TCOMM 911
POLICE | FIRE | MEDICAL
Your Emergency – Our Priority

TCERN

Summer 2024

Building the framework and infrastructure that will support the new county-wide public safety radio system.

What is TCERN?

TCERN stands for the **T**hurston **C**ounty **E**mergency **R**adio **N**etwork.

Started in 2017, the TCERN project's purpose is to replace Thurston County's aging VHF/Analog public safety radio system. The new system, will be a Motorola P25 Phase 2, 700 MHz trunked digital system with a VHF overlay.

In This Issue:

Wendy Hill, Executive Director

Message from the Director

We're so close! As we near readiness for operational cutover to the new digital trunked radio system this fall, the TCERN project team is working tirelessly behind the scenes to complete all of the many sub-projects and preparations required to enable a seamless transition for our member agencies when they begin using the new radio system. The purpose of the entire project is to provide enhanced radio coverage, modern features, and improved reliability for field radio users—and *we are just steps away from realizing that goal in the next few months.*

While much of the focus to-date has been placed on member agency radio users and fleet equipment, we are also mindful that this transition between systems will impact our interoperability partners and non-member agency radio users. As part of our enhanced interoperability plans, TCOMM has been developing radio programming and/or interoperability agreements with Pierce County, Washington State Patrol, and the City of Tacoma, paving the way for improved communications with these project partners when the need arises. We have also been working with non-member agencies, including ambulance companies and other local agencies, to develop system access agreements that will allow them to talk with other users on the TCERN system and to have selected TCERN talk groups programmed into their own radio equipment.

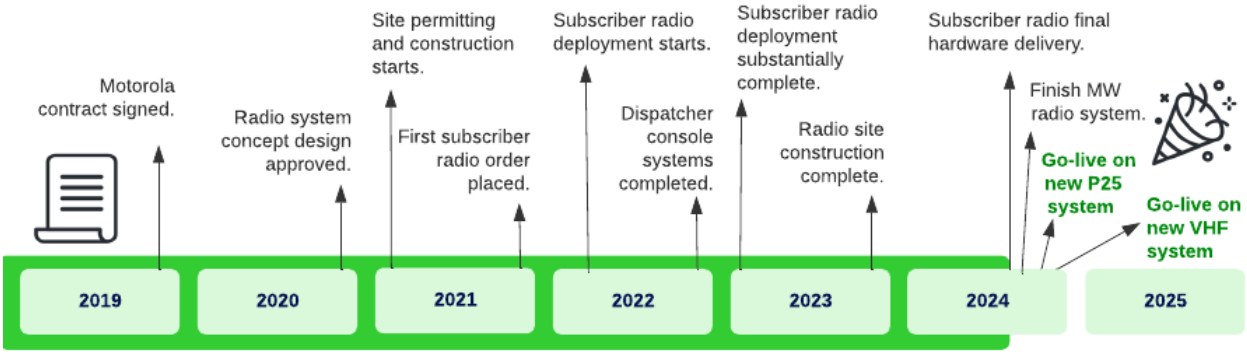
The project team is also actively engaged in planning what the actual cutover day looks like for our member agencies and dispatch. We have engaged a small workgroup made up of dispatch supervisors and two representatives from both Law Enforcement and Fire/EMS, with TCOMM's Jonnica Elkins and David Taylor leading the efforts. Meeting regularly over the next 2 months, the workgroup will develop the draft cutover plan, which will be shared with LE and Fire Chiefs for review and input to ensure the cutover day goes as smoothly as possible. We will also hold a town hall meeting for all impacted radio users roughly 3 weeks prior to cutover, which will be scheduled once the cutover date is locked-in.

A lot of communication, coordination, and collaboration will be needed as we complete this important project for our member agencies and stakeholders. We thank you in advance for your attention and assistance in achieving this worthy goal!

Cutover Forecast

After over 4-1/2 years, we are finally almost ready to switch over to the new TCERN 700 MHz digital trunked radio system in Thurston County. We expect this to happen in **October** of this year although a set date has not yet been established. In order to establish a cutover date, we must first have the 'Fire Station 8-2' (FS-82) and the 'Hawks Prairie' radio sites operational. In order for this to happen, a monopole tower must be installed at FS-82 and a final installation of microwave radio linking equipment must be installed that links those two sites back to TCOMM911. After those two items are accomplished, a cutover date can be set. Both tasks are scheduled to happen in August.

After that is accomplished and the October date is set, we will proceed with final system optimization, temporary operational install at FS-82, county-wide radio system coverage testing, system monitoring and alarm setup, system acceptance testing, and finalization of subscriber radio programming.

