Elements and Considerations of a Successful Disaster Preparedness Supplemental Communications Plan using the Personal Radio Services

Including GMRS, FRS, MURS, and CB

(References to the Amateur Radio Service)

(This is a work in progress. PRA invites comments. Send those comments to the author, Doug Smith, at doug@praweb.org)

Purpose

This document is intended to be a bullet-point resource and reference for persons, organizations, CERT teams, and OEMs interested in developing community communications programs that use the Family Radio Service, General Mobile Radio Service, Citizens Radio Service, and Multi-Use Radio Service.

The Amateur Radio Service is discussed but we refer you to your local Amateur Radio Emergency Service (ARES) and Radio Amateur Civil Emergency Service (RACES) Coordinators for assistance and advice. Every OEM should proactively involve itself with the local ARES and RACES and use these groups as your PRIMARY source of supplemental communications systems and operators when normal systems collapse or are seriously over loaded. Amateur Radio operators have, for almost a century, provided emergency and disaster communication as part of their FCC licensee mandate in the Amateur FCC Rules and Regulations.

Set Public Expectations

People need to know what to expect after a disaster. Setting expectations is the most overlooked aspect of many service related businesses and is no less important in emergency management. It is akin to making sure both parties in an agreement thoroughly understand the mutually agreed upon terms of their contract. When people do not know what to expect they get angry, lose focus, become impatient, and then anger and pandemonium results. In the case of a disaster, panic prevails over common sense. We cannot let that happen in our communities. After a disaster CERT Volunteers and public safety agencies are focused on triage. These entities want to do the most good for the most people in the shortest amount of time. The public needs to know what to do in the first seventy-two hours after a major disaster.

Likewise we *CANNOT* create expectations that are impossible to meet. There are efforts to declare Family Radio Service Channel one as an emergency channel. The concept is that any citizen could use a Family Radio Service radio to make a blind call for help to a monitoring Amateur radio operator after a disaster event. The proposal claims it is "instant, reliable crisis communications," but this is far from the truth. Such a plan is unmanageable in its scope, particularly when no neighborhood familiarization or training is even suggested and in fact declared by the major proponent <u>as unnecessary</u>! Despite pleas from the Personal Radio Association the backers of this effort still promote this dangerous scheme.

Planners need to provide the general public with some idea of the "who, what, when, where, why and how" behind the mitigation efforts for the aftermath of a disaster. Planners need to do this before the disaster and NOT after the disaster! It should be an aggressive effort of the utmost importance. One way to accomplish this is to engage the public in disaster planning at the grass-roots-neighborhood level. (CERT, neighborhood associations, Neighborhood Watch, local public meetings, REACT, building associations, parks and recreation meetings, public awareness advertising on radio and television etc.)

The public must accept a level of a responsibility toward disaster preparation in order to understand their role in disaster recovery. Setting expectations means the public learns basic concepts and can keep those concepts in mind so that clear thinking prevails over panic thinking.

There are not enough communications disaster workers to fulfill the needs of the Family Radio Channel One monitoring scheme. The idea completely ignores the pre-planned typical response to a major disaster in the first twenty-four to seventy-two hours. Setting the expectation that a rescuer is waiting and listening to a Family Radio might mean that

some families will shelter in place after they have been asked by public safety to evacuate! Setting the wrong expectation can crate new disaster victims and new dangers for rescuers. It is an excellent idea for neighbors to create their own Family Radio Network to assist in checking up on each other after a shelter-in-place emergency. An FRS radio and back-up batteries for each family member should be part of every seventy-two-hour disaster kit.

The following are some expectations to take into consideration for a communications plan using the various Personal Radio Services.

1. The Federal Communications Commission Rules and Regulations must be followed in every case. Licenses must be obtained where necessary and all users should be familiar with Part 95 of the FCC Rules as they pertain to GMRS and to the unlicensed FRS also in Part 95. The same goes for other radio services in use like Amateur Radio, FCC R&R Part 97, CB Radio Service Part 95, and the Business Radio Services in Part 90. Obeying the rules prevents anarchy, disorganization, and harmful interference.
2. Neighbors must plan to be without emergency services for up to seventy-two hours or more after a disaster. (More or less depending on the severity and scope of the event.) Every jurisdiction has a policy regarding the delivery of services after a disaster. It needs to be explained. **People's expectations must be set.**
3. Emergency OES/OEM officials need to explain the expected role FRS and GMRS (Personal Radio Services) have in the event of a disaster. What it can and cannot do and what it is expected to do, how it can be used, how it should not be used. To this the OEM's need to know what resources are available:
    a. Are there GMRS repeaters in your community? What the coverage areas? How many families? Where are the base stations? Are the repeaters connected to emergency power? Will the owners make the repeaters available?
    b. Where are the GMRS licensees in your community? Do they have base stations, repeater capable radios? Are these licensees in isolated neighborhoods? Could they be used to report for CERT back to an OEC after an emergency? Does the EOC have licensed GMRS operators to man a GMRS base station at the EOC?
4. Any use of disaster related supplemental two-way radio to relay information to public safety officials must be planned for and tested ahead of time. There must be alternate plans e.g. a Plan B.
5. Possession and use of an FRS or GMRS two-way radio does not guarantee an instant and reliable or an immediate and effective response to an individual's call for help using that radio. *NEVER* set the expectation that calling out on a two-way radio will guarantee a response. Unfortunately, since this concept has already

been heavily publicized some families may already believe it is a done deal. OEM's need to reach these families before the next disaster.

