



# GECO NextGen EmComm: The Making of HAManitarians

2024 Revised and Updated by KI6GIG

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*Ready to Serve and Sustain Our Community*

Greg Lee (HS0ZHM/KI6GIG) wrote *NextGen EmComm: GECO* in 2011. 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](#). The original paper was revised in 2019. The 2024 revision includes minor corrections to consistently align it with Applied Geography for Sustainable Living ([AppGeog](#)) Community-based Education ([C-bE](#)) materials, to improve reading ease, and to update hyperlinks.

**1.0 INTRODUCTION:** [GECO](#) (Grassroots Emergency Communications Operations) is a community-based education group. It is dedicated to Emergency Preparedness and Emergency Communications education. A review of disaster reports revealed these key points:

- 1) Once a disaster happens, it is too late to prepare.
- 2) There can never be too much emergency preparedness.
- 3) Unexpected disruptions to emergency plans hampered first responders.

The GECO HAManitarian Program integrates amateur (HAM) radio for Emergency Preparedness (EmPrep) and Emergency Communications (EmComm). The program summary is below.

			GECO HAManitarian Program		
			GECO Tier 1	GECO Tier 2	GECO Tier 3
			Each higher tier includes capabilities of all other lower tiers.		
Groups	Schools		Elementary	Secondary/Post-Secondary	
	Community		Individuals; Businesses; Local, Regional, National & International Civic organizations		
	Government		Local Government	Province	National & International Govt.
EmPrep	Equipment		Local resources, re-purposed discards, off-the-shelf goods, materials, and equipment.		More disaster relief supplies than local resources.
	Education	Science Technology Engineering Arts Mathematics Integrating Nature Geography	Lessons related to water, food, shelter, sanitation, and first aid for individuals, and families for emergency preparedness.	Set up supply network: <ul style="list-style-type: none"><li>• Village to village by mutual assistance.</li><li>• District/County to village.</li><li>• Province/State to county.</li><li>• National to Province/State.</li></ul>	Set supply network: <ul style="list-style-type: none"><li>• National to Province/State.</li><li>• Nation to International (outbound).</li><li>• International to National (Inbound).</li></ul>
EmComm	Equipment		Non-radio	Cell phone / CB Radio	HAM Radio
	Education	Science Technology Engineering Arts Mathematics Integrating Nature Geography	Applied lessons about making and using non-radio EmComm equipment and techniques (FFI: <a href="#">#1</a> , <a href="#">#2</a> , <a href="#">#3</a> )	Learn to use <a href="#">cell phones</a> & CB radios for EmComm in a network: <ul style="list-style-type: none"><li>• Village-to-village weekly net.</li><li>• District to village weekly or monthly net.</li></ul>	Learn to use HAM/CB radios in a network: <ul style="list-style-type: none"><li>• Local to Local weekly net.</li><li>• Prov. to District weekly net.</li><li>• National to Prov. Monthly net.</li><li>• Periodic test National to village net</li></ul>
Funding	Costs		← Lower -----Higher →		
	Donations		Local individuals, families, businesses, civic groups		Expand to National Radio Society based on history at lower levels
	Fundraising				
	Optimize existing budgets		Creative use of funds for the public good reduces overlapping efforts by combining resources (e.g., community development, public health, emergency planning, education, etc.).		

## 2.0 Definitions:

**2.1 GECO** stands for Grassroots Emergency Communications Operations. GECO is an all-volunteer, informal community-based education organization. It is a people-to-people effort. GECO collaborates with Applied Geography for Sustainable Living ([AppGeog](#)). GECO provides the content. AppGeog uses C-bE to customize EmPrep and EmComm lessons. The work is on a cost-recovery basis.

GECO operates on a minimal budget. GECO does not solicit funding for its activities. It is too easy to spend other people's money. At the very least, it leads to waste. At the very worst, it leads to corruption. GECO volunteers believe in what they do. They are willing to spend their time, effort, and money to do it.

At GECO, we say "Talk little, think much, and do more." GECO uses a no-cost/low-cost, no-tech / low-tech approach. These fit impoverished and marginalized communities and post-disaster reality. Lessons use recycling and re-purposing discards. This is good training to prepare people to use disaster debris to survive. This also makes it easier to replicate our efforts at minimal expense. Our approach applies to developed countries, too. Disasters can reduce developed countries to third-world conditions. Once a disaster occurs, it is too late to prepare.

