

City of Schertz

Network Expansion-V6

March 9, 2022

Submitted To:

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City of Schertz

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HGAC Contract Number CW10-19

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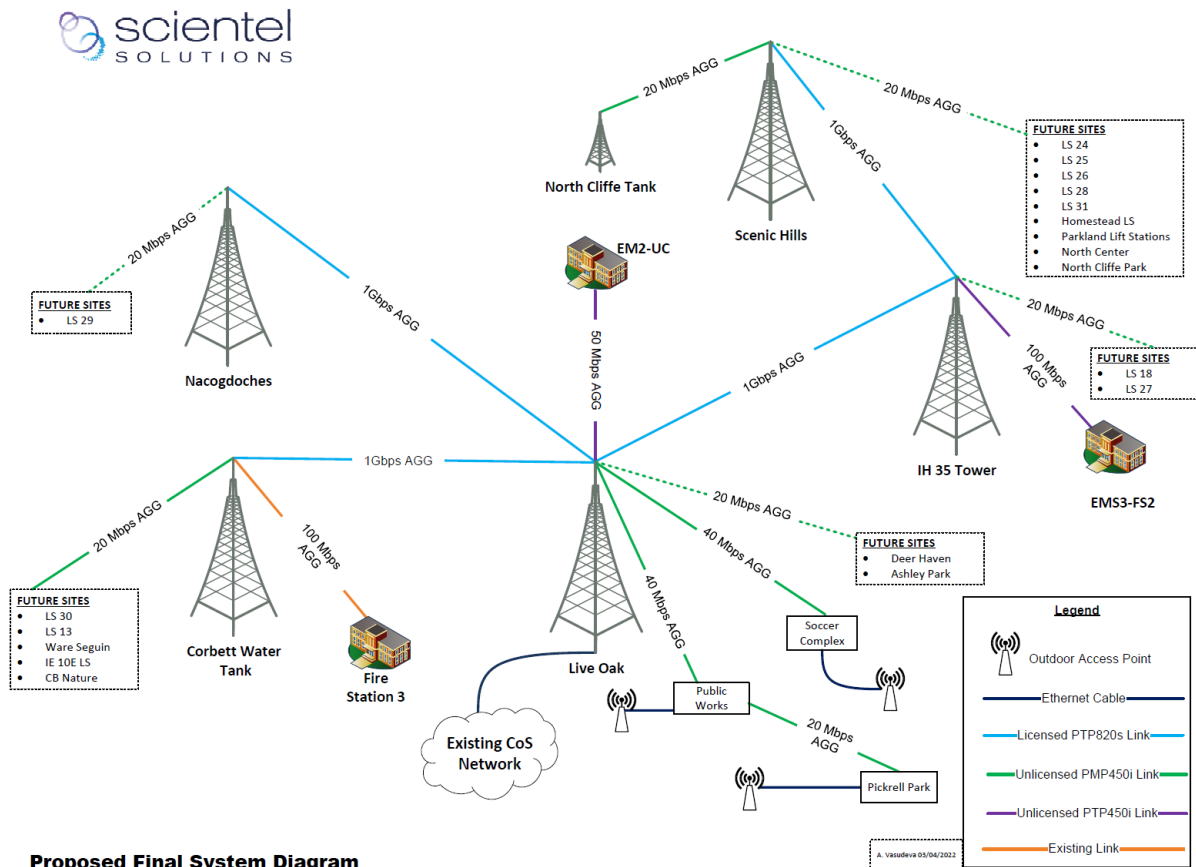
Table of Contents

1. INTRODUCTION	3
2. SCOPE OF WORK	5
3. ASSUMPTIONS – ALL PHASES.....	28
4. GENERAL PROJECT RESPONSIBILITIES	29
5. WARRANTY STATEMENT.....	31
6. PRICING	31
7. PAYMENT MILESTONES.....	32
8. PROJECT SCHEDULE-PHASE I.....	33

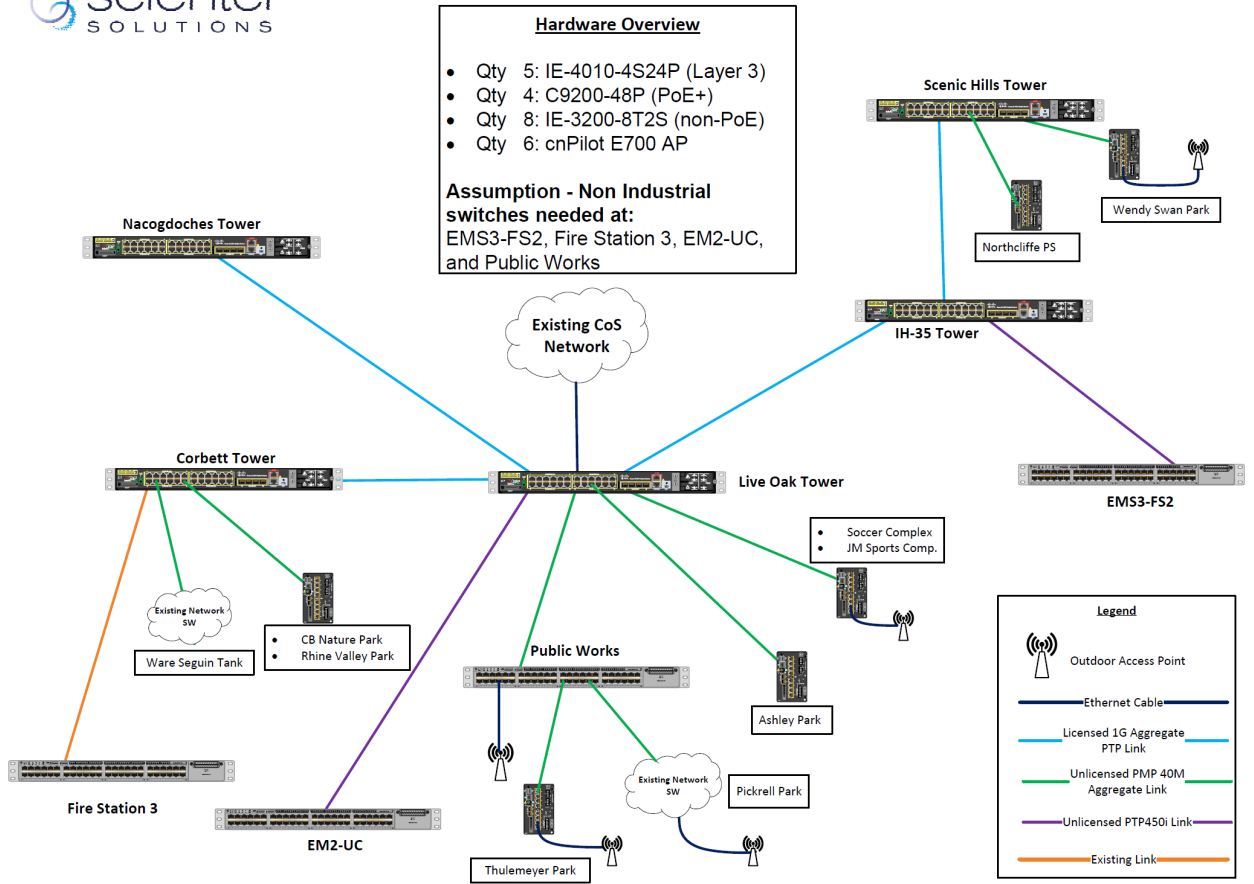
1. INTRODUCTION

Scientel Solutions LLC is pleased to present The City of Schertz with the following proposal for the design, configuration, and installation of The Citywide Network Expansion System. Scientel Solutions will do this by utilizing both licensed and unlicensed microwave solutions, we have divided this Network Expansion into separate phases based on The City of Schertz's priorities. The solution will utilize AES256 Encryption.

