



# Radio Network Assessment and Needs



Board of  
Supervisors

October 22, 2019

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TECHNOLOGY CONSULTING

# Agenda

- System Overview
- Systemwide Needs
- Public Safety Communications Microwave/Radio Plan
- Funding Needs
- Summary

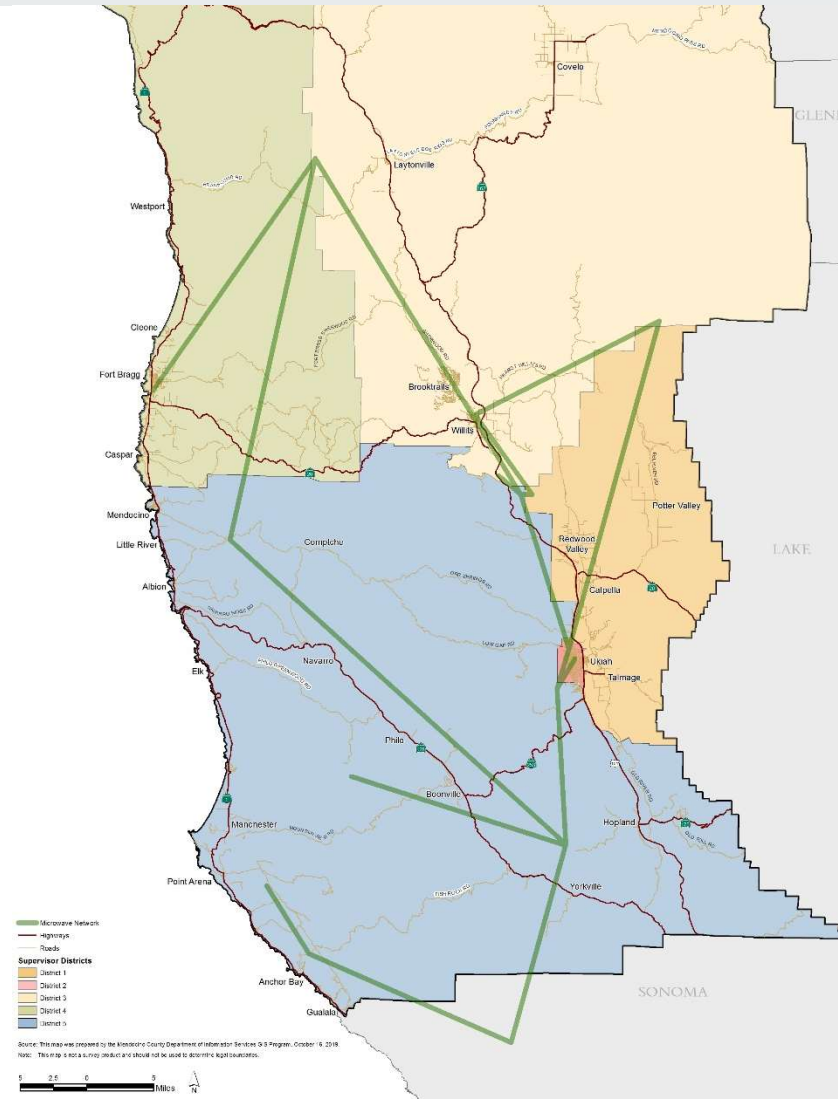


# System Overview

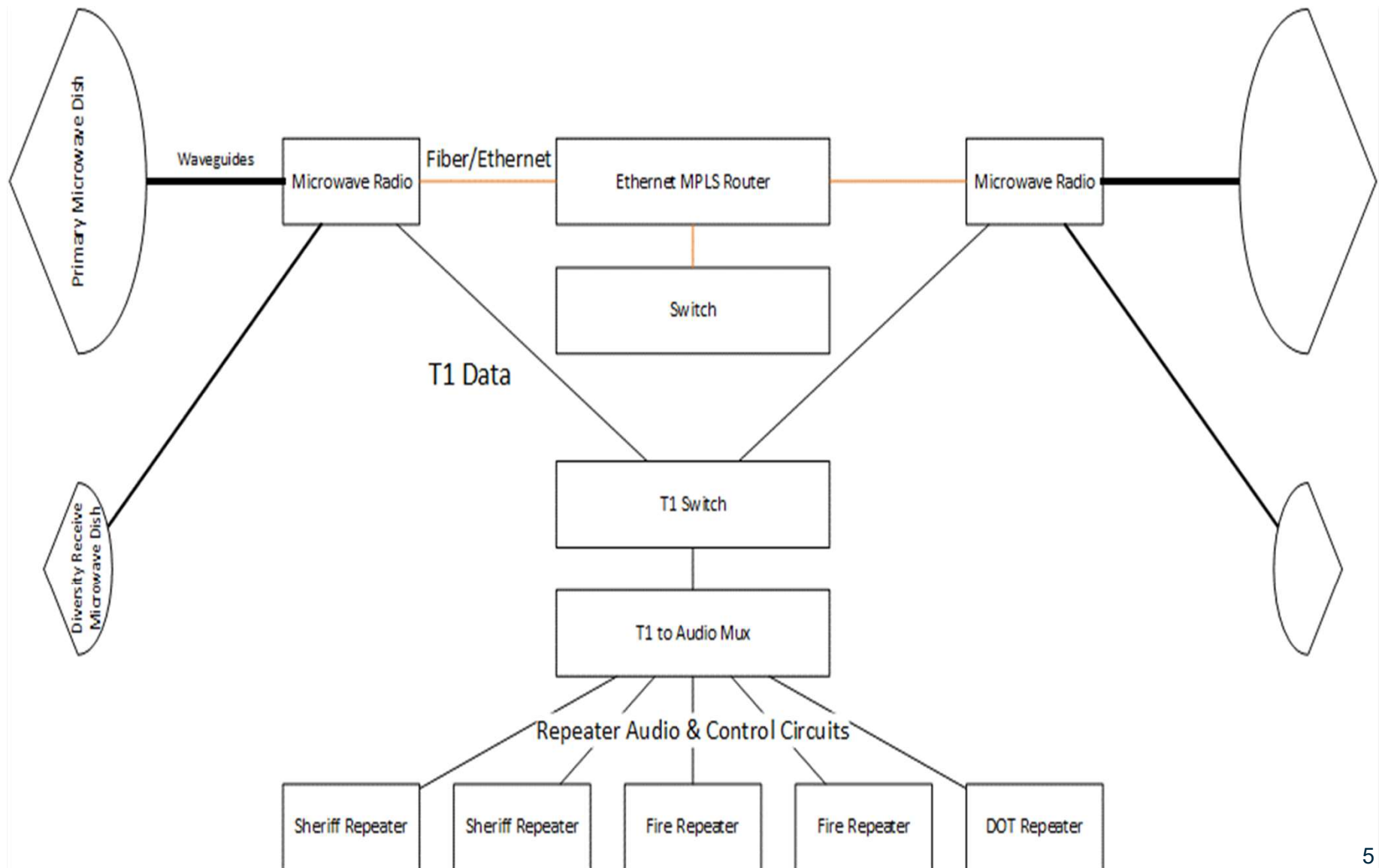
Current and  
Future  
State

# Topology

- Current Microwave Configuration – 16 Sites



# System Overview



# Agencies Supported

## Agencies Using County Radio

- Mendocino County Sheriff
- County Fire Dispatch
- County Fire Command (First Responders)
- Sonoma County Sheriff
- Ukiah Police
- Willits Police
- Ft Bragg Police
