

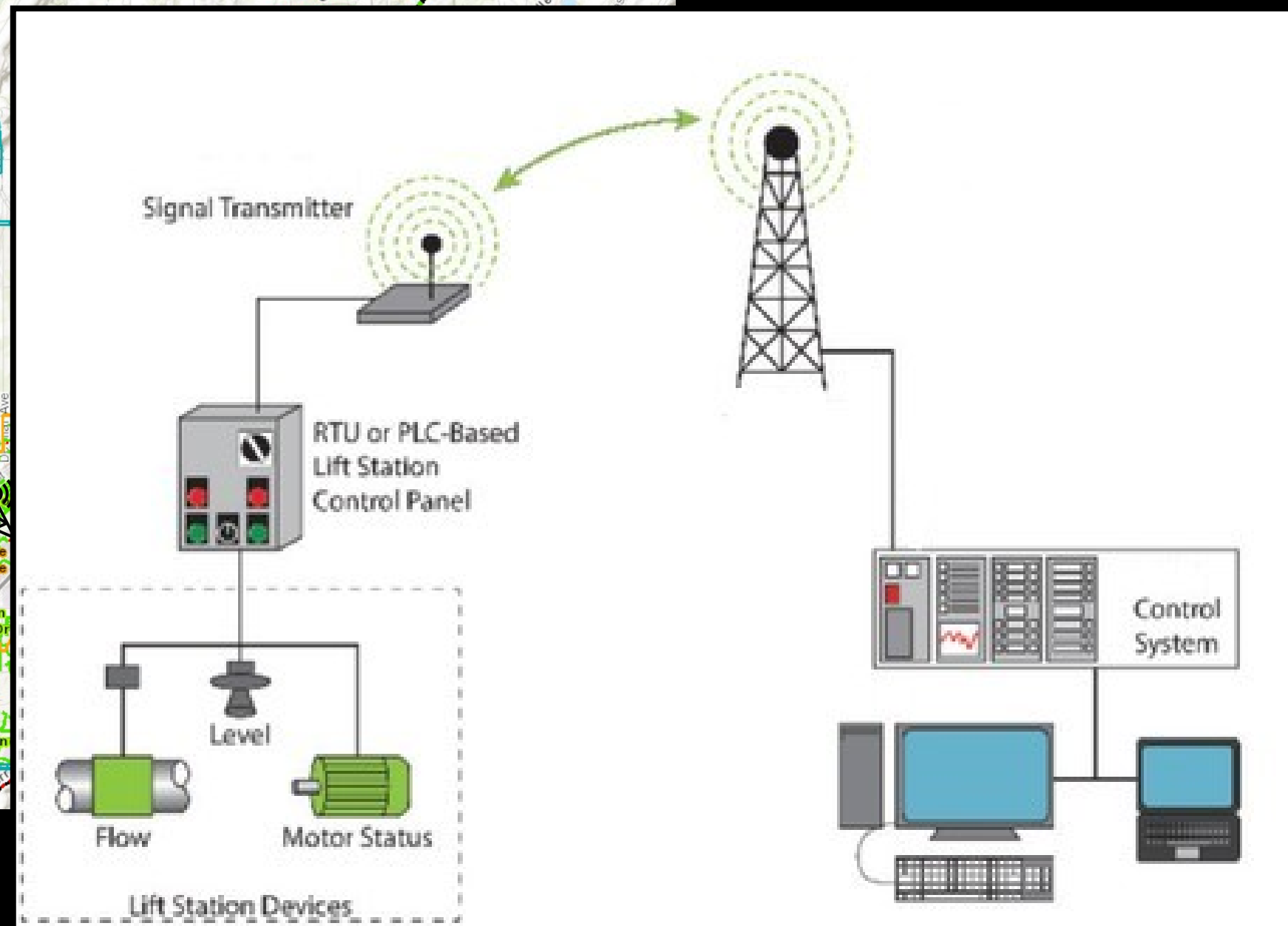
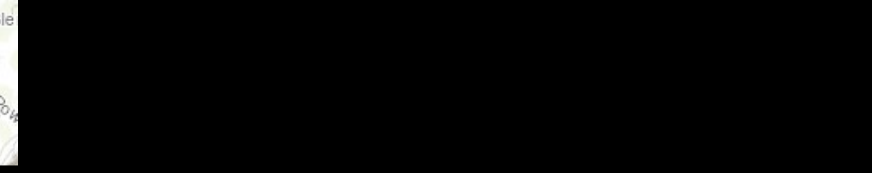