- Phase I will provide complete network system design and implementation of network connectivity to the Corbett/Live Oak Group
- Phase II will extend network connectivity to the Nacogdoches Tower Group.
- Phase III will further extend network connectivity to the IH35 Tower Group
- Phase IV will extend and complete network connectivity to the Scenic Hills Tower Group.
- ***Future Planning Considerations-Additional Parks and Water Facilities-Exempt From Proposal Pricing.***

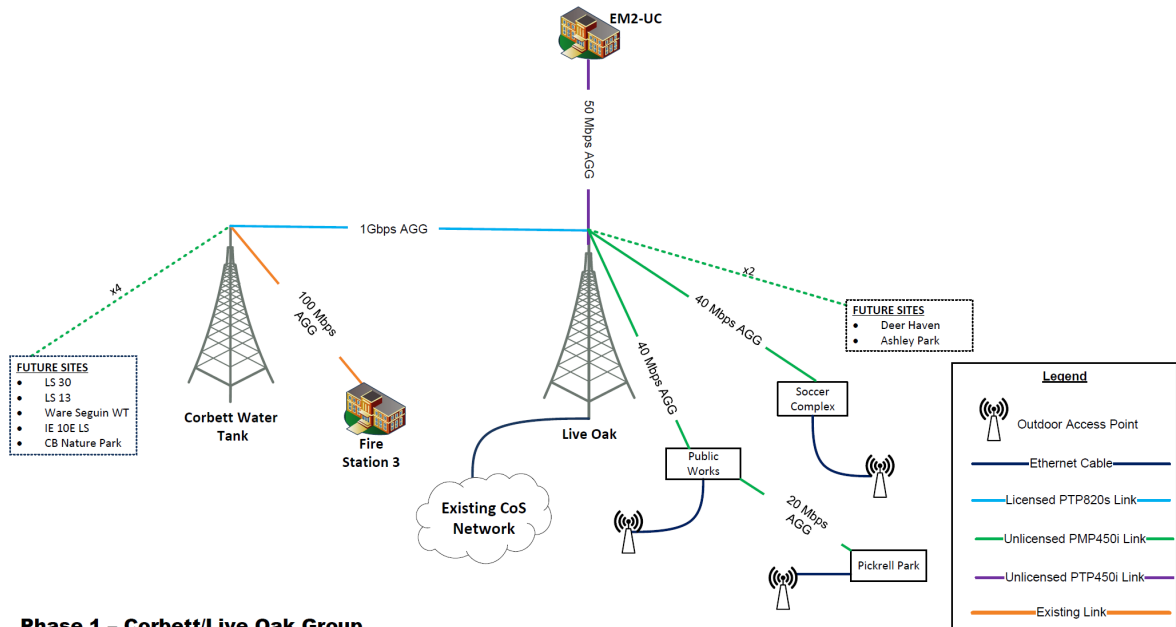


Proposed Final Network Diagram



2. SCOPE OF WORK

Phase I – Corbett/Live Oak Group



Phase 1 – Corbett/Live Oak Group

• Complete System Network Design

Scientel will:

- Create network IP plan for the radio network with assistance from the City of Schertz in ensure no overlapping or conflicting addresses are utilized with the existing infrastructure. Scientel will not be responsible for changing or modifying any IP network connected components on the existing network, as a result of introducing the newly connected radio network.
- Provide a network detailed design document that will cover the complete (*all phases*) proposed network system design for approval by City of Schertz.
- Provide a network deployment plan to assure for integration into the existing network.
- Utilize best practices of network implementation standards to assure network is configured to provide growth and expansion.
- Configure all tower switches to act as default gateways for connected VLAN's.
- Utilize dedicated Layer 3 network transport VLAN's will be built between PTP locations to assure a robust protected backhaul.

- Design PMP locations to be configured as Layer 2 VLAN's with the gateway of each network existing at the Layer 3 switch they connect.
 - Design Cisco EIGRP to be configured to run on all Layer 3 Switches to assure proper network advertisement across segments.
 - Design all Gateway of Last Resorts for each Layer 3 device to be set to point to the existing City of Schertz network gateway.
- **Corbett Water Tank**
Scientel will:
 - Perform site survey of each designated location to verify installation requirements and design.
 - Create Detailed Design Documents for radio system for specified phase 1 sites, as well as complete network design for entire proposed system.
 - Perform FCC License coordination for the licensed microwave link.
 - Deliver *Phase 1* Detailed Design Documents prior to procurement and field installation services.
 - Create system documentation for network parameters with assistance from City of Schertz to ensure seamless integration with existing network core system.
 - Procure all designated network and ancillary equipment to include installation materials.
 - Procure all designated microwave radio and ancillary equipment to include installation materials.
 - Stage and configure designated network and radio equipment in accordance with approved design.
 - Assume that City of Schertz will provide AC power outlets and/or DC power system, as required. Scientel will provide services to calculate power system/UPS loading for system sizing, upon request.
 - Install Cisco L3 Switch at base of water tank into provided network rack at area designated by the City of Schertz.
 - Install and align one licensed PTP radio, antenna, and mount at designated location on top of water tank towards Live Oak Water Tank.
 - Install and align the existing unlicensed PTP radio (*decommissioned from Live Oak Tower*) towards Fire Station 3.
 - Install three unlicensed PMP Access Points (AP's) at designated locations on top of water tank as per design.
 - Install associated indoor radio equipment to include power supplies and surge suppressors at designated network area at site.
 - Provide and install all network cabling between radio equipment to designated network demark.
 - Perform Radio connectivity and performance verification checks upon the completion of each microwave radio link and in accordance with acceptance test plan.
 - Network connectivity and performance verification checks will be performed upon the completion of microwave radio links and in accordance with acceptance test plan.
 - Provide the City of Schertz with system documentation in accordance with system acceptance requirements.

- **Live Oak Water Tank**

Scientel will:

- Perform site survey to verify installation requirements and design.
- Create Detailed Design Documents for radio system for specified phase 1 sites, as well as complete network design for entire proposed system.
- Deliver *Phase 1* Detailed Design Documents prior to procurement and field installation services.
- Create system documentation for network parameters with assistance from City of Schertz to ensure seamless integration with existing network core system.
- Procure all designated network and ancillary equipment to include installation materials.
- Procure all designated microwave radio and ancillary equipment to include installation materials.
- Stage and configure designated network and radio equipment in accordance with approved design.
- Install Cisco L3 Switch at base of water tank into provided network rack at area designated by the City of Schertz.
- Install and align one licensed PTP radio, antenna, and mount towards Corbett Water Tank.
- Install and align one (1) unlicensed PTP radio and mount towards *EMS2-UC*.
- Install two (2) unlicensed PMP Access Points (AP's) at designated locations on top of water tank as per design.
- De-commission and remove the existing unlicensed PTP Radio unit (*To-Fire Station 3*).
- Install associated indoor radio equipment to include power supplies and surge suppressors at designated network area at site.
- Existing data cabling will be used to connect radio unit to indoor equipment. Scientel will test existing cable to verify its operability.
- Provide and install all network cabling between indoor radio equipment to designated network demark.
- Perform radio connectivity and performance verification checks upon the completion of each microwave radio link and in accordance with acceptance test plan.
- Assume that City of Schertz will provide AC power outlets and/or DC power system, as required. Scientel will provide services to calculate power system/UPS loading for system sizing, upon request.
- Perform network connectivity and performance verification checks upon the completion of microwave radio links and in accordance with acceptance test plan.
- Provide the City of Schertz with system documentation in accordance with system acceptance requirements.

- **Fire Station 3**

Scientel will:

- Perform site survey to verify installation requirements and design.
- Deliver *Phase 1* Detailed Design Documents prior to procurement and field installation services.
- Create system documentation for network parameters with assistance from City of Schertz to ensure seamless integration with existing network core system.
- Procure all designated network and ancillary equipment to include installation materials.
- Install new Cisco Switch into provided network rack at area designated by the City of Schertz.
- Assume that City of Schertz will provide AC power outlets and/or DC power system, as required. Scientel will provide services to calculate power system/UPS loading for system sizing, upon request.
- Perform radio path alignment of existing unlicensed PTP radio to *Corbett Water Tank*.
- Perform radio connectivity and performance verification checks upon the installation completion of the radio link and in accordance with acceptance test plan.
- Provide the City of Schertz with system documentation in accordance with system acceptance requirements.