- California Highway Patrol
- Dept. of Fish & Wildlife
- Dept. of Parks and Recreation
- CALFIRE
- County Dept of Transportation
- Anderson Valley Fire
- Redwood Coast Fire
- South Coast Fire
- Sonoma REDCOM Fire/Medical Dispatch
- Sonoma Control Medical/Fire Tac
- USAF Auxiliary Civil Air Patrol
- US Forest Service Fire/Law/Admin
- Bureau of Land Management

## Data

- ALL COUNTY agencies/departments
- Fort Bragg Police
- Ukiah Police
- Willits Police

# Failures are Increasing

## First Responders Affected by Outages

- Law Enforcement
- Fire
- EMS

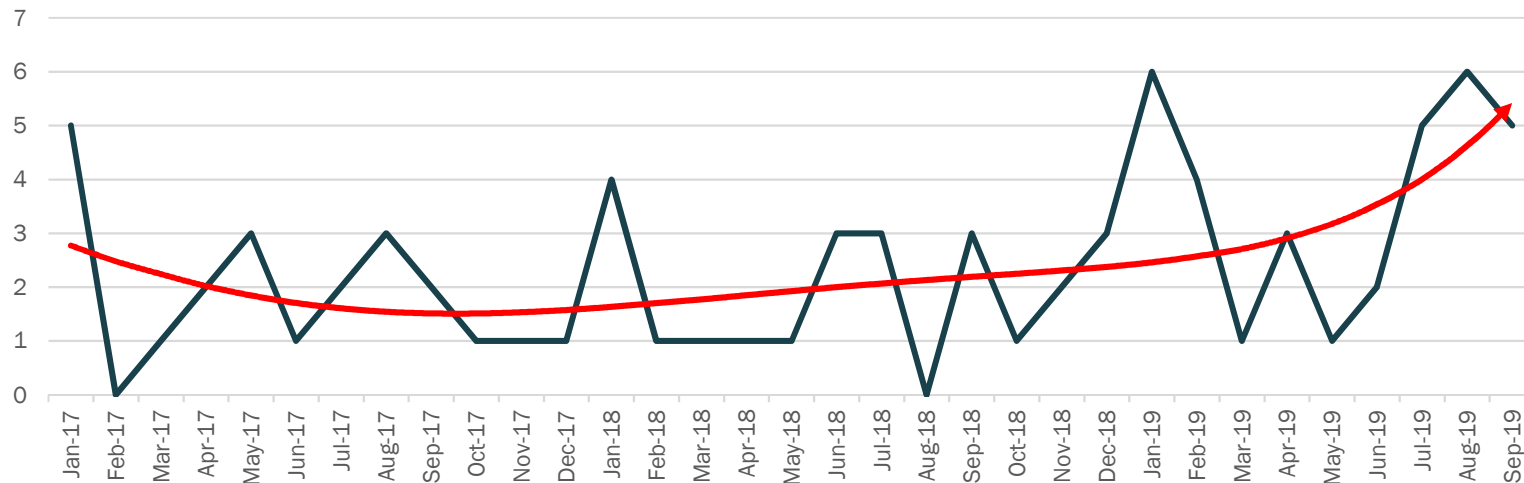
## Impacts

- Complete Loss of Communications
- Loss of County Data Network
- Loss of Resiliency and Backups

