Chebeague Public Safety Radio Communications

ISSUES & PROPOSED SOLUTIONS
How Our Radio System Works

Long Island → CCRCC (Dispatch) → CRC

Chebeague Rec Center
How Our Radio System Works

Currently radio transmissions are sent via microwave from CCRCC to Long Island which are then forwarded to the microwave antenna at the Chebeague Rec Center. All these transmissions require a clear line of sight between the antennas.

Our radio signal is then sent out across the island via a radio antenna at the Rec Center.

The radio antenna at the Rec Center currently faces several challenges:
  ➢ The location of the antenna is not centralized on the island.
  ➢ The antenna is located at a low elevation and radio signals cannot overcome all the topographical interference.
  ➢ There is an unknown source of radio interference near the Rec Center that we cannot resolve.
Radio Tests

RADIO TEST POINTS ACROSS THE ISLAND

- December, 2011 – Tested radio points across the island with the Rec Center antenna and an antenna at the Fire Station.
- October, 2012 – Tested same radio points again with RCM and a mobile antenna at the Fire Station vs. the Rec Center antenna. We also identified the height needed for line of sight from the Fire Station to the Long Island microwave antenna.
Results of Radio Tests

- Radio transmissions from the Rec Center are unreliable for most of the island, and there are numerous “dead zones”.

- Radio transmissions from the Rec Center are particularly bad for all of the east end, most of North Road, and all points north/east of Thompson’s Hill. A majority of fire & rescue personnel live in these areas of poor radio coverage.

- Radio transmissions transmitted from a mobile test antenna raised by a weather balloon at the fire station outperformed the Rec Center antenna at all locations, and ALL test points could send and receive intelligible transmissions with the mobile antenna.

- A stable, permanently installed antenna should outperform a mobile antenna on a swaying weather balloon!
One Solution (Option #1)

- **Line of sight** from Long Island to CCRCC (dispatch)
- **Fiber optics** from CCRCC to CIFR Station

Diagram:
- Long Island
- CCRCC (dispatch)
- Rec Center
- CIFR Station
Pros/Cons For Solution #1

- Can be done quickly and is the lowest cost solution (approx. 10-20K).

- Connecting the Rec Center and the Fire Station via fiber optics adds another step to the process = another potential problem area in our complete radio system.

- Will require the purchase and installation of another alarm system to identify any signal outages. Currently we have alarm systems alerting us to any outages between Chebeague and Long Island and between Long Island and CCRCC.

- The Town does not own the fiber optic cables; Chebeague.net owns those lines. Who will bear the responsibility and costs of any problems relating to the fiber optic cables?

- Currently, power outages require personnel to go to the Rec Center, manually start the generator, and unplug the radio system from its regular power source and plug it into the generator (there is a battery system that will give the radios power for a short period of time). The Fire Station automatically converts to generator power without any manual intervention.
Our Proposed Solution (Option #2)

Install a freestanding monopole antenna at the Chebeague Fire Station with direct line of sight (120’) to Long Island and eliminate the Rec Center from our radio system.
Pros/Cons For Solution #2

- Much more expensive solution (>70K)

- We may need to request an updated license with the FCC. The microwave will need to be installed at 120’ and the antenna will need to be installed between 40’-60’. However, we have an island resident already willing to assist us with this issue.

- All components will be housed at the Fire Station. A simpler system with fewer links will provide fewer opportunities for communication failures!

- All components, including power systems, will be Town owned and maintained.

- Power outages will no longer present significant demands and challenges – generator backup is automatic and requires no manual interventions.

- We know from our radio tests that this is the ideal location for a radio antenna on our island.
Next Steps

- RCM and the tower company are working on an updated proposal with specifications and costs for a monopole antenna at the Fire Station.

- Fire/Rescue (Ralph/Lisa) will meet with the island code enforcement officer this Friday to discuss possible site plans.

- Options for financing the installation of the new radio tower/antenna need to be discussed.

- RCM is available to meet with the Board of Selectmen and interested community members later this month to answer any technical questions.