- **Pickrell Park**

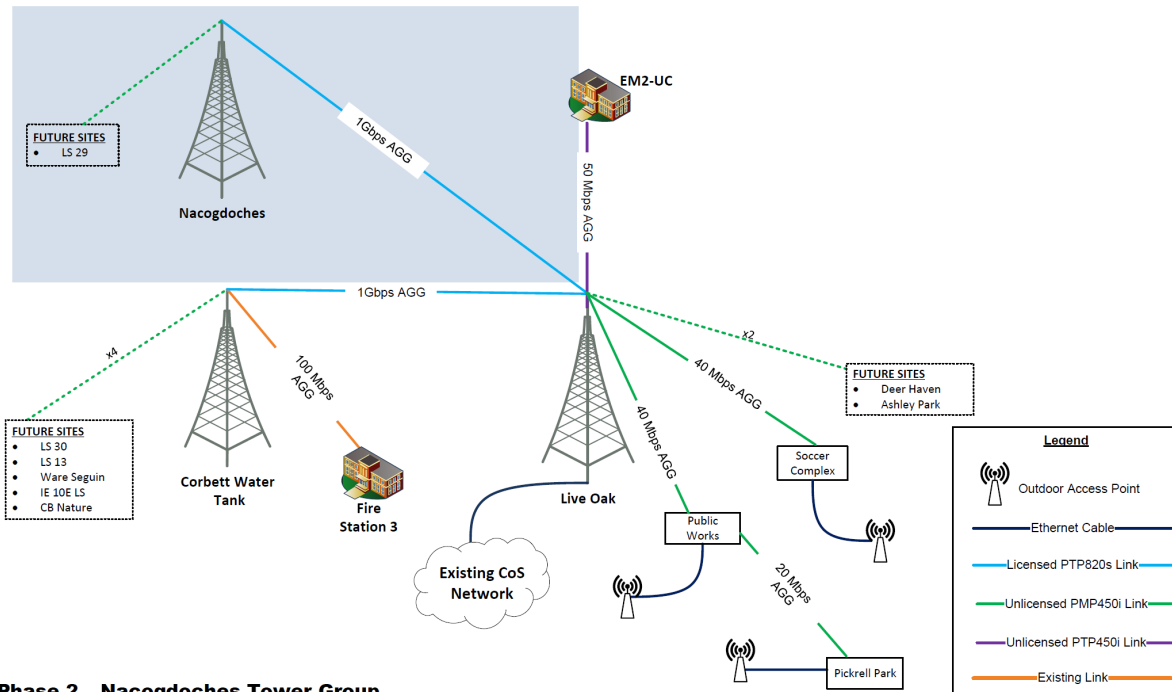
Scientel will:

- Perform site survey to verify installation requirements and design.
- Deliver *Phase 1* Detailed Design Documents prior to procurement and field installation services.
- Create system documentation for network parameters with assistance from City of Schertz to ensure seamless integration with existing network core system.
- Procure all designated radio and ancillary equipment to include installation materials.
- Stage and configure designated radio equipment in accordance with approved design.
- Install one (1) subscriber radio and align to the PMP AP at the *Public Works Infrastructure*.
- Install one (1) outdoor wireless access point (WAP) at the designated location.
- Install associated indoor radio equipment to include power supplies and surge suppressors at designated network area at site.
- Provide and install all network cabling between radio equipment to designated network demark.
- Perform radio connectivity and performance verification checks upon the completion of the subscriber radio and the WAP installation.
- Assume that City of Schertz will provide AC power outlets and/or DC power system, as required. Scientel will provide services to calculate power system/UPS loading for system sizing, upon request.

- Provide the City of Schertz with system documentation in accordance with system acceptance requirements.
- **Soccer Complex**
Scientel will:
 - Perform site survey to verify installation requirements and design.
 - Deliver *Phase 1* Detailed Design Documents prior to procurement and field installation services.
 - Create system documentation for network parameters with assistance from City of Schertz to ensure seamless integration with existing network core system.
 - Procure all designated network and ancillary equipment to include installation materials.
 - Procure all designated radio and ancillary equipment to include installation materials.
 - Stage and configure designated network and radio equipment in accordance with approved design.
 - Install new Cisco Switch into provided network rack at area designated by the City of Schertz.
 - Install one (1) subscriber radio and align to the PMP AP at the *Live Oak Water Tank*.
 - Install one (1) outdoor wireless access point (WAP) at the designated location.
 - Install associated indoor radio equipment to include power supplies and surge suppressors at designated network area at site.
 - Provide and install all network cabling between radio equipment to designated network demark.
 - Perform radio connectivity and performance verification checks upon the completion of the installation, in accordance with acceptance test plan.
 - Assume that City of Schertz will provide AC power outlets and/or DC power system, as required. Scientel will provide services to calculate power system/UPS loading for system sizing, upon request.
 - Provide the City of Schertz with system documentation in accordance with system acceptance requirements.
- **Public Works**
Scientel will:
 - Perform site survey to verify installation requirements and design.
 - Deliver *Phase 1* Detailed Design Documents prior to procurement and field installation services.
 - Create system documentation for network parameters with assistance from City of Schertz to ensure seamless integration with existing network core system.
 - Procure all designated network and ancillary equipment to include installation materials.
 - Procure all designated radio and ancillary equipment to include installation materials.

- Stage and configure designated network and radio equipment in accordance with approved design.
 - Install new Cisco Switch into provided network rack at area designated by the City of Schertz.
 - Install one (1) subscriber radio and align to the PMP AP at *the Live Oak Water Tank*.
 - Install one outdoor wireless access point (WAP) at the designated location.
 - Install associated indoor radio equipment to include power supplies and surge suppressors at designated network area at site.
 - Provide and install all network cabling between radio equipment to designated network demark.
 - Perform radio connectivity and performance verification checks upon the completion of the install and in accordance with acceptance test plan.
 - Assume that City of Schertz will provide AC power outlets and/or DC power system, as required. Scientel will provide services to calculate power system/UPS loading for system sizing, upon request.
 - Provide the City of Schertz with system documentation in accordance with system acceptance requirements.
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- **Emergency Medical Services 2 - Universal City**
Scientel will:
 - Perform site survey to verify installation requirements and design.
 - Deliver *Phase 1* Detailed Design Documents prior to procurement and field installation services.
 - Create system documentation for network parameters with assistance from City of Schertz to ensure seamless integration with existing network core system.
 - Procure all designated network and ancillary equipment to include installation materials.
 - Procure all designated radio and ancillary equipment to include installation materials.
 - Stage and configure designated network and radio equipment in accordance with approved design.
 - Install new Cisco Switch into provided network rack at area designated by the City of Schertz.
 - Install and align one (1) unlicensed PTP radio towards *Live Oak Water Tower*.
 - Install associated indoor radio equipment to include power supplies and surge suppressors at designated network area at site.
 - Provide and install all network cabling between radio equipment to designated network demark.
 - Perform radio connectivity and performance verification checks upon the completion of the install and in accordance with acceptance test plan.
 - Assume that City of Schertz will provide AC power outlets and/or DC power system, as required. Scientel will provide services to calculate power system/UPS loading for system sizing, upon request.
 - Provide the City of Schertz with system documentation in accordance with system acceptance requirements.

Phase 2 – Nacogdoches Tower Group



Phase 2 – Nacogdoches Tower Group

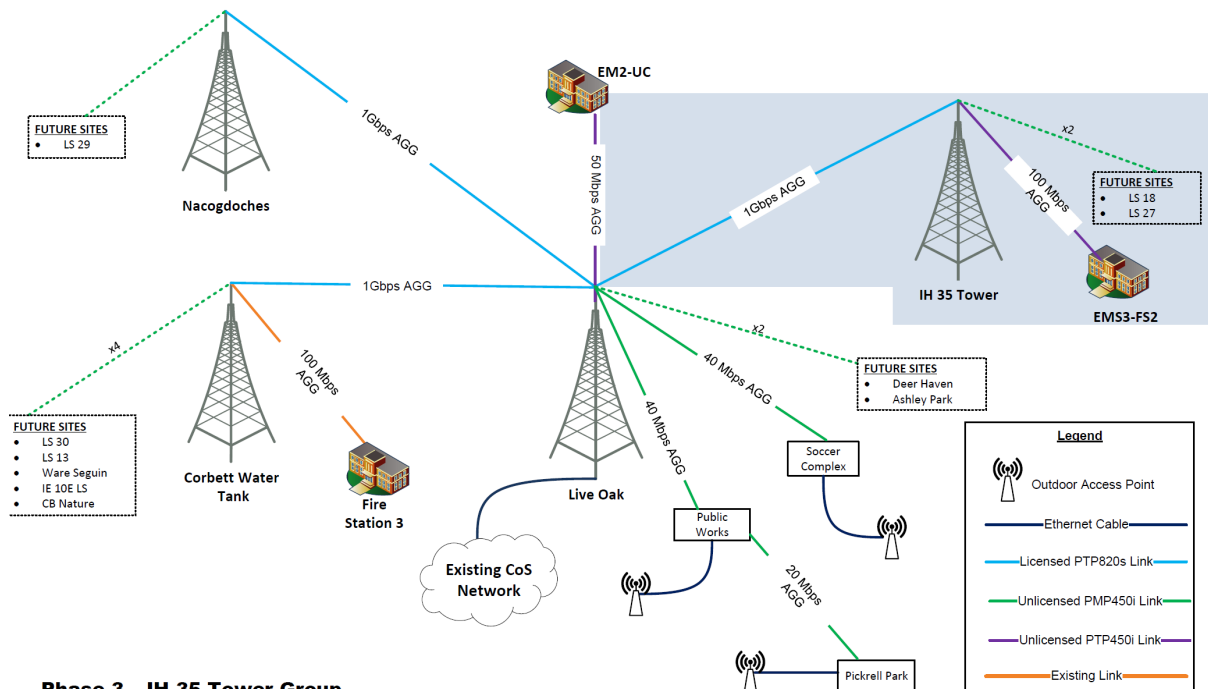
- **Nacogdoches Water Tank**

Scientel will:

- Perform site survey of each designated location to verify installation requirements and design.
- Deliver *Phase 2* Detailed Design Documents prior to procurement and field installation services.
- Create system documentation for network parameters with assistance from City of Schertz to ensure seamless integration with existing network core system.
- Perform FCC License coordination for the licensed microwave link.
- Procure all designated network and ancillary equipment to include installation materials.
- Procure all designated microwave radio and ancillary equipment to include installation materials.
- Stage and configure designated network and radio equipment in accordance with approved design.
- Assume that City of Schertz will provide AC power outlets and/or DC power system, as required. Scientel will provide services to calculate power system/UPS loading for system sizing, upon request.

