how may we help” without reference to agency, group or affiliation. Many operators will desire to assist but may feel unneeded because they are not formally affiliated with a specific group. The plan recognizes the need to make use of all resources and make allowances for differences in training, ability or station capability.

Challenges:

- Education/publicity: The primary challenge is getting the word out to Amateur Radio operators about the plan and how it can work in an emergency. This can happen at club meetings, RACES training, ARES meetings, church groups, community events, newsletters, etc. With a plan in place and support material (such as this document) available, the goal is consistency of purpose and in teaching the underlying principles.
- Training: Individual groups can seek ways to prepare net control operators, test the plan and teach operators how to use their radios and efficiently switch frequencies, PL tones and offsets.

Concerns:

There are increasing indicators that public agencies (cities, counties, etc.) and private organizations (churches, American Red Cross, CERT, etc.) are including Amateur Radio into their emergency planning and seeking some level of exclusivity. As such, groups are often seeking to “stake out” frequencies to the point of publicly restricting use.

Additionally there are several “private” groups that have formed that anticipate being involved (for example) in searches for abducted children and these groups indicate that Amateur Radio will be their primary means of communications.

Prior to development of this current plan, there has been no comprehensive plan in place to assist local groups (and agency officials) as they plan to respond to large emergency events that would require intensive Amateur Radio involvement.

Concepts:

Several wide-coverage repeaters/systems have been pre-identified and designated as “bulletin/information systems” call information networks (InfoNet). A net control would operate from a home or club station and assistant control stations would function to collect specific types of information such as road conditions, weather, deployed operators by function, news media summaries, etc. This draws a “circle of inclusion” around operators that are visually challenged or perhaps physically unable to respond to an on-scene assignment due to health or other concerns.

The desire is to offer on-the-air direction and assistance for operators with differing levels of expertise and ability.

This plan also establishes a “place” to park agencies with great areas of responsibility such as Utah Department of Transportation, the National Weather Service or Valley Emergency Communications Center (thus unable to monitor many nets) or agencies/groups with limited involvement.

When this plan is activated on agency request by a responsible Amateur Radio organization, that group has responsibility to establish the InfoNet and designate an “emergency frequency coordinator” to determine frequencies for tactical operations (more on this below). This individual could be the recognized ARRL frequency coordinator, designated (and experienced) operators familiar with frequency use, repeaters, coverage, etc., or (in the absence of the above) an individual necessary to effect frequency use in an emergency.

Overview:

The plan is to have simple and effective means for Amateur Radio operators to assist in times of large-scale emergency. The outlined principles COULD be used by any Amateur Radio group as well – and this would be encouraged as it “fits” with the big picture and assists in preparing local operators.

In an emergency, the primary concern is simply sharing accurate information in a timely manner. For example, if the Red Cross needs help or a particular agency needs help, the means must exist to collect, authenticate and make that information available. With accurate information stations can be directed to the appropriate information source.

Additionally, information such as road conditions, weather forecasts, power outage duration and location, evacuation routes, etc. should be coordinated at a single information point with ability to track the source (i.e. to ensure accuracy and limit speculation).

Several Amateur Radio repeaters systems have been identified that can host “bulletin and information nets” and serve as single points of contact for any station or agency.

Let’s contemplate a wide-spread power outage. Where would an operator or agency tune to find information? Currently every county ARES or radio group might have their own operational frequency and these frequencies and/or procedures would not be known to the operator who seldom is on the air or has not participated in a local ARES or similar radio club or group.

There are several repeaters or repeater systems that cover large areas AND are not normally associated with an emergency radio group. Many of these systems are popular and easily found by large numbers of radio operators (i.e. they’re popular). These repeaters/systems make an ideal and in-place resource to collect and dispatch information.

There will be a number of operators confined to home for health reasons or unable to respond because of handicaps or for other reasons. The wise NCS would use these stations as assistants to gather specific information such as weather, road conditions, locations of shelters, etc.

Let’s say the Red Cross needs operators with off-road vehicles. The NCS on 146.760 would broadcast the need and advise operators that the Red Cross is on XYZ frequency and W7XXX was the net control. Operators available to assist would go to that frequency and volunteer. When the need is met, the Red Cross NCS advises the InfoNet on the 146.76 repeater and simply “cancel the request”.

