



Town of Scarborough, ME

Analysis and
Recommendations for
Public Safety
Mission-Critical
Communications

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January 15, 2025 - PRESENTATION

STUDY PARTICIPANTS

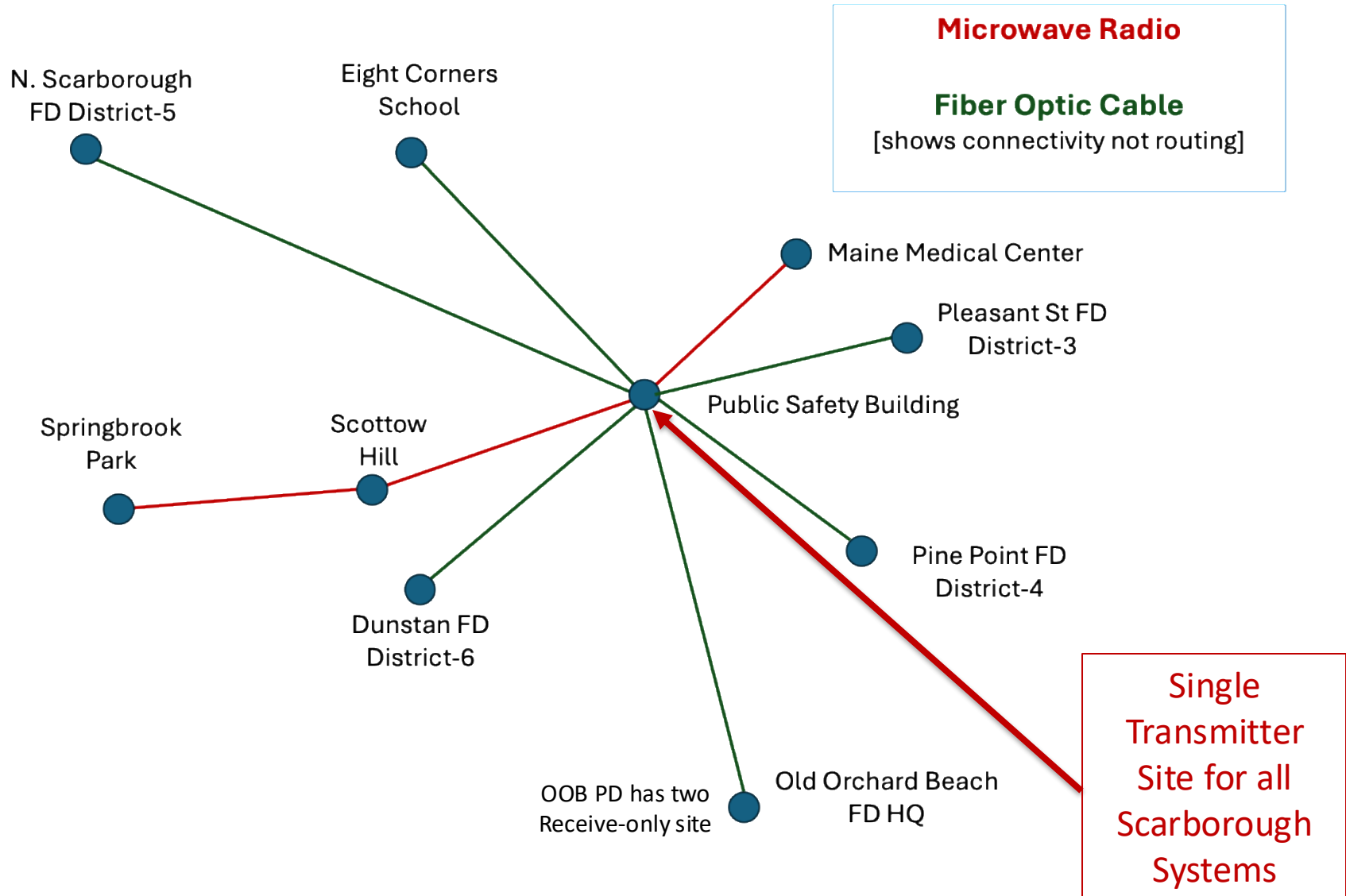
Town of Scarborough

- ✓ Dispatch Communications Center
- ✓ Police Department
- ✓ Fire/EMS Department
- ✓ Public Works
- ✓ Community Services
- ✓ School Department
- ✓ School Buses
- ✓ Sanitary District

Town of Old Orchard Beach

- ✓ Police Department
- ✓ Fire/EMS Department
- ✓ Lifeguards
- ✓ School Department
- ✓ Public Works
- ✓ Wastewater

Scarborough Public Safety Radio Connectivity Infrastructure



CRITICAL ISSUES AND CONCERNS

1. End-of-Life [EOL] Equipment in both Towns that Require Immediate Replacement

Manufacturer equipment discontinued and beyond end-of-life [EOL] is the most critical issue of this project

Equipment end-of-life [EOL] marks the official end of vendor offering for the radio system components. At this point, support shifts from system platform to individual system board repair components.

Typically, many manufacturers will support a product for 5 to 7 years after manufacturing has ceased. Spare parts are stockpiled to meet the estimated need over this period. Support during this period is "best effort" as there is no guarantee that component parts will be available.

Moreover, used equipment can also be obtained online from various sources. Public Safety systems should not reach this point for support.