6. Whenever possible, use cellular or land-line telephones instead of two-way radios. Conventional methods of communication (communication systems the public is already familiar with) should always be the preferred method of communication. It is recognized that these systems may be down or temporarily unavailable immediately after a disaster event. It is the time period immediately after the event and just before these systems are restored that very-local neighborhood two-way radio communication can be of the greatest help in mitigating welfare checks and rescues.
7. Two-way radios are primarily for neighbors to communicate with each other during and after a disaster so that CERT volunteers or others can provide immediate search and rescue or so neighbors can assist each other.
8. Two-way radio users must learn how to use their radios properly. They should know how to turn it on and off, how to change channels, disable coded squelch tones, adjust the volume, and transmit.
9. Emergency aid may not be available to some people whether or not they have a radio. They may be isolated due to impassable conditions, flooding, down power lines, fire, fallen structures, blocked roads, or there may not be public safety or other resources to assist them.
10. While it cannot be guaranteed, having a two-way radio may enable appropriate officials to communicate with persons in isolated areas.
11. Emergency management leaders, CERT trainers, and hobby radio operators need to train their neighbors in the use of two-way radios.
12. Persons should be expected to obey emergency management officials and LEAVE potential disaster areas before the event! When you are asked or ordered to leave a potential disaster area LEAVE! If you cannot leave on your own seek assistance but leave! Do not stick around expecting to use your tiny little FRS radio to call for help if you find yourself in deep water!
13. Since we generally have a very good understanding of what can occur in a natural disaster in the United States every person should plan accordingly. Offices of OES and OEM have pamphlets and websites persons can visit for disaster planning information.
14. The laws of physics as those laws relate to radio propagation of UHF radio waves apply to the eventual range of a radio in a given circumstance. The laws of sales and marketing do not apply.
15. Amateur Radio operators are NOT allowed to transmit on GMRS in an emergency with modified equipment on GMRS. (Or with Part 95 approved equipment.) Amateur Radio operators do NOT have GMRS privileges at any time.
16. The public must understand the procedures and reasons for evacuation and NOT ignore evacuation warnings.

As you Begin Planning Ask these Questions

1. Who needs to talk to whom and when and for how long does that does that communication need to take place? This is going to be determined by how you deploy personnel. It may often NOT be necessary for personnel to carry radios of any kind.
    a. Field disaster worker to EOC
    b. Field disaster worker to disaster worker?
    c. Field disaster worker to on-scene public safety personnel.
2. How far will you need to communicate?
3. Do you need a relay by radio or telephone?
4. Who, what, where are your relay resources?
5. Is it necessary to deploy citizen volunteers with communications equipment they use or is it sufficient to relay information through on-scene public safety personnel? How many people and which people will have radios? (Not every person in a large apartment building needs a radio.)
6. Do you have alternates for your Block Captains? (Or whatever you call your very-local neighborhood emergency coordinators.)
7. What kind of interference may already exist on FRS and GMRS in my area?
8. Can the interference be mitigated?
9. What is the likelihood of intentional interference and how will interference be dealt with it if it happens?
10. Which radio channels shall we use for our neighborhood? Select based on current use. Scan the FRS and GMRS channels. Monitor activity. Choose the quietest frequencies for your area. GMRS repeater output channels may be busy with higher powered radio stations. Very-local communications should use FRS one-fourteen.
11. Are GMRS repeaters available? Where are they? Who is already using them? Can your neighborhood benefit from using the repeaters?
12. Have the licensees of those GMRS repeaters, or have other GMRS licensees been asked to join the neighborhood team? Remember GMRS repeaters are private property. While most licensees will be happy to participate as part of a local communications plan they are NOT required to do so. AT this FCC database you can search for GMRS licensees in your zip code: http://wireless2.fcc.gov/UlsApp/UlsSearch/searchGmrs.jsp
13. Does your local repeater have a tone for the neighborhood? (CTCSS/DCS)
14. How far away are we from the main roads?
15. Will our radios reach from our residences to key neighborhood access points? Have we tested our neighborhood network?
16. Can we communicate with other neighborhoods? Do we need to?
17. Is there a way to relay requests for help beyond the range of FRS? Beyond the range of GMRS?

18. Are there critical services, plants, roads, etc in the neighborhood where we should put someone with a radio? Water pumping plant, club houses, damns, beaches, guard shacks, major intersections etc.
19. Are we prepared to direct public safety resources to rescues and medical emergencies after a disaster? How can we use our radios to do this?
20. Do we have a GMRS licensee in my neighborhood? Is that licensee part of our plan?
21. Do we have an Amateur Radio operator in our neighborhood? Is that Ham part of our plan?
22. Does or OEM office know about our group?
23. Do our OEM and local public safety officials have a copy of our neighborhood communications plan?
24. Has our OEM trained us on basic emergency planning?
25. Do we have a neighborhood map and local telephone list? Is there an alerting calling-tree to alert neighbors to take cover?
26. Do we have a welfare telephone calling-tree created to check on neighbors on a priority basis! Elderly first!
27. Does our OEM have a CERT program? Do we have trained people in our neighborhood?
28. Do we have a meeting place for training? Can we arrange one?
29. Do we have meetings already scheduled so we can add this topic to the agenda?