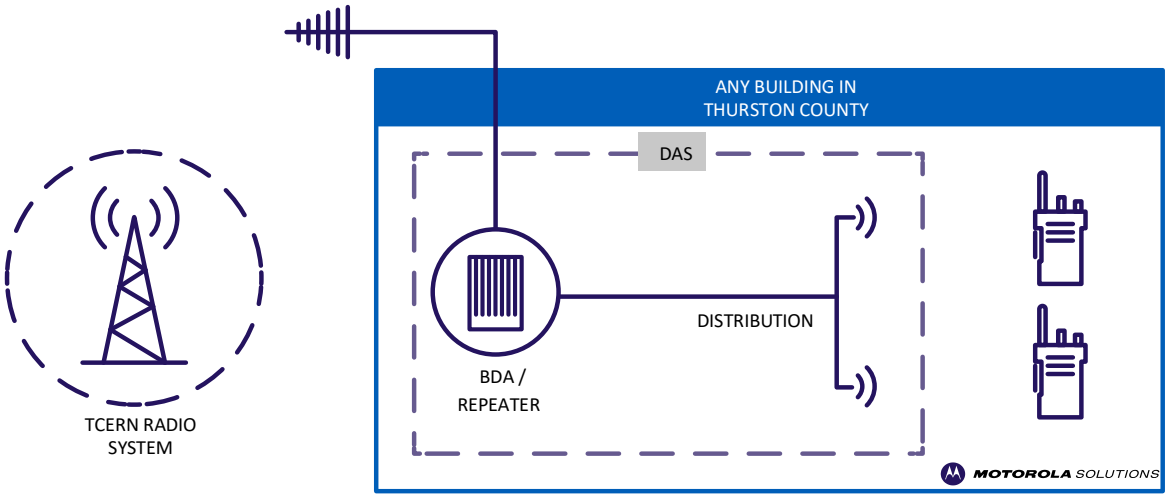


BDA / DAS Impacts to Cutover

Certain Fire codes and laws require buildings to provide special systems to make the Public Safety radio networks work inside if there is no normal radio coverage. This is done for the safety of all individuals that work or operate in those structures as well as Fire and Police responding to those buildings.

Washington Administrative Code: WAC 51-54A-0510
NFPA 1221 Section 9.6 Two-Way Radio Communications Enhancement Systems
IFC 510-Emergency Communication Radio Coverage

These in-building systems are typically known as DAS (Distributed Antenna System) or BDAs (Bi-Directional Amplifier Systems). Building materials, environmental windows coatings, metal siding and concrete all attenuate radio signals. For these reasons, there are amplifiers and antennas added to the buildings that carry radio signals out to the towers and send the signals from the radio towers back in to the building.



A graphical depiction of the DAS principal: The amplifier system works both ways to get the radio signal in and out the building…

Right now there are more than 30 buildings or structures with some form of In-building DAS and/or BDA. These systems are all set up to work on the current Thurston County analog VHF radio system. When we cut over to the new TCERN system, these older in-building systems will become obsolete. There is often times no way to upgrade them and they may have to be replaced if further testing on the TCERN 700 MHz system shows that there is no radio coverage in that building. Most of the systems are in large warehouse complexes, large apartment buildings, State buildings, schools, and other large structures.

There will be some structures in Thurston County that will not have radio coverage inside immediately after cutover. While there may still be current radio channels amplified, they will no longer be monitored by TCOMM911 on a normal basis and their use may cause critical radio traffic to be missed.

