



GECO NextGen EmComm: The Making of HAManitarians

2019 Revised and Updated by KI6GIG

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Ready to Serve and Sustain Our Community

Originally *NextGen EmComm: GECO* a 2011 paper by Greg Lee (HS0ZHM/KI6GIG). It was published in the HamFest India 2013 program. This led to collaborating with VU2NX (Basappa) on a slide show he presented at [HFI 2013](#). This major 2019 revision resulted from GECO updating its EmPrep and EmComm.

1.0 INTRODUCTION: GECO (Grassroots Emergency Communications Operations) is a community-based education group. It is dedicated to Emergency Preparedness and Emergency Communications education. Reading post-disaster reports reveals key lessons:

- 1) Once a disaster happens, it is too late to prepare;
- 2) There can never be too much emergency preparedness;
- 3) Emergency responders are hampered by unanticipated disruptions to their emergency plans.

The GECO HAManitarian Program integrates HAM radio for Emergency Communications (EmComm) with Emergency Preparedness (EmPrep). The chart below is an overview of the program.

		GECO HAManitarian Program				
		GECO Tier 1	GECO Tier 2	GECO Tier 3		
		<i>Each higher tier includes capabilities of all other lower tiers.</i>				
Groups	Schools	Elementary	Secondary / Post-Secondary			
	Community	Individuals; Businesses; Local, Regional, National & International Civic organizations				
	Government	Local Government	Province	National & International Government		
EmPrep	Equipment	Local resources, re-purposed discards, off-the-shelf goods, materials, equipment		Typical disaster relief supplies in larger quantities than local resources		
	<table border="0" style="width: 100%;"> <tr> <td style="text-align: center; vertical-align: middle;">Education</td> <td style="text-align: center; vertical-align: middle;">Involving</td> <td style="text-align: center; vertical-align: middle;">Science Technology Engineering Arts Mathematics Nature Geography</td> </tr> </table>	Education	Involving	Science Technology Engineering Arts Mathematics Nature Geography	Lessons related to water, food, shelter, sanitation, first aid for individuals, families for disaster preparedness.	Set re-supply logistics network: • Village to village by mutual assistance • District to village
Education	Involving	Science Technology Engineering Arts Mathematics Nature Geography				
EmComm	Equipment	Non-radio	Cell phone / CB Radio	HAM Radio		
	<table border="0" style="width: 100%;"> <tr> <td style="text-align: center; vertical-align: middle;">Education</td> <td style="text-align: center; vertical-align: middle;">Involving</td> <td style="text-align: center; vertical-align: middle;">Science Technology Engineering Arts Mathematics Nature Geography</td> </tr> </table>	Education	Involving	Science Technology Engineering Arts Mathematics Nature Geography	Applied lessons about making and using non-radio EmComm equipment and techniques	Learn to use cell phone & CB radios for EmComm Set EmComm network: • Village to village weekly net • District to village weekly or monthly net
Education	Involving	Science Technology Engineering Arts Mathematics Nature Geography				
Funding	Costs	← Lower ----- Higher →				
	Donations	Local individuals, families, businesses, civic groups		Expand to National Radio Society based on track record at lower levels		
	Fundraising					
	Optimize existing budgets	Creative use for the public good reducing overlapping efforts by combining resources (e.g. community development, public health, emergency planning, education, etc.).				

2.0 Definitions:

2.1 GECO is Grassroots Emergency Communications Operations. GECO is an all-volunteer, informal community-based education organization. It is a people to people effort. It is of the people, by the people, and for the people. We educate people about Emergency Preparedness (EmPrep) and Emergency Communications (EmComm).

We operate on a minimal budget. GECO does not solicit funding for its activities. It is too easy to spend money from other people. At the very least, it leads to waste. At the very worst, it leads to corruption. We believe in what we do. We are willing to spend our own money to do it.

At GECO, we say "Talk little, Think much, and Do more." Our no cost / low cost, no tech / low tech approach fits post-disaster reality. Recycling and re-purposing discards is good training to prepare people to use disaster debris to survive. This also make it easier to replicate our efforts in third world conditions. Our approach applies to developed countries, too. Disasters create third world conditions in developed countries. Once a disaster occurs, it is too late to prepare.