Something to think about: The Escalation of Alternative Communication Need

Just as law enforcement must consider the escalation of force in the apprehension of potentially violent criminal suspects so to does the communications planner consider a supplemental communication resource escalation methodology for a disaster.

1. Whenever possible, all normal day-to-day communications systems should be used and when alternative or supplemental communications systems are in place the objective should be to return to normal systems when normal systems are restored or are adequate for the need. Normal systems are staffed by public safety, municipal, county, state or federal personnel. Assumes all landline, cellular and public safety radio systems are in place and not overwhelmed.
2. When agencies do require supplemental communication they should look first to their own public safety mutual aid plans. When those plans are insufficient use the trained volunteers of the Amateur Radio Service to free up critical public safety resources. Communication relay functions to and from an EOC/OES/OEC from disaster or other critical locations should be staffed by trained Amateur Radio

Operators of the Amateur Radio Emergency Service/Radio Amateur Civil Emergency Service.

3. When there are insufficient Amateur Radio resources or there are isolated neighborhoods with no resident Amateur Radio operator consider licensing neighbors in the General Mobile Radio Service. GMRS licensees can use base or mobile stations up to fifty-watts of power and there is no license test just a simple on-line application. Supplemental very-local short-distance neighborhood communication in the same vicinity is available in the Family Radio Service. A GMRS licensee can report to an EOC on GMRS frequencies provided the EOC has a licensed GMRS operator.
4. The VHF Multi-Use Radio Service can be used for short-distance neighborhood communication and possibly for communication back to an EOC.
5. OEM's should not overlook companies with fleets of radios in the various business radio services. Company vehicles with radios could be positioned with CERT teams and communicate back to an EOC.

Assumptions about the Personal Radio Services

1. Many persons using FRS radios will have little or no prior communication training. They will have no confidence in the method or the device. Some may even refuse to own or learn to use one.
2. Radios may prove completely frustrating to some people and they will give up using them and resort to calling out for help. Planners should plan around both scenarios and NOT rely solely on two-way radios.
3. Some area residents may have read or heard about the Family Radio Channel One disaster scheme and may actually start calling out on FRS 1 after an emergency. It is unrealistic to expect that every disaster worker can carry an FRS radio but those that can or are allowed to should. This may be helpful if FRS or GMRS is used for supplemental communication in a remote area.
4. Calling out for help, if within earshot of a neighbor, makes more sense than taking the time to find one's radio. Neighbors in no immediate peril will exit their homes safely and begin checking on others. CERT volunteers are trained to assist in situations where their safety is concerned. Some disaster victims in severely damaged structures will have to wait for professional rescuers whether they call for help out loud or using an FRS radio.
5. Some persons may have no or very limited experience with a two-way radio. Finding the push-to-talk function may be difficult for some.
6. Some users of FRS and GMRS radios will panic and cause unwanted interference trying to reach anyone they can hear. They may even unwittingly interfere with rescues in progress. Batteries could be exhausted within hours of the disaster. When these radios are used in a neighborhood the local trainers should explain

wilderness protocols so that battery life is extended and the likelihood of a rescue improved as time proceeds.

a. Wilderness protocol: (modified from an example used by the Amateur Radio Service. All stations (both fixed, portable or mobile) monitor Personal Radio Service frequencies every three hours. Monitoring locations that have sufficient power resources monitor for five minutes starting at the top of every hour, or continuously.
b. Scan all frequencies. This increases the possibility that trapped persons who cannot properly operate a radio might be heard.

7. Some users of radios may be trapped in buildings or in other dangerous locations. It may be difficult to locate these people. Some very-local responders should be trained in simple radio direction finding techniques to approximate the location of trapped radio users. (Body fading.) Local Amateur Radio Service volunteers and Squadrons of the Civil Air Patrol have expertise in radio direction finding.
8. CTCSS and DCS settings will prevent communication and cause severe confusion. The public should be taught to use radios with these squelch codes disabled.
9. Individuals with criminal intent may attempt to take advantage of persons in distress, or fake distress calls in order to identify the location of law enforcement or search and rescue resources or unprotected properties to coordinate looting.
10. The lack of training and sophistication of users requires extraordinary personal communication and negotiation abilities of persons carrying radios and responding to victims. Some pre-disaster communications training is required.
11. CB may be useless or of very limited range. Most CB's will be in cars. There will be a few base stations. Communication during periods of active shortwave skip may be limited depending on local terrain.
12. MURS users will be scarce.
13. Many families will already own an FRS or a GMRS bubble-pack radio. Not everyone in the family will know how to use them. In most cases batteries will be dead or will soon be dead since most radios cannot be recharged in a vehicle.
14. Some two-way radio users will not cooperate with neighborhood groups and will do as they please. Some may even cause deliberate interference.
15. Some smaller groups will organize and use FRS and GMRS radios without being part of a larger plan. OEM officials will eventually learn about these groups and have difficulty verifying their authenticity. Some may lay claim to specific radio frequencies as their own. (Licensing encourages people to follow rules that prevent mutual interference.)
16. Local business radio users are going to be using their own business radio channels. OES OEM should coordinate with companies that have large fleets to take advantage of business repeaters and high powered simplex radios.

