

Gregg County Amateur Radio Emergency Communications Plan

Version: 1.00

**Gregg County Emergency Communications (GCEC)
Longview East Texas Amateur Radio Club (LETARC)**

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Document Coordinator:
Gary Lewis –WG5L
wg5l@arrl.net



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1 - Scope

This document provides details for the Gregg County Amateur Radio Emergency Communications Plan, including infrastructure, operating modes, frequencies, potential usage scenarios, and deployment procedures.

2 - Terms Of Use

This document is intended for use by individuals participating in emergency communications within the Gregg County Emergency Communications and the Longview East Texas Amateur Radio Club organizations.

3 - Reporting Defects

Defects in this document should be reported to the document coordinators.

4 - Revision History

Date	Ver	Description	Author
10/05/2011	1.00	Initial version	Gary Lewis - WG5L

4.1 - Acknowledgements

Contributor	Contribution
Rod Bartlett - N8QVR	APRS Digipeater information
Jim Rogers - N5VGQ	Area Repeater and Red Cross Infrastructure information
Darrell Toland - N5REO	EOC, GCEC Repeater and Trailer Infrastructure information
Tom Wilbeck - N5KGN	Research on Portable Resource and Power definitions

5 - Infrastructure

5.1 - Fixed Locations

5.1.1 - Area Repeaters

5.1.1.1 - Primary UHF Repeater - 444.725 Mhz

- Location: East Mountain
- *Inventory: GCEC*
- Frequency: 444.725
- PL Tone/Offset: 136.5/+
- Transceiver: Kenwood TKR-850
- Antenna: DB420B
- PA: Henry C100D10R
- Preamp: Advanced Research P432VDG
- Power Supply: Astron 50M /Astron 35
- Duplexer: None
- Controller: CAT 300DX
- Emergency Power: No

5.1.1.2 - VHF Repeater - 147.340 Mhz

- Location: Longview
- *Inventory: LETARC*
- Frequency: 147.340
- PL Tone/Offset: 136.5/+
- Transceiver: Vertex 7000
- Antenna:
- PA: 100 Mirage
- Preamp: None
- Power Supply: Motorola 30 Amp
- Duplexer: Flipex 4 cavity
- Controller: Cat 300DX
- Emergency Power: No

5.1.1.3 - VHF Repeater - 146.640 Mhz

- Location: East Mountain
- *Inventory: Texas VHF-FM Society*
- Frequency: 146.640
- PL Tone/Offset: 136.5/+
- Transceiver: Motorola Micor
- Antenna: 400' Split antennas
- PA: 50 watts
- Preamp: None
- Power Supply: Motorola 30 Amp
- Duplexer: None
- Controller: Internal
- Emergency Power: No

5.1.1.4 - VHF Repeater - 145.450 Mhz

- Location: Kilgore
- *Inventory: Texas VHF-FM Society*
- Frequency: 145.450
- PL Tone/Offset: 136.5/-
- Transceiver: Motorola MSR-200

5.1.2 - D-Star

5.1.2.1 - VHF Repeater - 147.120 Mhz (pending)

- Location: Lindale
- *Inventory: ETECS*
- Frequency: 147.120

5.1.2.2 - UHF Hotspot - 444.850 Mhz

- Location: Lakeport
- *Inventory: LETARC*
- Frequency: 444.850

5.1.3 - Emergency Operations Center (EOC)

5.1.3.1 - Repeaters

5.1.3.1.1 - Secondary UHF Repeater - 443.900 Mhz

- Location: Longview
- *Inventory: GCEC*
- Frequency: 443.900
- PL Tone/Offset: 136.5/+
- Transceivers: (2) Motorola GM300 UHF
- Antenna: (1) Decibel Products DB-420B
- PA: (1) RF Concepts 4-110 power amplifier
- Preamp: (1) Advanced Research P432VDG receive only UHF pre-amp
- Power Supply: (1) 50 amp power supply
- Duplexer: (1) Decibel Products 4 cavity set UHF BP/BR duplexer
- Controller: (1) CAT 250-B controller
- Emergency Power: Yes

5.1.3.1.2 - VHF Repeater - 145.350 Mhz (currently disabled)

- Location: Longview
- *Inventory: GCEC*
- Frequency: 145.350
- PL Tone/Offset: 136.5/-
- Transceivers: (2) Yaesu 2600M
- Antenna: (1) Diamond X-300N
- PA: (1) Mirage B1016 amplifier
- Power Supply: (1) Astron RS-70M 70 amp power supply
- Duplexer: (1) Wacom BPBR WP-738-1 duplexer
- Controller: (1) CAT 250-B controller
- Emergency Power: Yes

5.1.3.2 - Stations

5.1.3.2.1 - VHF/UHF #1

- *Inventory: City of Longview (unless otherwise noted)*
- Transceiver: Yaesu 8800R
- Antennas:
 - Cushcraft 26B2 VHF yagi (*GCEC inventory*)
 - Diamond X-300A UHF/VHF vertical (*GCEC inventory*)
- TNC: None
- Power Supply: Astron SRM-25M 25 amp
- Computer: Desktop PC
- Software: Windows XP
- Emergency Power: Yes

5.1.3.2.2 - HF #1

- *Inventory: City of Longview (unless otherwise noted)*
- Transceiver: Yaesu 857D
- Antenna: 10-80M HF sloper wire (*GCEC inventory*)
- Tuner: LDG AT-200
- TNC: None
- Power Supply: see VHF #1 under 5.1.1.2.1
- Computer: Desktop PC
- Software: Windows XP
- Emergency Power: Yes

5.1.3.2.3 - Scanner #1

- *Inventory: City of Longview (unless otherwise noted)*
- Receiver: Uniden BCT-15 Trunking Scanner
- Antenna: Icom Discone Broadband Scanner antenna (*GCEC inventory*)
- Computer: Desktop PC
- Software: Windows XP
- Emergency Power: Yes

