THE BOARD OF SUPERVISORS OF THE COUNTY OF STANISLAUS
ACTION AGENDA SUMMARY

DEPT: CEO-Office of Emergency Services/Fire Warden **BOARD AGENDA #** B-7

Urgent ☐ **Routine** ☒ **AGENDA DATE** July 25, 2006

CEO Concurs with Recommendation YES ☒ **NO** ☐ **4/5 Vote Required YES** ☐ **NO** ☒
(Information Attached)

SUBJECT:

Acceptance of a Presentation on the Regional Interoperable Communication Project

STAFF RECOMMENDATIONS:

Accept the informational presentation on the Regional Interoperable Communication Project.

FISCAL IMPACT:

Phase I of the Regional Interoperable Communication Project was funded by $180,000 of local support and grant funding. Total funding need for Phases II and III is estimated at over $1 million. Total budget for Phases I and II is $1,204,404. Partial funding of $519,164 has been identified through the Homeland Security Grants administered through the Stanislaus County Operational Area through the Office of Emergency Services.

BOARD ACTION AS FOLLOWS:

No. 2006-597

On motion of Supervisor Mayfield , **Seconded by Supervisor** Grover
and approved by the following vote,
Ayes: Supervisors: O'Brien, Mayfield, Grover, DeMartini, and Chairman Simon
Noes: Supervisors: None
Excused or Absent: Supervisors: None
Abstaining: Supervisor: None

1) X **Approved as recommended**
2) _____ **Denied**
3) _____ **Approved as amended**
4) _____ **Other:**
MOTION:

ATTEST: Christine Ferraro **CHRISTINE FERRARO TALLMAN, Clerk** **File No.**

DISCUSSION:
The Stanislaus Operational Area identified a critical need to upgrade and enhance public safety communications. Most importantly, interoperable regional communications between public safety agencies are inadequate. Through support with local funding and initial funding through the Homeland Security Grants, individual efforts by law enforcement and fire agencies began addressing interoperable communication issues. The Sheriff's Department purchased $75,000 in interoperable equipment through the grants while the fire service funded $55,000 toward the Fire Frequency Sharing project. The City of Modesto spent $50,000 to begin an overall upgrade of the law enforcement radio system.

Stanislaus Regional 911 (SR911) acts as a central coordination point for both law enforcement and the fire service's interoperable communication projects. Staff from SR911 began noting the overlapping goals and needs of the individual projects and, with cooperation from the lead agencies, developed a phased, overarching plan to address interoperable communication needs throughout Stanislaus County. Through meetings of the Homeland Security Work Group, the needs for Public Health have been incorporated with this plan.

The first phase of the plan consisted of the interoperable communication system, beginning of the fire frequency sharing project and equipment for Modesto Police Department. The initial phase is 75% complete. The itemized detail of Phases II and III of the plan is presented here. The total cost for Phases II and III is estimated at $1,204,404. A reallocation of funds in the amount of $519,164 to support this project is proposed for the Fiscal Year 2005 Homeland Security Grant Program. The need for an engineering study to design the future system and migration path is identified as part of Phase III. In the Fiscal Year 2006 Homeland Security Grant Program application, $200,000 is requested to fund this study. The projects identified in these two phases are necessary to future interoperable communications in Stanislaus County and will act as the basis for future phases recommended by the engineering study.

POLICY ISSUE:
The Board may wish to evaluate whether support of this project would support and enhance the Board's priorities of a safe community and efficient delivery of public services.

STAFFING IMPACT:
There is no staffing impact associated with this item.

Inter-Op Proposed Radio System and Build Out Plan

The Stanislaus Operational Area has identified a critical need to upgrade and enhance public safety communications, most importantly interoperability. Regional communications between public safety agencies in the Stanislaus Operational Area are inadequate. The current interoperability channel is undependable. The operational area has committed funds to begin the upgrade and improvements in the various public safety communications systems. The City of Modesto recently spent $50,000 to begin an overall upgrade of the law enforcement radio system. The funds were used to replace some of the older repeaters, antennas and voter receivers. The proposal to reallocate the Homeland Security grant funds from the CAD project will allow for continued improvements to both the existing infrastructure backbone as well as the overall interoperability.

This proposal will enhance the existing interoperability channel, expand radio coverage through difficult terrain, replace aging equipment, upgrade and secure the primary radio tower and will support the operational area's joint efforts to respond to all hazards as well as day to day operations. The proposal is a multi phase project that will be implemented as funds become available. The current funds will allow immediate improvements that can be built upon in the future.