## • Loss of Communications:

- Public safety
  - Sheriff
  - Fire
  - EMS
  - Police
- County Facilities
- Dispatch

Number of Failures 2017 -2019



# System Needs

Necessary  
Improvements

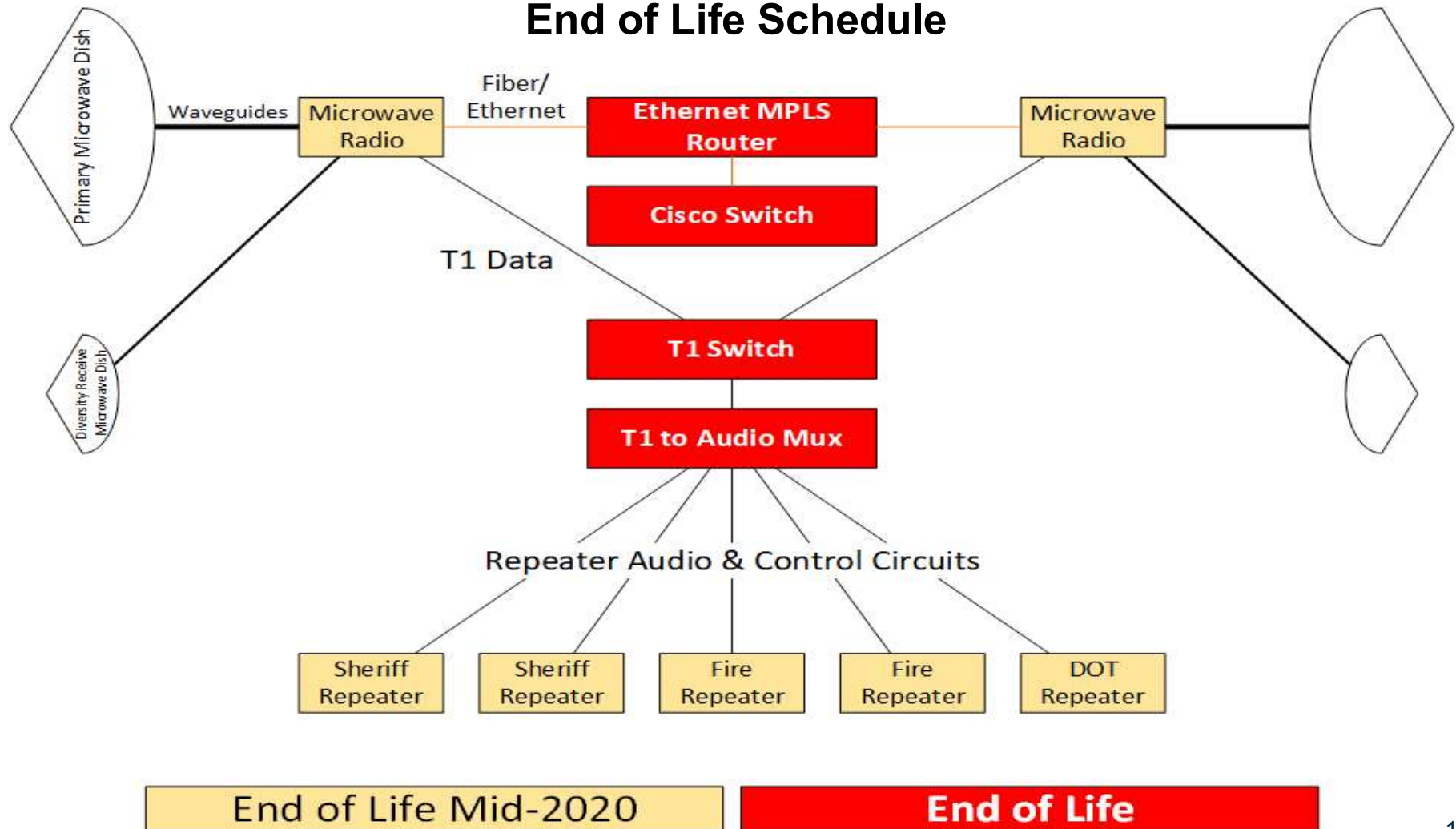


# System Wide Needs

- All Microwave, Radios and Repeaters *End of Life mid-2020*
  - Spare parts are difficult to obtain
- Dispatch Console *End of Life*
- 90% of Patrol car radios *End of Life*
- Additional Resiliency needed in coastal areas
- Significant Facilities needs countywide
  - Facility cooling/heating
  - Generators
  - Electrical
  - Tower inspections
  - Dispatch basement suitability issues