Perhaps the UDOT operations center needs to collect road conditions and damage or to know which roads are open and unaffected. Rather than have the UDOT station try to check into many nets, the UDOT station would “park” on the information net frequency and stations with reports would know where to report information.

If collection of a specific type of data were critical (such as road conditions, weather, power, etc.) the InfoNet control would ask a specific station to collect this data and make it available as needed. For example, the Red Cross may desire to know which area schools are damaged or undamaged. One operator could be asked to collect this data as it is reported on the InfoNet.

A younger operator who might not be able to respond to serve on scene might be asked to monitor local TV and radio reports and offer an hourly (or more frequent) summary to the InfoNet listeners of what’s being reported.

Could the InfoNet control ask someone to serve as a “communications liaison station” and monitor a frequency (such as the ARES repeater) and offer a summary to the InfoNet listeners every 30 minutes? Yes. The InfoNet control could also ask someone from a tactical net to return to the InfoNet frequency on

a regular basis and give a summary. Operators need to be flexible and cooperative – knowing that sharing relevant information is critical!

Perhaps several LDS Church stakes have mobilized with people or resources and need to know where they can be used. This can be communicated to the InfoNet control and the information made available to other agencies/groups monitoring. The NCS would simply ask for information. If someone had road information or weather information or power status, the focal point would be to make this known on the InfoNet.

The InfoNet would not be a staging area net or keep lists of available operators. The InfoNet control would not ask for operators to check into the net with “no traffic” as this is generally unproductive and unneeded.

So who determines the InfoNet control and emergency frequency coordinator? Let’s not get bogged down in formal assignments. The principle is that the ARES EC or assigned organization’s leader with responsibility for an affected area would make the determination. If two or more counties were involved, the principle is that the LEAST affected county handle NCS. For example, if an event affects Salt Lake, Davis, and Utah counties, Tooele ARES would assume the information NCS duties. This function does NOT need to happen at the scene of the event! We have quality EC folk and the idea is to have them coordinate for what works best!

For you database folk, think of the InfoNet as a distributed database. You have a control station that can gather information or ask others to gather specific kinds of data. When someone asks for that data it can be given by the NCS or in the event of a state-wide event the InfoNet control should be within reliable range of the State of Utah EOC and the NCS coordinated with the Utah HLS.

If at all possible the emergency frequency coordinator should be the ARRL’s designated frequency coordinator. The next best possible consideration is someone who has been identified in advance by the ARRL’s frequency coordinator as someone who could function in this role. The minimal consideration would be for a VERY experienced operator familiar with propagation, frequency use, repeater coverage, etc., and that these individuals be identified in advance!

Let’s address the issue of “everyone needs their own frequency.” They don’t. They can’t. There are not enough trained operators available to operate as net control and assist EVERY agency or group that needs a cadre of operators. The idea is to share and assign available operators AND frequencies to do the COMMUNICATIONS function as needed for the particular event. Rather than have an agency “stockpile” operators for their own use (and they may not be needed by that agency) available operators would respond where they can best be of service.

Here’s the concept. There are 90 VHF frequencies that could be used for simplex (true simplex and repeater outputs). There are many repeaters and not all of them “belong” to an emergency function, group or agency. One cannot

envison any event that would require use of every frequency available (simplex and repeater).

The idea is that the emergency frequency coordinator could assign frequencies and repeaters to tactical functions. Some repeaters may have an emergency function or group and this retains priority. For example if a local ARES group has an assigned repeater AND they are involved in the event, they should not be moved from a repeater that would best accommodate their activities (i.e. their “own” repeater). On the other hand perhaps a club has a repeater that is used primarily for social contacts. This repeater may be the ideal place for a tactical assignment because of the repeater’s coverage.

Considering the purpose of Amateur Radio and the purpose of this service (*FCC rules Part 97: “Recognition and enhancement of the value of the amateur service to the public as a voluntary noncommercial communication service, particularly with respect to providing emergency communications.”*) it is in the spirit of good practice to assist and encourage “what is best” with respect to human lives and property. Remember, we’re talking very large emergency events that happen rarely – so the plan is NOT to routinely take over frequencies or repeaters used by groups on a regular basis.