- Install Cisco L3 Switch at base of water tank into provided network rack at area designated by the City of Schertz.
 - Install and align one (1) licensed PTP radio, antenna, and mount at designated location on top of water tank towards *Live Oak Water Tank*.
 - Install one (1) unlicensed PMP Access Point (AP) at designated location on top of water tank as per design.
 - Install associated indoor radio equipment to include power supplies and surge suppressors at designated network area at site.
 - Provide and install all network cabling between radio equipment to designated network demark.
 - Perform Radio connectivity and performance verification checks upon the completion of each radio and in accordance with acceptance test plan.
 - Network connectivity and performance verification checks will be performed upon the completion of microwave radio link and in accordance with acceptance test plan.
 - Provide the City of Schertz with system documentation in accordance with system acceptance requirements.
- **Live Oak Water Tank**
Scientel will:
 - Perform site survey to verify installation requirements and design.
 - Deliver *Phase 2* Detailed Design Documents prior to procurement and field installation services.
 - Create system documentation for network parameters with assistance from City of Schertz to ensure seamless integration with existing network core system.
 - Procure all designated microwave radio and ancillary equipment to include installation materials.
 - Stage and configure designated radio equipment in accordance with approved design.
 - Install and align one (1) PTP radio, antenna, and mount towards *Nacogdoches Water Tank*.
 - Install associated indoor radio equipment to include power supplies and surge suppressors at designated network area at site.
 - Existing data cabling will be used to connect radio unit to indoor equipment. Scientel will test existing cable to verify its operability.
 - Provide and install all network cabling between indoor radio equipment to designated network demark.
 - Perform radio connectivity and performance verification checks upon the completion of the microwave radio link and in accordance with acceptance test plan.
 - Assume that City of Schertz will provide AC power outlets and/or DC power system, as required. Scientel will provide services to calculate power system/UPS loading for system sizing, upon request.
 - Perform network connectivity and performance verification checks upon the completion of microwave radio link and in accordance with acceptance test plan.
 - Provide the City of Schertz with system documentation in accordance with system acceptance requirements.

Phase 3 – IH-35 Tower Group



Phase 3 – IH-35 Tower Group

- **IH35 Water Tank**

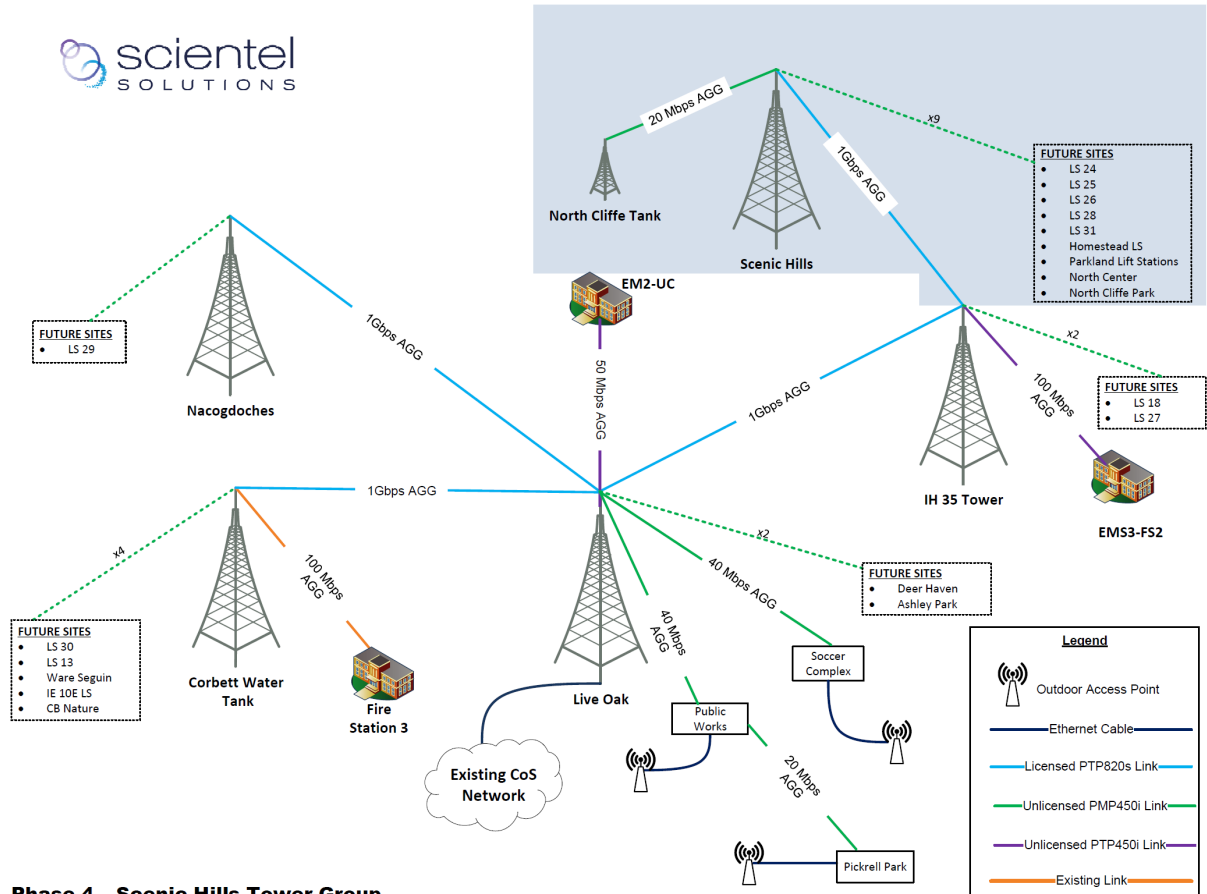
Scientel will:

- Perform site survey of each designated location to verify installation requirements and design.
- Deliver *Phase 3* Detailed Design Documents prior to procurement and field installation services.
- Create system documentation for network parameters with assistance from City of Schertz to ensure seamless integration with existing network core system.
- Perform FCC License coordination for the licensed microwave link.
- Procure all designated network and ancillary equipment to include installation materials.
- Procure all designated microwave radio and ancillary equipment to include installation materials.
- Stage and configure designated network and radio equipment in accordance with approved design.

- Assume that City of Schertz will provide AC power outlets and/or DC power system, as required. Scientel will provide services to calculate power system/UPS loading for system sizing, upon request.
 - Install Cisco L3 Switch at base of water tank into provided network rack at area designated by the City of Schertz.
 - Install and align one (1) licensed PTP radio, antenna, and mount at designated location on top of water tank towards Live Oak Water Tank.
 - Install and align the unlicensed PTP radio towards EMS3-FS2 site.
 - Install two (2) unlicensed PMP Access Points (AP's) at designated locations on top of water tank as per design.
 - Install associated indoor radio equipment to include power supplies and surge suppressors at designated network area at site.
 - Provide and install all network cabling between radio equipment to designated network demark.
 - Perform Radio connectivity and performance verification checks upon the completion of each radio and in accordance with acceptance test plan.
 - Network connectivity and performance verification checks will be performed upon the completion of microwave radio link installation and in accordance with acceptance test plan.
 - Provide the City of Schertz with system documentation in accordance with system acceptance requirements.
- **Live Oak Water Tank**
Scientel will:
 - Perform site survey to verify installation requirements and design.
 - Deliver *Phase 3* Detailed Design Documents prior to procurement and field installation services.
 - Create system documentation for network parameters with assistance from City of Schertz to ensure seamless integration with existing network core system.
 - Procure all designated microwave radio and ancillary equipment to include installation materials.
 - Stage and configure designated radio equipment in accordance with approved design.
 - Install and align one (1) PTP radio, antenna, and mount towards *IH-35 Water Tank*.
 - Install associated indoor radio equipment to include power supplies and surge suppressors at designated network area at site.
 - Existing data cabling will be used to connect radio unit to indoor equipment. Scientel will test existing cable to verify its operability.
 - Provide and install all network cabling between indoor radio equipment to designated network demark.
 - Perform radio connectivity and performance verification checks upon the completion of each microwave radio link and in accordance with acceptance test plan.
 - Assume that City of Schertz will provide AC power outlets and/or DC power system, as required. Scientel will provide services to calculate power system/UPS loading for system sizing, upon request.