2.2 GECO Community-based Education: GECO developed its own outdoor, hands-on, interactive, competency-based training method. It replaces written exams with student Teach-backs (done individually and as teams). GECO strives for practical competency rather than paper proficiency. We can teach our method to teachers or community groups. All lessons are guided by STEAMING (Science, Technology, Engineering, Arts, Mathematics Involving Nature and Geography). [**Note:** The Arts include language, visual and performing arts, the humanities / philosophy. True to the spirit of HAM radio, we don't include politics or religion.] We use outdoor education to reconnect people with Nature. Hands-on interactive EmPrep and EmComm community service projects apply classroom knowledge locally. Our lessons make classroom learning relevant and practical.

2.3 HAManitarian combines HAM (a slang term for amateur radio operators) and humanitarian. GECO trains HAMs to use their hobby for humanitarian goals: Using HAM radio 1) make the world a better place through friendship and understanding; 2) for emergency communications in time of need. In a world filled with strife and sorrow, we feel there can never be too many good people. We strive to be a good example, especially for youth. We provide opportunities for people to 1) learn and study, 2) share their knowledge, 3) to use their knowledge to build disaster resilience to sustain their communities.

2.4 EmPrep is the contraction of the words Emergency and Preparedness. GECO teaches people, especially youth, to prepare for natural disasters. GECO community-based education makes classroom lessons practical to teach EmPrep. The subject content is integrated with EmPrep using STEAMING (Science, Technology, Engineering, Arts, and Mathematics, Integrating Nature and Geography). Hands-on activities stress recycling, re-purposing locally available materials. This prepares students to use disaster debris to help in their survival and rescue. This builds individual capacity for disaster resilience. Students are encouraged to actively Teach-Back rather than take exams. Teach-backs are done individually or in teams doing community service activities. Trainers observe and review Teach-back sessions with the students. This is how GECO empowers students to be resources and assets in building community disaster resilience.

2.5 EmComm is the contraction of the words Emergency and Communications. EmComm is part of EmPrep. We got involved with EmPrep because of our HAM radio hobby. Communication is vital in disasters. Modern communications are very dependent on electricity. Disasters tend to disrupt electrical service. Radios are not always available. Robust EmComm requires a full range of communication options. At the low end (GECO Tier 1) are non-radio methods (e.g. whistles, signal fires, flags, etc.). GECO Tier 2 uses cell phones (using VOIP Apps) and CB radios. GECO Tier 3 uses

HAM radios. Each level varies in costs and level of technology. (See GECO HAManitarian Program Summary Chart, page 1.) All of these can be integrated into classroom lessons using STEAMING. This builds the EmComm capacity for a well-rounded EmPrep program. This gives students the opportunity to become the next generation of EmComm operators and community resilience stewards.

3.0 Basic Assumptions:

- 3.1 There will never be enough money.** Most people and governments never have enough money, especially for EmPrep. Disasters often occur unexpectedly. Most common people can't stockpile food and water for disasters that may not happen. Many struggle day-to-day trying to put food on the table. Governments are also face many more immediate concerns than disasters. Many can only react after the disaster occurs. GECO's approach is to make do with what is available locally. GECO EmPrep training for common people focuses on awareness and using discards for survival. This awareness, knowledge and skill base, are the foundation for all higher levels of EmPrep. But some money is needed. Optimizing public expenses can start by reducing waste and redundancy. Collaborating with businesses and community groups opens potential access to other resources.
- 3.2 There will never be enough time.** Most people and governments never have enough time. Preparing for disaster may not be a top priority. Once a disaster strikes, it is too late to prepare. Could have, should have, would have wastes time. For GECO, the key EmPrep goal is to get more people to prepare for their own rescue. Based on past disasters, it can take 72-hours or more before help arrives. Knowing communities can hold on for 72-hours gives authorities time to assess the extent of the disaster and coordinate the support. Getting EmCom reports from the disaster area helps authorities develop an appropriate response relative to local needs.
- 3.3 There will never be enough people.** In a disaster, there can never be enough local help. More trained people make the work go faster. More trained people mean more frequent rotations for rest, less fatigue and burnout. Primary and secondary schools are likely to be more numerous than hospitals. Schools are often emergency shelters. Students are often considered dependent on society. With proper training, they are assets and resources. Using GECO community-based education opens the door turning students into a reservoir of workers. Schools with students trained in EmPrep and EmComm become valuable disaster relief resources.
- 3.4 Disaster survivors suffer from depression.** Many survivors feel they are helpless victims. GECO EmPrep training empowers people to take an active role in their rescue and community recovery. GECO EmPrep and EmComm teach people to make effective tools from disaster debris. Keeping active and feeling productive produces positive tangible results amid chaos. This improves the victims psychological outlook. It builds hope. It is this hope that fuels resilience and survival.
- 3.5 You can never prepare too much.** Every disaster is unique. GECO has read many disaster reports, especially regarding EmComm. The number one issue for EmComm operations: unexpected events disrupted their plans and operations. It is hard to plan for the unexpected. No matter how much these EmComm operators planned, when the disaster struck, their plans failed. We are guided by Sun Tzu's planning principle: *You make plans. But be flexible. You need to change to suit the situation.* GECO's community-based education develops critical thinking, problem solving, and flexibility.
- 3.6 Direct People to People contact** in the local organizations are more responsive than big organizations far away. The people hit by a disaster are often the first to know about it. EmPrep and EmComm training empowers people in the disaster area to respond and to report to authorities quickly with credible information.