**2.2 GECO Community-based Education:** GECO uses the AppGeog Community-based Education ([C-bE](#)) method. AppGeog C-bE is an outdoor, hands-on, interactive, competency-based training method. It uses individual and team student teach-backs rather than written exams. GECO strives for practical competency rather than paper proficiency. GECO collaborates with AppGeog to train teachers, community leaders, or community groups. All lessons are guided by the AppGeog [STEAMING](#) (Science, Technology, Engineering, Arts, Mathematics Involving Nature, and Geography). This is an enhancement of STEM/STEAM curricular methods. [**Note:** The Arts include language, visual and performing arts, and the humanities/philosophy. True to the spirit of HAM radio, GECO regards politics and religion as personal matters.] 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. At the same time, students help build a stronger sense of community, preparedness, resilience, and sustainability. These goals fit well with the [UN Sendai Framework](#) for Disaster Risk Reduction.

**2.3 HAManitarian** combines HAM (a slang term for amateur radio operators) and humanitarianism. GECO trains HAMs to use their hobby for humanitarian goals: 1) to make the world a better place through friendship and understanding; and 2) for emergency communications in time of need. In a world filled with poverty, strife, and sorrow, there can never be too many good people. GECO sets a good example, especially for youth. It gives people a chance to 1) learn and study, 2) share their knowledge, and 3) use their knowledge to build disaster resilience to sustain their communities. [**Note:** Some people see poverty in economic terms. GECO and AppGeog see poverty as a lack of choices rooted in a lack of education or limited access to education.]

**2.4 EmPrep** is short for Emergency Preparedness. GECO and AppGeog provide education methods and materials for people, especially youth, to prepare for emergencies. AppGeog C-bE makes practical EmPrep lessons. STEAMING integrates classroom subject content with EmPrep. The hands-on activities stress recycling and re-purposing locally available materials to reduce costs and stimulate creative problem-solving, and critical thinking. This prepares students to use disaster debris for their survival and rescue. It builds individual and group capacity for disaster resilience. Individual or team teach-backs (rather than written exams) are part of all community service activities. Trainers observe teach-back sessions to evaluate student proficiency. This is how students are empowered to build community resilience and sustainability.

**2.5 EmComm** is short for Emergency Communications. EmComm is part of EmPrep. Communication is vital in emergencies. Modern communications depend on electricity. Disasters tend to disrupt electrical service and communications. A radio may not always be available. Robust EmComm requires a full range of communication options. At the low end (GECO Tier 1) are [non-radio methods](#) (e.g., [Three Essential Non-Radio EmComm Tools](#); whistles, signal fires, flags, [ground-to-air signals](#), [heliographs](#), etc.). GECO Tier 2 uses cell phones (using [VOIP Apps](#)) and CB radios. GECO Tier 3 uses HAM radios. Each level varies in education, equipment costs, and level of technology. (See GECO HAManitarian Program Summary Chart, page 1.) EmComm training can be integrated with existing classroom lessons using STEAMING. There are little to no changes needed to the curriculum. This builds the capacity for a well-rounded EmPrep and EmComm program. The practical knowledge, skills, and experiences open the door to more education and jobs. Students can even choose to become the next generation of EmComm operators and community stewards for resilience and/or sustainability.

### 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. People (especially the poor) cannot stockpile food and water for disasters that may not happen. Poor people struggle every day to put food on the table. Governments also face more immediate concerns than preparing for disasters. They can tend to react after a 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. While money is needed, no amount of money can guarantee a solution. Optimizing public expenses can start by reducing waste and redundancy. Collaborating with businesses and community groups opens potential access to other resources. The most valuable community resource is the people. Their diverse perceptions with their combined local knowledge, skills, and experiences can be priceless.