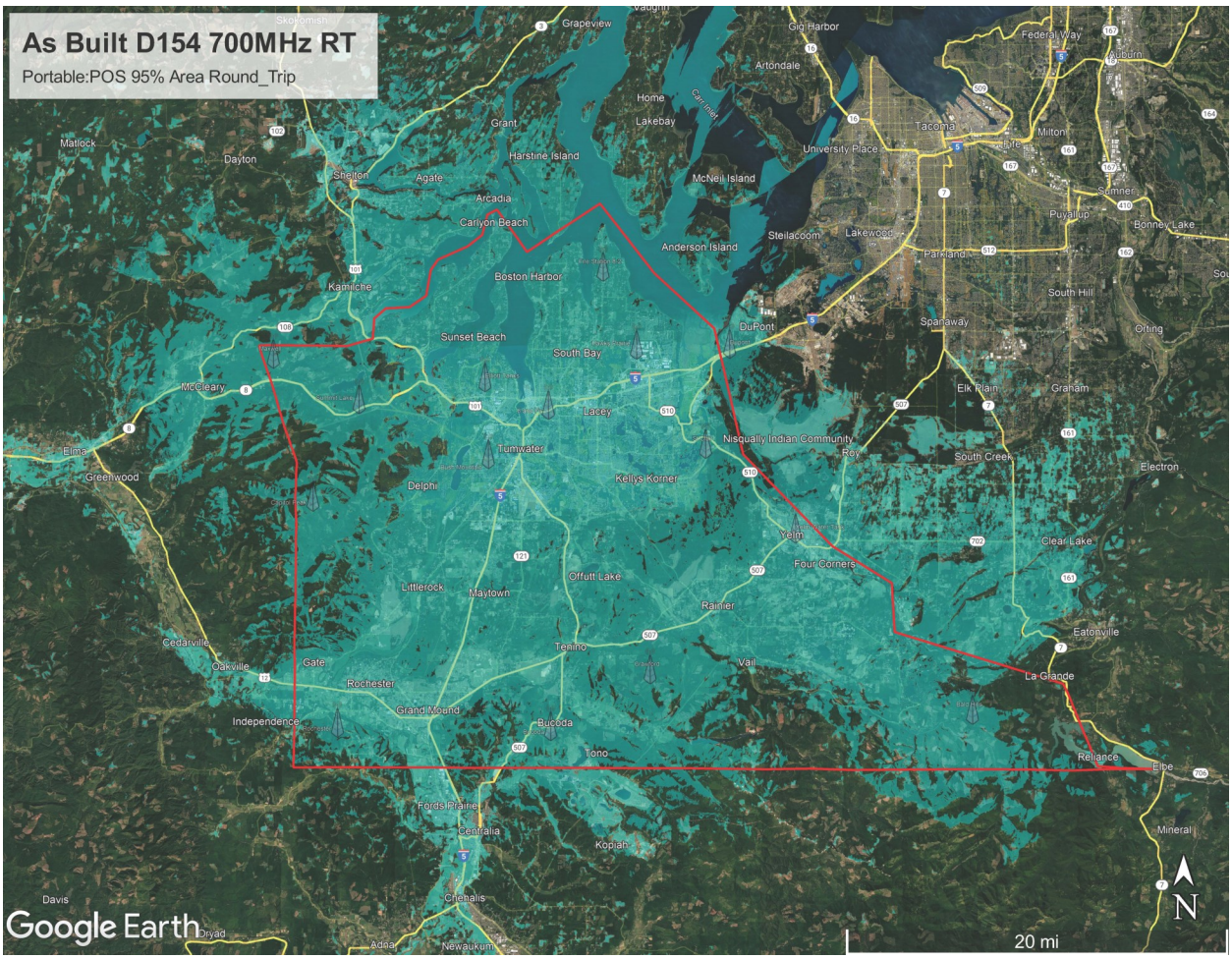
Fire Ground Simplex communications or 'Radio to Radio' will be the interim solution. All TCERN Fire radios that have the final pre-cutover programming applied will have the designated Fire Ground simplex channel in their primary Zone and Channel/Talkgroup position 16. More information and operations details will follow with the cutover plan.

With Fire Ground Simplex communications, the radio inside the building will talk directly with a radio outside the building. No Radio Infrastructure is involved. This radio channel is Channel 16 on your Primary Zone and it is a Digital 700 MHz frequency.

Coverage Map

TCERN radio coverage will be the same no matter what talkgroup you are working from. No longer will you have to consider whether TAC 2 or the DATA channel have the same coverage footprint.

- Coverage design has been engineered around a belt-worn portable radio using a remote speaker microphone.
- Coverage guarantee of 95 percent is for major populated and critical operating areas with an audio quality of DAQ 3.4. It does not mean that the design is for all lands in Thurston County. Mostly this means private forest lands, Capitol Forest in some areas, and other areas with no roads. There may be coverage in ALL of these areas but it is deemed outside of the coverage "guarantee."
- Shown below is portable coverage. Mobile coverage saturates the whole County except for a few remote forested areas.



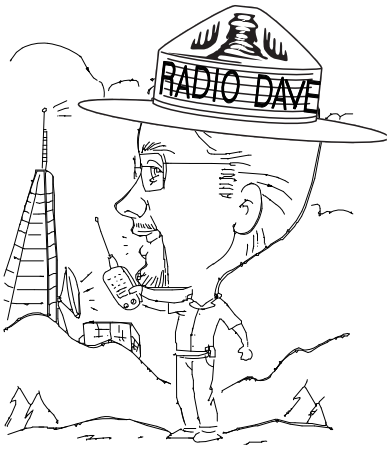
The green coverage overlay on the map of the County shows where there should be 95 percent belt-worn portable radio coverage. Remember that just because an area has no color on it does NOT mean there is no radio coverage. It only means that it is not predicted to meet the 95 percent coverage criteria. Conversely, if an area is colored there is a 5 percent chance that is does not meet the coverage standard.