The proposed Inter-Op radio system is P25 compliant and is also capable of conventional analog communications. The heart of the system is a repeater manufactured by Tait radio that supports standard analog and P25 network connections. All audio, analog and P25 digital is routed over a standard computer network. In addition a standard 2 or 4 wire connection can be used at the same time to interface radio consoles and remotes. When a mobile or portable transmits on one of the three Inter-Op channels the signal will be received by one or more voting receivers. The audio is then sent down the network along with the receive signal strength and bit error rate if it is a P25 digital transmission. The receiver with the strongest signal or lowest bit error rate will be selected and re-broadcasted out all three repeaters to all the other mobile radios. In addition the audio will be send out to the console on a standard 4 wire connection from anyone of the three repeaters. If the console initiates the call control tones and audio are sent to one of the three repeaters and is then converted to digital signal and sent out over the network to all three repeaters where it is transmitted out to all mobile units. The transmission can be sent out conventional analog or P25 digital depending on programming. There is no need for comparators in this system; all audio

selection is done by the repeaters over the network. The repeaters are compatible with any other manufactures mobile or portable radios.

The radio management computer and software make it easy to monitor and make any changes to the system. It also provides alarm reporting and remote diagnostics.

Adding voting receivers and back-up repeaters can be easily added to the system by simply programming the radio, plugging it into the network and configuring the system with the management software. In addition different radio systems can use the same network and be patched together if needed.

Other benefits of the plan will be improvements to existing radio sites and build out of new sites for use by existing systems. Improvements include.

Mt Oso:

- New antennas and combining systems to reduce tower over loading and intermod & high noise floor problems.
- Site clean-up and reorganization.
- Existing Inter-Op repeaters can be used to replace existing old repeaters.

MFD Station 5:

- Replacing old antennas and line kits.
- Installing new combining.
- Site clean-up and reorganization.
- Improved connection to Dispatch and lower monthly cost.

Oakdale, Turlock, Modesto:

- Builds out new voting sites that can easily and cheaply be expanded for existing radio channels.

Patterson & Newman:

- Replaces old antennas and line kits.
- Site clean-up and up-grades site conditions
- Back-up Battery power
- Surge & lightening protection.

By adding a computer server and software the system can meet future needs and can support many different radio systems on different frequencies simultaneously like:

Inter-Op Proposed Radio System and Build Out Plan

- **P25 Conventional:** Standard conventional radio system only using the P25 digital format.
- **P25 Multicast:** 2 or more repeats transmit the same digital audio on different frequencies at the same time. They can use the same input frequency.
- **P25 Simulcast:** 2 or more repeaters transmitting the same digital audio on the same frequency and time.
- **P25 Trunking:** Is pooling radio channels together and sharing them with other departments or agencies. Channels are divided into talk groups and use a control channel to direct traffic.
- **P25 Trunked Simulcast:** Combines Trunking and simulcasting to provide coverage over a wide area.
- **P25 Zone Control:** Is a Trunked system that acts similar to cellular system in that mobile are handed off between sites as they move throughout the county or city.