Replacement parts becoming scarce, and in some cases, not available

EOL Equipment provided on the next page

CRITICAL ISSUES AND CONCERNS

Infrastructure Equipment at Transmitter Sites

SITES	EQUIPMENT																													
	End-of-Life discontinued equipment										Recommend Replacement																			
	MASTR III Repeater	RFPA	Tait 9400 Repeater	MTR2000 Base Station	Kenwood VHF Repeater	Kenwood UHF Repeater	Kenwood Multi Freq Base Station	Kenwood UHF Link	Kenwood VHF Receiver	MASTR III Receiver	AES Transmitter	MDS 900 MAS	TRAKGPS	Aviat Microwave	Aviat Multiplexer	RAD Airmux	RAD TDM Multiplexor	Fiber Mux	Duracom DC Power Supply	UPS	Batts & Charger	Zetron 4048 Console	Raytheon JPS Voter	TXCombiner	RXMulticoupler	Duplexer	Cisco LAN Switch	Net Gear LAN Switch	Bogen PA Amplifier	VOC Control Station
Black Point FD Dist-1																1											1		1	1
Dunstan FD Dist-6																1											1		1	1
Eight Corners School					4											1											1			
Maine Medical Center			2									1	1	1							1					1				
North Scarborough FD Dist-5					4											1	1								1		1		1	1
Pine Point FD Dist-04					4																									
Pleasant Hill FD Dist-3					4											1	1								1		1		1	1
Scar High School						1																				1				
Scarborough PSB/Eng-7	1	1	1	2	4				4	1	1		1	1	1	7	1	3	1	1	1	4	3	2	2	1		3	1	
Scotto Hill									4							2											1			
Springbrook					4											1	1								1			1		
Fire Headquarters	1	1		1			1	2														1							1	1
Town Hall								1	1																					
Public Works								1	1																					

CRITICAL ISSUES AND CONCERNS

2. ZETRON MODEL 4048 COMMUNICATIONS CONSOLE

IMPORTANT: The Scarborough Dispatch Communications Console, a critical component of public safety communications system was installed in 2009. While some upgrades, the system architecture is based on a 25-year-old technology.

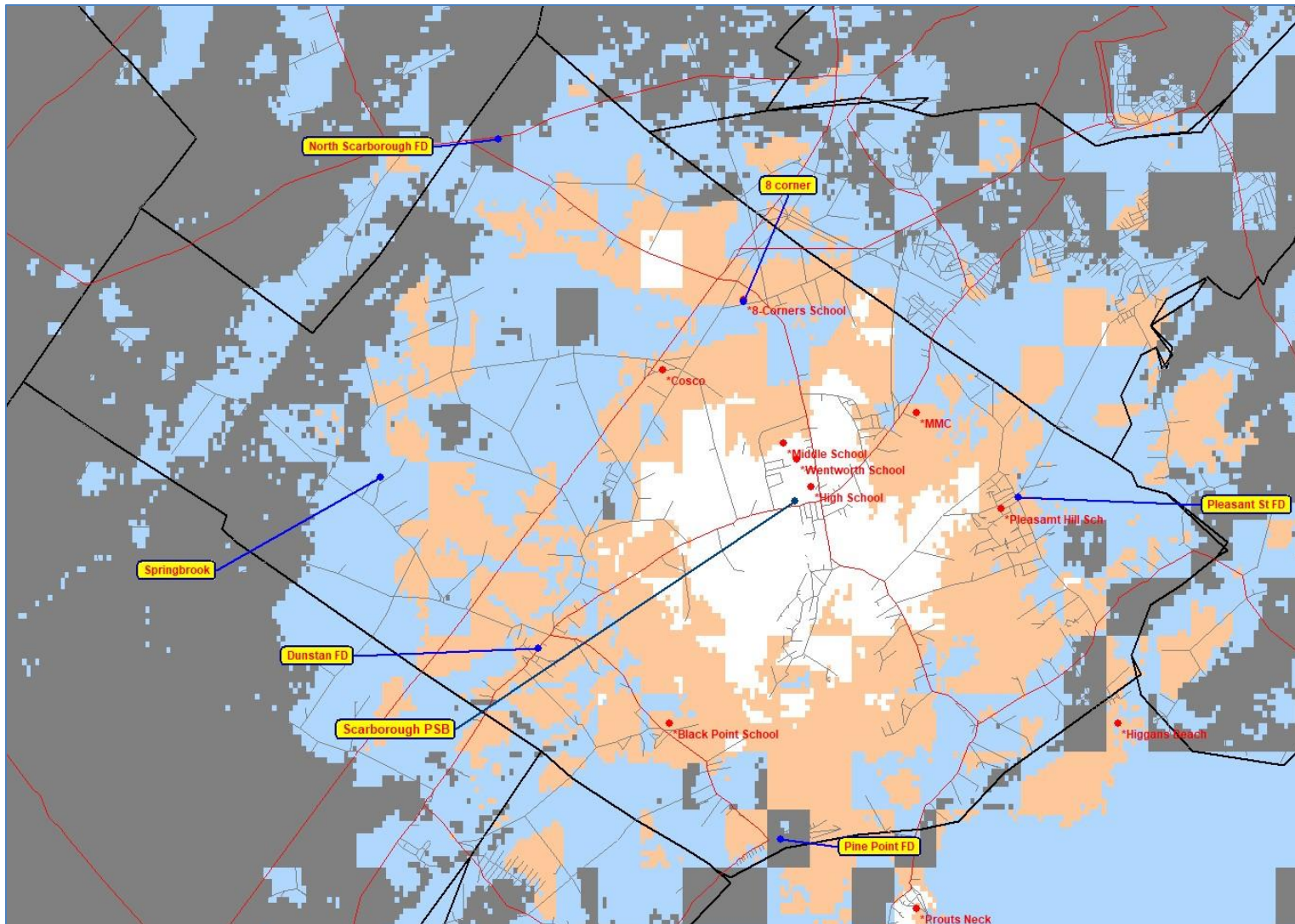
While it has reliably supported the Town's dispatch operations for over 15 years, its outdated design raises concerns about reliability and its ability to meet modern needs, encompassing both fundamental functions and essential advanced features. Upgrading the console is crucial to sustain 24/7/365 performance and to prepare for future needs and operational demands