Planning

- Participants using GMRS should license in GMRS. Planning should include local GMRS licensees. There should be an effort to license families in GMRS in America's neighborhoods that want to help each other during or immediately after an emergency using two-way radios.

- Encourage local jurisdictions to have an FRS GMRS communications plan within the existing FCC Rules governing both services. These jurisdictions should locate and negotiate with all GMRS resources.

- GMRS based organizations can create a committee to explore the appropriate use of the FRS in an emergency for their area and make recommendations to OES/OEMs. GMRS groups should support community based disaster communication plans and work within those plans to provide public emergency communications.

- GMRS repeater owners should invite new families onto their systems so families get used to operating GMRS radio systems.

- The public needs informative packets, and training information. No disaster program will work without training. This includes extremely basic radio operation instructions, storage of spare batteries, and disaster related supplies. Such training should be provided through local offices of emergency management or groups with CERT affiliations, Neighborhood Watch, community associations etc.

- Set the public expectation of FRS channel one as an emergency radio frequency to summon assistance on demand. Remember, OEM's warn persons in areas anticipating weather related emergencies that public safety cannot respond to telephone calls immediately after a disaster. Calling for help or rescue on a Family Radio Service portable radio does not increase your chances of emergency assistance.

- In a local plan make use of radio frequencies after surveying your areas normal activity. Create a primary and backup channel. Do not put simplex radio traffic on a local repeater output.

- Know your neighbors ahead of time. Get to know folks on a first and last name basis before the disaster strikes.

- Have designated alternates for important tasks.

- Every family should have a communications plan for a disaster. This includes a telephone contact plan, family-expectation setting regarding future welfare related telephone calls. Every family should have one designated contact person far from the emergency (another city or state) that can be a single point of contact for all family members.

- Disaster communications planners, while taking into consideration the limitations of GMRS and FRS should:

    a. Share with neighborhoods the benefits of communicating after an emergency to assess the welfare of persons by radio in a very local way.

    b. The need for a neighbor or neighbors to learn how to effectively use a two-way radio during and immediately after a disaster.

    c. Encourage neighbors to use radios with coded-squelch disabled.

    d. Develop local ways for neighborhoods to communicate with OES/OEM officials.

Suggestions

1. A neighborhood should standardize on a particular make and model of FRS radio (if possible) for those people that have no prior experience using radios and that might be likely to have problems using their radios.
2. Pick a radio that uses regular alkaline batteries you can replace. When electricity is out you may not be able to recharge your rechargeable batteries.
3. Some simple method of wearing the radio on the belt, around the neck, or clipped to clothing should be devised so it is not lost. (Especially for the elderly and the sick.)
4. Use of call tones should be discouraged. These tones serve no useful purpose. They make the radio an obnoxious toy.
5. A neighborhood communications volunteer should set up FRS radios for those that cannot do it properly themselves.
6. Neighborhoods should have Block Captains. Block Captains have the responsibility to call everyone on the radio during and after a disaster to verify the welfare of people in the homes and buildings around them.
7. Large buildings should have designated Floor Captains and alternates that carry radios. Every building should have a communications plan in place with their evacuation plan. It is not realistic that every employee should carry an FRS radio

in a business structure but key employees that are part of the neighborhood disaster plan should do so.

8. A neighborhood's radio system should be tested at least four times a year. A good time may be just prior to a Neighborhood Watch meeting or local disaster preparedness meeting. Neighbors should use their radios informally all year so they become familiar with the radio.
9. As many volunteers as can be found should take CERT training so everyone responding to calls from help can so do with some confidence and without injury.
10. CERT teams should not have to design or re-design communications systems or methods already included in their local disaster plans. CERT emphasis is on rescue and public welfare. Disaster planners should do this work for CERT volunteers.
11. Neighbors who want to license in the GMRS should pay the license fee, and buy a base station and mobile radio capable of attaching to an external antenna. These neighbors can be a link to a designated resource up the communications chain.
12. Amateur Radio operators in the neighborhood should be identified and included in neighborhood communications planning. Amateurs can serve as a neighborhood's link back to the designated public safety agency. Areas with great distances between neighborhoods can benefit from such a scheme.
13. A neighborhood should be included in a multi-hazard functional plan for the jurisdiction in which it is located. Contact persons, and their addresses and phone numbers should be kept up to date for every local neighborhood. This is easier to do through Neighborhood Watch or Neighborhood Association meetings since these are regularly conducted by local police jurisdictions.
14. When using a radio to talk to a neighbor use plain language. Do not use ten codes.
15. Use radio codes instead of plain language only if you can guarantee there will be no misunderstandings.
16. Maritime communities should think about communicating with each other on GMRS and FRS. VHF maritime channels cannot be legally used on land. The maritime channels may be busy with maritime distress activities.
17. Teach everyone who owns a radio how to use the radio with specific emphasis on:
    a. Listening before transmitting
    b. Disabling CTCSS and DCS
    c. Disabling scrambling
    d. Speaking in plain language.
    e. Directing all communications to a specific person or unit.
    f. Responding only to known persons.
    g. How to make a general call to anyone that can hear you only when you cannot reach designated persons.
    h. Having enough batteries on hand to use your radio continuously for at least seventy-two hours.
    i. Keeping your radio and batteries within easy to reach, away from areas that might be damaged during earthquakes or storms.
    j. In advance warning of an emergency putting your radio on your belt or clipping it to your clothing.