Let’s consider a scenario. Weather hits Utah and Salt Lake County causing wide-spread power outages and lots of wind damage. Roads are blocked and both county sheriffs have asked for Amateur Radio operators to assist in reporting damage and relaying emergency requests. There are several shelters open and one or two schools where children remain as buses are unable to negotiate the roads. The LDS Church has activated its ERC function and needs to collect reports from various church wards and stakes in response to LDS Church leader requests.

There are FOUR high-impact areas that involve hundreds of people. Because this is a large-scale event an information net has been established on 146.620 and is being run by Tooele ARES.

The LDS Church’s ERC folk are using the 145.45 repeater as their primary contact for information to collect church reports. Utah County ARES is using 147.340 and Salt Lake County ARES is using 146.880. Salt Lake County ARES is asked to assist with a school collapse. They let the InfoNet control know of the need for a tactical frequency for an intensive assignment involving a number of operators from CERT, ERC, ARES, Red Cross and government agencies. An operator at the Salt Lake County EOC advises InfoNet control that the sheriff search and rescue team is using 155.160 MHz and an operator at the Red Cross chapter office advises that 47.54 MHz is being used on-scene.

Meanwhile, ERC needs a simplex frequency for the Avenues area that is especially impacted. The emergency frequency coordinator looks at the list of frequencies and assigns them 146.580 to use. The Red Cross asks for a repeater frequency and a simplex frequency. The frequency coordinator puts the Red Cross on the IHC repeater 145.210 and gives them 146.54 for simplex.

Utah County needs a simplex frequency to assist with a potential flooding situation. From the list, the frequency coordinator assigns them a simplex frequency of 146.480. (This is listed as a Box Elder County ARES frequency, but Box Elder is not activated, so the frequency can be assigned.) The Red Cross needs a simplex frequency in Utah County to coordinate with Southern Baptist responders and they are assigned 145.730 – which is listed for Tooele County ARES, but Tooele ARES is not active so the frequency can be used.

The emergency frequency coordinator simply keeps a list of non-emergency affiliated repeaters and frequencies and coordinates them for THIS event. Once the event is over all of the assignments are no longer in effect.

The InfoNet control is contacted by a station at the National Weather Service who needs to get a message to the Red Cross in Salt Lake. NCS, keeping track of assignments, advises the NWS that the Red Cross is on the 145.21 repeater.

If ERC asks for an additional five simplex channels and an additional repeater resource, the emergency frequency coordinator looks at the list of available simplex channels and makes the assignment. The coordinator then looks at repeaters that are “club” and non-emergency assigned and makes a determination.

When the frequencies are assigned, two conditions must be met: A) the group MUST have a station who can function as NCS and B) the group’s NCS must let the information NCS know when the frequency is no longer needed. We’re not just designating frequencies for “future need” during this emergency! There must be a need, an assignment, an NCS ready to assume control of the assigned frequency and stations assigned to the need. If ERC needs five simplex channels, ERC would have five stations ready to handle NCS duties and enough stations to require the frequencies.

As a note, the assignment of frequencies need not be an arbitrary thing. Some ARES groups have worked with agencies and have equipment installed and programmed for ease of use. If an ARES (or other) group is working with an agency where equipment is installed and programmed (EOCs, hospitals, schools, agencies, etc.) the group should let the frequency coordinator know of preferred frequencies that fit with existing plans and procedures. The frequency coordinator will act in the best spirit of cooperation and accommodate such requests and needs! (Just because groups have equipment installed and programmed does not mean the frequencies are preserved! If the group or locations are not involved, it makes no sense to “reserve” frequencies for potential use!)

Remember: Once the emergency is over, the emergency coordination is over as well.

Some thoughts and frequently asked questions.

Who could activate “the plan?” Any Amateur Radio organization asked to do so by a “legal” agency or organization with authority to do so. It could be a fire

department chief or a sheriff's caption. It could be a mayor or incident commander at a forest fire. It is important that the leadership of an Amateur Radio organization not "cry wolf" but not delay when lives and property are threatened. Use common sense! When you meet in your Amateur Radio groups or with agency officials, discuss what potential events could cause you to seek help.

