
 <p>The logo features a stylized radio antenna icon above a globe with horizontal lines. To the right of the globe, the text 'EMERGENCY MEASURES RADIO GROUP' is stacked vertically in a bold, sans-serif font.</p>	<p><b>EMERGENCY MEASURES RADIO GROUP</b></p>
 <p>A circular logo with a yellow border. Inside, a black circle contains a yellow lightning bolt striking a maple leaf. The text 'AMATEUR RADIO' is at the top, 'EMERGENCY SERVICE' is at the bottom, and 'ARAC' is in the center.</p>	<p><b>OTTAWA ARES</b></p>

Two Names - One Group - One Purpose

# **Building Robust Repeaters for Amateur Radio Emergency Communications**

**All Amateur  
Repeaters are  
Emergency  
Repeaters, aren't  
they?**

# EXPECTATIONS

- Emergency Management is mostly about planning; what could happen, what could be needed and what resources are available.
- Includes communications, & backup communications.
- When Amateurs say “***our repeater is available for use in an emergency***”, there is an expectation that basic emergency requirements have been considered and are in place.

# CLIENT REQUIREMENTS

- Clients are the groups who use EMRG communications services in an emergency.
- EMRG clients are;
  - Community Services (City of Ottawa)
  - Ottawa Red Cross
  - Ottawa Salvation Army
  - Hospitals
- All EMRG strategy, planning, development and training is based on client requirements.

# THERE IS A PLAN

- In theory, every Amateur radio repeater is available to assist in an emergency.
- Not all repeaters in Ottawa are included in the EMRG plan.
- Repeaters not in the EMRG plan may still be used in an emergency, however they may not meet the criteria for an emergency repeater.

# PLANNING CONSIDERATIONS

## RELIABILITY

- Repeaters must be dependable and withstand continuous use for days in an emergency

## DIVERSITY

- Some repeaters may not work in an emergency, so enough capacity is required to maintain effective coverage with some infrastructure loss.

## CHANNEL CAPACITY

- User requirements and message volumes will vary, so more than one repeater and coverage area is required to effectively meet client needs.

# COVERAGE AREA

- Emergency communications for Ottawa cannot be done using a single wide area repeater.
- There is a requirement for multiple channels, serving different groups, requiring different coverage areas, operating on different bands.
- EMRG has 3 categories for repeater coverage;
  - **Wide Area** - Reaches across the City
  - **Regional** - Covers a unique portion of the City, including the core
  - **Community** – Covers a specific local community

# POWER

- Repeaters must be able to operate when AC power fails, so they must be located in a critical site with generator power and battery backup.
  - Generator backup is required for extended operation if the AC power fails.
  - Critical Sites have an importance which means they are likely to be refuelled in an emergency.
  - Battery backup is required in case the generator does not start.

# SUPPORT & ACCESS

- If the repeater fails during an emergency, there must be a high probability that someone will be available, have the skills required and be able to get access for repairs.
- There must be more than 1 person who can gain access to the repeater site, and more than 1 person capable of working on the equipment.

# ANTENNAS

- There must be a high probability that a repeater will remain operational, which includes good antennas that can survive heavy wind and ice.
- Unfortunately, many groups are turning to Amateur fibreglass antennas for repeater service due to the low cost.
- If a club is claiming their repeater is available for an emergency, they must invest in antennas.

# REPEATER EQUIPMENT

- In an emergency, a repeater may operate non stop for hours, even days.
- This type of operation requires repeaters to be built from suitable equipment that can withstand continuous duty.
- While a pair of mobiles may work for normal use, especially with a fan, there is a high risk that the system will fail under continuous use.

# COMPATABILITY

- Long tails make it difficult to use cross band repeaters because the end user cannot break in.
- CTCSS helps reduce noise from intermod and ensures cross-band repeaters are not adding to the problem. CTCSS IS IMPORTANT.
- In an emergency, the controller should meet license requirements and no more.
  - The long winded announcements just make it more difficult to move messages.