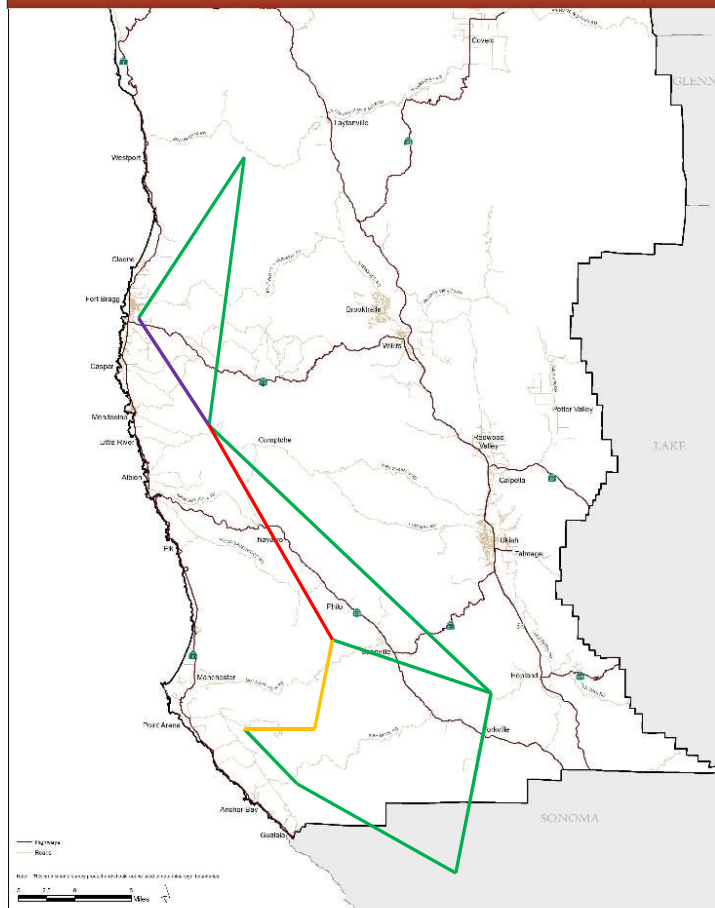
# Significant Microwave Radio Needs

## End of Life Schedule



# Microwave Resiliency Needs

Microwave connectivity upgrades needed to close the communication loop



- Current Microwave Communication does not provide adequate redundancy
- Creates a reliable and redundant radio communication network
- Improved resiliency in the event of disaster
- Close Fort Bragg loop

- Existing Site Connectivity
- Phase 1
- Phase 2
- Phase 3

# Sheriff Dispatch Console

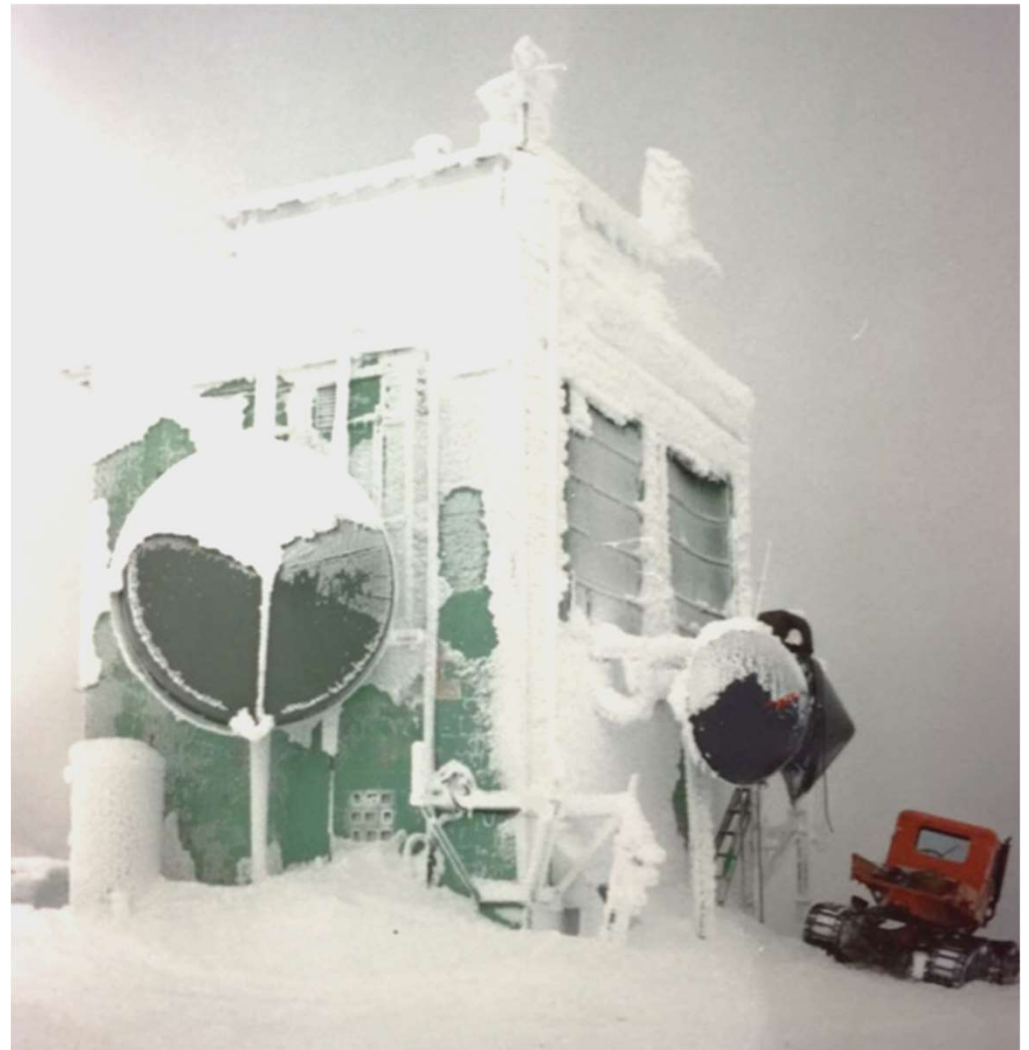
## Sheriff Dispatch Console

- Equipment installed in 1990
- Antiquated technology
- All components End of Life
  - No support & replacement parts almost impossible to locate.