5.1.4 - Red Cross Chapter

5.1.4.1 - Stations

5.1.4.1.1 - VHF/UHF #1

- *Inventory: LETARC*
- Transceiver: Alinco DR-610
- Antenna: UHF/VHF vertical
- TNC: None
- Power Supply: Astron RS-12A
- Computer: None
- Software: None
- Emergency Power: No

5.1.4.1.2 - VHF/UHF #2

- *Inventory: LETARC*
- Transceiver: Kenwood 221A (VHF-only)
- Antenna: VHF Beam/UHF Beam
- TNC: None
- Power Supply: SEC 1223
- Computer: None
- Software: None
- Emergency Power: No

5.1.4.1.3 - HF #1

- *Inventory: LETARC*
- Transceiver: ICOM 718
- Antenna: Hy-Gain 10-20-40 Meter Beam
- Rotator Control: Hy-Gain
- Tuner: LDG Z-100 Auto
- TNC: None
- Power Supply: Kenwood PS-30
- Computer: None
- Software: None
- Emergency Power: No

5.1.4.1.4 - HF #2

- *Inventory: LETARC*
- Transceiver: ICOM 718
- Antenna: 40/80 Meter Dipole in inverted vee
- Tuners:
 - LDG Z100 Auto
 - MFJ Versa Tuner III Manual
- PA: Transworld 500W
- TNC: None
- Power Supply: Astron RS-20
- Computer: None
- Software: None

- Emergency Power: No

5.1.5 - Operator-Owned/Supplied Fixed Locations

5.1.5.1 - Digipeaters/Gateways

5.1.5.1.1 - WinLink VHF RMS Packet Gateway - WG5L-10

- Transceiver: Yaesu FT-1802 on 145.010 Mhz
- TNC: Byonics TinyTrak4 - KISS Mode
- Antenna: Ventenna VT-21
- Computer: Mac Mini with Parallels/Windows 7
- Software: WinLink RMS Packet and RMS Relay
- Emergency Power: UPS 30 minutes, Portable Generator available

5.1.5.1.2 - APRS Digipeater/iGate - N8QVR-10

- Transceiver: Alinco DR135T on 144.390 Mhz
- TNC: MFJ-1278T
- Antenna: Diamond X500HNA
- Computer: MSI 1350D Netbook
- Software: UI-View32
- Emergency Power: UPS 30 minutes

5.1.5.1.3 - APRS Digipeater Only - N5VGQ-10

- Transceiver: Radio Shack HTX 242 on 144.390 Mhz
- Antenna: Comet G7
- TNC: MFJ-1270
- Computer: None
- Software: None
- Emergency Power: No

5.1.5.1.4 - APRS Digipeater Only - WW5RM-1

- Transceiver: Yaesu FT-1802 on 144.390 Mhz
- TNC: MFJ-1278T
- Antenna: Unknown
- Computer: HP Mini Desktop PC
- Software: UI-View32
- Emergency Power: No

5.2 - Portable Assets

This section documents the composition of various portable asset categories. This section is provided for our organizations and for individuals wishing to construct and provide these resources in times of emergency.

5.2.1 - Definitions

5.2.1.1 - Shadow Resource (Type S)

Functions as a VHF/UHF foot mobile station while shadowing an event or incident official.

Example equipment list:

Item	Cost Range
Handheld 2M (2M/440 preferred) Transceiver capable of 2.5w or more, programmable for tones	\$120-470
Dual-band antenna and 1 25ft antenna cable	\$75-130
Earphone or headset	\$10-50
Total	\$280-\$770

5.2.1.2 - Mobile Resource (Type M)

Functions as a VHF/UHF station from a moving vehicle such as a car, truck, van, or bus.

Example equipment list:

Item	Cost Range
2M (2M/440 preferred) Transceiver, powerpoles on power lines	\$330-600
Gain antenna and 1 25ft antenna cable	\$75-130
Power cord and clip lead adapter power cables with powerpoles	\$30-40
Headset (preferred) or external speaker	\$15-100
Total	\$450-870

5.2.1.3 - Base Resource (Type B)

Functions as a VHF/UHF station at a temporary fixed location

Example equipment list:

Item	Cost Range
2M (2M/440 preferred) Transceiver, powerpoles on power lines	\$330-600
Gain antenna (collapsible or ladder line J-Pole)	\$75-130
Mast, tripod, and guy lines	\$200-300
100 ft coax with PL-259s and couplers	\$130-150
Headphones (preferred) or external speaker & audio patch cables	\$40-75
Low current desk lamp (LED, flourescent)	\$20-100
Power Supply, Power Cords	\$160-275
Total	\$955-1630

5.2.1.4 - HF Resource (Type H)

Functions as an HF station at a temporary fixed location

Example equipment list:

Item	Cost Range
HF Transceiver capable of Phone, CW, Packet over 20m/40m/80m, powerpoles on power lines	\$530-1240
NVIS antenna (Cobra Ultralite Jr. with 4:1 Balun and Tuner)	\$350-600
Mast, tripod, and guy lines	\$200-500
200 ft coax with PL-259s and couplers	\$300-400
Headphones (preferred) or external speaker & audio patch cables	\$40-75
Low current desk lamp (LED, flourescent)	\$20-100
Power Supply, Power Cords	\$200-300
Total	\$1640-3215

5.2.1.5 - Digital Message/APRS Resource (Type DM/DA)

Functions as a VHF station with a laptop/netbook configured with Winlink and/or APRS software at a temporary fixed location

Example equipment list:

Item	Cost Range
2M (2M/440 preferred) Transceiver, powerpoles on power lines	\$330-600
Netbook or Laptop with WinLink and/or APRS software	\$300-600
TNC and GPS	\$200-600
Gain antenna (collapsable or ladder line J-Pole)	\$75-130
Mast, tripod, and guy lines	\$200-300
100 ft coax with PL-259s and couplers	\$130-150
Headphones (preferred) or external speaker & audio patch cables	\$40-75
Low current desk lamp (LED, flourescent)	\$20-100
Power Supply, Power Cords	\$160-275
Total	\$1455-2830

5.2.1.6 - APRS Tracker (Type DT)

Functions as a VHF transmitter only to track mobile units in an event or incident

Example equipment list:

Item	Cost Range
Self-contained APRS solution like Byonics MicroTrak (Radio, TNC, GPS, and Mag-mount antenna) OR	\$220-250
<ul style="list-style-type: none">• 2M Transceiver on 144.390 Mhz• TNC and GPS• Gain antenna	\$330-600 \$200-600 \$75-100
Extension cabling	\$50-100
Total	\$300-1400

5.2.1.7 - Power (Type P)

Supplies power to various other resources

Example equipment list:

Item	Cost Range
<p>General notes AGM or VRLA batteries specified as they are maintenance free, except for charging, are spill-proof, and recombine gasses rather than emit them. The specified batteries are 70Ahr units. Battery Capacities estimated using 20Hr discharge rates and factoring capacity tolerance and life cycle of unit. Having multiple batteries of like capacities allows using in parallel or alone as well as one can be used while the other is taken to another location for charging. 50Ahr units generally weigh between 40 and 50 lbs each, and 70Ahr units weigh between 50 and 60 lbs each. If a shorter duty cycle is anticipated, the battery capacity can be reduced accordingly. Battery units should last 5 - 10 years in float service, or less in severe discharge conditions.</p>	
<p>Battery needs for Type B resource estimated at 50% duty cycle, 7A average draw. Needed are 10 - 70Ahr batteries. Cost of charger was estimated at a "middle of the road" common charger. Better charger could cost substantially more</p>	\$1550-3050
<p>Battery needs for Type M resource estimated at 50% duty cycle, 6A average draw. Needed are 2 - 70Ahr batteries. Cost of charger was estimated at a "middle of the road" common charger. Better charger could cost substantially more.</p>	\$350-700
<p>Battery needs for Type H resource estimated at 50% duty cycle, 10A average draw. Needed are 16 - 70Ahr batteries. Cost of charger was estimated at a "middle of the road" common charger. Better charger could cost substantially more.</p>	\$2450-4850
<p>Generators have a wide range of types and capabilities. Power inverter types are quieter, smaller, but more expensive.</p>	\$300-1500

5.2.2 - GCEC-Owned

5.2.2.1 - GCEC Trailer

Equipment currently on board the GCEC communications trailer has been designed and tested to provide reliable voice communications on local, state and national levels. Trailer may also be configured to serve as a cross-band repeater.

- Transceivers:
 - Standard C5900 UHF/VHF
 - Yaesu 897 HF
- Antennas:
 - 10-40M HF wire
 - Comet GP-9 UHF/VHF vertical
 - Cushcraft A3 3-element HF yagi
- Power Supply: 25 amp
- Emergency Power: Yes

5.2.3 - LETARC-Owned

There are currently no LETARC-owned portable assets.

5.2.4 - Operator-Supplied

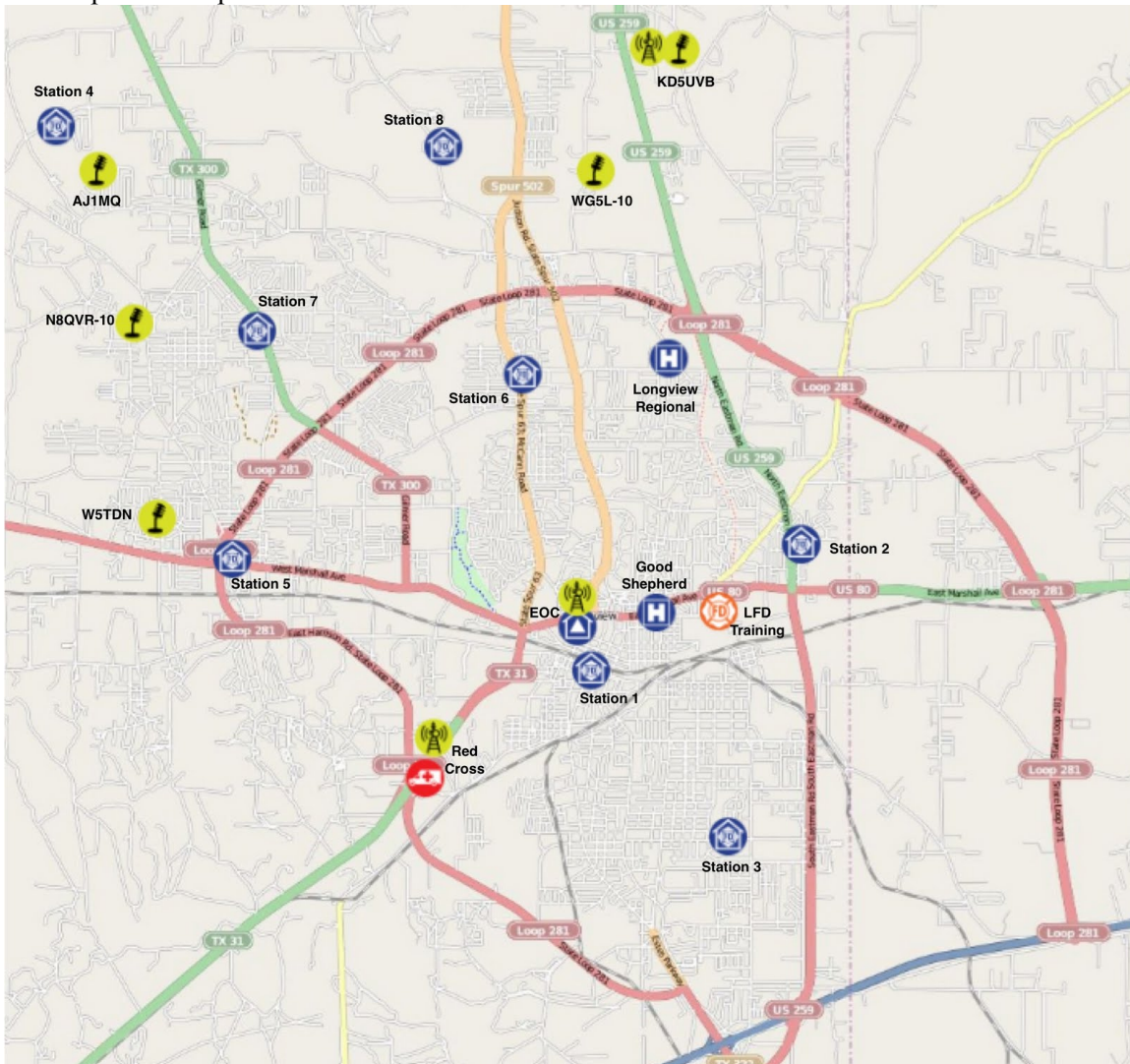
Operator-supplied resources/capability are collected/documented in the *Emergency Communications Participant Registration Form* located on the LETARC web site, www.letarc.org.