**3.2 There will never be enough time.** The 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. The "It could have, should have, would have" and blame game is a waste of time. GECO's key EmPrep goal is to get people to prepare for their rescue. History shows it can take 72 hours or more before help arrives. When communities can hold on for 72-hours, the authorities have time to assess the extent of the disaster and coordinate a response. Getting EmComm reports from the disaster area helps authorities develop an appropriate response relative to local needs. **[Note:** As a rule, communities located farther from a major population center and with smaller populations may have to wait longer for help to arrive.]

**3.3 There will never be enough people.** In a disaster, there can never be enough adequately trained people to help. More trained people make the work go faster. It means frequent rotations for rest, and less fatigue and exhaustion. In most countries, there are more schools than hospitals. Schools are often emergency shelters. Students trained in EmPrep and EmComm are community assets and resources. They are a viable reservoir of emergency workers. Schools serving as shelters with students trained in EmComm come linked to an EmComm network.


**3.4 Disaster survivors suffer from depression.** Survivors often feel they are helpless victims. GECO EmPrep training empowers people to take an active role in their rescue and community recovery. Students can teach back lessons to people on how to make effective tools from disaster debris. Keeping survivors active and feeling productive produces positive tangible results amid chaos. This

improves the victim's psychological outlook. It fights depression and builds hope. It is this hope that fuels resilience and survival.

**3.5 You can never prepare too much.** Every disaster is unique. Disaster reports reveal the number one cause of failed EmComm operations is an unexpected disruption of their plans. It is hard to plan for the unexpected. No matter how much these EmComm operators planned when the disaster struck, their plans failed. GECO uses [Sun Tzu's](#) planning principle: *You make plans. But be flexible. You must adapt to suit the ever-changing situation.* AppGeog's C-bE adapted to EmPrep and EmComm develops critical thinking, creative problem-solving, and flexibility.

**3.6 Direct People-to-people contact** between GECO and the local people is a way to directly respond to local needs and concerns. This avoids distant bureaucratic involvement. Those people and organizations do not have to live with the unintended consequences of their policies and bad decisions. Post-disaster reports on stronger psychological bonds among survivors and relief volunteers and survivors at a person-to-person level than at organizational levels.

**4.0 Building Community Resilience & Sustainability:** The table below is a summary of GECO's concept for building community disaster resilience and sustainability. It shows the relationship of the key participants at all levels for the various activities. This is a complex problem with many participants. Some say it is an impossible task. GECO says "Those who say a job is impossible should get out of the way of those trying to do the job."

<div><b>Building Community Resilience &amp; Sustainability</b></div>				Equipment	Education	Donations	Fund Raising	Public Funds	<div><i>GECO's guiding principles are based on a dynamic balance of the individual and society. People are interdependent and dependent socially on each other locally and the government for matters beyond local/regional levels. Everyone has a social responsibility to their community, the country, humanity, and Nature regardless of their national, ethnic, socioeconomic, religious, or political affiliation.</i></div> <div><b>Key to Symbols</b></div> <div>B = Buy C = Community-based Education D = Donations M = Make/Modify NA = No Authority O = Organize &amp; Sponsor P = Policy Changes R = Recipient of donations S = Source of donations ❖ = Funds from realigned and optimized public budgets</div>	
Levels & Participants										
Local	Community	Schools	Primary	M/B	P/C	S/R	O (All groups can do fundraising activities.)	❖		<div></div>
			Secondary							
			Post-Secondary							
	Community	Individuals & Families		D/M/B	C	S		NA		
		Businesses			P/C			❖		
		Civic Organizations.								
		Local Government								
Regional	Community	Individuals & Families		M/B	C	S/R		NA		
		Businesses			P/C			❖		
		Civic Organizations								
		Schools								
		Province Government		D/M/B	C	S		❖		
National	Community	Individuals & Families			P/C	SR		NA		
		Businesses								
		Civic Organizations								
		Schools								
		National Government		D/M/B	S	❖				
International Organizations				D/M/B		S		❖		

#### 4.1 Explanation of Chart Symbols:

- B = Buy:** Equipment, materials, and other direct costs paid from funds allocated by the government, direct and indirect donations, or fundraising.
- C = Community-based Education:** Individuals and families, schools, businesses, civic organizations, all levels of government, and international organizations use AppGeog C-bE for EmPrep and EmComm training.
- D = Donations** are 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 Authority** over this resource or arena.
- O = Organize fundraising events.** This can be individually or collaboratively sponsorship. Ideally, fundraising efforts are coordinated to provide a stable revenue stream.
- P = Changes in Existing Policies** to facilitate implementing GECO/AppGeog EmPrep and EmComm C-bE. Policymaking should adhere to GECO's [S<sup>5</sup>](#) litmus test.
- R = Recipient of donations.** These are primarily local schools and non-school C-b E training programs.
- S = Source of Donations.** Participants at all levels are potential donor sources.
- ❖ = **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. For example, some government funds for public safety education are shared with schools. Students doing teach-backs are doing public safety education.