k. Putting packs of extra batteries in your pocket in case you are not able to get back to your supply in the event of a building collapse.
l. In advance of a disaster warning, attempt to contact other members of your neighborhood group and check in with Block Captains. Block Captains should have paper and pencil to record names and addresses of check-ins. It is also good to know who has already evacuated.
m. Have a current neighborhood map with address numbers, telephone numbers, and names of families recorded on the map.
n. After a disaster Block Captains should contact every person that checked in and attempt to contact those that did not.
o. Block Captains should allow persons in actual distress to check in before those that are not. Everyone needs to know they are helped by neighborhood resources on a priority basis!
p. Persons in distress should begin transmitting the moment they determine their vocal cries for help are not being heard. Transmit and listen, transmit and listen. "This is Bill on Main St. Please help me." Stop transmitting when you are called or are asked to do so. Indicate you are injured when you are called. State your name, last known location (where you should be), and the nature of your emergency. (follow a suggested wilderness protocol like that mentioned in this document)
q. Signaling in the event you cannot speak. Radios require speech, but you can create a method of signaling, or responding to yes and no questions if you can tap or rub the radio against a solid object while transmitting. Whatever system you develop should be widely understood among the neighbors and only used as a last resort. Be prepared to answer once for yes two for no.
r. Preventing an open-microphone condition and what to do if one happens e.g. switching to an alternate channel.

OES/OEM's, Public Safety - Make a Commitment Now

There are some considerations in this list that are frankly, a little outside the scope of FRS and GMRS but these should be considered so that FRS and GMRS use can be considered in context by disaster planners.

- OES/OEM's that plan for supplemental communication functions need to encourage and train volunteers through drills and organized training. Volunteers need encouragement, recognition, drills, training etc.

- Determine the supplemental communications needs of every neighborhood, public safety agency, major utility etc and work your volunteers into those places. Amateur Radio RACES and ARES should be your primary supplemental civilian communications resource.
- In the case of Amateur Radio volunteers, Public Safety agencies, particularly police, have an obligation to use Amateurs as RACES volunteers and not ARES volunteers. This does not mean the local Ham population has to be Balkanized! This just means that Hams assigned to work a specific agency are volunteers at that agency as well as members of the local ARES. They wear two hats. Public Safety agencies often fingerprint RACES volunteers. This allows agencies to assert some control over the quality and integrity of volunteers that serve. In most cases it also qualifies volunteers to receive workman's compensation insurance benefits if injured in the line of duty.
- Actively train and provide drills for volunteers.
- Avoid using your communications volunteers in other roles. It makes sense to train communications volunteers so that they understand the concepts behind the disaster mitigation effort. Their expertise is however communications. After a disaster, that expertise is valuable and in some cases they may prove more valuable as a communicator than as neighborhood search and rescue volunteer.
- Encourage firefighters, Dispatch, OES/OEM, medical personnel, and police officers to become Amateur Radio operators. These folks are often highly motivated leaders of volunteers. They understand how to get things done in government and planners tend to take them seriously. Volunteers feel honored to serve alongside their very qualified partners. It can truly make a difference in training, and effectiveness to have 911 staff, police staff, and even firefighters become Amateur radio operators.
- By making a commitment you are more likely to identify those volunteers that should not be part of a program before an emergency occurs. You can also work with local volunteer groups to create other useful jobs for volunteers. When you set standards and set expectations for volunteers you will have a better program.
- Setting up a grass-roots neighborhood supplemental communications plan is difficult. The reason is that the people doing the communicating are not necessarily radio or communications enthusiasts. Their primary interest is the safety of family and neighbors. (CERT) Whatever you decide to set up should not diminish the primary role of the CERT volunteer.
- An OES/OEM may not have the resources to train communicators but your local Amateur/GMRS population does! It is what they already do. They can serve you well in this function. Trainers that are currently or former public safety employees make excellent trainers. Work hard to develop a trainer's skills and help them write a training program with which your agency is comfortable.
- Avoid competing communications volunteer programs. Political jurisdictions should make this a requirement for OES/OEM's and all volunteer groups. There is no room for griping, finger pointing, politics, or empire building in communications disaster planning. That message must be conveyed to volunteers. Plans should not be Balkanized among or across clubs or special interest groups.