6 - Modes of Operation and Frequency Plans

6.1 - City of Longview

The base plan for the City of Longview is based on fixed locations that include, at a minimum, the EOC and the Red Cross Building. Beyond those two locations, the plan locations would include the fire stations and fire training facility. The next set of locations would include certain key amateur locations, depending on mode of operation and need.

The map below depicts these various locations:



6.1.1 - Voice with Repeaters

- UHF
 - Primary - 444.725 Mhz (PL Tone/Offset 136.5+)
 - Secondary - 443.900 Mhz (PL Tone/Offset 136.5+)
- VHF
 - Primary - 145.350 Mhz (PL Tone/Offset 136.5-)
 - Secondary - 147.340 Mhz (PL Tone/Offset 136.5+)
 - Tertiary - 146.640 Mhz (PL Tone/Offset 136.5+)

6.1.2 - Simplex Voice and Cross Band Repeat

The table at the end of this section gives frequencies and tones for several different combinations of operating scenarios. The chances of using all of the listed frequencies and tones at once is remote, but the different zones are listed so we can have pre-assigned frequencies and tones for the different zones.

Cross Band Repeat (CBR) is also known as simplex repeating. The CBR station cannot be without a control operator, unless the radio has the capability of periodically passing the control operator's call sign in transmissions. Most radios do not do this. So, legally, the station cannot be left unmanned (without the control operator nearby).

The different operating scenarios are as follows:

- **VHF Simplex Only (no repeaters)**
- **UHF Simplex Only (no repeaters)**
- **VHF-to-UHF Cross Band Repeat (CBR) using a local UHF Repeater**
 - When using VHF-to-UHF crossband with a UHF repeater, a VHF Simplex handheld would communicate with a dual-band, crossband-capable mobile configured with the VHF Simplex frequency on one side and a local UHF repeater frequency on the other.
- **UHF-to-VHF Cross Band Repeat (CBR) using a local VHF Repeater**
 - When using UHF-to-VHF crossband with a VHF repeater, a UHF Simplex handheld would communicate with a dual-band, crossband-capable mobile configured with the UHF Simplex frequency on one side and a local VHF repeater frequency on the other.
- **UHF-to-VHF Cross Band Repeat (CBR) without a local VHF Repeater (useful when some only have 2M handhelds)**
 - When using UHF-to-VHF crossband without a VHF repeater, a UHF Simplex handheld would communicate with a dual-band, crossband-capable mobile configured with the UHF Simplex frequency on one side and the chosen VHF Simplex frequency on the other.
- **VHF-to-UHF Cross Band Repeat (CBR) without a local UHF Repeater (useful when setting up a temporary repeater at a remote command location)**
 - When using VHF-to-UHF crossband without a UHF repeater, a VHF Simplex handheld would communicate with a dual-band, crossband-capable mobile configured with the VHF Simplex frequency on one side and the chosen UHF Simplex frequency on the other.

Zone	VHF Simplex	UHF CBR (non-repeater)	UHF Simplex	Tone
Red Cross	147.550 Mhz	440.750 Mhz	441.030 Mhz	67.0
EOC	147.555 Mhz	440.755 Mhz	441.035 Mhz	82.5
Station 1	145.550 Mhz	445.750 Mhz	446.030 Mhz	100.0
Station 2	145.555 Mhz	445.755 Mhz	446.035 Mhz	123.0
Station 3	145.600 Mhz	445.760 Mhz	446.040 Mhz	151.4
Station 4	145.565 Mhz	445.765 Mhz	446.045 Mhz	173.8
Station 5	145.570 Mhz	445.770 Mhz	446.050 Mhz	192.8
Station 6	145.575 Mhz	445.775 Mhz	446.055 Mhz	79.7
Station 7	145.580 Mhz	445.780 Mhz	446.060 Mhz	97.4
Station 8	145.585 Mhz	445.785 Mhz	446.065 Mhz	118.8
LFD Training	145.590 Mhz	445.790 Mhz	446.070 Mhz	146.2
Good Shepherd	146.410 Mhz	445.810 Mhz	441.040 Mhz	167.9
Longview Regional	146.420 Mhz	445.820 Mhz	441.050 Mhz	186.2
Roaming A	146.430 Mhz	445.830 Mhz	441.060 Mhz	206.5
Roaming B	146.440 Mhz	445.840 Mhz	441.070 Mhz	241.8

