

Communication Modalities Chart

This is basic information on communication equipment for planners to use when drafting their unique communication contingency plans.

Mode	Dependent Upon	Benefits	Limitations	Notes
Manual				
Bull Horns	~Batteries	~Inexpensive ~No need for electricity ~May be heard by a large number of people for up to 1km (depending on device)	~May alert more individuals than intended ~Must have numerous batteries on hand for extended use	
Hand Signals	~Personnel within visual range of each other	~Good on a noisy scene that prohibits verbal communication ~Generally simple to interpret when pre-established	~Same signal may mean different things on different scenes or in different regions ~Must be within visual range to be seen and not misinterpreted ~Requires consistent practice and utilization to be effective	
Messengers	~The ability of personnel to physically locate one another	~Requires no technology which may be damaged during an emergency	~Message may fall victim to the "telephone game" and become misinterpreted	~Deciding which personnel will act as messengers prior to an emergency would reduce confusion and increase efficiency
Whistles	~Personnel having possession of whistles and knowledge of signal combinations	~Good for relatively close area when hands are tied up ~Good for close areas that are visually obscured ~Loud enough to be heard in moderately noisy conditions	~Not commonly used; easy to forget signal combinations ~Cannot keep whistle in mouth while speaking on a radio ~May be difficult to distinguish from other noise in loud situations	~ for example, two sounds = gather around (usually at a predetermined location) ~Three sounds = emergency

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Phones				
~A phone tree should be arranged to prevent unnecessary overloading of the phone lines. ~Cell and Landline phones offer the ability to be bridged into a conference call or command center for full incident management. ~GPS enabled portable phones allow pinpointing of the caller's location for emergency purposes.				
Cellular Phones	~Cell tower ~Batteries ~Power for recharging (electricity or solar)	~Relatively cheap ~Ease of use ~Will work without a power source for a limited amount of time ~Portable	~May not work if event has destroyed nearby cell towers ~Cell lines may become congested during a disaster ~Limited battery life without power source ~Battery chargers not compatible with all phones	~Out-of-state numbers may work better than local area codes. Consider purchasing an out-of-state cell with text messaging for each facility ~Consider purchasing a cell with prepaid minutes that is regularly charged for emergency use ~Adapters will allow many cell phones to be charged using a car battery ~It may be advisable to have extra cell phone batteries on hand in the headquarters
Instant messaging via wireless internet	~Cell tower ~Cell Phone, Batteries ~Power for recharging (electricity or solar)	~text messages, particularly on 'smart phones' may be more reliable than cellular voice messages ~Portable	~May not work if event has destroyed nearby cell towers	~Try using the delivery verification feature 'read receipt' on most programs to ensure delivery of message ~During a response many command and coordination personnel are overwhelmed with email traffic. Avoid sending unnecessary emails, be concise, use 'reply all' selectively, and keep official communications within official channels

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Land Line Phones (Hard-wired)	<ul style="list-style-type: none"> ~Telephone lines ~NO NEED FOR ELECTRICITY 	<ul style="list-style-type: none"> ~Hard-wired land line phones do not rely on electricity to function, therefore may work when power outages cause other systems to fail 	<ul style="list-style-type: none"> ~Some locations may no longer have land line phones ~Point-to-point; not portable ~Cannot be easily or readily extended to reach remote locations ~Wireless landline phones (not hardwired) will not function during a 	<ul style="list-style-type: none"> ~Telephone wires suspended in the air may be vulnerable to the disaster ~Consider Installing a land line phone in your planned headquarters
Satellite Phones	<ul style="list-style-type: none"> ~Batteries ~Constellation of satellites ~Line-of-sight between phone and satellite 	<ul style="list-style-type: none"> ~Portable (can be used in rough terrain and not tied to cell towers) ~Uses satellite for connection; Can be used when terrestrial infrastructure is damaged, destroyed, or overwhelmed 	<ul style="list-style-type: none"> ~Must be used outside unless a portable antennae is used ~May take longer time to connect ~Cost (high cost of equipment, subscriptions and minutes) ~Ease of use; Regular training required 	<ul style="list-style-type: none"> ~Consider purchasing a portable antennae to deploy after storm for use in buildings ~2 types of satellite services: Geosynchronous and Low Earth Orbit ~Can be used in 2 ways: <ol style="list-style-type: none"> 1) Satellite phone to landline or cell (uses land infrastructure) 2) Satellite phone to satellite phone (no need for land infrastructure)
Solar Phones	<ul style="list-style-type: none"> ~Cell tower ~Sunlight 	<ul style="list-style-type: none"> ~Portable ~No need for electricity or additional devices for power 	<ul style="list-style-type: none"> ~Same as Cellular Phones above ~Not yet offered globally, particularly absent in the US market ~Possible concern about the integrity of the phone after being left in the sun for long periods of time 	