- CERT volunteers needing communications should not be in the position of having to set up their own communications methodologies without appropriate leadership. You do not want these groups re-inventing the wheel. Involve RACES volunteers and GMRS licensees as communicators for CERT teams.
- When you find it difficult to recruit communications volunteers work harder at it. Ask people why they no longer bother to volunteer and you may be surprised. It is not necessarily their age or lack of interest. On the contrary, it is often that when volunteers do express an interest in serving the various jurisdictions do not take the volunteers seriously. Amateur Radio Operators have often been in the position, despite an incredible record of service, of having to sell their capabilities and themselves to political jurisdictions over and over again because the jurisdictions do not take the Amateurs seriously. The same goes for GMRS groups. Do not wait for them to come to you, go to them. Over and over again Amateurs have proven their value perhaps just not you – not yet anyway.
- Make sure your OES/OEM leaders are the right people. It is not a desk job. It's a people job, an organizers job, a political job, a leadership job, and a tough job. The skills required are supervisory, managerial, organizational, and political. There is a strong emphasis on the ability to manage resources and supervise various types and levels of volunteer resources.
- The diversity of America's neighborhoods makes an approach to a supplemental communications or CERT program different on many levels. How you make it work and what you do with it is going to depend on very-local circumstances. A CERT approach in a farming community is going to necessarily be different than a CERT approach in an inner city apartment building.
- When you create very-local communications plans decide first what it is you want these communicators to do. Is communicating their job or is communication necessary to get their real job done? ***These are two very different things.*** An Amateur Radio operator trains to provide supplemental communications and it is his or her job. A CERT neighbor trains to rescue an elderly neighbor from the debris of a collapsed building and he/she needs to communicate status and requests for additional resources while getting their real work done. This is also one major reason why you do not want a CERT leader to have to reinvent communications plans! Assign a communicator to find and train your CERT in the appropriate radio service that can provide tactical communication after an emergency. The communicator then trains the trainers who train the neighbors.
- Training is easier than you think. Start train-the-trainer programs for neighborhood volunteers.
- Standardize training. Use handouts, Power Point, lectures, and demonstrations.
- Train people not only how to do something but also discuss why it is so important. Discuss the potential consequences for plan failures due to modified personal interpretations and implementations.
- OEM's and communications trainers should identify loose canons – people with scary security guard mentalities, or personality problems that can make them a liability and not an asset. Neighborhoods can find something for these folks to do but they should not be responsible for the success of a program if they are not likely to follow rules, guidelines, laws, or policies. It is OK to set standards and

ask neighborhood volunteers to accept those standards. Develop volunteer agreements that contain a span of control, and a scope of work and a defined chain of command within your Incident Command System. Standards of behavior and the organization of the volunteer service need to be clearly understood. Volunteers must be required to sign a document indicating their understanding of policies and procedures.

- It is highly recommended that any disaster communications volunteer having official access to restricted areas be trained as CERT volunteers are in the local Incident Command System and that they be fingerprinted and at a minimum those fingerprints are checked through your state's Department of Justice (CORI) or equivalent using procedures in place for public safety applicants. Volunteers with criminal records should be excused from service.

A Quick Look at the Personal Radio Services

Citizens Radio Service

- The service was originally created to provide the public with a simple, low-cost radio service on which to conduct personal business or commerce.
- CB was created in the high-end of the short-wave radio spectrum. It is the old Amateur Radio Services eleven meter band.
- Short-wave radio signals propagate over great distances. Low power CB radio can be heard around the world. Every eleven years the sunspot cycle causes reliable world-wide propagation.
- The first CB rules and those of today forbid operators from talking to others that are over one-hundred fifty miles away.
- When average citizens discovered they could talk great distances like Amateur Radio operators they began using CB illegally to "shoot skip." CB was rendered a useless wasteland by these outlaw hobbyists.
- The problem of illegal CB use became so great that the FCC abandoned licensing of CB stations. The FCC even abandoned enforcement to a great extent by asking Congress to allow local jurisdictions to investigate complaints of illegal power amplifiers. The FCC does still occasionally locate and fine illegal operators but their emphasis has now been placed on enforcement activities directed at retailers of illegal CB radio equipment.
- There is now complete anarchy on CB. Illegal hobbyists have had control of the band for decades.

- Illegal CB operations were the impetuous behind extraordinarily restrictive covenants, codes, and restrictions against radio operation in homes and neighborhoods. In some areas of the country housing discrimination is reportedly being practiced against licensed radio hobbyists – including Amateur Radio Operators.
- The use of illegal CB power amplifiers is still a problem throughout the United States.
- There are very few home CB base stations now.
- CB is widely used by the trucking industry so drivers can communicate with each other on the highways and in some cases their delivery depots.
- CB hobby communication is frequently profane, off-color, and juvenile. Most would say it is not a radio service they would want their children to listen to.
- CB is still used by some Americans in cars, by four-wheel-drive enthusiasts, in boats, and RV's.
- The useful distance of a CB radio is greatly reduced during periods of short-wave band openings due to illegal hobby operations.
- Very-local distance expectations between mobile units can be from less than one mile to tens of miles.
- The CB clubs of the past died out with the popularity of CB.
- Four-wheel drive clubs often have CB radios in all member vehicles. These clubs could be an excellent communications and transportation resource. They have their own communication and provide vehicles that can go where many cannot.
- CB walkie-talkie's have very limited range because of low-profile and very inefficient antennas.
- CB might be a useful way for neighbors in rural areas to talk to each other if they live within a few miles.
- Local CB communication may be better at night when, in most cases, hobby operations cease as signal propagation decreases.
- CB should not be considered a highly reliable communications resource. Wherever you plan to use it, test it first. Insist that all use of radios be legal. Never allow illegal linear amplifiers to be used by volunteers. Planners should question the integrity of any volunteer breaking FCC Rules.
- There are legitimate users of CB that do use their radios for family communication. The PRA believes that encouraging such use may eventually have an effect of the usefulness of the radio service.