Subscriber Radio Training - Summary

In critical situations, having access to a radio can be lifesaving. Just as important, knowing how to operate the radio at that moment can mean the difference between a successful outcome and a tragedy.

That's where training comes in! In addition to investments in updated TCERN system hardware and subscriber radios, TCOMM has also invested in the technical training to support the optimal use of the new system. In September of 2023, Motorola presented an 'APX Two-Way Radio Train the Trainer' course for our law and fire user agency training leads, teaching them how to use the abundance of functions of the APX8500 E5 mobile radio and the APX8000XE/Model 2 and 3 portable radios, and specifically addressing the job aides available for assistance with operation. The fire and law training leads were also coached on how to deliver training and toolkit resources to the other radio users in their own agency. Each of TCOMM's member agencies will play a significant role in the successful transition from VHF analog to P25 700 MHz digital radio systems this fall by proactively ensuring that every radio user is fully trained and signed off on operation of the new equipment on the new radio system by September 15, 2024.

SELECTED TRAINING RESOURCE LINKS
Best Practices for Motorola Solutions' Law Enforcement RSMs
APX8000 Law: Quick Reference
APX8000XE Fire: Quick Reference
APX8500 Law: Quick Reference
APX8500E5 Fire: Quick Reference
Fire APX 8000 XE Cheat Sheet – Radio Basics Sheet – Generic
G1SCBA Config and Pairing Guide – Motorola APX Radios
Mobile Radio Instructions
Radio Basics Sheet: Generic TCSO
TCERN APX Fire Portable Configuration and Function



Radio Dave says, " Only YOU can prevent poor radio transmissions!"

Knowledge is Power:

Each agency training lead has a digital copy of the training information to be shared with their agency. All of the training material can also be found on the TCERN Project Resources homepage at: **https://tcomm911.org/radioupgrade/**

Fair warning: the site is password protected. Please contact your training lead or a TCOMM911 team member for help accessing.

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TCERN TEAM:

Wendy Hill, TCOMM
Jonnica Elkins, TCOMM
David Taylor, TCOMM
Landon Hansen, TCOMM
Carla Mai, TCOMM

Molly Kovaka, ADCOMM
Susan Ronning, ADCOMM
Jennifer Skilowitz, ADCOMM
Shawn Halsey, ADCOMM

TCERN TRAINING TEAM:

Jonnica Elkins, TCOMM
Tammy Kallgren, TCOMM
Ryan Cox, Lacey FD
Jaime Newcomb, Lacey PD
Chris Patti, McLane/BL FD
Pete Suver, SE Thurston FD

CONTACT:

Wendy Hill
Executive Director
TCOMM 911
(360) 704-2731
w.hill@tcomm911.org

Subscriber Radio Updates

Pre-Cutover Reprogramming

Between April and July, the TCOMM radio shop coordinated with every member agency to reprogram the entire fleet of more than 1,600 subscriber radios in preparation for the upcoming cutover to the new P25 radio system. The updated radio codeplugs include changes to home zones and talkgroups for (future) P25 system operations, fixes for issues reported in the old codeplug, and specific agency requested changes. There are still a little less than 10 percent of agency radios that need to be reprogrammed and the TCOMM radio shop will be working with agencies to complete this step before the end of summer so that the entire fleet will be prepared for P25 system operations in the Fall.

Final Fleet and Spare Radios

TCOMM placed an order with Motorola in June 2023 for a final quantity of subscriber radios to complete a full fleet of operational and spare radios for TCERN member agencies. Those radios are now being programmed and distributed to agencies, completing the deployment of project-purchase subscriber equipment.

Preventive Maintenance Services

As part of the TCERN project, TCOMM purchased extended warranties and preventive maintenance services for member agency fleet radios. All project-purchased subscriber fleet radios are now eligible for annual preventive maintenance services, provided locally by Day Wireless Services. Agencies are encouraged to schedule these services between now and the end of 2024.

TCERN Blue Mountain Radio Shop: We have successfully processed 1,868 Public Safety radios to date.

TCERN STATS:

- ★ Over 1,550 radio units with the start of the system.
- ★ Fifteen 700 MHz Radio sites and a Master Control Site for County-wide radio coverage and increased traffic capacity.
- ★ Replacement of the 9 Site VHF Simulcast system for interoperability and system reliability…'VHF Overlay".
- ★ Improved system for Fire Alert paging.
- ★ New Digital microwave radio site linking and data transport system to all radio sites.
- ★ Many enhanced radio system features including Emergency Alert.