6.1.3 - VHF RMS Express or Paclink WinLink

- VHF RMS WinLink Gateway: WG5L-10
- Frequency: 145.010

6.1.3 - APRS

- VHF APRS Digipeater/iGates
 - N8QVR-10 - Northwest Longview area - Digipeater and iGate
 - N5VGQ-10 - Lakeport area - Digipeater Only
 - WW5RM-1 - Gladewater area - Digipeater Only
- Frequency: 144.390

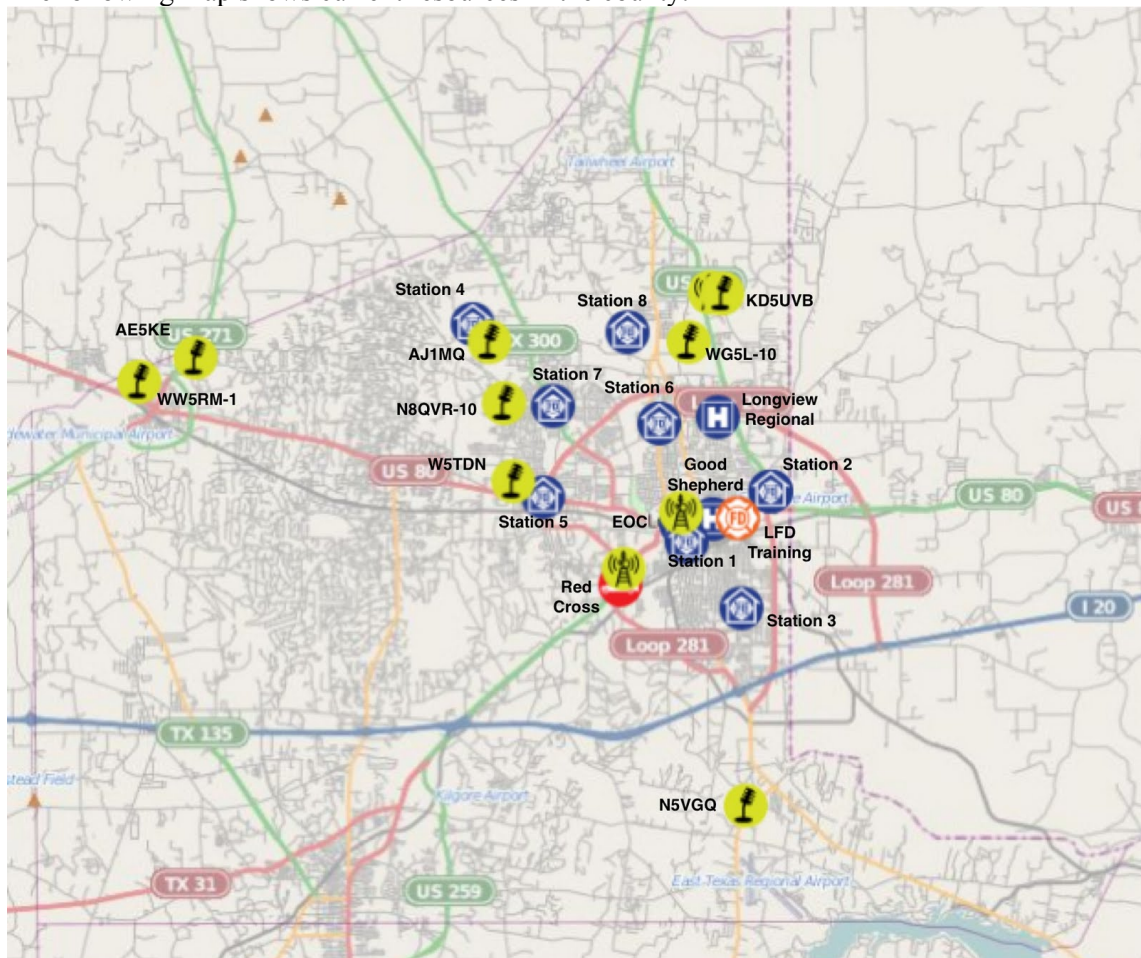
6.2 - Gregg County - Countywide

The base plan for Gregg County potentially would include not only the City of Longview, but the cities of Kilgore, White Oak, Gladewater, and Liberty City. Because Gregg County jointly operates the EOC in Longview, any countywide deployment would more than likely emanate from the EOC.

The base plan for the City of Longview, which is based on a set of fixed locations centered primarily on fire station locations and other key emergency management facilities, would be modified/expanded in a similar fashion to affected areas in the county.

Because we would be dealing with a wider area of coverage, either temporary VHF stations or mobile UHF/VHF stations with cross band repeat capability used in conjunction with area repeaters or NVIS HF stations would need to be setup. What actually is utilized would depend on the status of existing infrastructure within the county at the time of deployment.

The following map shows current resources in the county:



6.2.1 - Voice with Repeaters

- UHF
 - Primary - 444.725 Mhz (PL Tone/Offset 136.5+)
 - Secondary - 443.900 Mhz (PL Tone/Offset 136.5+)
- VHF
 - Primary - 145.350 Mhz (PL Tone/Offset 136.5-)
 - Secondary - 147.340 Mhz (PL Tone/Offset 136.5+)
 - Tertiary - 146.640 Mhz (PL Tone/Offset 136.5+)

6.2.2 - Simplex Voice and Cross Band Repeat

The table at the end of this section gives frequencies and tones for several different combinations of operating scenarios. The chances of using all of the listed frequencies and tones at once is remote, but the different zones are listed so we can have pre-assigned frequencies and tones for the different zones.