Who will be the "keeper" of the plan? As currently envisioned, the Utah Section Emergency Coordinator (Utah SEC) of the Amateur Radio Relay League will maintain the plan and publish changes as needed. Any (ANY) group with responsibility for emergency response is encouraged to submit a two-page addition to the plan that would outline minimal response guidelines when the request is made for Amateur Radio help.

Operators, groups, clubs and agencies need to be flexible! What works best? What benefits the most people? How can we best serve?

What if a local group wants to use this plan on a smaller scale event such as a parade or community event. Could they? Yes. In these events it would be advisable to contact a repeater owner or sponsor in advance to ensure there are no hurt feelings or upset operators. In non-emergency settings operators should be very aware of repeater ownership and frequency assignment. Because this type of event is planned in advance, there is no excuse for last-minute demands to use repeaters or frequencies. The concept is to be exemplary Amateur Radio operators in the finest tradition of cooperation!

What if I am a member of ARES or ERC and get the call to help. Do I have to monitor the InfoNet for an assignment? NO! Some groups have callout procedures already defined. Some groups have agreements in place to support an agency. The InfoNet (if established) should be made aware of your group's activation and assignment – that is the purpose of the InfoNet.

One principle to be encouraged is to "serve where you can." For example you may have an assignment with an ARES or ERC group but when the emergency happens you are miles away from your primary assignment. You could try to get home or to your assigned EOC or station and if that is not immediately possible, you could monitor the InfoNet and look for an opportunity to serve where you are. If, for example, you are located at work and your employer (such as a utility, media outlet, government office, etc.) could contribute to the knowledge base, you could volunteer to serve as a liaison for your employer. The idea is to serve where you can serve most effectively given your capabilities and location AT THE MOMENT. Just because your ERC assignment is a church building at the other end of the county should not prevent you from using your talents and FCC-issued license to serve!

What if our tactical group is given a frequency and then someone on that frequency tells us "it's coordinated for a different group" or chases us away or yells at us? You could argue and claim the emergency situation precludes the "ownership" and you could just use the frequency as assigned. The best solution would be to ask on the InfoNet for a different frequency and let the emergency

frequency coordinator deal with the problems. The principle is to take the high road and not contribute to arguments or create confrontation.

Do I (or my radio club) have to follow the plan? No. There is nothing that compels you to cooperate and work within the guidelines of this communications plan. It's always a good idea to have groups and operators using the same "sheet of music" and be "in harmony" – but – you are under no legal obligation to do so. The concept is that we should set the best example of professionalism we can and that usually means working together for a common goal. The goal here is to offer the citizenry of Utah a valuable and coordinated resource.

What if a group wants to establish a specialty? GREAT! Maybe a group wants to serve as technical consultants for questions ranging from how a radio works to helping diagnose an antenna problem. If this group (or club) works toward such a designation and coordinates with other groups (such as ARES) they can be of great value in an emergency!

The communications plan does not have suggested training or a checklist of materials I need in my grab-and-go or bailout-bag. Why? There's a wealth of ideas on the Internet! Because each operator is unique and each situation is unique it's simply impossible to offer a definitive list or checklist. You may need medications or specialized equipment for your response. Your role may require you bring a portable tower or provide a generator. Others may need only a portable or mobile radio. You should develop your own response gear based on your experience and predicted involvement. Many ARES groups have suggested training outlines and lists of recommended equipment. The best suggestion is to learn from others and gather recommendations and then prepare as best you can. Please do not go out and spend a lot of money (and impact your family finances) for equipment – as you may never use the equipment! Use common sense!

Groups such as Red Cross have a wide area in which they can be dispatched. They may want to coordinate with a "club" as their frequency sponsor. Groups such as a neighborhood CERT or ARC may want to have their "own" frequency, and they could, for training or just normal stuff. In an emergency, it would be nice to have ARC affiliated with a group (such as L3 or IHC) and have that group support ARC.

Every CERT or stake/ward in the state wants their own frequency – and in reality they are not going to all need a unique channel as they're not all going to be active and involved. Such groups may not even have enough operators to function as net control and support their anticipated need. If an area is hard-hit and requires Amateur Radio, the group would need an NCS for their area and could then have a simplex or repeater frequency. The NCS should be able to handle traffic for the affected area and be able to contact other nets to distribute information or make requests. If one particular net gets overwhelmed, the group could split the area (incident command concept) and get another NCS and another frequency (herein is one critical need – to have various groups train stations to handle NCS duties).