- Perform network connectivity and performance verification checks upon the completion of microwave radio links and in accordance with acceptance test plan.
 - Provide the City of Schertz with system documentation in accordance with system acceptance requirements.
- **EMS3-FS2**
Scientel will:
 - Perform site survey to verify installation requirements and design.
 - Deliver *Phase 3* Detailed Design Documents prior to procurement and field installation services.
 - Create system documentation for network parameters with assistance from City of Schertz to ensure seamless integration with existing network core system.
 - Procure all designated network and ancillary equipment to include installation materials.
 - Procure all designated radio and ancillary equipment to include installation materials.
 - Stage and configure designated network and radio equipment in accordance with approved design.
 - Install new Cisco Switch into provided network rack at area designated by the City of Schertz.
 - Install and align one (1) unlicensed PTP radio towards *IH-35 Tower*.
 - Install associated indoor radio equipment to include power supplies and surge suppressors at designated network area at site.
 - Provide and install all network cabling between radio equipment to designated network demark.
 - Perform radio connectivity and performance verification checks upon the completion of install and in accordance with acceptance test plan.
 - Assume that City of Schertz will provide AC power outlets and/or DC power system, as required. Scientel will provide services to calculate power system/UPS loading for system sizing, upon request.
 - Provide the City of Schertz with system documentation in accordance with system acceptance requirements.

Phase 4 – Scenic Hills Tower Group



Phase 4 – Scenic Hills Tower Group

- **Scenic Hills Water Tank**

Scientel will:

- Perform site survey of each designated location to verify installation requirements and design.
- Deliver *Phase 4* Detailed Design Documents prior to procurement and field installation services.
- Create system documentation for network parameters with assistance from City of Schertz to ensure seamless integration with existing network core system.
- Perform FCC License coordination for the licensed microwave link.
- Procure all designated network and ancillary equipment to include installation materials.
- Procure all designated microwave radio and ancillary equipment to include installation materials.
- Stage and configure designated network and radio equipment in accordance with approved design.

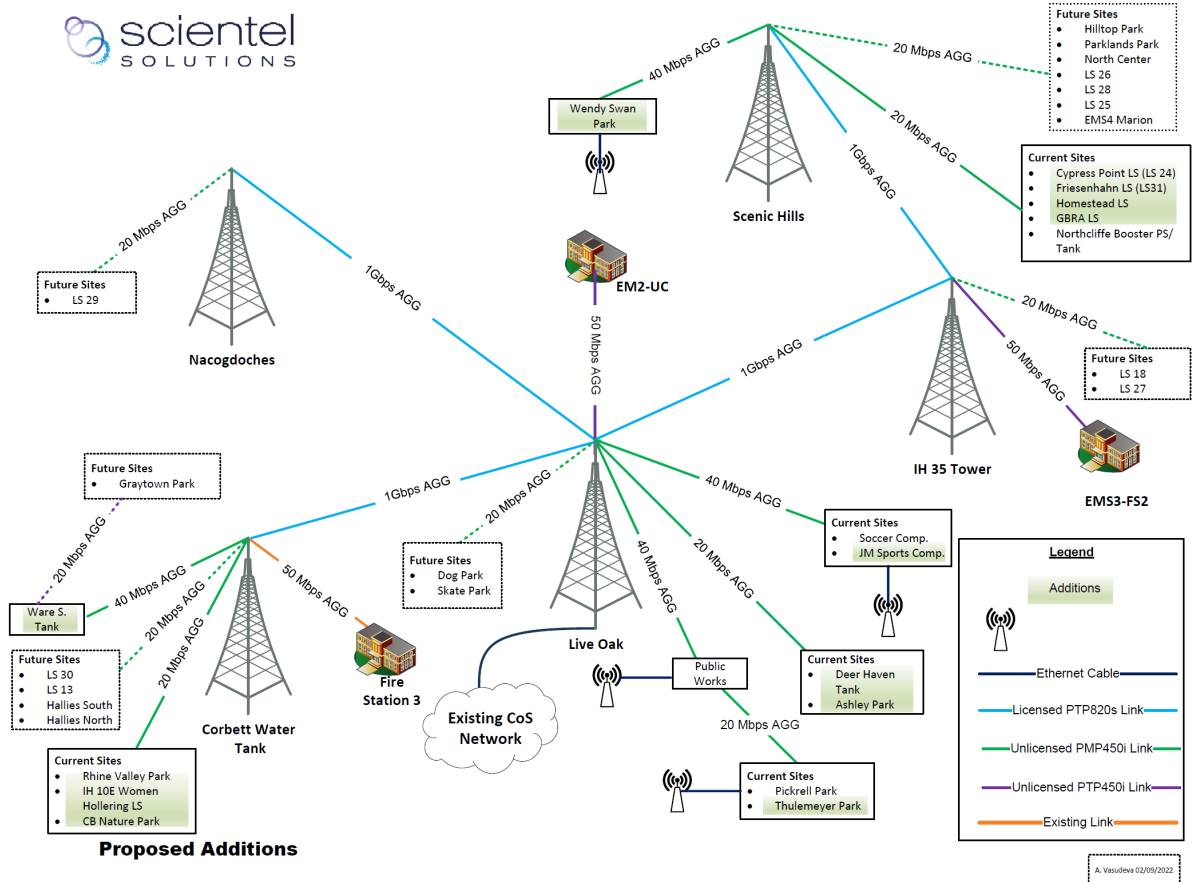
- Assume that City of Schertz will provide AC power outlets and/or DC power system, as required. Scientel will provide services to calculate power system/UPS loading for system sizing, upon request.
 - Install Cisco L3 Switch at base of tower into provided network rack at area designated by the City of Schertz.
 - Install and align one (1) licensed PTP radio, antenna, and mount at designated location on top of water tank towards *IH-35* Water Tank.
 - Install six (6) unlicensed PMP Access Points (AP's) at designated locations on tower as per design.
 - Install associated indoor radio equipment to include power supplies and surge suppressors at designated network area at site.
 - Provide and install all network cabling between radio equipment to designated network demark.
 - Perform Radio connectivity and performance verification checks upon the completion of installation of each radio and in accordance with acceptance test plan.
 - Network connectivity and performance verification checks will be performed upon the completion of microwave radio link and in accordance with acceptance test plan.
 - Provide the City of Schertz with system documentation in accordance with system acceptance requirements.
- **IH-35 Water Tank**
 - Scientel will:
 - Perform site survey to verify installation requirements and design.
 - Deliver *Phase 4* Detailed Design Documents prior to procurement and field installation services.
 - Create system documentation for network parameters with assistance from City of Schertz to ensure seamless integration with existing network core system.
 - Procure all designated microwave radio and ancillary equipment to include installation materials.
 - Stage and configure designated radio equipment in accordance with approved design.
 - Install and align one (1) PTP radio, antenna, and mount towards *Scenic Hills Tower*.
 - Install associated indoor radio equipment to include power supplies and surge suppressors at designated network area at site.
 - Provide and install all network cabling between radio equipment to designated network demark.
 - Perform radio connectivity and performance verification checks upon the completion of each microwave radio link and in accordance with acceptance test plan.
 - Assume that City of Schertz will provide AC power outlets and/or DC power system, as required. Scientel will provide services to calculate power system/UPS loading for system sizing, upon request.
 - Perform network connectivity and performance verification checks upon the completion of microwave radio links and in accordance with acceptance test plan.

- **North Cliffe Tank**

Scientel will:

- Perform site survey to verify installation requirements and design.
- Deliver *Phase 4* Detailed Design Documents prior to procurement and field installation services.
- Create system documentation for network parameters with assistance from City of Schertz to ensure seamless integration with existing network core system.
- Procure all designated network and ancillary equipment to include installation materials.
- Procure all designated radio and ancillary equipment to include installation materials.
- Stage and configure designated network and radio equipment in accordance with approved design.
- Install new Cisco Switch into provided network rack at area designated by the City of Schertz.
- Install one (1) subscriber radio and align to the PMP AP at the *Scenic Hills Tower*.
- Install associated indoor radio equipment to include power supplies and surge suppressors at designated network area at site.
- Provide and install all network cabling between radio equipment to designated network demark.
- Perform radio connectivity and performance verification checks upon the completion of installation of the radio link and in accordance with acceptance test plan.
- Assume that City of Schertz will provide AC power outlets and/or DC power system, as required. Scientel will provide services to calculate power system/UPS loading for system sizing, upon request.
- Provide the City of Schertz with system documentation in accordance with system acceptance requirements.