Multi-Use Radio Service

- The Multi-Use Radio Service consists of five VHF radio frequencies. Operation on these frequencies does not require an FCC license; however, unlicensed operation does require that transceivers meet very specific FCC MURS requirements.
- Transceivers that do not meet MURS requirements may not be used without an FCC license. There are still licensed businesses sharing these radio channels.
- Some major radio manufacturers were not pleased with the FCC's decision to create the MURS service and for this reason have stubbornly refused to make equipment for it. Because of this, MURS radios are not as easy to find or purchase as one might think.
- VHF radio waves propagate better through forested areas.
- Two watts on VHF may go considerably farther than two watts on UHF GMRS.
- Businesses and unscrupulous radio dealers put customers on these five frequencies and deliberately failed to license. The widespread abuse of the licensing requirement prompted the FCC to license-by-rule just as the FCC did with the CB band.
- Low-power VHF generally does not propagate like short-wave radio.
- Interference is likely to come from existing business users and unlicensed business users.
- Interference is more likely in urban areas.
- These frequencies are often used as drive-up window channels at restaurants and as portable-to-portable business radios in stores, warehouses, malls, construction sites, and as itinerant devices.
- Users of this radio service are required to share the frequencies they use.
- MURS would be an acceptable very-local communications option for a neighborhood, particular where forests and rolling hills are plentiful.

Family Radio Service

- The FRS is a license-free very-short-range radio service.
- FRS channels one through seven are shared with the General Mobile Radio Service.
- GMRS licensees may have small base stations up to five watts effective radiated power on FRS one through seven. This rule can make FRS in a neighborhood useful if one licensed resident can communicate well with many local hand-held FRS radios.

- FRS channels eight through fourteen are exclusive to the FRS.
- Families and businesses are both allowed to use radios that are FCC approved for the Family Radio Service.
- Anarchy reigns on the FRS in urban areas. Interference can be severe.
- FRS radio waves travel line of sight.
- Antenna height is more important to range than is the power of the radio. Communication over tens of miles is possible from high altitudes.
- Heavily forested areas limit the range of FRS. UHF radio waves are absorbed by vegetation.
- Intentional interference on FRS is common. Call tones are typically used to interfere and annoy others.
- Very-local use of FRS around a neighborhood or a home is very effective.
- FRS radios are limited to one-half watt output.
- Only the United States and Canada share a Family Radio Service on the same frequencies. Use of FRS radios in other countries is illegal. Some persons have obtained prior permission to use FRS frequencies in other countries but this is the exception and not the rule.
- Manufacturer marketing claims of useful communication beyond several hundred feet to one half mile are greatly exaggerated and intended only to sell radios by creating unrealistic expectations in the minds of consumers.
- Children should not use FRS radios unsupervised. Parents should know who their children are talking to especially with the new Hasbro text-messaging radios.
- FRS radios are unfortunately also used by criminals.
- Use of FRS radios as children's toys should be discouraged.
- Use of FRS radios and other two-way radios by hunters to coordinate the hunting of game may be regulated in some states. In some states it is considered unsportsmanlike conduct to coordinate the hunt using two-way radios.
- FRS radios are perfect for neighbors to use to keep in touch before, during, and after disasters.
- FCC rules prohibit FRS radio connection to external antennas.
- FCC rules prohibit FRS radio connection to telephone systems.
- FCC rules prohibit FRS radio connection to store and forward repeaters.

General Mobile Radio Service

- Use of GMRS is limited to personal licensees. Organizations, clubs, and businesses are not eligible to license in GMRS. Individuals are licensed upon application and payment of a license fee. The renewable license is good for five years.
- Personal licensees may conduct their personal business.

- A person's GMRS license covers their immediate family members including members of the immediate family not living in the licensee's home.
- A licensee is responsible for the proper operation of all radio equipment used as part of the licensee's system.
- GMRS base stations and mobile units may use external antennas and power outputs up to fifty watts.
- GMRS licensees may use up to five watts effective radiated power on GMRS interstitial channels also known as Family Radio Service channels one through seven.
- GMRS allows the use of radio repeater stations.
- Higher power outputs of GMRS radios make communications more reliable over greater distances.
- GMRS repeaters are considered private property. Repeaters may be shared by licensees but sharing agreements must be in writing and kept with station records.

Methods of Communication for Very-local Communication *(Under development)*

The following suggestions are for very-local neighborhood groups. Your implementation may vary depending upon colloquial circumstances. This is not a one-size fits all approach.

- The planner wants to choose simple-language communication methods rather than try to teach ten-codes or other similar codes used by public safety communicators. The general public speaks in words so stick with plain language call signs also called tactical identifiers.
- Minimize future confusion by encouraging neighbors to use their radios for family use and events around the neighborhood.
- Make FRS radios and perhaps even GMRS a tool of your local Neighborhood Watch.