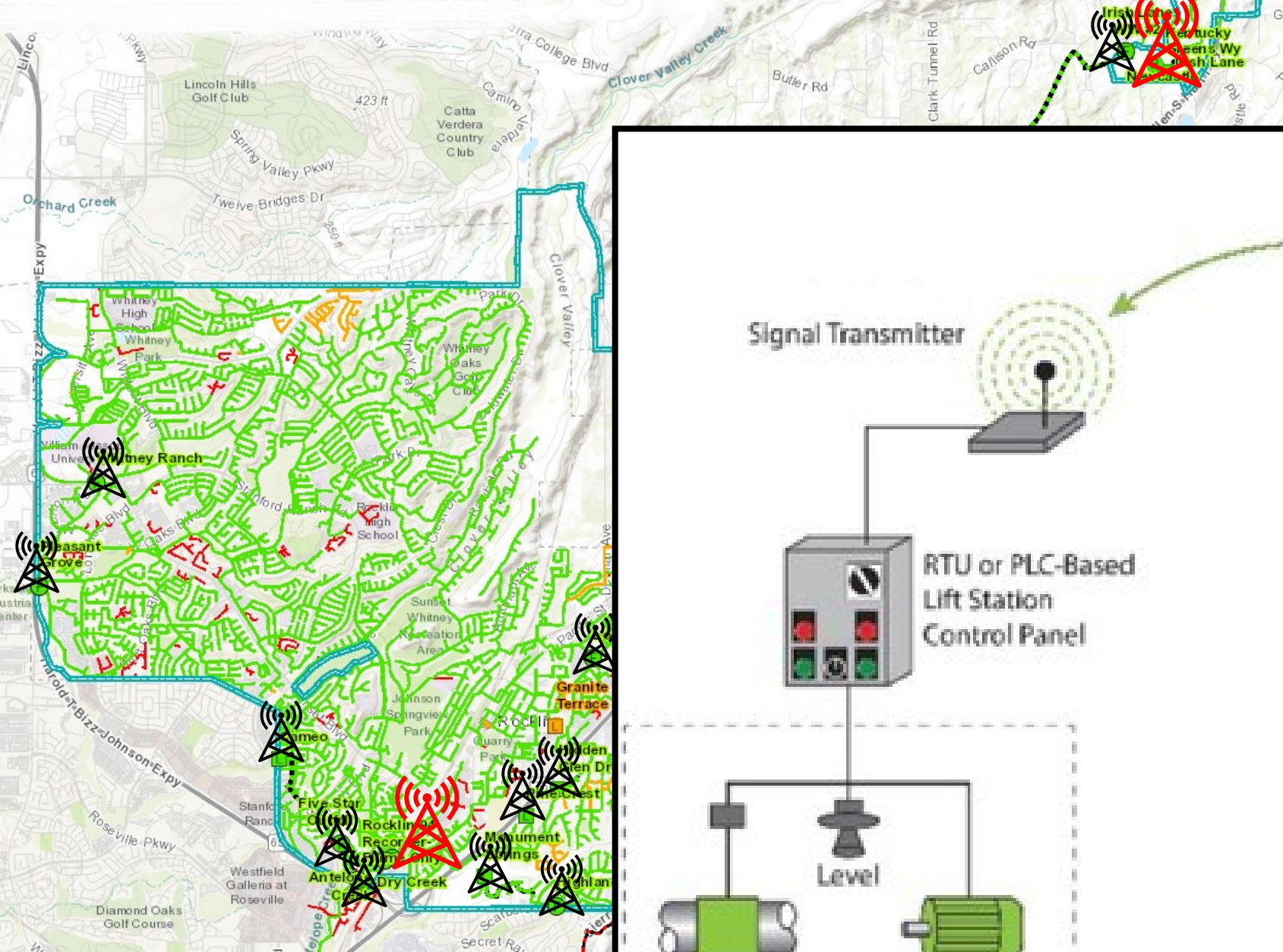
SCADA Master Plan