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- **VHF Simplex Only (no repeaters)**
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 - When using VHF-to-UHF crossband with a UHF repeater, a VHF Simplex handheld would communicate with a dual-band, crossband-capable mobile configured with the VHF Simplex frequency on one side and a local UHF repeater frequency on the other.
- **UHF-to-VHF Cross Band Repeat (CBR) using a local VHF Repeater**
 - When using UHF-to-VHF crossband with a VHF repeater, a UHF Simplex handheld would communicate with a dual-band, crossband-capable mobile configured with the UHF Simplex frequency on one side and a local VHF repeater frequency on the other.
- **UHF-to-VHF Cross Band Repeat (CBR) without a local VHF Repeater (useful when some only have 2M handhelds)**
 - When using UHF-to-VHF crossband without a VHF repeater, a UHF Simplex handheld would communicate with a dual-band, crossband-capable mobile configured with the UHF Simplex frequency on one side and the chosen VHF Simplex frequency on the other.
- **VHF-to-UHF Cross Band Repeat (CBR) without a local UHF Repeater (useful when setting up a temporary repeater at a remote command location)**
 - When using VHF-to-UHF crossband without a UHF repeater, a VHF Simplex handheld would communicate with a dual-band, crossband-capable mobile configured with the VHF Simplex frequency on one side and the chosen UHF Simplex frequency on the other.

Zone	VHF Simplex	UHF CBR (non-repeater)	UHF Simplex	Tone
Red Cross	147.550 Mhz	440.750 Mhz	441.030 Mhz	67.0
EOC	147.555 Mhz	440.755 Mhz	441.035 Mhz	82.5
Station 1	145.550 Mhz	455.750 Mhz	446.030 Mhz	100.0
Station 2	145.555 Mhz	455.755 Mhz	446.035 Mhz	123.0
Station 3	145.600 Mhz	455.760 Mhz	446.040 Mhz	151.4
Station 4	145.565 Mhz	455.765 Mhz	446.045 Mhz	171.3
Station 5	145.570 Mhz	455.770 Mhz	446.050 Mhz	189.9
Station 6	145.575 Mhz	455.775 Mhz	446.055 Mhz	79.7
Station 7	145.580 Mhz	455.780 Mhz	446.060 Mhz	97.4
Station 8	145.585 Mhz	455.785 Mhz	446.065 Mhz	118.8
LFD TC	145.590 Mhz	445.790 Mhz	446.070 Mhz	146.2
Good Shepherd	146.410 Mhz	455.810 Mhz	441.040 Mhz	167.9
Longview Regional	146.420 Mhz	445.820 Mhz	441.050 Mhz	186.2
Roaming A	146.430 Mhz	445.830 Mhz	441.060 Mhz	206.5
Roaming B	146.440 Mhz	445.840 Mhz	441.070 Mhz	241.8

6.2.3 - VHF RMS Packet WinLink

The only VHF WinLink Packet gateway currently in Gregg County is the WG5L-10 gateway. This station is “antenna height challenged” and thus has limited range, depending on the range of the client station. It is located in Northeast Longview, north of Longview High School.

- VHF RMS WinLink Gateway: WG5L-10
- Frequency: 145.010

When setting up RMS Express Client or PacLink Client, one has to configure the client session to point to this gateway if within the City of Longview.

There are plans to establish more VHF RMS WinLink Gateways in the county in the near future.

6.2.4 - APRS

- VHF APRS Digipeater/iGates
 - N8QVR-10 - Northwest Longview area - Digipeater and iGate
 - N5VGQ-10 - Lakeport area - Digipeater Only
 - WW5RM-1 - Gladewater area - Digipeater Only
- Frequency: 144.390

6.3 - Outside Gregg County

Communications outside Gregg County fall into two basic categories. The first category is for relaying traffic outside the county to State of Texas authorities or to pass traffic to/from the National Traffic System (NTS). The second category would be if GCEC ARES resources were requested to deploy outside the county to another affected location.

In the case of the first category, there are specific frequencies designated for both ARES and RACES emergency communications over VHF or HF. In addition, there are also specific frequencies designated for NTS nets. These frequencies are indicated below in the appropriate sections.

In the case of the second category, the frequencies utilized in a deployment in another area would be dictated by that area's communication plan and we would need to conform to that plan at the time of deployment. Within the State of Texas, there is an ARES/RACES study group currently working on a statewide frequency plan. The intent is to standardize on certain modes and frequencies to the extent possible, for instances where ARES teams may have to deploy to another part of the state. However, it will be some time before this plan is finalized. Once finalized, we will ensure our communications plan, as outlined in this document, conforms to the statewide plan.

6.3.1 - VHF Voice (Regional Intercounty)

6.3.1.1 - Using Repeaters

- Upshur County (East Mountain) - 146.640 Mhz (PL Tone/Offset 136.5+)
- Smith County (Tyler)
 - 147.000 Mhz (PL Tone/Offset 88.5-)
 - 145.210 Mhz (PL Tone/Offset 88.5-)
- Harrison County (Marshall) - 146.860 Mhz (PL Tone/Offset 151.4-)
- Panola County (Carthage) - 147.180 Mhz (PL Tone/Offset 123.0+)
- Rusk County (Henderson) - 146.780 Mhz (PL Tone/Offset 131.8-)

6.3.2 - VHF RMS Packet WinLink

The only VHF WinLink Packet gateway in the contiguous counties surrounding Gregg County is the N9JN-10 gateway in Tyler. Client stations within Gregg County wishing to communicate with this gateway would need sufficient antenna height and power.

- VHF RMS WinLink Gateway: N9JN-10
- Frequency: 145.010

When setting up RMS Express Client or PacLink Client, one has to configure the client session to point to this gateway if within Gregg County.

There are plans to establish more VHF RMS WinLink Gateways in other nearby counties in the near future.