3. COVERAGE PROBLEMS AT VARIOUS LOCATIONS WITHIN SCARBOROUGH AND OLD ORCHARD

There are several locations throughout Scarborough and Old Orchard where portable handheld coverage is non-existent; and other locations where signals are weak, and inside some critical buildings. An example is Scarborough Police and Fire have difficulties communicating inside of school buildings

Analysis and Recommendations for Mission-Critical Communications

Scarborough Police & Fire Portable Coverage



Scarborough DPW, Sanitary District & Community Services



Old Orchard Police & Fire Portable Coverage



CRITICAL ISSUES AND CONCERNS

3. INTRA-OPERABILITY AND INTER-OPERABILITY COMMUNICATIONS

Intra-Operability

Currently, Scarborough Law and Fire cannot communicate on the School system as they are both in different frequency bands; for example, the SRO has to carry two radios

Inter-Operability

- Beyond the Scarborough and Old Orchard Beach region lie several neighboring towns, each relying on their jurisdiction communication systems to support law enforcement, fire services, and EMS
- At times, Scarborough and Old Orchard Beach both request and assist with mutual aid during emergencies. The most straightforward approach to facilitating mutual aid communication is for each town to program its radios with the frequencies of their mutual aid partners, ensuring seamless coordination – a practice commonly referred to as interoperability
- However, as departments upgrade their radio systems and migrate to enhanced technologies such as digital voice, trunked radio systems, or frequency band change, maintaining interoperability has become a growing challenge for mutual aid communication
- For instance, Biddeford uses an 800 MHz trunked radio system, Saco PD is transitioning to an 800 MHz conventional system, Portland, South Portland, and Cape Elizabeth operate on an 800 MHz trunked system, and Westbrook uses a DMR digital system. These differences create communication challenges for mutual aid coordination for Scarborough and Old Orchard Beach

OPTION-1

Upgrade and Expand Existing VHF 150 MHz Conventional Radio

- This option focuses on replacing end-of-life equipment and expanding signal coverage by adding new transmitter sites and implementing a transmitter simulcast system across the jurisdiction, emphasizing enhancing in-building coverage. The plan also includes a transition to P25 digital voice communications, to be decided by the participating department
- The system enables improved interoperability, reliability, and compliance with modern public safety communication standards
- Departments migrating to P25 will require their mobiles or portables to be replaced, or if recent units, software upgrades for P25 digital
- The upgrade would retain the use of the independent departmental systems in Scarborough and Old Orchard, with the current channel assignments remaining in place.
 - ✓ Scarborough: eight [8] site system transmitter simulcast system [six TX/RX and two RX]
 two [2] receive-only sites
 - ✓ Old Orchard Beach: three [3] site system transmitter simulcast system

OPTION-2

Implement a 4-channel, 13-site, wide area Trunked Radio Network covering Scarborough and Old Orchard Beach

- ❖ This option incorporates state-of-the-art, future-proof radio technology into the infrastructure. This ensures long-term adaptability to evolving communication standards and operational needs. The system supports implementation in either the VHF 150 MHz or 800 MHz frequency bands, offering flexibility to align with specific requirements
- ❖ All voice communication would utilize APCO Project-25 - Phase 2 technology digital, which enhances spectrum efficiency by providing two channels per frequency, thereby reducing the number of repeaters needed
- ❖ Additional features include enhanced signal coverage, robust system redundancy, advanced encryption for secure communications, and improved interoperability.
- ❖ Moreover, the Trunking Network leverages a server-based infrastructure, providing scalable, efficient, and centralized management of radio resources for optimal performance and reliability

OPTION-2, con't

- ❖ The transition to a trunked system will unify all communications on a shared, wide-area communications platform.
 - Independent frequencies and systems per department will be eliminated.
 - Scarborough and Old Orchard Beach will share four [4] frequencies.
 - The P25 Phase 2 architecture will support six talk-paths.
 - The four frequencies will be pooled and dynamically assigned by a server during a PTT (Push-To-Talk) request.
 - User radios will be configured with virtual talkgroups tailored to each department's channel requirements.

Why choose the 800 MHz frequency band over the 150 MHz band?

The FCC's 150 MHz VHF frequency band pool allocations are depleted

- The lack of available frequencies in the FCC Public Safety frequency pool to support expanding needs or future requirements in the greater Portland area is a critical issue that poses significant challenges to maintaining reliable and effective communication for public safety operations
- As the Town continues to grow, radio channel congestion will intensify, resulting in communication delays and potential missed calls. This problem becomes particularly critical during emergencies when the demand for reliable communication surges
- With no additional 150 MHz frequencies available to accommodate growth and increased traffic conditions, communication bottlenecks may develop particularly during high-demand situations
- **However, there is sufficient spectrum in the 800 MHz frequency band for Scarborough & Old Orchard Beach**
 - 800 MHz provides better signal penetration inside buildings where 150 MHz cannot
 - 800 MHz is less noisy than the 150 MHz band and is less susceptible to environmental noise
 - 800 MHz band has shorter coverage distances than the 150 MHz band generally requiring more sites
 - 800 MHz may potentially increase interoperability with surrounding towns or mutual aid partners as some are currently migrating to this frequency band

800 MHz Spectrum Availability

NPSPAC – [National Public Safety Planning Advisory Committee] Region-19 oversees the allocation and management of 800 MHz spectrum for public safety entities within the region, which includes Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont. The Committee is made up of public safety communications practitioners from each state.