Future Planning Considerations-Additional Parks, Water Facilities, and Lift Stations-Exempt from Proposal Pricing



- **Live Oak Water Tank**

Scientel will:

- Create system documentation for network parameters with assistance from City of Schertz to ensure seamless integration with existing network core system.
- Procure all designated network and ancillary equipment to include installation materials.
- Stage and configure designated network and radio equipment in accordance with approved design.
- Install one (1) additional unlicensed PMP Access Points (AP's) at designated locations on top of water tank as per design.
- Provide and install all network cabling between indoor radio equipment to designated network demark.

- Perform radio connectivity and performance verification checks upon the completion of the installation of the PMP AP and in accordance with acceptance test plan.
- Assume that City of Schertz will provide AC power outlets and/or DC power system, as required. Scientel will provide services to calculate power system/UPS loading for system sizing, upon request.
- Provide the City of Schertz with system documentation in accordance with system acceptance requirements.

- **Public Works**

Scientel will:

- Create system documentation for network parameters with assistance from City of Schertz to ensure seamless integration with existing network core system.
- Procure all designated radio and ancillary equipment to include installation materials.
- Stage and configure designated network and radio equipment in accordance with approved design.
- Install new Cisco Switch into provided network rack at area designated by the City of Schertz.
- Install one additional (1) PMP AP at *the existing Public Works Infrastructure*.
- Provide and install all network cabling between radio equipment to designated network demark.
- Perform radio connectivity and performance verification checks upon the completion of installation, in accordance with acceptance test plan.
- Assume that City of Schertz will provide AC power outlets and/or DC power system, as required. Scientel will provide services to calculate power system/UPS loading for system sizing, upon request.
- Provide the City of Schertz with system documentation in accordance with system acceptance requirements.

- **Johnie McDow Sports Complex**

Scientel will:

- Create system documentation for network parameters with assistance from City of Schertz to ensure seamless integration with existing network core system.
- Procure all designated network and ancillary equipment to include installation materials.
- Procure all designated radio and ancillary equipment to include installation materials.
- Stage and configure designated network and radio equipment in accordance with approved design.
- Install new Cisco Switch into provided network rack at area designated by the City of Schertz.
- Install one (1) subscriber radio and align to the PMP AP at the *Live Oak Tower*.
- Install one outdoor wireless access point (WAP) at the designated location.

- Install associated indoor radio equipment to include power supplies and surge suppressors at designated network area at site.
 - Provide and install all network cabling between radio equipment to designated network demark.
 - Perform radio connectivity and performance verification checks upon the completion of install and in accordance with acceptance test plan.
 - Assume that City of Schertz will provide AC power outlets and/or DC power system, as required. Scientel will provide services to calculate power system/UPS loading for system sizing, upon request.
 - Provide the City of Schertz with system documentation in accordance with system acceptance requirements.
- **Thulemeyer Park**
 - Create system documentation for network parameters with assistance from City of Schertz to ensure seamless integration with existing network core system.
 - Procure all designated network and ancillary equipment to include installation materials.
 - Procure all designated radio and ancillary equipment to include installation materials.
 - Stage and configure designated network and radio equipment in accordance with approved design.
 - Install new Cisco Switch into provided network rack at area designated by the City of Schertz.
 - Install one (1) outdoor wireless access point (WAP) at the designated location.
 - Install one (1) subscriber radio and align to the PMP AP at the *Public Works Infrastructure*.
 - Install associated indoor radio equipment to include power supplies and surge suppressors at designated network area at site.
 - Provide and install all network cabling between radio equipment to designated network demark.
 - Perform radio connectivity and performance verification checks upon the completion of the install and in accordance with acceptance test plan.
 - Assume that City of Schertz will provide AC power outlets and/or DC power system, as required. Scientel will provide services to calculate power system/UPS loading for system sizing, upon request.
 - Provide the City of Schertz with system documentation in accordance with system acceptance requirements.
- **Ashley Park**
 - Perform site survey to verify installation requirements and design.
 - Deliver Additional Parks and Detailed Design Documents prior to procurement and field installation services.
 - Create system documentation for network parameters with assistance from City of Schertz to ensure seamless integration with existing network core system.
 - Procure all designated network and ancillary equipment to include installation materials.

- Procure all designated radio and ancillary equipment to include installation materials.
 - Stage and configure designated network and radio equipment in accordance with approved design.
 - Install new Cisco Switch into provided network rack at area designated by the City of Schertz.
 - Install one (1) subscriber radio and align to the PMP AP at the *Live Oak Tower*.
 - Install associated indoor radio equipment to include power supplies and surge suppressors at designated network area at site.
 - Provide and install all network cabling between radio equipment to designated network demark.
 - Perform radio connectivity and performance verification checks upon the completion of install and in accordance with acceptance test plan.
 - Assume that City of Schertz will provide AC power outlets and/or DC power system, as required. Scientel will provide services to calculate power system/UPS loading for system sizing, upon request.
 - Provide the City of Schertz with system documentation in accordance with system acceptance requirements.
- **Crescent Bend Nature Park**
Scientel will:
 - Perform site survey to verify installation requirements and design.
 - Deliver Additional Parks and Detailed Design Documents prior to procurement and field installation services.
 - Create system documentation for network parameters with assistance from City of Schertz to ensure seamless integration with existing network core system.
 - Procure all designated network and ancillary equipment to include installation materials.
 - Procure all designated radio and ancillary equipment to include installation materials.
 - Stage and configure designated network and radio equipment in accordance with approved design.
 - Install new Cisco Switch into provided network rack at area designated by the City of Schertz.
 - Install one (1) subscriber radio and align to the PMP AP at the *Corbett Tower*.
 - Install associated indoor radio equipment to include power supplies and surge suppressors at designated network area at site.
 - Provide and install all network cabling between radio equipment to designated network demark.
 - Perform radio connectivity and performance verification checks upon the completion of install and in accordance with acceptance test plan.
 - Assume that City of Schertz will provide AC power outlets and/or DC power system, as required. Scientel will provide services to calculate power system/UPS loading for system sizing, upon request.
 - Provide the City of Schertz with system documentation in accordance with system acceptance requirements.

- **Rhine Valley Park**

Scientel will:

- Perform site survey to verify installation requirements and design.
- Deliver Additional Parks and Detailed Design Documents prior to procurement and field installation services.
- Create system documentation for network parameters with assistance from City of Schertz to ensure seamless integration with existing network core system.
- Procure all designated network and ancillary equipment to include installation materials.
- Procure all designated radio and ancillary equipment to include installation materials.
- Stage and configure designated network and radio equipment in accordance with approved design.
- Install new Cisco Switch into provided network rack at area designated by the City of Schertz.
- Install one (1) subscriber radio and align to the PMP AP at the *Corbett Tower*.
- Install associated indoor radio equipment to include power supplies and surge suppressors at designated network area at site.
- Provide and install all network cabling between radio equipment to designated network demark.
- Perform radio connectivity and performance verification checks upon the completion of the install and in accordance with acceptance test plan.
- Assume that City of Schertz will provide AC power outlets and/or DC power system, as required. Scientel will provide services to calculate power system/UPS loading for system sizing, upon request.
- Provide the City of Schertz with system documentation in accordance with system acceptance requirements.

- **Ware Sequin Booster Pump Station**

Scientel will:

- Perform site survey to verify installation requirements and design.
- Deliver Additional Parks and Detailed Design Documents prior to procurement and field installation services.
- Create system documentation for network parameters with assistance from City of Schertz to ensure seamless integration with existing network core system.
- Procure all designated network and ancillary equipment to include installation materials.
- Procure all designated radio and ancillary equipment to include installation materials.
- Stage and configure designated network and radio equipment in accordance with approved design.
- Install one (1) subscriber radio and align to the PMP AP at the *Corbett Tower*.
- Install associated indoor radio equipment to include power supplies and surge suppressors at designated network area at site.
- Provide and install all network cabling between radio equipment to designated network demark.

- Perform radio connectivity and performance verification checks upon the completion of the install and in accordance with acceptance test plan.
- Assume that City of Schertz will provide AC power outlets and/or DC power system, as required. Scientel will provide services to calculate power system/UPS loading for system sizing, upon request.
- Provide the City of Schertz with system documentation in accordance with system acceptance requirements.

- **Deer Haven Booster Pump Station**

Scientel will:

- Perform site survey to verify installation requirements and design.
- Deliver Additional Parks and Detailed Design Documents prior to procurement and field installation services.
- Create system documentation for network parameters with assistance from City of Schertz to ensure seamless integration with existing network core system.
- Procure all designated network and ancillary equipment to include installation materials.
- Procure all designated radio and ancillary equipment to include installation materials.
- Stage and configure designated network and radio equipment in accordance with approved design.
- Install one (1) subscriber radio and align to the PMP AP at the *Live Oak Tower*.
- Install associated indoor radio equipment to include power supplies and surge suppressors at designated network area at site.
- Provide and install all network cabling between radio equipment to designated network demark.
- Perform radio connectivity and performance verification checks upon the completion of the install and in accordance with acceptance test plan.
- Assume that City of Schertz will provide AC power outlets and/or DC power system, as required. Scientel will provide services to calculate power system/UPS loading for system sizing, upon request.
- Provide the City of Schertz with system documentation in accordance with system acceptance requirements.