August 5, 2021



What is SCADA?

- Supervisory Control and Data Acquisition
 - Control remote equipment & sensors
 - From central location or remotely
 - Monitor remote equipment & sensors
 - Data historian



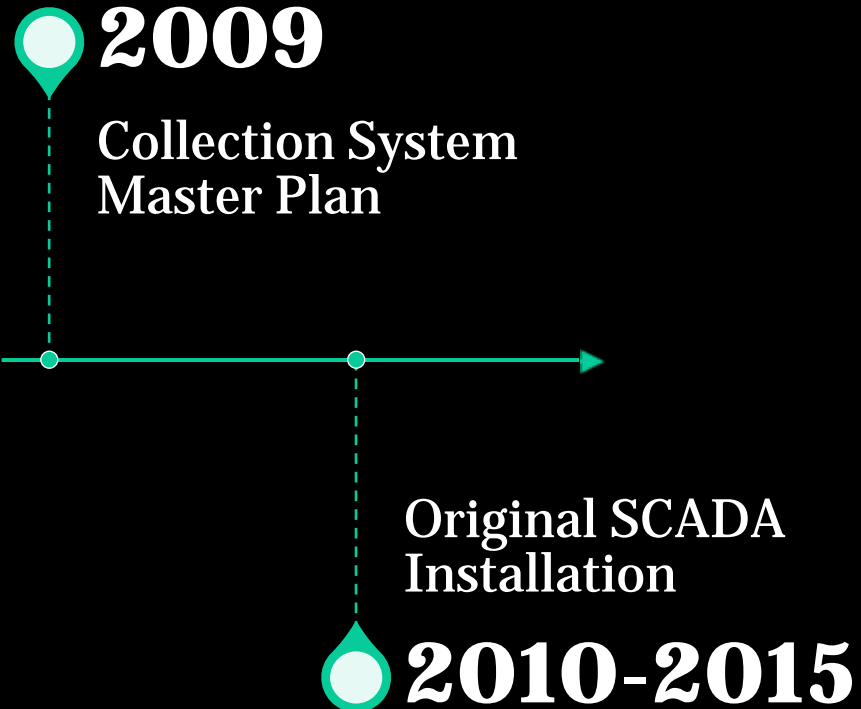
Advantages of SCADA

- Improved reliability
- System faults can be detected and localized
- Enable remote facility operation
- Reduced response times
- Reduced maintenance costs
- Historical data supports work programs and studies