Eligibility: The town of Scarborough qualifies for obtaining 800 MHz channels under the provisions of Section 90.523 of the FCC's regulations. This section establishes that entities primarily engaged in safeguarding life, health, or property—such as public safety organizations—are eligible to access these frequencies to support their critical communication needs.

Service Area Coverage: Frequencies are granted based on the size of the coverage area and the projected number of radios within that area. The Service Area would be Scarborough and Old Orchard Beach. Moreover, allocated channels are protected by the FCC to mitigate any co-channel interference.

Loading Justification: Agencies are required to demonstrate that they meet or will meet the loading standard of 70 mobile or portable units per channel. A preliminary analysis indicates that four (4) channels should be sufficient [based on call traffic volume], though detailed loading calculations need to be conducted to confirm the exact number of 800 channels required.

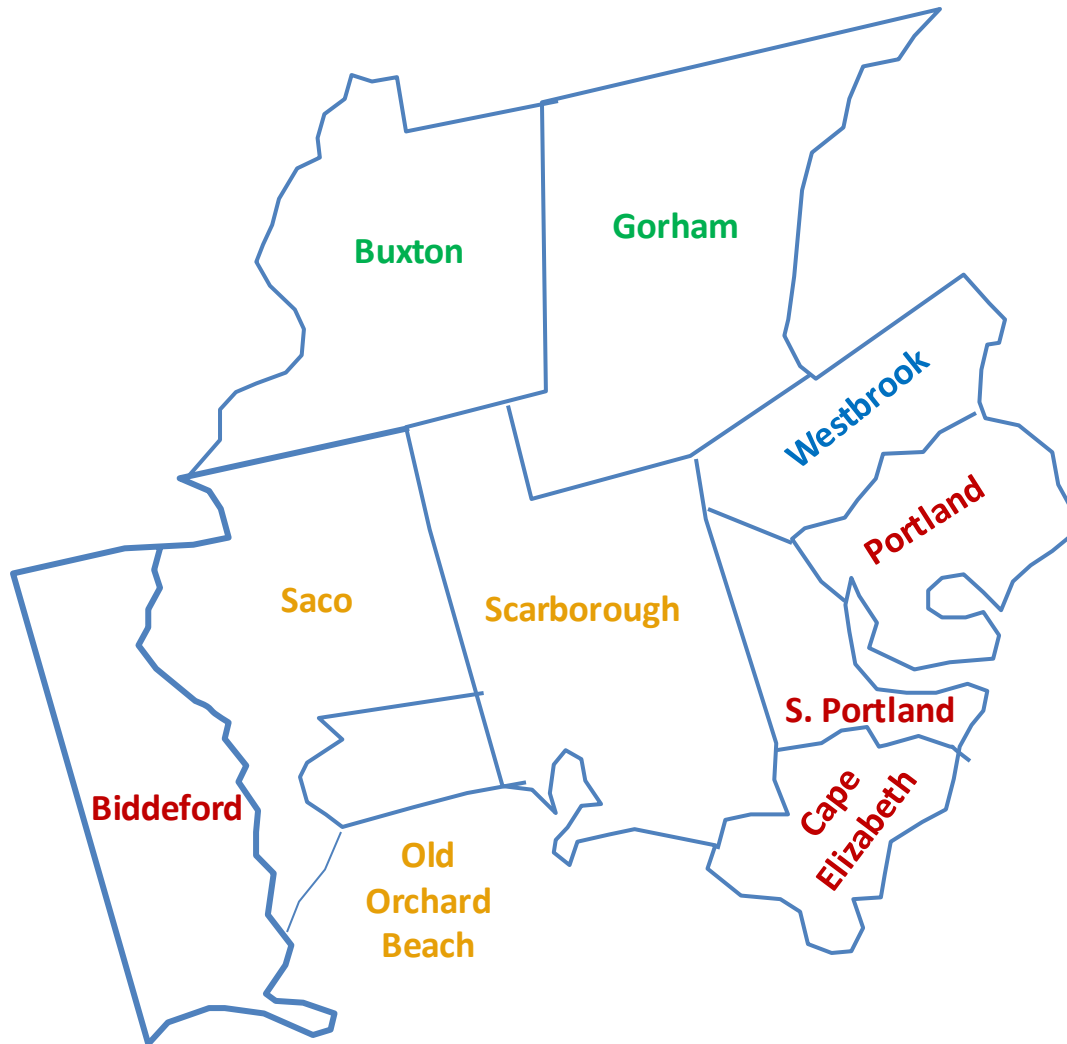
Approval: Once Region-19 approves an application, it is forwarded to the APCO Frequency Coordinator and then filed with the FCC for final authorization and grant.