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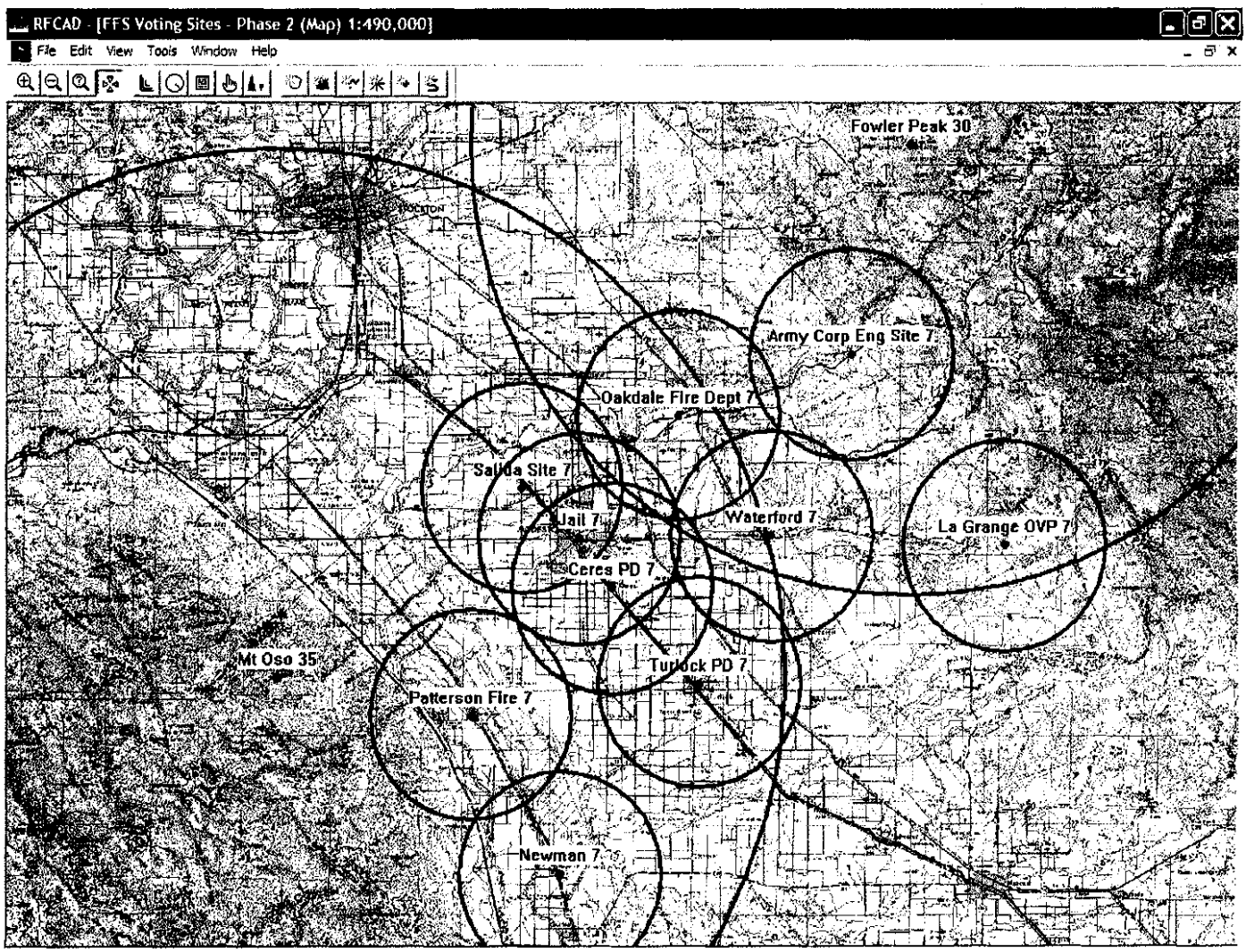
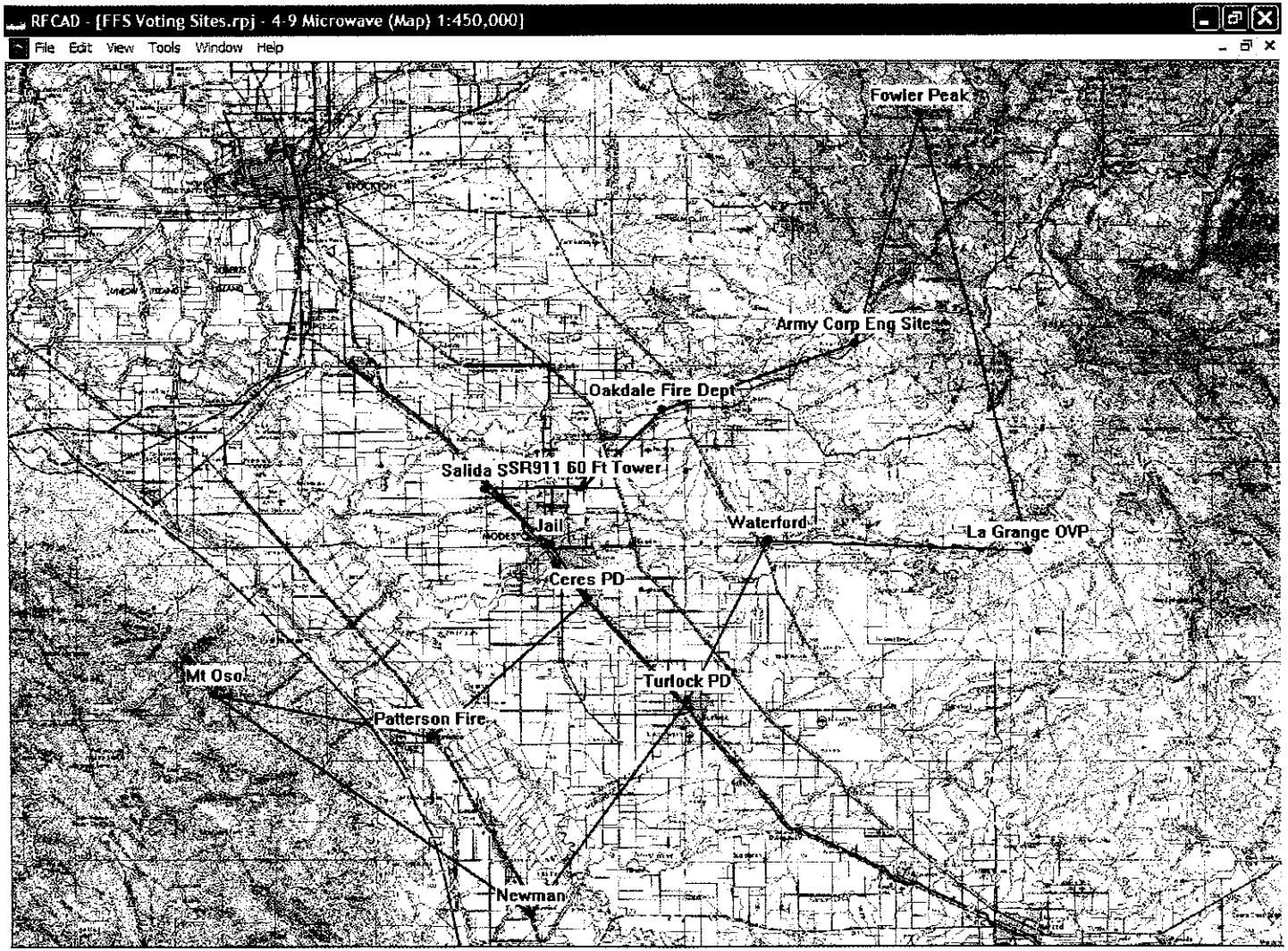
Inter-Op Proposed Radio System and Build Out Plan