# Severe Weather Conditions



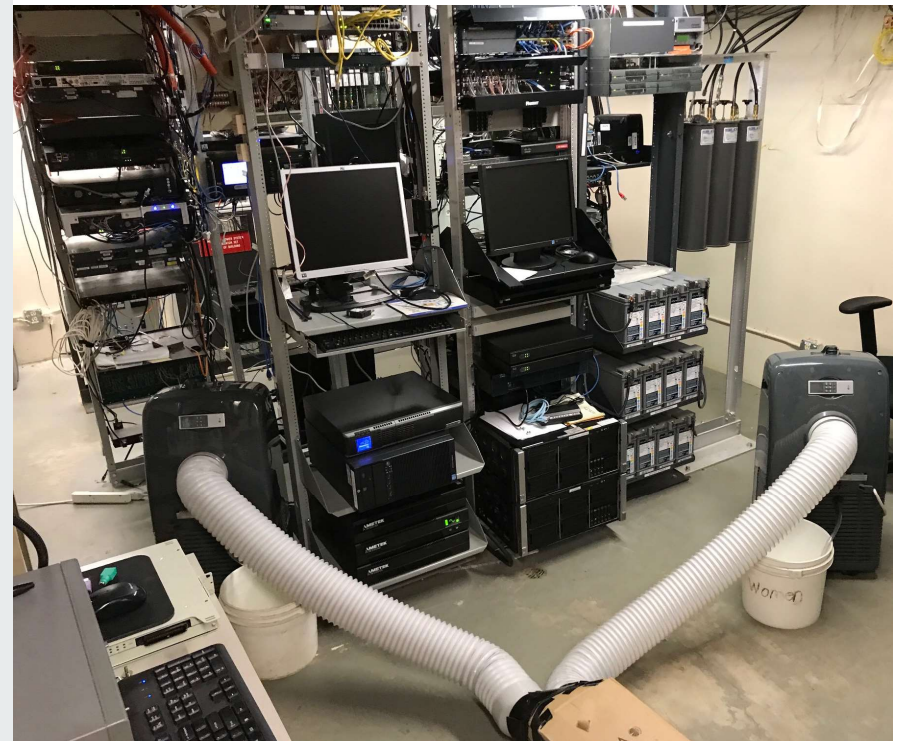
# Significant Facilities Needs





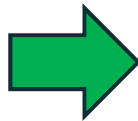
# Significant Facilities Needs

- Structure
  - Replacement/Repair/Maintenance
    - Cooling
    - Electrical
    - Roof replacements/sealing
    - Water penetration
      - Equipment requires protective tarps
- Sanhedrin power lines
- Dispatch basement not suitable for equipment



# Significant Facilities Needs

- Generator Upgrades Needed
  - 6 sites running residential grade generators
  - Delays in getting emergency operations areas up and running in the event of an emergency due to power outages
- UPS Replacements
  - Power Failure can result in loss of legacy equipment