The concept of this plan is to allow best use of frequencies, ensure each frequency has some semblance of control (i.e. an NCS) and avoid having groups just go out and decide where they're going to park their radios and then shoo everyone else away even when their "protected" frequency isn't necessary to the emergency.

An InfoNet should allow individuals and diverse agencies to monitor one place to get timely and reliable information. If the NWS or ARC or even KSL news wants to monitor, this allows them one place. Perhaps VECC and the UDOT operations center will monitor their own Amateur Radio stations. Where do you assign them? There are not enough ARES folk to staff all the diverse agencies. IF such agencies (VECC, UDOT, UTA, school districts, NWS, etc.) were able to just monitor one information net, they could gather and offer information of value.

An InfoNet station could also track FRS/GMRS/CB/etc. use. The idea is to have ACCURATE valuable information available. If it "helps people/agencies" and is applicable to the communications function and we can gather it – we should do all we can to make it available.

NCS

The InfoNet control could be a home station or a club station. It should be equipped to allow multiple operators and multiple frequencies/modes. This station would NOT monitor all the tactical nets – the sole function is to gather and distribute accurate (verified to the best ability possible) information.

So who does it? ARES? RACES? ERC? SINBAD? VHF society? It does NOT matter. Does everyone have to be aligned with ARES? NO!!! In many areas of the state there are no active ARES groups but VERY active organizations fully able to support emergency operations. IF there is an active ARES group they could have preference to be the "lead" group if so prepared and trained. In other areas there are quality organizations recognized by the city or county and they could "lead" the event, again if prepared and trained. (Licensed operators – especially NCS operators – are encouraged to associate with ARRL and ARES to obtain as much standardized training as possible. The plan provides a framework that EVERY group could use and with education and training could work an event effectively.)

This InfoNet control station should have several VHF radios, UHF, EchoLink, packet, etc. The operator(s) should be ready to handle intensive traffic needs for several hours. This is a critical station. This function could be the training objective of a non-ARES club and/or ARES or even an individual. Individuals and/or stations so-equipped and trained could be identified in advance by groups (such as ARES) who would be tasked by an agency for the communication activation. The critical need is the first two to four hours of the event as the response is organized.

Frequency coordination:

The individual that is handling this function should have a significant amount of common sense and situational awareness. He/she should not be

confrontational. If a recognized group (ARC, ERC, ARES, etc.) asks, the frequency should be assigned. If there is a question, perhaps the emergency frequency coordinator could defer to the senior EC (or any EC) for advice. In most cases this will not be a problem because the request is made on an open channel and the requestor is known. If this is a large-scale event, it is anticipated that this function can be augmented with the actual frequency coordinator and/or some seasoned emergency communications operators.

In no event should an on-the-air argument take place. This is a coordination function, not a justification function. As long as there are resources available there is no need to prioritize or check out the requests. If the event were intensive, this function could be delegated for each major region (Wasatch Front, Cache County, Sinbad area, etc.)

Education – This document should become a “training” document and offered to any group or operator desiring to delve into how the emergency communications plan can work. ANY group can use it! Operators should also accomplish CERT training and basic (free) FEMA training and as much experience as possible.

Someone asked why one group could not be designated to act as the “net control group” and another designated a “response group” and so forth. Human behavior is both strange and unique. Some groups like to “be in charge” and assume authority. Other groups like to be in a support role. And then these groups get new leaders and the dynamics change. Let’s not forget we’re ALL Amateur Radio operators. This plan is designed to allow flexibility and function in many situations. If certain groups are “assigned” to various roles, it is likely in an emergency that groups will sit and wait and do nothing. The idea is to encourage groups to take the reins and get things going – the idea is to serve others. Let’s not hamper our response by creating “kingdoms.”

Updates and suggestions – As this is being maintained by the Utah Section Emergency Coordinator, please look on the ARRL’s Web site (www.arrl.org) and forward your suggestions and comments to the Utah SEC! It is important that you make your concerns known and offer improvements.

Thank you very much for **your** involvement in emergency communications. Your interest and preparation are key elements to an effective response in service to others.