# CTCSS TONES

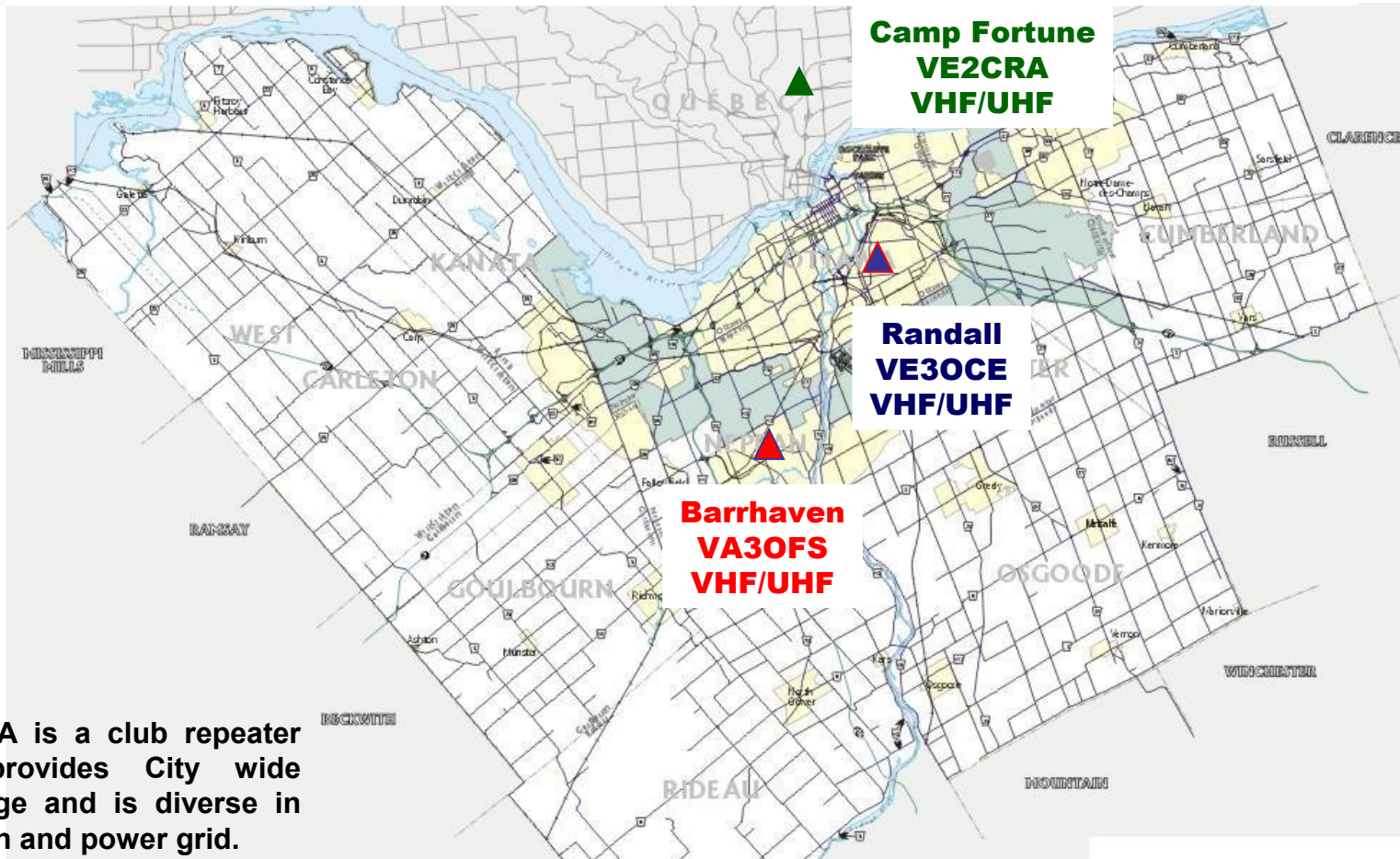
- Many people believe repeaters should not use CTCSS because there are amateurs who have radios that cannot support CTCSS tone encode.
- In reality this is not an issue for three reasons;
  1. Most amateur radios can encode a CTCSS tone
  2. Many people will be partnered with someone and will be using the other persons equipment.
  3. Some locations have permanent radios, plus EMRG is has a supply of radios.

# ALTERNATE REPEATERS

- In some cases, there are multiple repeaters that provide coverage in the same area.
- Based on the emergency plan, there needs to be a reasonable number of repeaters with overlapping coverage, in case of failure, but not all repeaters may be required.