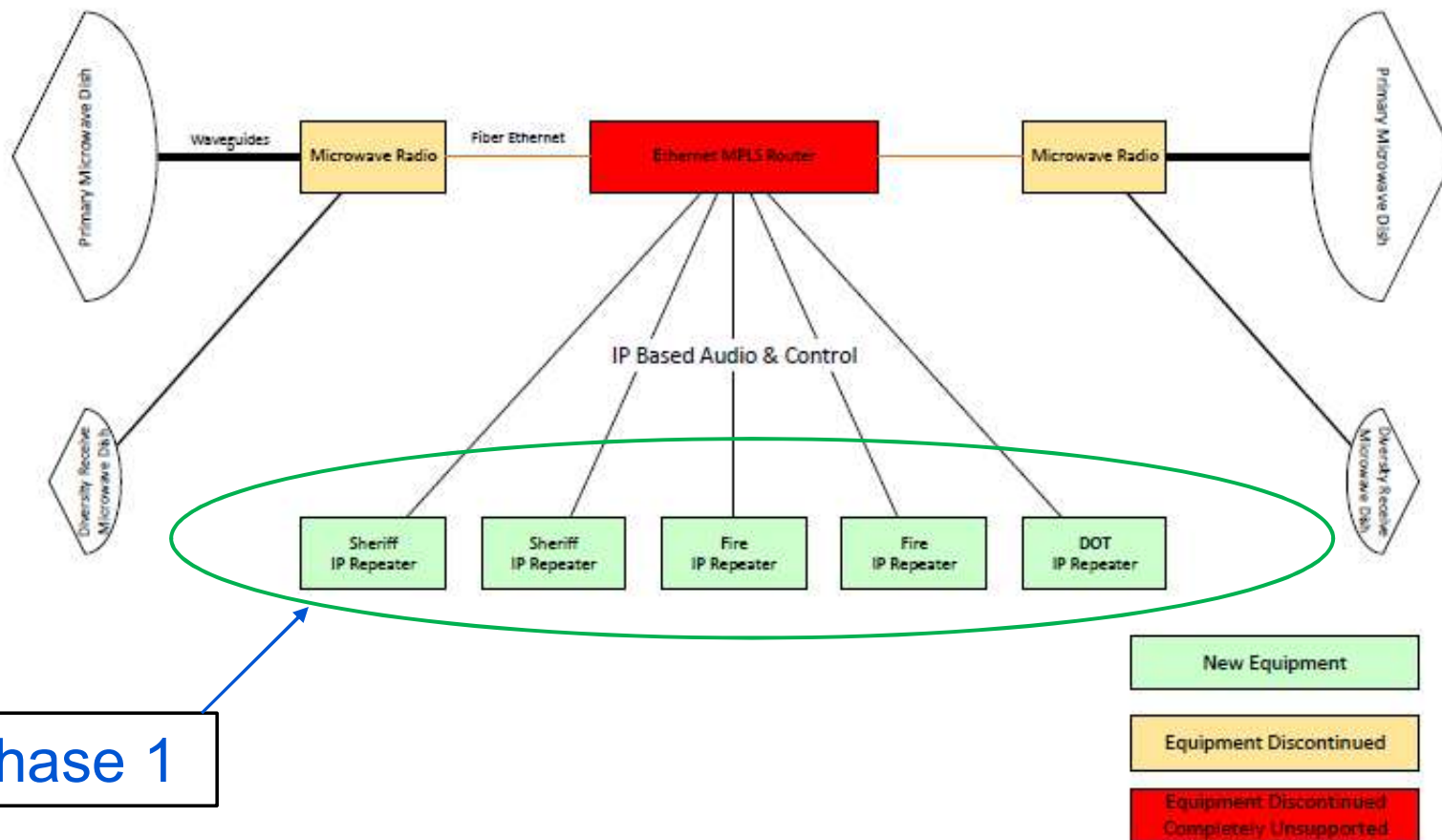




# Microwave/Radio Upgrade Plan

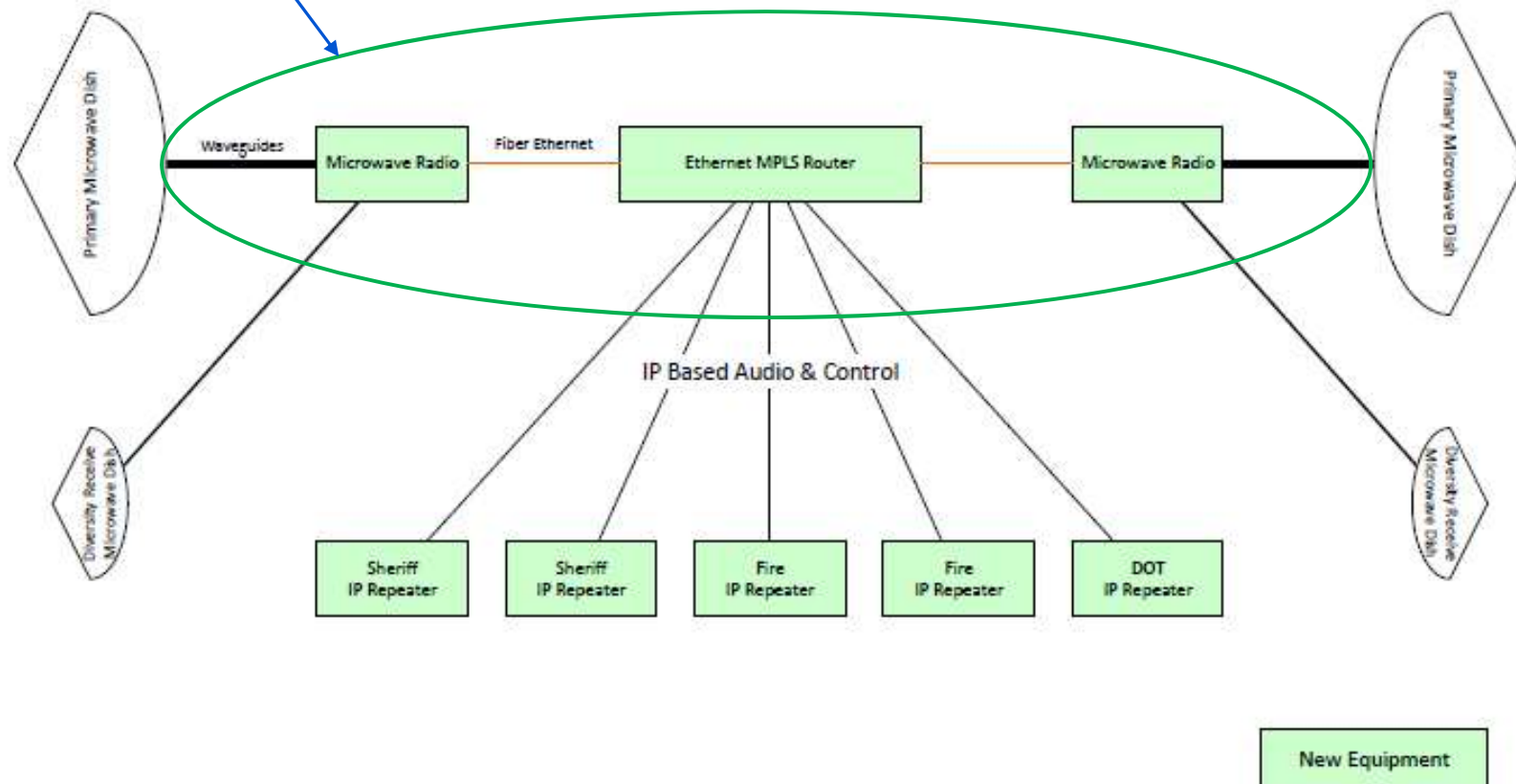
Radio  
Improvements

# Microwave Radio Upgrade Plan



# Microwave Radio Upgrade Plan

## Phase 2



# Funding Needs

The Big  
Picture

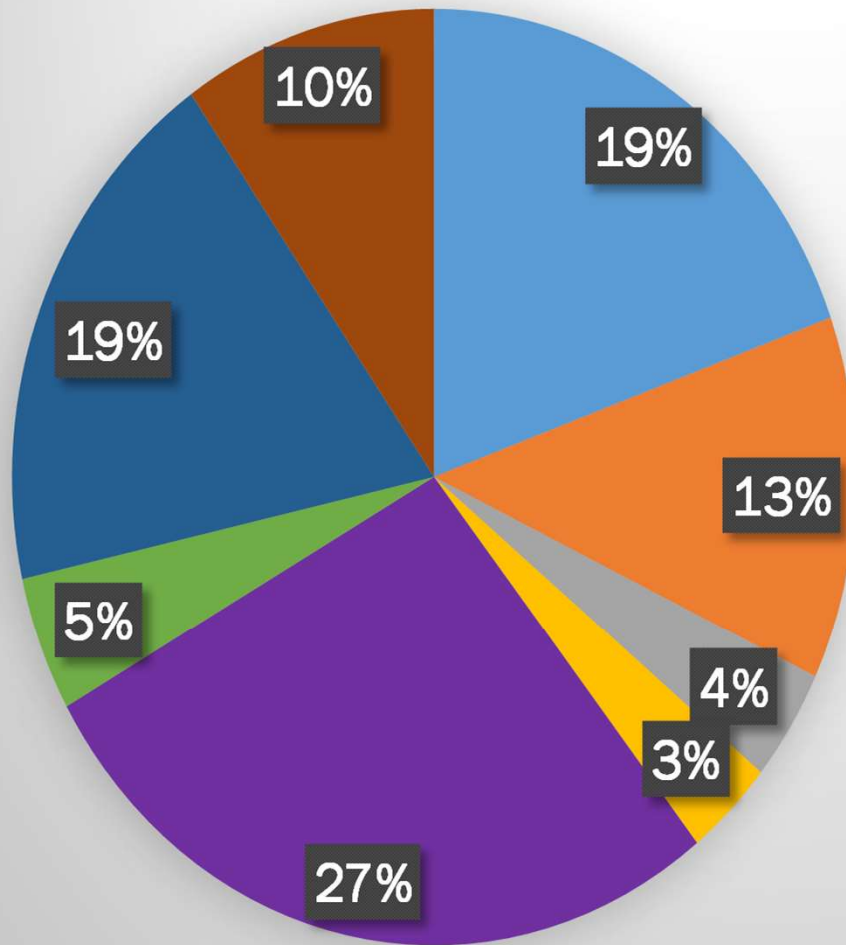
# Estimated Costs

<b>Repeaters Phase 1</b>	Replace and improve communication stability and resiliency	\$1,600,500
<b>Microwave and Switching - Phase 2</b>	Network speed increases by 3x over the current speed to meet demands	\$4,000,000
<b>Dispatch Console</b>	Console upgrade and ongoing support	\$1,000,000
<b>Sheriff's Patrol Car Radios</b>		\$250,000
<b>Resiliency</b>		
Point Arena	Remaining costs after \$250k equipment funding grant applied – Deadline for completion Apr-2020	\$375,000
Fort Bragg	Close the loop to add redundancy	\$1,000,000
<b>Facilities</b>		
Generator Upgrades		\$590,000
HVAC/Power	*Need to obtain cost estimates	\$500,000
Buildings	*Need to obtain cost estimates	\$1,500,000
Replace 7 miles of power poles to Sanhedrin	*Need to obtain cost estimates	\$500,000
		<b>\$11,315,500</b>

\*Radio Network Assessment identified significant facilities needs. These are budgetary estimates only. Facilities related cost estimates to be obtained if funded by the Board.