APCO Project-25¹ Trunked Radio Network

- A Project-25 [P25] trunked radio system utilizing the 800 MHz frequency band is an integrated network designed to provide seamless and reliable communication for public safety and municipal operations within its coverage area
- This system operates on the principles of capacity, interoperability, scalability, and centralized management, ensuring that all components work together cohesively to meet the demanding needs of mission-critical communications
- At its core, a P25 trunked system consists of multiple interconnected sites that function as a unified network
- The network includes transmitter sites, repeaters, and server/controller, synchronized by GPS clocks, all of which are linked via robust IP networking backhaul of microwave or fiber infrastructure
- The network's ability to dynamically allocate available channels ensures efficient use of the radio spectrum, supporting multiple users and agencies simultaneously, and communications without interruptions, even during high-demand scenarios
- Replacing mobile and portable radios for all departments to operate on an integrated 800 MHz trunked radio network is required

¹ P25 (APCO Project 25) is a digital radio standard adopted nationwide by public safety for First Responders and emergency response agencies

Public Safety Communications in Towns Bordering Scarborough and Old Orchard Beach



- ❖ Existing 800 MHz System
- ❖ Planning 800 MHz
- ❖ Existing VHF Analog System
- ❖ Existing VHF DMR System

Migrating to a trunked radio system offers numerous benefits that significantly enhance public safety communications. These advantages include:

- **Virtual Channels** - Trunking removes the requirement for dedicated frequencies assigned to departments by utilizing virtual channels programmed as talkgroups. When an agency requires an additional operating channel or a new agency needs radio communication, the infrastructure is simply programmed with a new talkgroup – no new frequencies are needed
- **Improved Spectrum Efficiency** - frequencies are processor assigned on demand, ensuring optimal use of available frequencies – initially, four [4] frequencies are needed to serve the estimated 800 mobiles & portables in Scarborough and Old Orchard
- **Better Signal Penetration** - if implemented in the 800 MHz band, superior indoor signal penetration compared to lower bands
- **Increased Capacity** - supports a larger number of simultaneous users compared to conventional systems. Easily accommodates additional users or agencies as the network grows
- **Greater Intra-operability** - facilitates coordinated responses during multi-agency incidents or emergencies
- **Priority Call Handling** - critical calls or radios can be prioritized, ensuring that emergency communications are not delayed

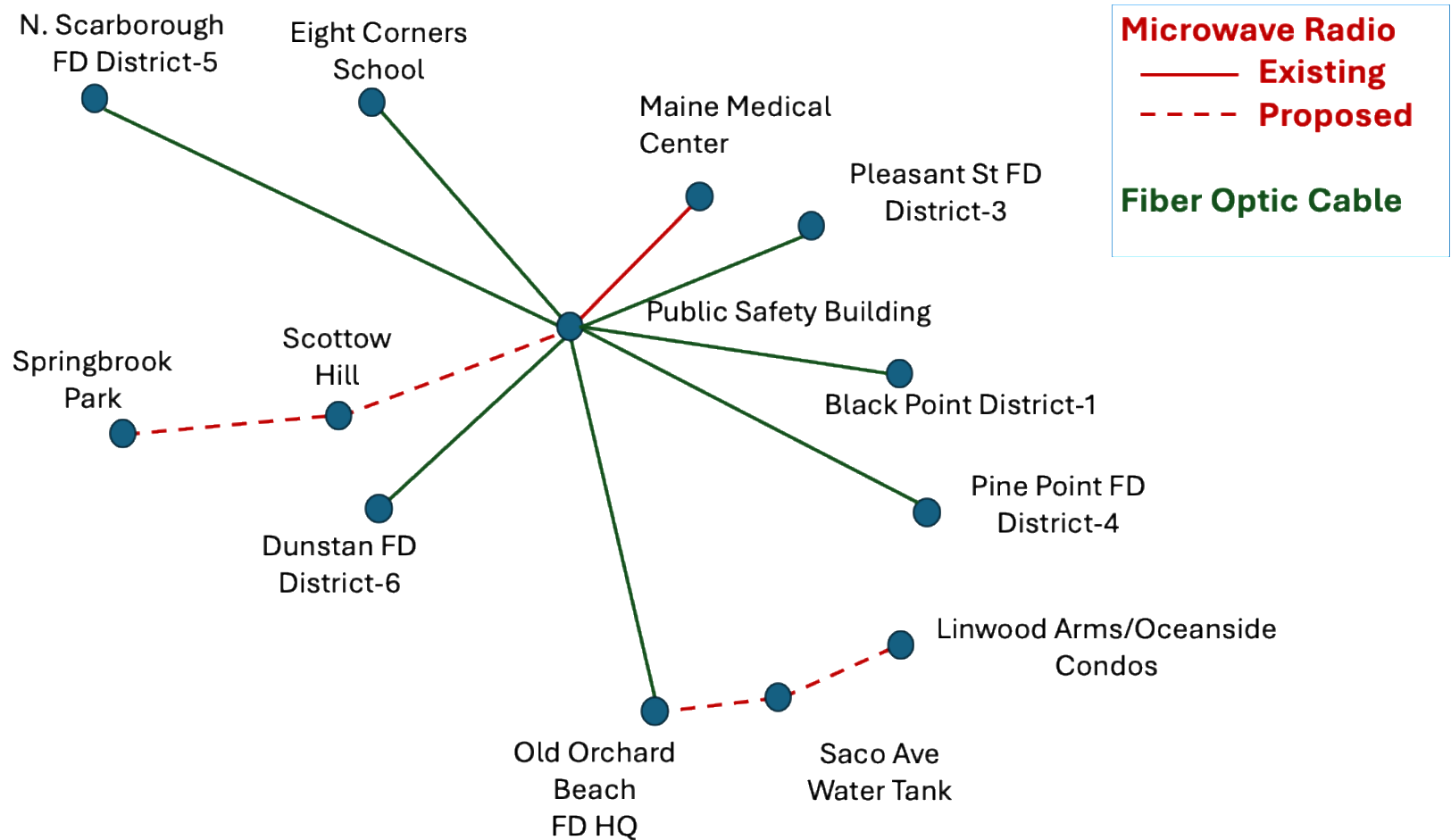
- **Over-the-Air Programming** - allows remote updates and configuration changes of mobile and portable radios, reducing maintenance downtime or on-site technician to program radios
- **Future-Readiness** - trunked systems can integrate with emerging technologies, such as LTE and 5G, for enhanced capabilities
- **Cost-Effectiveness** - shared resource, multi-agency systems distribute costs while providing robust functionality to all its users

Migrating to a trunked radio system positions public safety and municipal agencies to operate more effectively, increase capacity for future growth, adapt to evolving challenges, and deliver faster, more reliable communication when it matters most.