County Map Showing proposed Radio Sites with 7 mile radius circle.

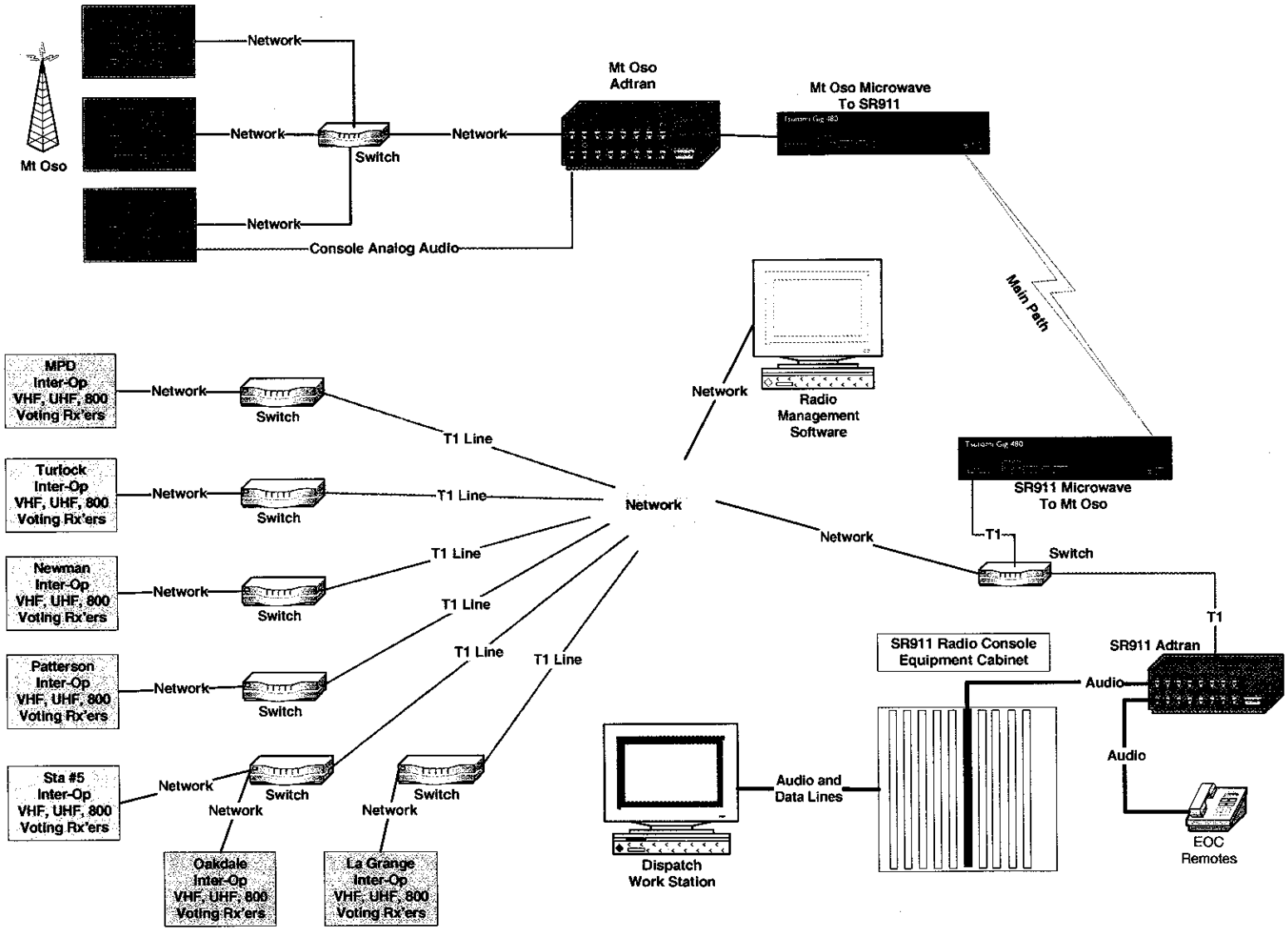
Inter-Op Proposed Radio System and Build Out Plan



