

Central Minnesota Emergency Services Board Standards, Protocols, Procedures

Document Section:	3 – Interoperability Standards	Status: Approved
Sub-Section:	CM 3.33.2	
Procedure Title:	STR – Transportable Tower/Repeater	
Date Established:		CMESB Approval: January 27, 2016
Replaces document dated:	n/a	
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1. Purpose or Objective:

To establish policies and procedures for the deployment and use of the following Strategic Technology reserve (STR) component:

Transportable Tower and Repeater

2. Technical Background

• Capabilities

As part of the Public Safety Interoperable Communication (PSIC) grant program, transportable towers and repeaters will be established in each of the radio regions in the state. The transportable towers and repeaters and their basic capabilities are described as follows:

Resource	Description
Transportable Tower	50' trailer based, crank-up aluminum tower, assembled with 800 MHz, VHF, and amateur radio antennas and transmission cables.
Repeaters	Repeater-Transportable 800 MHz and VHF repeater capable of cross-band operation in analog and digital P25 modes. The repeater is equipped to support at least two-800 MHz frequency pairs and at least one of two VHF frequency pairs for repeater operation. The repeater is enclosed in a case that can be transported in the back of an SUV and weighs approximately 70 lbs. The repeater is battery operated and can be connected to a 12-volt vehicle battery or 120 VAC power source.

Frequencies identified for use in the transportable repeater are specified in Appendix A.

STR transportable repeater frequencies will be identified in the State of Minnesota Interoperability Frequency Plan and should be available in public safety mobile and portable radios throughout the state of Minnesota. They may also be programmed into public safety mobile and portable radios for neighboring state agencies operating along the Minnesota border.

Through the allocation of this STR resource, each region of the state should have an ability to respond immediately to any catastrophic loss of the existing public safety communication resources, to provide

additional resources under certain circumstances, and to provide local responders with a transportable communication resource should they respond to a major event or natural disaster.

- **Constraints**

The Interoperability Frequency Plan and the National Interoperable Frequency Operational Guide (NIFOG) provide a comprehensive list of all available interoperability frequencies. In the VHF spectrum, most interoperability frequencies are specifically simplex and not paired for repeater use. There are very few permanent repeaters in place on interoperability frequencies outside the Minneapolis/St. Paul metropolitan area. Based upon the limited nature of this resource, care must be exercised in the overall coordination of communications so the deployment of equipment achieves maximum effectiveness.

3. Operational Context

The STR transportable tower/repeater is one element of a comprehensive STR capability available within the state. The allocation of an STR transportable tower/repeater to every Regional Radio Board (RRB) provides them with a resource that can be placed into service within the region very quickly. Upon deployment to the scene or area of operation, an STR transportable tower/repeater can be put into operation within 30 minutes. Regional ESB standards should address the following issues necessary to maintain operational readiness and availability of the equipment:

To maintain operational readiness and availability of the equipment, CMESB designates the following:

- Points of Contact for access to the equipment:
Primary: Regional System Administrator
Phone: see CMNRadio.org for current contact details

Secondary: Douglas County PSAP
Phone: 320-762-8151

- Point of Contact for operational functionality of equipment:
Primary Contact: Regional System Administrator
Phone: see CMNRadio.org

Secondary: Douglas County PSAP
Phone: 320-762-8151

Note: All Communications Unit Leaders (COML) within the CM regional should be knowledgeable with operation functionality.

The STR transportable tower/repeater may be deployed individually or used in conjunction with other STR resources. Although deployment of more than one STR transportable tower/repeaters might be possible, there is a strong potential for conflict between signals. The STR transportable towers/repeaters are designed to provide a limited resource (capacity and coverage) that can be implemented very quickly to address the public safety communication over a very limited geographic region (3-7 mile radius). Actual area coverage may vary depending upon tower placement, which should be at the highest point overlooking the area of operations.

Where additional communication paths are needed, consideration should be given to requesting additional state resources.

4. Standardized Policy

Every region of the state should have access to STR components (radio cache and transportable tower/repeater) necessary to immediately respond to any loss of basic public safety communications. This standard defines the steps necessary to make sure the STR transportable tower/repeater is available for deployment by addressing the requirements to maintain, operate, and deploy the STR transportable towers/repeaters.