Coverage Design Concept

- The coverage design goal is to ensure reliable communication for the "worst-case" scenario, such as a handheld portable radio worn at hip level inside a residential building – note that this scenario implies excellent mobile communication within the jurisdiction
- Coverage for larger structures, such as schools, small apartment buildings, small to medium multi-story businesses, medical offices, or office buildings, will depend on their construction or their distance from the nearest transmitter site
- Coverage for 'critical buildings', or large enclosed shopping malls, buildings with extensive internal rooms or walls beyond their exterior walls, medium to large hospitals, government facilities, substantial concrete or steel structures, and high-density buildings often presents unique challenges. These buildings may require additional planning, enhanced infrastructure, or specialized equipment to ensure reliable communication throughout all areas, including deep interior spaces and locations with significant structural interference
- Note that most vendors will exclude coverage guarantees in sub-terranean levels, elevators, enclosed staircases

800 MHz System Diagram



Analysis and Recommendations for Mission-Critical Communications

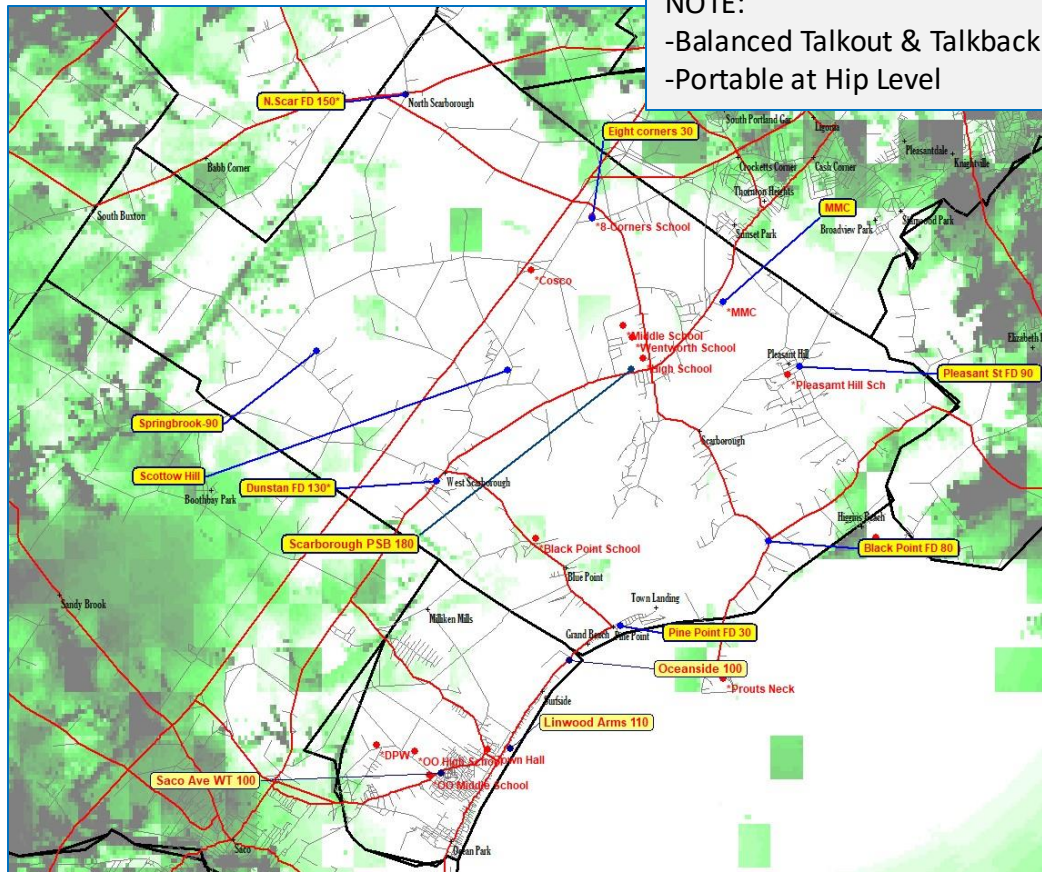
800 MHz Coverage Design Concept Portable Coverage Map - Inside Residential Buildings

Coverage Inside an
average residential
building

In-Street
Coverage

No
Coverage

NOTE:
-Balanced Talkout & Talkback
-Portable at Hip Level



Scarborough – Old Orchard Beach

800 MHz APCO Phase-2 Trunked Radio Network

- Integrated wide-area system
- Protected 800 MHz frequencies
- Thirteen [13] transmitter sites
- Transmitter simulcast & receiver voting techniques
- Four [4] RF channels per site
- Departments no longer have their own frequency, virtual talkgroups are programmed per department requirements
- Fiber & Microwave connectivity to the Dispatch Center

Summary of Other Infrastructure Upgrades – 1 of 3

❖ Upgrade Scarborough infrastructure to improve in-street and building coverage – migrate to 800 MHz Trunked Radio Network