Microwave Path with all Build out Phases Complete

SR911 Staff, KK, 06-21-06

Inter-Op Proposed Radio System and Build Out Plan



Inter-Op Channel Drawing

Stanislaus Operational Area Inter-Op Radio Project

Phase II

Site	DESCRIPTION	Cost
Phase 1 Mt Oso	Install new Tx & Rx combining systems.	
	Install New antennas and line kits on tower.	
	Install New Inter-op P25 Compliant Repeaters with network connection.	
	EOC Med Net Radios	
	Installing cable trays and cable entry ports	
	Install New Med Net, Sheriff, Fire, MPD, Public Works Repeaters	
	Up-Grade Site Grounding, Cable Management, Back-up Power	$255,989.29
Phase 2 Oakdale	Install new antennas and line kits.	
	Install voting receivers. Inter-Op, Sheriff, Fire, Public Works, Med Net	
	Install receive multi-couplers.	
	Install T1 line and equipment at Oakdale and SR911.	
	Install UPS equipment rack or cabinet	$96,810.12
Phase 3 Newman	Install new antennas and line kits.	
	Install voting receivers. Inter-Op, Sheriff, Fire, Public Works, Med Net	
	Install T1 line and equipment at Newman and SR911.	
	Install receive multi-couplers.	
	Install UPS equipment rack or cabinet.	$97,741.07
Phase 4 MPD	Install new antennas and line kits.	
	Install voting receivers. Inter-Op, Sheriff, Fire, Public Works, Med Net	
	Install receive multi-couplers.	
	Install T1 line and equipment at MPD and SR911.	
	Install new MPD, MFD Voter	$123,041.42
Phase 5 Turlock	Install new antennas and line kits.	
	Install receive multi-couplers.	
	Install voting receivers. Inter-Op, Sheriff, Fire, Public Works, Med Net	
	Install T1 line and equipment at Turlock and SR911.	
	Install UPS equipment rack or cabinet.	$100,402.92

Total Cost	**$673,984.81**

Stanislaus Operational Area Inter-Op Radio Project

Phase III

Site	DESCRIPTION	Cost
Phase 7 Engineering / Consultant	Engineering / Consultant Firm to design future system and migration path.	$200,000.00
Phase 8 Patterson	Install new antennas and line kits.	
	Install voting receivers. Inter-Op, Sheriff, Fire, Public Works, Med Net	
	Install receive multi-couplers.	
	Install UPS equipment rack or cabinet.	
	Up-Grade Tower, Grounding.	$90,300.25
Phase 9 Mod Sta #5		
	Install voting receivers. Inter-Op, Sheriff, Fire, Public Works, Med Net	
	Install receive multi-couplers.	
	Install T1 line and equipment at Sta 5 and SR911.	
	Install New MPD 7 Repeater	
	Install UPS equipment rack or cabinet.	$94,789.26
Phase 10 MPD / MFD	Install new antennas and line kits.	
	Install receive multi-couplers.	
	Install transmit combining	
	Install Back-up repeaters with voting	
	Install Voting receivers	$108,244.49
Phase 11 Co Jail	Install new antennas and line kits.	
	Install receive multi-couplers.	
	Install transmit combining	
	Install Voting receivers	$37,085.00
	Total Cost	**$530,419.00**

PowerPoint Presentation