# Radio/Repeater – Phase 1

Budgetary Total - \$1,600,500



- Fire Agencies - \$311,662
- County Sheriff - \$201,151
- County D.O.T. - \$61,617
- EMS MED NET SYSTEM - \$54,383
- System Wide - \$440,604
- Sheriff Dispatch - \$74,832
- Maintenance & Support (5 years) - \$300,000
- Hardware, Software & Engineering - \$156,251

# Funding Needs Summary

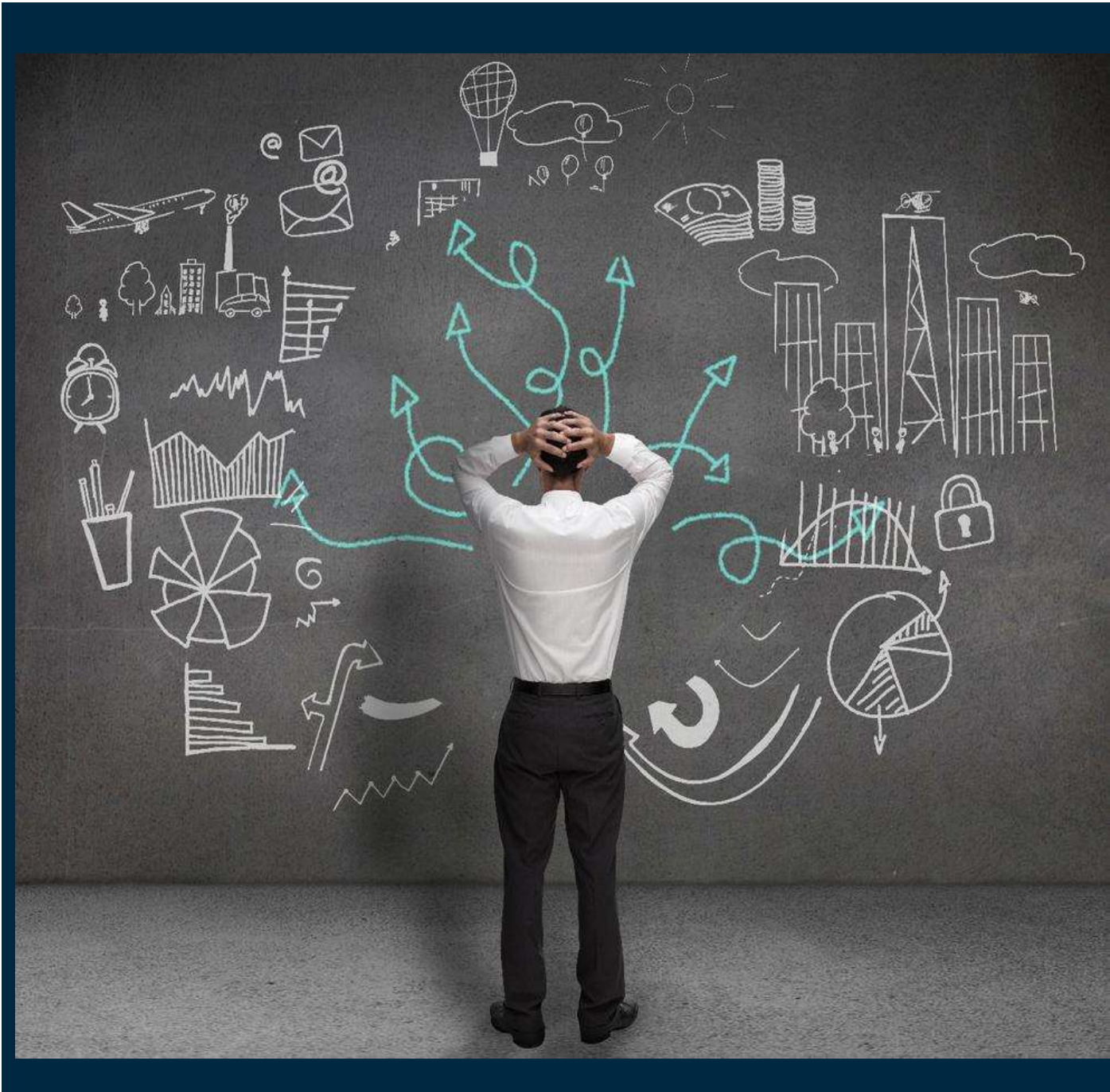
<b>Immediate Need</b>	Radio repeaters & Point Arena Radar expansion	Radio repeater upgrades and Point Arena grant fulfillment	\$1,975,500
<b>Critical Need</b>	Microwave & Facilities	Replace EOL microwave equipment, critical facilities repairs and repair leaking roofs	Microwave - \$4,000,000 *Facilities - \$1,500,000
<b>Critical Need</b>	Sheriff's Dispatch Console	Replace 20+ year old dispatch console	\$1,000,000
	Generators and HVAC/Power Needs	Replace old inadequate generators, repair power poles	\$1,590,000
	Microwave Redundancy	Add Fort Bragg into the loop for backup and resiliency	\$1,000,000
Sheriff Operational Need	Sheriff's Patrol Car Radios	Radios are EOL and need replaced	\$250,000
		<b>Funding Needs Total</b>	<b>\$11,315,500</b>

\*Facilities related cost estimates to be obtained if funded by the Board.

# Summary

- Public safety communications microwave and radio system is end of life
- Options for upgrade and replacement
  - Phased approach (recommended)
  - Total project
- Identified Related capital project facilities improvements, repairs and possible replacement





Questions?

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