4.0 Building Community Resilience & Sustainability: The table below is an overview of GECO’s concept for building community disaster resilience and sustainability. It shows the relationship of the key participants (at all levels) and related activities. This is not a simple problem with a simple solution. Some say it is an impossible task. At GECO, we say “Those who say a job is impossible should get out of the way of those trying to do the job.”

 Building Community Resilience & Sustainability			Equipment	Education	Donations	Fund Raising	Public Funds	<i>GECO is guided by a few principles centered on a dynamic balance of the individual and society. People are interdependent on each other and generally dependent on government for matters beyond local/regional levels. Everyone has a social responsibility to other members of their community, the country, humanity and to Nature regardless of their national, ethnic, socio-economic, religious or political affiliation.</i>
Levels & Participants								
Local	Community	Primary	MB	PC	SR	O	❖	Key to Symbols B = Buy C = Community-based Education D = Donations M = Make / Modify NA = No Authority O = Organize & Sponsor P = Policy Changes R = Recipient of donations S = Source of donations ❖ = Funds from realigned and optimized public budgets
		Secondary						
		Post-Secondary						
	Individuals & Families		DMB	C	S		NA	
	Businesses							
Civic Organizations.								
Local Government								
Regional	Community	Individuals & Families	DMB	C	S		NA	
		Businesses						
		Civic Organizations						
		Schools				MB		PC
	Province Government							
National / International	Community	Individuals & Families	DMB	C	S	NA		
		Businesses						
		Civic Organizations						
		Schools					MB	PC
	National Government							
International Organizations			DMB		S	❖		

4.1 Explanation of Chart Symbols:

- B = Buy:** Equipment, materials, and other direct cost paid from funds allocated by government or donated from others directly or indirectly from fundraising.
- C = Community-based Education:** GECO-style Community-based Education should be used by individuals & families, schools, businesses, civic organizations, all levels of government, and international organizations to spread EmPrep and EmComm awareness, training, and capacity.
- D = Donations:** This can be equipment, materials, use of facilities, time/labor, money, services, sponsorships, etc.
- M = Make or modify** equipment: Kit building projects in school, home, or community. Also reconditioning, modifying, and repairing donated, salvaged, or surplus equipment.
- NA = No Direct Authority** over this resource or arena.
- O = Organize fund raising events.** This can be done individually or as collaborative sponsorships. Ideally, fund raising efforts can be coordinated to provide a stable revenue stream.
- P = Policy changes** to facilitate implementing GECO-style Community-based Education for EmPrep and EmComm. Policy making should adhere to GECO’s [S⁵](#) approach.

R = Recipient of donations. These are primarily schools and non-school Community-based Education training programs.

S = Source of Donations. Participants at all levels are potential sources of donations.

❖ = Public Funds made available by re-aligning and optimizing existing government budgets resulting from policy and priority changes. The goal is to get more “bang” for the existing bucks.

4.2 Bridge Building Activities. The past success of GECO programs is based on participant self-selection. People learn best what they want and choose to learn. Though GECO is not an official not-for-profit organization, we operate like one. We don’t make money for sharing our knowledge and skills. We operate on mutual respect to empower people to make the world a better place for all. We strive to be part of the solution, not part of the problem.

4.2.1 GECO “Y.E.A.R.S.” Program: This is an effort to build support for EmPrep and EmComm Community-based Education programs. Y.E.A.R.S. stands for **Y**outh, **E**nvironment, **A**ttaining **R**esilience and **S**ustainability. **Y**outh are next generation and future of the community, nation, and humanity. The **E**nvironment is the source of our survival and the source of natural disasters. We need to educate people in both these facets. Our goal is to **A**ttain community **R**esilience for the present and **S**ustainability for the future. We want people to think long-term for future generations.