- Convert appropriate Scarborough receive-only sites for transmit and receive
 - ✓ Some locations may require upgraded or expanded equipment room space and electrical power upgrade
 - ✓ New transmit/receive sites include:
 - Black Point, Pine Point, Pleasant Hill, Dunstan, N. Scarborough, MMC, Springbrook, Scottow Hill, Eight Corners
- Install a new 130' tower at the Dunstan Station
 - Will be required to provide coverage in NW part of Old Orchard Beach
- Continue to utilize the existing fiber backhaul in Scarborough and Old Orchard
 - ✓ New sites will be interconnected with microwave links
 - New hops include PSB to Scottow; Scottow to Springbrook
- The three Fire Stations equipped with flagpole monopoles may not be capable of supporting additional antenna loads due to their light-duty design and uncertain structural integrity.
- Option pricing is included for replacement however, structural analysis will be conducted first to determine structural integrity

Summary of Other Infrastructure Upgrades – 2 of 3

❖ Upgrade Old Orchard Beach infrastructure to improve in-street and building coverage - migrate to 800 MHz Trunked Radio Network

- Relocate OOB FD HQ radios and antennas to the Saco Ave Water Tank
 - ✓ Negotiate lease equipment and antenna space with the appropriate tower owner
- Implement two new Old Orchard transmitter sites on two buildings on Grand Ave: Oceanside Condo and Linwood Arms Condos
 - ✓ Negotiate lease equipment and antenna space with the appropriate building owner
- Requires coverage from the Scarborough Dunstan Station site for coverage in NW part of town
- Provide microwave connectivity to OOB new sites

❖ Obtain New Mobiles and Portable Radios for all Department migrating to the new system for both Towns

- Legacy VHF equipment can not operate on the 800 MHz infrastructure. All new radios are needed for each department migrating to the proposed Trunked system
- Subscriber radios for Public Safety departments should be dual-band [150 & 800] and capable of supporting analog, P25 digital, and Trunked Radio operations for seamless mutual aid communication. For DMR functionality, a second radio is required unless Kenwood radios are chosen, as they can be programmed to accommodate all necessary features.

Summary of Other Infrastructure Upgrades – 3 of 3

❖ **Replace the existing Communications Dispatch Console at Scarborough Dispatch and ancillary equipment**

The replacement of console furniture is also included

❖ **DC Power Supply**

New infrastructure equipment will be 100% powered by 48-volt DC battery/rectifier system with at least 4-hours of backup; this allows reserve power in the event the generator does not start or is out of fuel

❖ **Alarm Monitoring**

- The proposed infrastructure will employ performance - type surveillance and site alarm monitoring of various equipment or conditions at the remote tower sites.
- Instantly identifies equipment problem

❖ **Upgrade transmitter site grounding**

Recommend that a grounding and surge protection audit be conducted at all sites for effectiveness

How is Interoperability and Mutual Aid Communications Managed? 1 of 2

- Scarborough and Old Orchard currently utilize VHF conventional analog radio systems
- Scarborough and Old Orchard are situated between areas with varying communication frequencies. The surrounding towns operate on different frequency bands and employ diverse system architectures, such as trunked or conventional radio systems. More recently, the adoption of different digital voice modulation techniques has added another layer of complexity to interoperability efforts
- Digital radio technology is available in two primary formats: P25 and DMR, which are not compatible with one another. After extensive analysis and testing, the Association of Public-Safety Communications Officials (APCO), representing federal and local public safety agencies across the nation, adopted APCO Project 25 (P25) as the standard for public safety digital communications. In contrast, DMR, developed by a European consortium, is predominantly utilized in business and utility communications

How is Interoperability and Mutual Aid Communications Managed? 2 of 2

- Within the greater Portland area, the following conditions exist:
 - Portland, South Portland, and Cape Elizabeth operate on a regional APCO P25 800 MHz system manufactured by Motorola
 - Biddeford recently implemented a Motorola APCO P25 800 MHz system
 - Saco has secured 800 MHz frequencies, and the Police Department is preparing to transition to an 800 MHz conventional P25 system, with the Fire Department potentially joining at a later date. In the future, both departments may integrate into the Biddeford trunked system.
 - Westbrook is also VHF but utilizes DMR digital
 - Gorham is VHF analog similar to Scarborough and Old Orchard
- Subscriber radios can be purchased with multi-band capability, trunked or conventional, P25 digital and/or analog for seamless mutual aid communication by purchasing software licenses for each functionality
- Once an infrastructure solution is selected, additional discussions with each department will be required to develop cost-effective regional interoperability strategies. It is important to note that Kenwood is the only manufacturer capable of providing the previously described functionality as well as DMR. Other manufacturers will require a second radio if DMR is required

Budgetary Cost Estimates – Option-1

Scarborough / Old Orchard VHF Conventional Radio Network

ITEM	Cost Estimate
800 TRUNKED RADIO INFRASTRUCTURE	\$2,250,000.00
DISPATCH CONSOLE	\$555,000.00
MICROWAVE RADIO	\$300,000.00
SITE IMPROVEMENTS	\$375,000.00
SERVICES	\$1,552,500.00
5% CONTINGENCY	\$483,460.00
INFRASTRUCTURE TOTAL	\$5,515,960.00
SUBSCRIBER TOTAL	\$4,216,700.00
GRAND TOTAL	\$9,732,660.00
Annual Maintenance Costs: \$95,000.00	
OPTIONS	\$420,000.00

Notes:

1. Each radio system remains the same but with expanded coverage
2. Subscribers can be P25 or analog per department preference
3. Mobile and portable radios for Public Safety will be encrypted multiband [VHF, UHF, 800]
4. Municipal department's radios will have lower-priced single-band VHF radios