# **REPEATERS IN THE EMRG PLAN**

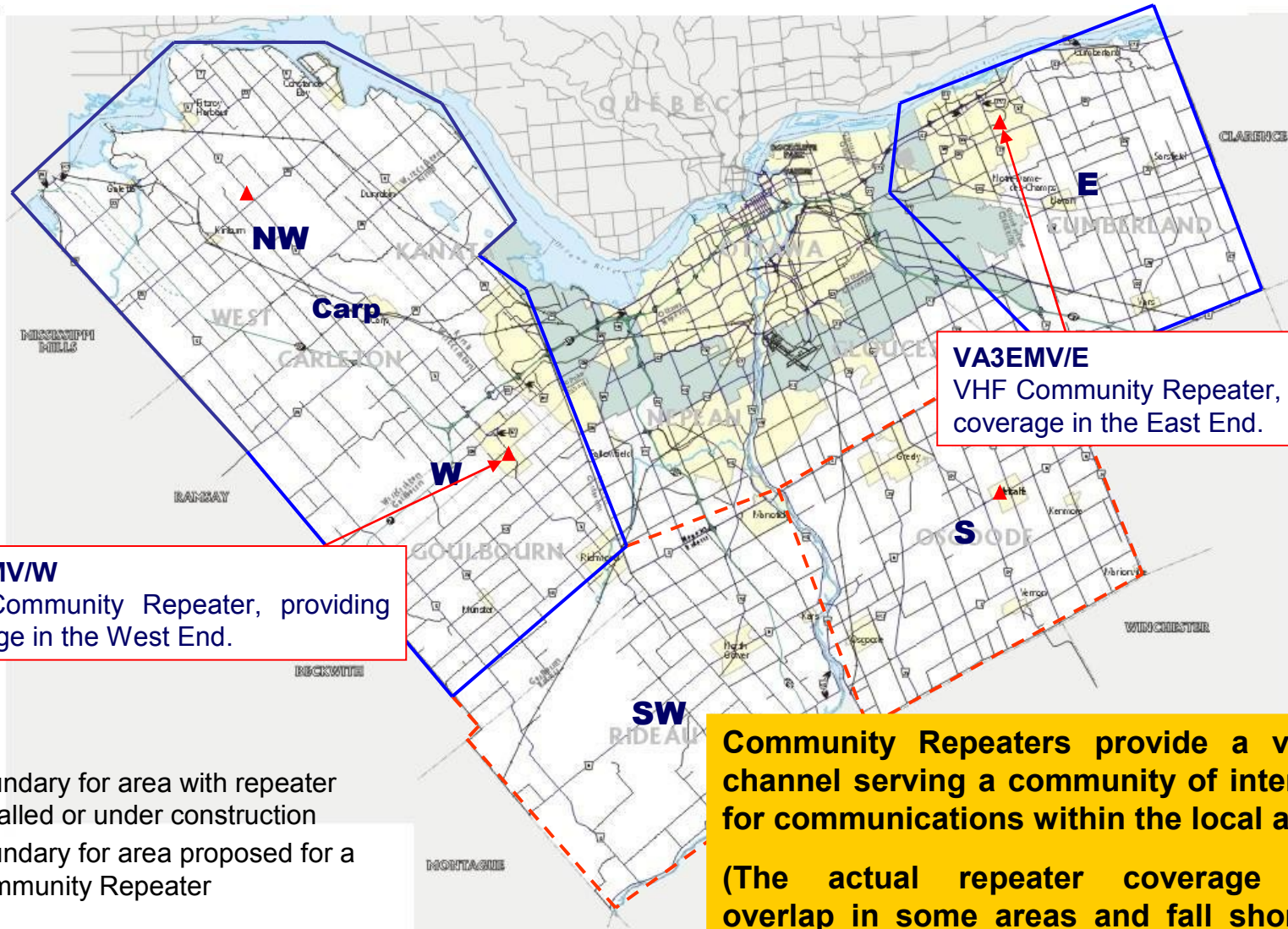
# CITY WIDE REPEATERS



VE2CRA is a club repeater that provides City wide coverage and is diverse in location and power grid.

**There is no single repeater that can cover the full City of Ottawa. By using several repeaters, most areas are covered and are accessible from key locations.**

# COMMUNITY REPEATERS



**VA3EMV/E**  
VHF Community Repeater, providing coverage in the East End.

**VA3EMV/W**  
VHF Community Repeater, providing coverage in the West End.

**Community Repeaters provide a voice channel serving a community of interest, for communications within the local area. (The actual repeater coverage will overlap in some areas and fall short in others.)**

- Boundary for area with repeater installed or under construction
- - - Boundary for area proposed for a Community Repeater

# USE OF EMRG REPEATERS

EMRG repeaters are open for use by anyone in the Amateur community under the following understanding;

- The purpose of the repeaters is for emergency communications, so EMRG has priority.
- Conversations should be useful, Amateur radio related and free from personal opinions.
- If the repeater is not working, tell someone. Notify any member of the EMRG management team, or send an email to [ve3oce@rac.ca](mailto:ve3oce@rac.ca)

# **www.emrg.ca**

The EMRG web site provides information related to Amateur radio emergency communications, specifically as it relates to the City of Ottawa.

- Project Information
- Newsletters
- Upcoming Events
- Documentation
- Links to related information

Information: **planning @ emrg . ca**