Mistakes to Avoid

- CERT organizations have no right under law to issue GMRS radios to unlicensed volunteers. There is a trend developing of jurisdictions purchasing the twenty-two channel bubble-pack GMRS radios and issuing these radios to volunteers. The uniformed believe these are FRS radios. Jurisdictions tell volunteers to use the channels that do not require a license and to avoid using the higher power GMRS channels unless told to do so. Some jurisdictions even make up their own rules to say when volunteers can use GMRS channels without license authority. This is inconsistent with the license requirements for these radios and is against FCC Rules. It is not good planning. Do not make this mistake or you will run afoul of the law. Read the GMRS Rules in FCC R&R Part 95. Observe the license requirements for radios certified as GMRS radios.
- Do not make the assumption that you have the right to do as you please with a GMRS radio because you represent a police, fire, or OEM agency. The Federal Communications Commission makes the rules and enforces the rules. You may not interpret the rules for your own benefit.
- Amateur Radio operators, public safety jurisdictions, nor OES/OEM's should assume that they have the right to use GMRS radios without a license or to issue GMRS radios to non Hams in order to outfit citizen ACS teams. (Auxiliary Communications Service teams.)
- Assume that your illegal operations on GMRS will be noticed. Do not break the law. There is an ever growing membership of the Personal Radio Association taking responsibility for monitoring GMRS nationwide. Unlicensed operation is reported to the Federal Communications Commission. You could find you or your agency having to explain to the FCC why you have ignored and operated outside of the FCC Rules.
- Do not permit Amateur Radio operators assisting as communications volunteers to use modified Amateur Radio equipment on GMRS frequencies. This is not allowed under FCC Rules. Permitting your volunteers to break the law is not the right thing to do. Local ARES/RACES leaders should certify that all Amateur Radio communications disaster service volunteers do not operate with modified equipment.
- Do not permit public safety employees to program GMRS channels in public safety radios or to use modified Amateur Radios on public safety frequencies.
- Do not assume that your organization has the right to commandeer a GMRS or FRS channel for your exclusive use.

Opportunities for Manufacturers

Manufacturers have gone about the development and marketing of FRS radios in all the wrong ways. Development is entirely about what the marketing manager expects will

tempt the average citizen to buy the product without regard to licensing. The marketers want the radios loaded with features. They insist on making bizarre claims as to the range radios will transmit effectively. It is all about what a marketing manager believes will sell the product and not at all about how useful the radio actually is. The most glaring examples are the intentional built-in complexities of these radios that should be so incredibly simple. Set-up menus and multiple controls confuse and bemuse the average citizen making the radios almost impossible to use. One excellent argument against the use of today's FRS/GMRS bubble-pack radios for use in emergency situations was put this way:

> **"Take any two FRS (or bubble-pack GMRS) radios from competing manufacturers and set each radio on a different channel with different call tones. Hand the radios to an average person with an instruction book and ask them to set the radios up so they can talk to each other." One or both people will certainly give up and setting up a radio to communicate during an emergency is too late!**

Manufacturers have an opportunity to reverse confusion by developing FRS only radios for use in neighborhoods as radios for crime prevention teams or CERT with the following features:

1. FRS only channels so radios can be used license free.
2. Elimination of the tone-coded squelch option.
    a. Eliminates complicated set up
    b. Eliminates problems associated with model differences between manufacturers
    c. Eliminates interference to GMRS repeaters when operated on FRS eight through fourteen.
    d. Enables persons to quickly and easily talk to each other.
3. Elimination of the call tone feature. This feature has rarely served a useful purpose. It is most frequently used to interfere with and to annoy others. It makes the radio a toy.
4. Simple one-button scan function.

Why make the changes?

- CTCSS and DCS tones are difficult to set up in most radios.
- Manufacturers market CTCSS and DCS tones as privacy feature when it is anything but a privacy feature.
- Most people with CTCSS or DCS enabled will never listen first before transmitting and often interfere with others.
- An FRS radio with CTCSS or DCS enabled will prevent communication with others.
- Menu and push-button function set up methods are confusing and difficult to master.
- Feature rich radios are communication poor.
- Reduced complexity emphasizes voice communication.
- An FRS-only radio is license free. Something that that has escaped the attention of manufacturers and marketing managers for a number of years.

Most serious GMRS licensees invest in high quality commercial-grade two-way radio equipment and have invested a great deal of money in this equipment. Commercial-grade radios last longer, are more reliable, and in many cases much simpler to use. These radios may be of similar quality and manufacture as radios in use by public safety agencies.

Marine Radio

The 156-160 MHz marine band is intended for use on the water. It is illegal to use a land based marine radio transceiver unless the station is licensed as a coast station by the FCC. Obtaining a coast station license is not easy. Only businesses and public safety agencies having a need to communicate with vessels on the water is even eligible. Activities of the Coast Guard are also covered in Federal regulations. Citizens on board boats under a certain length and weight are allowed to use mobile marine radio without a license. The average citizen may not operate a land based marine coast station or even a marine portable radio while on land.