6.3.3 - VHF EchoLink

EchoLink is a VoIP/Sound Card technology that requires internet access. Usually during a larger emergency situation that requires communication outside the county, Longview and Tyler can communicate using EchoLink. The two nodes are as follows:

- Longview Repeater
 - Frequency: 145.350 Mhz
 - PL Tone/Offset: 136.5/+
 - Node: 62763
- Tyler Repeater
 - 145.210 Mhz
 - PL Tone/Offset: 88.5/-
 - Node: N9JN-R

6.3.3 - NVIS HF Voice

Near Vertical Incident Skywave (NVIS) HF communication allows communications within a smaller radius from the transceiver location. It is used extensively by the military. Part of the key to NVIS HF communication is antenna type, height, and placement. Most of the nets we use here in Texas are either on 40 or 80 meters. In most cases, a multi-band wire dipole antenna at an average height of 20-30 feet, depending on the band, will work well across most of the state.

For both stationary or portable use, the recommendation is for the following equipment:

- Cobra Ultralite Junior multiband dipole has a total length of 73 feet. This is a ladder-line fed dipole and thus requires both a 4:1 current balun and a tuner. In space-restricted areas, it can be in an inverted vee configuration.
- Baluns: Balun Designs or Unadilla
- Tuner: Manual or Auto Tuner designed to work with radio, such as LDG, MFJ, or SGC.
- Mast and guy lines, as required.

6.3.3.1 - ARES Nets

- Daytime
 - LSB - 7.285 Mhz
- Evening
 - LSB - 3.873 Mhz

6.3.3.2 - RACES Nets (RACES Stations Only)

- Daytime
 - LSB - 7.255 Mhz
- Evening
 - LSB - 3.975 Mhz

6.3.3.3 - Traffic Nets

- Daytime
 - LSB - 7.290 Mhz
- Evening
 - LSB - 3.935 Mhz

6.3.4 - NVIS HF WinLink

Frequencies for HF WinLink, using RMS Express and WINMOR, are determined using the frequency selection table associated with a WINMOR session. RMS Express uses an HF Propagation tool to calculate the best stations based on band conditions and distance from the client location.

7 - Potential Deployment Scenarios

The vast majority of emergency situations involving amateur radio within Gregg County would flow out of weather-related incidents. These incidents could be local, such as tornadoes, flash floods, or fires due to extreme heat. Other weather-related incidents could be generated outside the county, such as coastal hurricane evacuations.

Other emergency incidents that could potentially involve amateur radio communication resources, could include railcar or transportation incidents, terrorist or WMD incidents, and incidents involving public health.

7.1 - General Protocol and Communications Information

Depending on the scope and nature of the incident, generally speaking, communication infrastructure and amateur assets would be utilized in the following order:

- **Repeater, Digipeater, and Internet Resources Still Intact**
 - UHF/VHF Voice using repeaters (for short, uncomplicated message traffic)
 - VHF WinLink and APRS using digipeaters/gateways (for data or more complicated message traffic)
- **Partial or Complete Loss of Repeater, Digipeater, Cellular, and Internet Resources**
 - Simplex UHF/VHF Voice and CBR (for short, uncomplicated message traffic)
 - HF NVIS Voice outside affected area (for short, uncomplicated message traffic)
 - HF WinLink WINMOR (for data or more complicated message traffic)
 - HF PacLink/WAMP/WebMail (for e-mail traffic outside affected area for EOC and/or Red Cross)

In the case of a partial or complete loss of repeater/digipeater infrastructure and assuming the EOC and Red Cross facilities are still intact, most HF operations would originate from the EOC and/or Red Cross locations. UHF/VHF resources would be deployed as needed to the affected zones as outline in section 6 of this document.

Because the EOC can often become a very chaotic place during an emergency, local tactical amateur radio Net Control Stations (NCS's) will normally be located at the Red Cross, select amateur operator home locations, or remote command posts, to allow the EOC to be more a point of coordination and liaison with the City/County and State-level communications.

7.2 - Within Gregg County

7.2.1 - Government Agencies

7.2.1.1 - City of Longview

The City of Longview has extensive communications resources, including a mobile communications van. These resources are on standard public safety frequencies and are reliant on trunking and/or satellite infrastructure. During an emergency, this infrastructure may or may not still be intact. If still intact, these communications channels can often become overloaded due to the volume of traffic.

Amateur radio involvement would be invoked, via the EOC EM Liaison, as either a supplement to, or in the worse-case scenario, a replacement of, normal public safety communications infrastructure and/or cellular communications. Amateurs could be used to pass message traffic or serve as shadowing resources for incident command personnel.

7.2.1.2 - Other Gregg County Cities

Other Gregg County cities are setup similar to Longview, except their communications infrastructure may not be as advanced and there is not an EOC function. In some cases, first responder fire department resources may be volunteers.

Normally, other Gregg County cities would first call for assistance from the City of Longview or the County Sheriff. A request for amateur radio resources to deploy to other cities within the county would emanate from the City/County EOC, as part of a broader response effort. Amateurs could be used to pass message traffic or serve as shadowing resources for incident command personnel.

7.2.1.3 - Countywide Incident

A countywide incident would, in all likelihood, involve an even larger area. As such, the County/ City EOC and possibly State resources would be involved. Regardless of the actual scope of an incident that engulfs the entire County, a request for amateur resources would emanate from the City/County EOC or a State-level entity. Amateurs could be used to pass message traffic or serve as shadowing resources for incident command personnel.

7.2.2 - Other Served Agencies

7.2.2.1 - Assistance to Local Red Cross Chapter

Assistance scenarios with the Red Cross would normally fall into two categories:

- Weather Incident Recovery - Storm Damage Assessment
 - Storm damage assessment usually occurs shortly after a weather-related incident. The assessments would occur as part of normal post-storm spotter activity. Storm damage assessment requires the completion of a specific course given by the local Red Cross Chapter.
- Shelter Operations
 - Shelter operations would usually include assisting in logistics communications and supplementing health and welfare traffic for non-sensitive information. Shelter operations requires the completion of a specific course given by the local Red Cross Chapter.