Budgetary Cost Estimates – Option-2

Scarborough / Old Orchard 800 MHz P25 Trunked Radio Network

ITEM	Cost Estimate
800 TRUNKED RADIO INFRASTRUCTURE	\$3,659,000.00
DISPATCH CONSOLE	\$555,000.00
MICROWAVE RADIO	\$300,000.00
SITE IMPROVEMENTS	\$657,500.00
SERVICES	\$2,257,000.00
5% CONTINGENCY	\$646,153.00
INFRASTRUCTURE TOTAL	\$8,074,653.00
SUBSCRIBER TOTAL	\$5,090,300.00
GRAND TOTAL	\$13,164,953.00
Annual Maintenance Costs: \$110,000.00	
OPTIONS	\$420,000.00

Notes:

1. Infrastructure is for a 13-site, 4-channel 800 MHz Simulcast P25 Trunked radio network
2. OPTIONS represents the replacement of Black Point, Pleasant Hill, and Springbrook light-duty monopoles should they fail structurally
3. Mobile and portable radios for Public Safety will be encrypted multiband [VHF, UHF, 800]
4. Municipal departments radios will have lower-priced single-band [800] radios

Analysis and Recommendations for Mission-Critical Communications

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Scarborough and Old Orchard Beach Subscriber Inventories

		Mobile	Portable	Pager	Control Stations	Base Station	SCADA
Scarborough	Buses	35	2				
	Community Services	4	19				
	Fire Dept	53	227				
	Public Works	17	41				
	Police Dept	35	84				
	Sanitary District		4		21	1	20
	Schools		153				
	SUBSCRIBER TOTALS	144	530	0	21	1	20
	SCAR TOTAL	716					
OOB	Fire Dept & Lifeguards	18	50				
	Police Dept	15	50				
	Public Works	24	2		1		
	Schools & Busses	16	47				
	Waistwater	0	0				10
	SUBSCRIBER TOTALS	73	149	0	1	0	10
	OLD ORCHARD BEACH TOTAL	233					
GRAND TOTAL		217	679	0	22	1	30
		949					

Analysis and Recommendations for Mission-Critical Communications

CURRENT FCC FREQUENCY AUTHORIZATIONS

Scarborough

Department	Call Sign	TX-freq	RX-freq
Buses	WQNN497	153.1475	153.1475
Community Services	WPOZ473	153.9950	153.9950
Fire Dispatch	KNGL859	154.1300	159.0900
Fire Tactical	WPBR667	155.7750	155.7750
Police Dispatch	WPJL702	160.1250	155.4150
Police Tactical	KXB473	155.5200	155.5200
Public Works	WNWA334	153.9650	155.0250
Sanitary District SCADA	WQDD455	451.2125	456.2125
Sanitary District VOICE	WNPR900	453.2000	458.2000
School Buses	WPNV918	153.9050	153.9050
High School	WQSW877	451.4500	456.4500
Schools		451.3875	451.3875
		452.1125	452.1125
		451.7625	451.7625
		451.3125	451.3125
		451.2875	451.2875

Scarborough and Old Orchard Beach have several FCC authorizations for the use of frequencies within their jurisdictions

NOTE

The tables show the main frequencies used by both towns; more detailed information is provided in a separate spreadsheet

Old Orchard Beach

Department	Call Sign	TX-freq	RX-freq
Fire	KCH615	154.2500	159.0450
Fire TAC	WQFS946	154.3400	154.3400
Police	WQCS823	155.0100	156.0375
Public Works	KXI881	155.9250	155.9250
Waste Water	WQEU912	158.7675	158.7675
Waste Water Pumps	WQKZ402	458.6125	458.6125

Analysis and Recommendations for Mission-Critical Communications

Scarborough – Old Orchard Beach Transmitters Radio Sites

SITE	FUNCTION	Fiber to SPSB	LAT	LON	FCC ASR No.	TWR TYPE	TWR HT [ft]	Comment
SCARBOROUGH								
Black Point FD Dist-1	Control Station only	X	43 33 26.4	70 18 15.3	1248584	Monopole	80	
Dunstan FD Dist-6	Control Station only	X	43 34 07.3	70 23 2.9		Roof	30	
Eight Corners School	PD, FD receive-only	X	43 37 07.4	70 21 0.3		Roof	30	Receiver audio voter at PSB
Maine Medical	PD, FD receive-only		43 36 09.1	70 18 57.9		Roof	75	Microwave link to PSB; has transmitters & GPS for simulcast
North Scarborough FD Dist-5	PD, FD receive-only	X	43 38 30.5	70 23 54.4		Lattice tower building side mount	50	Receiver audio voter at PSB
Pine Point FD Dist-04	PD, FD receive-only	X	43 32 28.6	70 20 33.9		Roof	30	Receiver audio voter at PSB
Pleasant Hill FD Dist-3	PD, FD receive-only	X	43 35 25.4	70 17 46.2		Monopole	70	Receiver audio voter at PSB
Scar High School	School Repeater		43 35 30.7	70 20 12.9		Roof	45	
Scarborough PSB	Prime site**	X	43 35 23.1	70 20 24.1	1311352	Self-support tower	180	FAA clearance at 200'
Scottow Hill	Microwave relay		43 35 22.6	70 22 10.5	1007523	Guyed tower	260	
Springbrook	PD, FD receive-only		43 35 35.7	70 25 17.9	1250559	Monopole	90	Receiver audio voter at PSB ; antenna roof mounted at 15'
OLD ORCHARD BEACH								
Fire Headquarters	Prime site**	X	43 30 49.8	70 23 27.3		Roof mounted tower	65'	
Town Hall	PD receive-only		43 31 04.3	70 22 38.5		Roof	30'	
Public Works	PD receive-only		43 31 07.2	70 24 22.2		Lattice tower building side mount	40'	