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Solar Phone Chargers	~Sunlight	~Charge existing cellular phones using solar power when power is out ~Some kits contain multiple adapters to fit many cell phone types		~Current prices for kits range from ~\$20 - \$90 ~Recommend having at least one charger with adapters for personnel cell phones stored in headquarters building
Text Messaging (SMS)	~Cell tower ~Cell Phone, Batteries ~Power for recharging (electricity or solar)	~May be available when the phone can not be used for calls ~Relatively cheap if part of the phone plan ~Ease of use (most people use this regularly) ~Portable	~May not work if event has destroyed nearby cell towers	~Text messaging often works on cellular phones when call cannot be made due to an overwhelmed system due to use of a smaller bandwidth ⁸
Wind-up Cell Phone Charger	~Manual labor	~Charge existing cellular phones using manual crank wheel when power is out ~Some kits contain multiple adapters to fit many cell phone types ~Low cost		~Recommend having at least one charger with adapters for personnel cell phones stored in headquarters building
Radios				
<p>~Most 2-way radio frequencies are licensed and managed by the Federal Communications Commission (FCC). Therefore public safety radios and General Mobile Radio Service radios require FCC license</p> <p>~Agreements (MOU) could be explored with local FCC license holders to use their channel(s).</p> <p>~Staff should receive regular training on equipment and frequency use.</p> <p>~None of the various radio types (VHF, UHF, 700MHz, 800MHz) are interoperable. It is important to all have the same type of radio.</p> <p>~ Have a prearranged code(s) to signal danger.</p> <p>~ Train personnel in the phonetic alphabet and procedural words with a copy near devices for reference.</p>				

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2-Way Radios (VHF and 800MHz most common)	<ul style="list-style-type: none"> ~Electricity for charging batteries ~2-way radio tower for the particular type of radio 		<ul style="list-style-type: none"> ~Cost ~Requires pre-existing infrastructure of towers ~ Regular training required for use ~Usually used by emergency personnel only 	<ul style="list-style-type: none"> ~May be advisable to have one radio charged on hand to communicate with external emergency personnel and to stay informed ~A quick-guide sheet near radio would be useful in emergencies ~If you are tied in to the incident management structure of the local community, a Comms Plan would be provided as part of the Incident Action Plan (IAP). If radios are being used, then frequencies and channels are listed
Facility 2 way Radio	<ul style="list-style-type: none"> ~Electricity for charging batteries ~2-way radio tower 	<ul style="list-style-type: none"> ~Previously existing form of comm. for institutions that use them ~Should not get congested when cell phones are overwhelmed ~Ease of use; employees previously trained and regularly 		<ul style="list-style-type: none"> ~Short wave ~Consider extra generator power and added outlets for use during a disaster
Walkie-Talkies and CB Radio	<ul style="list-style-type: none"> ~Power source for charging ~Radio tower 		<ul style="list-style-type: none"> ~Short distance walkie-talkies good for 5 mi radius but not good for communication with the EOC (Emergency Operations Center) 	<ul style="list-style-type: none"> ~Typically reserved for the general public, however in some instances, NGOs and voluntary organizations may choose to use these
Amateur Radios	<ul style="list-style-type: none"> ~Communication with ARES 	<ul style="list-style-type: none"> ~Provide communication when all other methods fail ~Amateur Radio Emergency Service (ARES) are able to assist during disasters nation-wide 		<ul style="list-style-type: none"> ~It is advisable to create a Memoranda of Understanding (MOA) with the ARES in order to state the needs and capabilities of each organization to prevent misunderstandings or miscommunication during disaster responses ~Visit (www.ares.org) & (www.nh-ares.org/MOUGuidance.pdf) for more information

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Computer-Based				
Internet	~Electricity ~Computer ~Server			
Video Conference (VoIP)	~Electricity ~Computer ~Internet access ~Server ~Downloaded Program	~Allows for video conferencing, internet chat, and calls to land and cellular phones from a computer ~Some providers allow multiple user video conferencing (4-way, etc.)	~Will not function without power	~Many providers offer free basic programs for download ~Upgraded features or calls to cell and land phones often require the purchase of a plan or credits
MISC				
Emergency Power Kit	~Availability of items (see notes)	~Should assist in providing power to power-dependent communication devices during a power outage	~Users must have knowledge of how to use the items in the kit to regain power	~The Animal Keepers Forum suggests 2 sets of supplies: <i>Must have supplies</i> : specialty and high-power batteries, specialty chargers, power inverter, cables, manuals, laptop computer, alternate communication devices, standard tool set, duct tape and permanent markers. <i>Advanced supplies</i> : Power connectors, battery clamps, voltage regulators, capacitors, heatsinks, resettable fuses, transils, diodes, LED diodes, multimeter, voltmeters, propane torch with soldering tip and hot glue sticks. The <i>must haves</i> should help with most power outages and the <i>advanced supplies</i> should help in situations in which power sources are limited yet somecritical devices must be powered. Refer to Animal Keepers' Forum, Vol. 34 Nos. 11/12 for more info.

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Facsimile	~Electricity phone line	~Allows for written messages to be delivered to any location without the need for internet	~Both the sending and receiving party must have a functioning machine and power source	
Flashing Strobe		~Will alert personnel that may be hearing impaired to an emergency ~Can be used as a reinforcement in addition to radios, bull horns, etc.	~Without proper training, personnel may not know what procedures to follow when they see the strobe	~Training personnel as to the meaning of a strobe and where to go when they see it will increase the efficiency of relaying the message
Pagers/Beepers	~Batteries ~Electricity or a landline to dial out from a phone to a pager			
Public Address (PA System)	~electricity	~Allows administration to alert all patrons to an emergency at once	~May not work during a power outage	

References

Animal Keepers' Forum, Vol. 34 Nos. 11/12 Keep Communication Equipment Powered in an Emergency, Part 1- What to put in your emergency power kit, p. 529

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