- **Homestead Lift Station**

Scientel will:

- Create system documentation for network parameters with assistance from City of Schertz to ensure seamless integration with existing network core system.
- Procure all designated radio and ancillary equipment to include installation materials.
- Stage and configure designated network and radio equipment in accordance with approved design.
- Install one (1) subscriber radio and align to the PMP AP at the *Scenic Hills tower*.
- Provide and install all network cabling between radio equipment to designated network demark.

- Perform radio connectivity and performance verification checks upon the completion of the install and in accordance with acceptance test plan.
 - Assume that City of Schertz will provide AC power outlets and/or DC power system, as required. Scientel will provide services to calculate power system/UPS loading for system sizing, upon request.
 - Provide the City of Schertz with system documentation in accordance with system acceptance requirements.
- **Woman Hollering Creek Lift Station-LS IE10E**
Scientel will:
 - Create system documentation for network parameters with assistance from City of Schertz to ensure seamless integration with existing network core system.
 - Procure all designated radio and ancillary equipment to include installation materials.
 - Stage and configure designated network and radio equipment in accordance with approved design.
 - Install one (1) subscriber radio and align to the PMP AP at the *Corbett Tower*.
 - Provide and install all network cabling between radio equipment to designated network demark.
 - Perform radio connectivity and performance verification checks upon the completion of the install and in accordance with acceptance test plan.
 - Assume that City of Schertz will provide AC power outlets and/or DC power system, as required. Scientel will provide services to calculate power system/UPS loading for system sizing, upon request.
 - Provide the City of Schertz with system documentation in accordance with system acceptance requirements.
 - **Wendy Swan Park**
 - Create system documentation for network parameters with assistance from City of Schertz to ensure seamless integration with existing network core system.
 - Procure all designated network and ancillary equipment to include installation materials.
 - Procure all designated radio and ancillary equipment to include installation materials.
 - Stage and configure designated network and radio equipment in accordance with approved design.
 - Install new Cisco Switch into provided network rack at area designated by the City of Schertz.
 - Install one (1) outdoor wireless access point (WAP) at the designated location.
 - Install one (1) subscriber radio and align to the PMP AP at the *Scenic Hills Tower*.
 - Install associated indoor radio equipment to include power supplies and surge suppressors at designated network area at site.
 - Provide and install all network cabling between radio equipment to designated network demark.

- Perform radio connectivity and performance verification checks upon the completion of the install and in accordance with acceptance test plan.
- Assume that City of Schertz will provide AC power outlets and/or DC power system, as required. Scientel will provide services to calculate power system/UPS loading for system sizing, upon request.
- Provide the City of Schertz with system documentation in accordance with system acceptance requirements.

- **GBRA Lift Station**

Scientel will:

- Create system documentation for network parameters with assistance from City of Schertz to ensure seamless integration with existing network core system.
- Procure all designated radio and ancillary equipment to include installation materials.
- Stage and configure designated network and radio equipment in accordance with approved design.
- Install one (1) subscriber radio and align to the PMP AP at the *Scenic Hills Tower*.
- Provide and install all network cabling between radio equipment to designated network demark.
- Perform radio connectivity and performance verification checks upon the completion of the install and in accordance with acceptance test plan.
- Assume that City of Schertz will provide AC power outlets and/or DC power system, as required. Scientel will provide services to calculate power system/UPS loading for system sizing, upon request.
- Provide the City of Schertz with system documentation in accordance with system acceptance requirements.

- **Friesenhahn Lift Station-LS31**

Scientel will:

- Create system documentation for network parameters with assistance from City of Schertz to ensure seamless integration with existing network core system.
- Procure all designated radio and ancillary equipment to include installation materials.
- Stage and configure designated network and radio equipment in accordance with approved design.
- Install one (1) subscriber radio and align to the PMP AP at the *Scenic Hills Tower*.
- Provide and install all network cabling between radio equipment to designated network demark.
- Perform radio connectivity and performance verification checks upon the completion of the install and in accordance with acceptance test plan.
- Assume that City of Schertz will provide AC power outlets and/or DC power system, as required. Scientel will provide services to calculate power system/UPS loading for system sizing, upon request.
- Provide the City of Schertz with system documentation in accordance with system acceptance requirements.

- **Cypress Point Lift Station-LS24**

Scientel will:

- Create system documentation for network parameters with assistance from City of Schertz to ensure seamless integration with existing network core system.
- Procure all designated radio and ancillary equipment to include installation materials.
- Stage and configure designated network and radio equipment in accordance with approved design.
- Install one (1) subscriber radio and align to the PMP AP at the *Scenic Hills Tower*.
- Provide and install all network cabling between radio equipment to designated network demark.
- Perform radio connectivity and performance verification checks upon the completion of the install and in accordance with acceptance test plan.
- Assume that City of Schertz will provide AC power outlets and/or DC power system, as required. Scientel will provide services to calculate power system/UPS loading for system sizing, upon request.
- Provide the City of Schertz with system documentation in accordance with system acceptance requirements.

3. ASSUMPTIONS – ALL PHASES

- L3 network Design of network equipment not listed in proposal is excluded from this proposal.
- Each Phase will deliver a Detailed Design Review prior to procurement and field services, it is understood that approval of each DDR will lock in the design. Once DDR is accepted, all further changes may be subject to a change order.
- Each Phase of work includes one mobilization fee, splitting work may be subject to change order.
- Duration of project is not to exceed 6 months; schedule extensions may be subject to change order.
- City of Schertz to provide IP addresses and networking parameter prior to implementation of this Scope of Work.
- Live Oak water tower site has existing network connectivity between the tower and the City's core network equipment. This is assumed network demark.
- No Civil infrastructure work (trenching, boring, demolition, new monopole/towers, etc..) is included.
- Tower structural analysis engineering services are not included in this proposal, The City of Schertz will be solely responsible for any analysis required.
- Replacement of any existing/provided network cables is not included.
- Pricing includes standard equipment mounts and installation. Custom and specialty installation materials and work to be determined on site survey reports.
- City to determine and provide SFPs and any other networking infrastructure to facilitate integration into their network.
- All network cabling assumes CAT-5e/CAT-6 maximum cable run length of 300'. Fiber cabling is subject to additional costs, if required.
- This proposal assumes there are existing power condition systems where needed, any new ones needed are outside this scope of work and would be subject to a change order.
- Aerial Lifts up to 45' are included.
- Water Tanks rooftop hatch will be sufficient to deliver radio antenna to top of tank. Requirement of repelling or Crane services to be determined on site walk and are not included in proposal.
- Detailed Design Review Acceptance
- Proposed design is dependent on FCC Frequency Coordination.
- It is understood that phase II switch over from Live Oak to Corbett will cause a planned outage at FS3. Outage will be coordinated and scheduled with approval of City of Schertz.
- It is understood that phase III scope of work includes public Wi-Fi access only, should public safety access be required an additional proposal will be issued for that work.
- All equipment will be staged at Scientel Solutions staging facility in Plano, TX.

4. GENERAL PROJECT RESPONSIBILITIES

Scientel Solutions Responsibilities

Scientel will designate a Project Manager who will direct Scientel's efforts and serve as the primary point of contact for the client. The Scientel Project Manager will have significant authority to make certain decisions relative to the project, on behalf of Scientel, and will have direct access to Scientel's executive management for resolving problems beyond the Project Manager's immediate authority. The responsibilities of the Scientel Project Manager include:

- Participate with the client in daily progress review meetings and submit status reports that identify the activities of the previous review period, as well as activities.
- planned for the upcoming review period, including an updated Project Schedule. Maintain project communications with the client's Project Manager(s).
- Participate in weekly conference calls or face-to-face meetings and issue a mutually agreed upon agenda for each call or meeting.
- Manage the efforts of Scientel staff and coordinate activities with client's project team members.
- Measure, evaluate and report the progress against the Project Schedule.
- Resolve deviations from the Project Schedule.
- Monitor the project to ensure that support resources are available as scheduled and as identified in the contract.
- Assume accountabilities for all Scientel contractor and subcontractor supplied tasks within the Project Schedule, if any.
- Coordinate and oversee the installation of all hardware and software.
- Review and administer change control procedures through the client's Project Manager, commonly referenced as a "Project Change Request" (PCR), issued by the Scientel Project Manager.
- Work with the client Manager(s) in designing and approving the format of an action item log to be used in conjunction with the Project Schedule. The purpose of the log is to identify outstanding issues, provide continual status updates on specific tasks and to identify responsibilities of the parties.
- Prepare and submit regular status reports that identifies the activities and milestones completed in the previous month and activities planned for the current month and the next month, including progress and payment milestones, and an updated Project Schedule.
- In the event that Scientel must replace or substitute a Project Manager, Scientel will immediately notify the client of such a change and will provide the client with a resume of the person Scientel intends to substitute or change.
- Provide and coordinate lift trucks and trained/authorized operators as well as licensed electricians to install devices as required. If tower crews are required per the defined type of installation in the summary section, it is the responsibility of Scientel.
- Provide wall penetrations, conduit, cable trays and other supporting equipment necessary for the routing of power, grounding and networking cables.