7.2.2.2 - Assistance to Local CERT Group

The local CERT group is specifically set up to coordinate with the Longview Fire Department. This CERT group uses multi-use radios that are programmed on frequencies used by the Fire Department. These radios are the CERT group's primary communication medium. However, there are also a few CERT participants who are also amateur radio operators. The group does have dual-band VHF/UHF radios (Kenwood TH-72A's) that operate on amateur frequencies.

Assistance scenarios with CERT would involve helping with traffic passed on to the amateur radio frequencies to appropriate served agencies.

7.2.2.3 - Assistance to Local Hospitals

Both Good Shepherd and Longview Regional hospitals have amateur radios on site. Because of limitations placed on employees of the hospital in operating amateur equipment, assistance scenarios would involve operating these radios and/or passing hospital-related traffic over amateur frequencies if all other means of communications are not functional.

7.2.2.4 - Assistance to Other Organizations

There are other volunteer organizations (served agencies) in the area, such as the Salvation Army, Texas Baptist Men's Association, and other faith-based organizations that often are involved in disaster operations. Assistance scenarios with these organizations would be to provide communications capability and nets that they may not have available locally.

7.2.3 - Multi-Agency Response

In a larger, more complex incident requiring a multi-agency response, Incident Command will develop a **Radio Communications Plan** for the incident, using **ICS Form 205**. In fact, this communications plan can (and probably will) change/be updated between incident operational periods. If amateur radio resources are utilized, Incident Command will consult with the local ARES group to help build this plan, in order to ensure coordinated usage of local amateur radio infrastructure and frequencies.

7.3 - Outside Gregg County - Mutual Aid

There are currently no formal ARES-related mutual aid agreements with other counties outside Gregg County. However, we can request aid through the ARRL North Texas Section Emergency Coordinator if we experience an incident that exceeds our capacity within our ARES group. Conversely, if other counties in the State require assistance, the North Texas Section Emergency Coordinator can contact our County Emergency Coordinator to ask if there are resources available for deployment to incidents outside our area.

Also, because most of the contiguous counties around Gregg County do not have radio clubs from which they can draw sufficient amateur radio resources during emergencies, our Gregg County ARES group could be called upon by neighboring counties if a larger incident causes a need for more communications resources.

7.4 - RACES

RACES within the State of Texas is a state program administered by the State of Texas Department of Emergency Management and the Department of Public Safety (DPS). As such, only government entities can request a call-up/deployment of a RACES unit. Our RACES unit is part of District 12 and we are unit 183-A.

FCC regulation places restrictions on the RACES protocol in that only RACES stations may communicate with other RACES stations. Within Gregg County, we have select individuals who have undergone the necessary background checks with DPS and have become RACES certified, in case this protocol is invoked. In the history of GCEC, there has only been one time when RACES was invoked and that was during the Katrina evacuation. During that evacuation, it was not local EM authorities that requested that deployment, but the Texas National Guard. In other words, it was a state-level entity.

We would expect this to continue to be the case for RACES call-up/deployment. It would have to be an incident that affected a good portion of the State of Texas or the region. Even if RACES is invoked, we would still utilize non-RACES personnel under the ARES protocol. However, only RACES-certified personnel could communicate with state-level RACES stations.

7.5 - MARS

MARS (Military Auxiliary Radio Service) is increasingly being utilized at the State level during large incidents that involve a Federal response. Some amateur radio operators within Gregg County and the surrounding counties are also affiliated with MARS. Only those operators may operate on MARS frequencies. In the case where both MARS and Amateur Service frequencies are employed in an incident, appropriate liaison stations between the services will need to be setup as part of an overall incident communications plan.

8 - Deployment/Callup Procedures

8.1 - Telephone Tree

Generally, in a known emergency, such as what flows out of a weather-related event, GCEC ARES leadership should already be monitoring or participating in the local Skywarn net. An official ARES deployment or call-up in this situation would be in response to weather-related recovery operations being performed by a served agency.

In the case of an emergency that is unknown to GCEC ARES leadership, a served agency would make contact to inquire about deploying local amateur radio resources.

In either case, a served agency official will contact either the ARES Gregg County Emergency Coordinator or the designated backup/liaison contact person (usually one of the ARES Gregg County Assistant Emergency Coordinators) via telephone (landline or cellular), if available.

It is the responsibility of the person contacted to obtain all relevant incident location information, probable deployment assignment information, and incident check-in procedures from the served agency official. Once that initial phone call or contact is made, it is the responsibility of the person contacted to contact two additional people on the call-up list assigned to them. Those two people call two additional people assigned to them and so on, until all people on the list are contacted. If a person is unreachable, all means should be made to leave a message in multiple ways (voice mail/answering machine or e-mail, if available).

Once a resource net or initial tactical net is established (per the *ARES Net Procedures* document), or if reporting to a remote staging area, unsuccessful call-ups should be reported to the Net Control Station or person in charge at the remote staging area.

8.2 - Reporting

According to ICS and NIMS doctrine, amateur radio resources normally report to the Communication Unit of the Logistics Section with the Incident Command Structure. However, depending on the scope of the incident, actual deployment and usage of amateur radio resources could differ. Most incidents that would involve an ARES response other than normal Skywarn weather nets, would normally involve activation of EOC-related teams. Both the City of Longview and Gregg County operate a joint EOC located at the AT&T building in downtown Longview. In accordance with ICS and NIMS doctrine, EOC's serve in a coordination role and would be the focal point for utilization of volunteer resources.

Part of the telephone tree notification is to provide information to individual operators on where to report. Normally, there will be an initial resource or tactical net established for check-in and/or a specific location given to which certain operators need to report for initial assignments.