**4.2 Public Involvement.** The past success of GECO programs is based on participant self-selection. People learn best when they freely choose what they want to learn. Though GECO is not an official non-profit organization, it operates like one. GECO does not make money by sharing its knowledge and skills. It operates on a cost-recovery basis. It uses mutual respect and mutual benefit to empower people to make the world a better place for all. GECO/AppGeog strives to be part of the solution, not part of the problem.

**4.2.1 AppGeog “Y.E.A.R.S.” Program:** This is an effort to build support for EmPrep and EmComm C-bE programs. Y.E.A.R.S. stands for **Youth, Environment, Attaining Resilience, and Sustainability**. Youth are the next generation and the future of the community, nation, and humanity. The Environment is the source of our survival and the source of the energy for many disruptions. We need to educate people in both these facets. Our goal is to **Attain Resilience** for communities in the present and **Sustainability** for future generations.

#### 4.2.2 Planting Seeds for Success:

**Step 1: Meet with Community Decision and Policy Makers:** The 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 C-bE programs. The key questions:

- A) Are they interested in building disaster resilience in their community?
- B) Do they agree to accept GECO's operating guidelines? Specifically, 1) Full transparency, responsibility, and accountability; 2) inclusion of all participants (including opponents); 3) adoption of the [S<sup>5</sup>](#) policy litmus test (i.e. the use of Science, Systems, Synergy, Sustainability, and Society to make policies for the common good); 4) conduct periodic independent and inclusive program reviews and make 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 disasters (regardless of cause) in their jurisdiction? This includes disaster type, frequency, and magnitude (e.g., impact in terms of, but not limited to human, material/economic/environmental impacts, etc.).

D) What are their plans for mitigating these anticipated disasters? This encompasses response, clean-up, and recovery timeframes.

Step 2: Preliminary Needs Assessment. Rank all community hazards to identify the highest vulnerabilities and risks. Assess the current status of EmPrep/EmComm relative to the current emergency plan and potential disasters. Identify the priorities for a local C-bE 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. [Note: GECO operates on the idea that locals know their environment better than outsiders. However, their worldview is different than GECO's. It is not a question of which is better. What matters is how combining their perceptions, knowledge, skills, and experiences can help improve the community's resilience and sustainability (e.g., quality of life).]

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. Holding general Town Hall meetings open to all is one way to start. The goal is to gather local input regarding their concerns, and knowledge of local environmental conditions, hazards, and potential for disasters. We want to know:

What do they think is the problem? What do they think is being done?	What should be done and why? What has been done and why?	What are they willing and not willing to do and why?
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Step 4: Evaluate the inputs: The critical outcome is finding the convergence and divergence of the 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 C-bE effort.

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

- Schools can make new policies to include EmPrep and EmComm awareness, training data in lesson plans aligned with 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 EmPrep and resilience BEFORE disasters strike. Community preparations at this level **do not** 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 to give accurate 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, etc.). For example, 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 public. The materials can be practical school lessons using STEAMING guidelines. Students can deliver the messages to the community via teach-backs.

Governments can create financial incentives for individuals, businesses, and communities to build community disaster resilience. The possibilities include, but are not limited to tax incentives, free use of facilities, disposal 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 historical 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 21<sup>st</sup> century is forecasted to have disasters of greater frequency, magnitude, and duration than before.

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 move the community from being passive disaster victims to being proactive in their rescue and recovery. EmComm reports from the disaster scene give authorities better information to more effectively allocate resources. Start building community disaster resilience today! Start making EmPrep and EmComm training part of the school curriculum and prepare the next generation of EmComm operators.