- Prepare Method of Procedure (MOP) request for all service affecting work activities.
- Submission of MOP requests must be made in advance of the scheduled event, to allow customer operations time to coordinate the approval, since all microwave sites in the system active and transport customer traffic.
- Submission of downtime requests must be made at least 4 weeks in advance of a scheduled event, to allow customer operations time to coordinate the reroute and/or downtime approval, since all microwave sites in the system are active and transport customer traffic.
- Schedule on-site work activities affected by MOP approval(s) based on the work activity and time of day and day of the week restrictions designated in the approval.

City of Schertz Responsibilities

The client will designate a Project Manager who will direct the client efforts and serve as the primary point of contact for Scientel. The client's Project Manager(s) will have significant authority to make certain decisions relative to the project, on behalf of the client, and will have direct access to the client's executive management for resolving problems beyond the Project Manager's immediate authority. The responsibilities of the client's Project Manager(s) include:

- Maintain project communications with Scientel's Project Manager.
- Identify the efforts required of the client's staff to meet the client task requirements and milestones in the Statement of Work and Project Schedule.
- Measure and evaluate progress against the Project Schedule.
- Monitor the project to ensure that support resources are available as scheduled.
- Participate in Progress Reviews meetings.
- Provide timely responses to issues related to project progress raised by Scientel's Project Manager.
- Approve and release payments in a timely manner predicated on project deliverables.
- Ensure that all appropriate client personnel attend and actively participate in Progress Reviews, conference calls, and other project meetings.
- Assign one or more personnel who will work with Scientel staff as needed for the duration of the project, including at least one system administrator.
- Ensure acceptable Standard Change Request and Approval Letter(s) are approved by authorized signature(s).
- Provide building access to Scientel personnel to all facilities where the system is to be installed during the project. Temporary identification cards should be issued to Scientel personnel if required for access to client facilities. Access must be available after business hours where required by Scientel, or as necessary to meet the project schedule.
- Provide any required parking permits to Scientel personnel for restricted access entry and/or parking.
- Obtain all zoning, site access, and other permits (including, but not limited to, easements, impact studies, planning commission approval, variances, etc) necessary for this project and any other agreements required to gain use of sites.
- Provide the appropriate fire inspection and building inspection certificates.

- Provide adequate space, electrical power, communications lines and environmental appropriations for the communications equipment to be installed by Scientel.
- Review and approve or revise delivered design documents within ten days of submission.
- The client must inform Scientel of all relevant rules, regulations, and requirements for installation. Should these conditions impact the project schedule and limit installation, the client may incur additional cost.
- Scientel's demarcation point on the network infrastructure end is the client-owned switch (to be determined on the IP Network Design). The client is responsible for connecting Host end servers to this router.
- The client shall provide power and grounding within 10' of each location.

5. WARRANTY STATEMENT

Scientel Solutions LLC warrants that work will be performed in accordance with sound engineering practice and professional standards, but makes no other warranty, express or implied including the merchantability. In the event of any error, omission, or other professional negligence or any breach of the above warranty of which Scientel Solutions, LLC. is notified in writing within 90 days after system acceptance, the sole and exclusive responsibility of Scientel Solutions LLC shall be to re-perform deficient work at its own expense, and Scientel Solutions LLC shall have no other liability whatsoever. In no event shall Scientel Solutions LLC be liable, whether in contract or tort, including negligence, for loss of profit, loss of product, loss of use, or for indirect, consequential, or special damages. The liability of Scientel Solutions LLC for injury or damage to persons or property arising out of this work shall not exceed the lesser of the total amount received by Scientel Solutions LLC pursuant to this contract or \$1,000,000, whether in contract or tort, including negligence and shall not extend to liability arising out of the negligence or other fault of the client.

6. PRICING

Item	Qty	Pricing
Phase I	1	\$ 230,530.00
Phase II	1	\$ 94,661.00
Phase III	1	\$ 109,445.00
Phase IV	1	\$ 131,199.00
TOTAL		\$565,835.00

7. PAYMENT MILESTONES

Phase I

- 15% NTP
- 20% Design Acceptance
- 30% Equipment Receipt
- 25% Installation Completion
- 10%Final Phase Acceptance

Phase II

- 15% NTP
- 20% Design Acceptance
- 30% Equipment Receipt
- 25% Installation Completion
- 10%Final Phase Acceptance

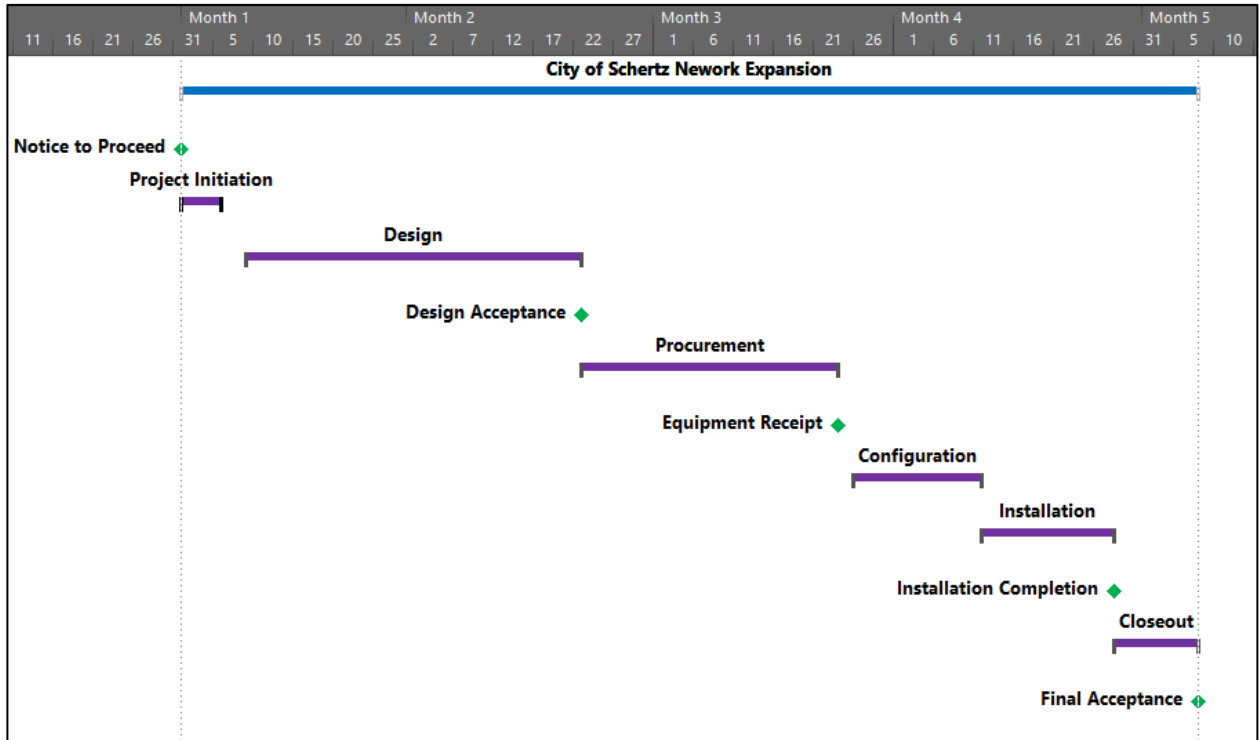
Phase III

- 15% NTP
- 20% Design Acceptance
- 30% Equipment Receipt
- 25% Installation Completion
- 10%Final Phase Acceptance

Phase IV

- 15% NTP
- 20% Design Acceptance
- 30% Equipment Receipt
- 25% Installation Completion
- 10%Final Phase Acceptance

8. PROJECT SCHEDULE-PHASE I



Billing Milestones

- Notice to Proceed Day 1
- Design Acceptance Day 35
- Equipment Receipt Day 60
- Installation Completion Day 80
- Final System Acceptance Day 100