To the greatest extent possible, CM STR components (radio cache and transportable tower/repeater) should be made available to support operations in other regions of the state to provide communication resources for public safety personnel responding to an event or disaster in another state.

5. Standardized Procedure

CMESB shall provide for the STR transportable tower/repeater as follows:

Maintenance and Storage

STR transportable tower/repeater must be maintained in a secured area to prevent intentional and unintentional damage to equipment.

- Transportable towers may be stored outside in a secured or protected area that is covered to protect coaxial cables and connectors from corrosion.
- Cased repeaters must be stored inside with access to an electrical power supply to keep on-board batteries fully charged at all times.

Safety Note: Repeaters weigh approximately 70 pounds and should be carried by two people when loading or transporting.

Recommended towing specifications:

Refer to Appendix A of CM STR SOP for detailed Maintenance and Storage plan.

Resource Activation

- The region's designated point of contact and alternate contact should be listed in each region's TICP and must have access to the STR transportable tower/repeater at all times.
- An indication will be made on Statusboard when CM STR equipment is deployed with details of location and expected duration of use.

- At the time of deployment, it is recommended that at least one person involved in the deployment have participated in deployment familiarization training within the last year. It may be possible for a qualified person to conduct deployment familiarization training immediately before deployment, but such training must be documented.
- A pre-deployment checklist must be kept with the equipment. The checklist should include a thorough list of the equipment, verification of deployment familiarization and training, and verification of setup procedure.
- Written, step-by-step set up procedures, including safety notices should be reviewed periodically and must be kept with the equipment at all times.
- Deployment of the transportable tower/repeater within the region may be for any purpose authorized by the ESB.
- Deployment outside the region to support public safety response to an event or natural disaster shall be provided for in the ESB standard, which may contain reasonable pre-requisites. Note: the STR transportable tower/repeater has been standardized to assure compatibility of the resource across the state.
- The requesting agency shall be responsible for the return of any transportable tower/repeater to the owner agency.
- The agency requesting the transportable tower/repeater assumes full risk of loss for any equipment loaned to it which are lost, stolen, damaged, consumed, and inoperable, or destroyed until the equipment is returned to the owner agency.
- The requesting agency shall reimburse the owner agency for the repair or replacement cost of any equipment which is lost, stolen, damaged, consumed, inoperable, or destroyed.

Resource Deactivation

- The requesting agency shall be responsible for the return of the STR transportable tower/repeater and any cache radios/equipment to the owner agency. Unless other terms have been approved, the requesting agency shall return all cache radios/equipment within 72 hours of the closing of the event for which the request was made.
- Indicate on Statusboard the current availability of STR resources.

Operational Training

- Deployment familiarization training should be conducted at least once a year at the May meeting of the Owners & Operators Committee.
- All trained Communications Unit Leaders (COMLs) in the region should participate in deployment familiarization training for the equipment. At the regional level, the transportable tower/repeater should be made available for local disaster exercises, local events (fairs or celebrations) or other activities where personnel will become familiar with the deployment procedures and operational characteristics of the equipment.

6. Management

The CM Owners and Operators Committee is responsible for assuring compliance with this standard.

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Document Section:	3 – Interoperability Standards	<h1>Appendix A</h1>
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The following frequencies identified for use in the Transportable Tower / Repeater shall be maintained in all repeaters maintained as part of Minnesota's Strategic Technology Reserve (STR):

VHF

Name	Transmit	Receive	CTCSS/NAC
F1-VTAC14/VTAC14R	159.4725 MHz	154.6875 MHz	156.7 Hz E/D
F2-LE2 Federal LE Interop*	167.2500 MHz	162.2625 MHz	167.9 Hz E/D
F3-IR2 Medical Evac Control	170.4125 MHz	165.9625 MHz	\$68F

*Subject to coordination with federal LE partners

800 MHz

Name	Transmit	Receive	CTCSS/NAC
F1 – 8CALL90	851.01250 MHz	806.01250 MHz	156.7 Hz
F2 – 8TAC91	851.51250 MHz	806.51250 MHz	156.7 Hz
F3 – 8TAC92	852.01250 MHz	807.01250 MHz	156.7 Hz
F4 – 8TAC93	852.51250 MHz	807.51250 MHz	156.7 Hz
F5 – 8TAC94	853.01250 MHz	808.01250 MHz	156.7 Hz