4.2.2 Planting Seeds for Success:

- Step 1: Meet with Decision and Policy Makers:** Success of the program requires the commitment and support of community leaders. They have the authority to create policies and commit resources to implement EmPrep and EmComm Community-based education programs. The key questions are:
- A) Are they interested in building disaster resilience in their community or nation?
 - B) Do they agree to accept GECO’s operating guidelines? The guidelines are: 1) Full transparency, responsibility, and accountability; 2) inclusion of all participants (including opponents); 3) adopt making policies following [S⁵](#) (i.e. the use of Science, Systems, Synergy, Sustainability, Society to make public policy for the greater common good); 4) conduct periodic independent and inclusive program reviews with appropriate modifications (as needed); 5) pragmatic measurable assessment (the key litmus test is simple: are the peoples’ need for EmPrep and EmComm met by the programs?).
 - C) What do the leaders perceive as the potential for natural disasters in their jurisdiction? This includes disaster type, frequency, magnitude (e.g. impact in terms of, but not limited to, human, material / economic impacts, etc.)
 - D) What are their plans for handling these anticipated natural disasters? This encompasses response, clean-up, and recovery time frames.

Step 2: Preliminary Needs Assessment. Rank all communities to identify the most vulnerable. Assess the current status of EmPrep / EmComm relative to the current emergency plan and potential disasters. Identify the priorities for a local community-based EmPrep /EmComm HAManitarian Pilot program. There may be different types of disasters in different environmental settings. It may be necessary to have more than one pilot program.

Step 3: Stakeholder Buy-In: The grassroots level work builds awareness and assesses support for the program. All participants at all levels must be included in the effort. General Town Hall Meetings open, to all, are held. The goal is to gather local input regarding their concerns, knowledge of local environmental conditions, natural hazards, and potential for disasters. We want to know:

What they think is the problem?	What should be done and why?	What are they willing and not willing to do and why?
What they think is being done?	What have they done and why?	

Step 4: Evaluate the inputs: The critical outcome is finding the convergence and divergence of official Prep / EmComm perceptions and capabilities to grassroots perceptions and capabilities. The results help shape program development to increase convergence. It is important to avoid the “blame game” and name calling. Facts, science, and the common good for improved disaster survival and resilience should prevail. Mutual understanding and agreement help set realistic measurable goals. These are priorities for the EmPrep / EmComm effort.

Step 5: Using the Inputs to shape policy changes. For example:

- Schools can make new policies to re-align curriculum giving priority to EmPrep and EmComm awareness and training. They can make curricular adjustments using STEAMING and Teach-backs. They can shift away from standardized written tests. They can adopt competency-based practical evaluations. They can shift to outdoor, interactive instruction via community-service projects.
- Communities need to build awareness of the need for disaster resilience and preparations BEFORE disaster strikes. Preparations at the community level don’t replace government disaster relief. It gives the government time to better respond to provide relief. This can happen IF a community develops and maintains local EmComm capability giving reliable data to authorities.
- Businesses and Civic Organizations can make tangible commitments to building community-resilience integral to their operations. This can make regular sustained donations (e.g. materials, funds, use of facilities, equipment). They can give workers paid time off to perform community service work related to building EmPrep and EmComm resilience.
- Governments can optimize public spending by realigning budgets to reduce waste and redundancy. For example, many governments and civic organizations print and distribute emergency preparedness booklets. Consider the cost savings of not sending government workers into the community to distribute materials or conduct meetings for the general public. The materials can be turned into practical school lessons using STEAMING.
Governments can create financial incentives for individuals, businesses, and communities build community disaster resilience. Possible considerations include, but are not limited to tax incentives, free use of facilities, disposing of surplus equipment, and short-term access to equipment and technical advice and assistance.
- International Organizations can adopt policies to assist governments that demonstrate effective collaborations from National to Local levels in EmPrep and EmComm for building community disaster resilience.

5.0 Summary

There can never be enough disaster preparedness. The historic record is clear. When disaster strikes, recovery can never be fast enough (if it takes place at all). Costs are rising for everyone, including governments. The 21st century is forecasted to have greater and more frequent natural disasters.

Haste makes waste. People cannot and should not sit and wait for the government to help AFTER a disaster. Building local capacity in EmPrep and EmComm increases resilience for community sustainability. Once the disaster strikes, it is too late to prepare. Effective EmPrep and EmComm moves the community from being passive disaster victims to being pro-active in their own rescue and recovery. EmComm reports from the disaster scene gives authorities better information to more effectively allocate resources. Start building community disaster resilience today!