Disadvantages of SCADA

- Complex
- Requires skilled operators
- Adds cybersecurity vulnerability

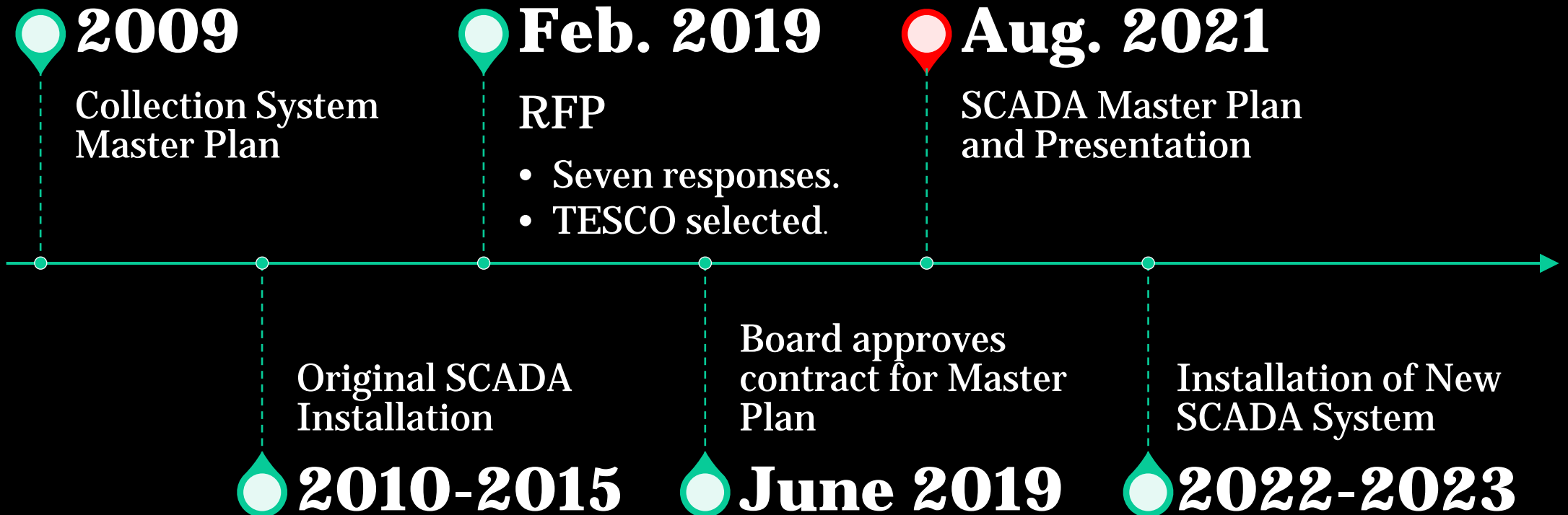
History



Reasons for Master Plan

- Current system
 - Proprietary architecture
 - RTU hardware and radio frequency
 - Limited functionality
 - Limited support channel
- Future development
 - SPMUD/Developers only have one option for new sites

Timeline

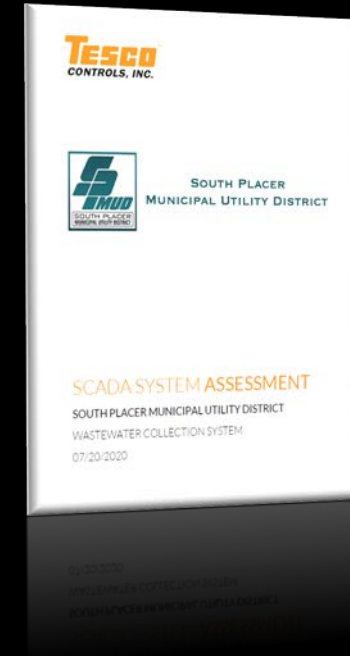


Master Planning Objectives

- Open, industry-standard, commercially available system
- Availability of local support services
- Redundancy, resiliency, and reliability
- Consistency and standardization
- Simplicity and maintainability
- System performance
- Cost-effective solution

Master Planning Process

- Kickoff and data collection meetings
- Site visits with TESCO team
- System Assessment Memo
- Workshops
- Demonstration of SCADA software programs
- Site visit with electrician for “pre-design” options
- SCADA Master Plan



Issues Highlighted

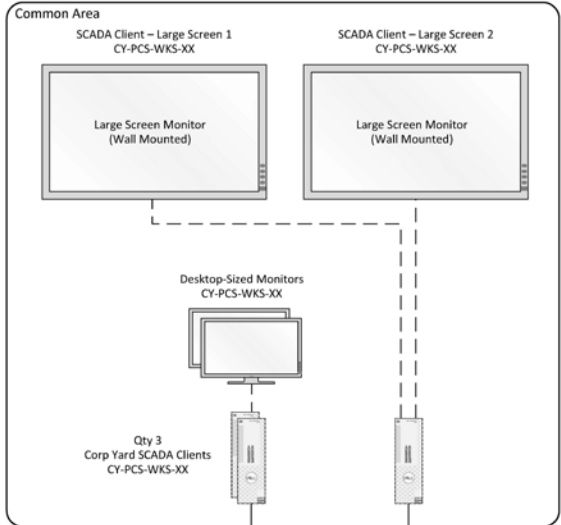
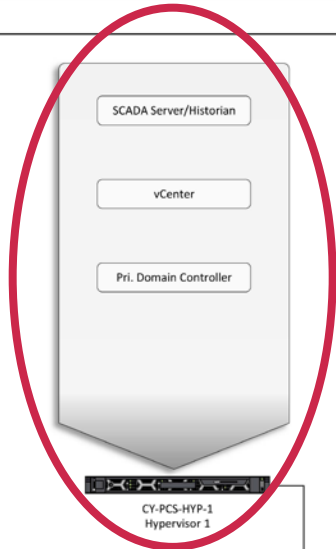
- **Current System**
 - No central station hardware redundancy
- **Radio Frequency (RF)**
 - Frequency is proprietary
 - RF analysis during final design
- **Risks**
 - Potential code issues
 - Potential safety issues

Master Planning Results

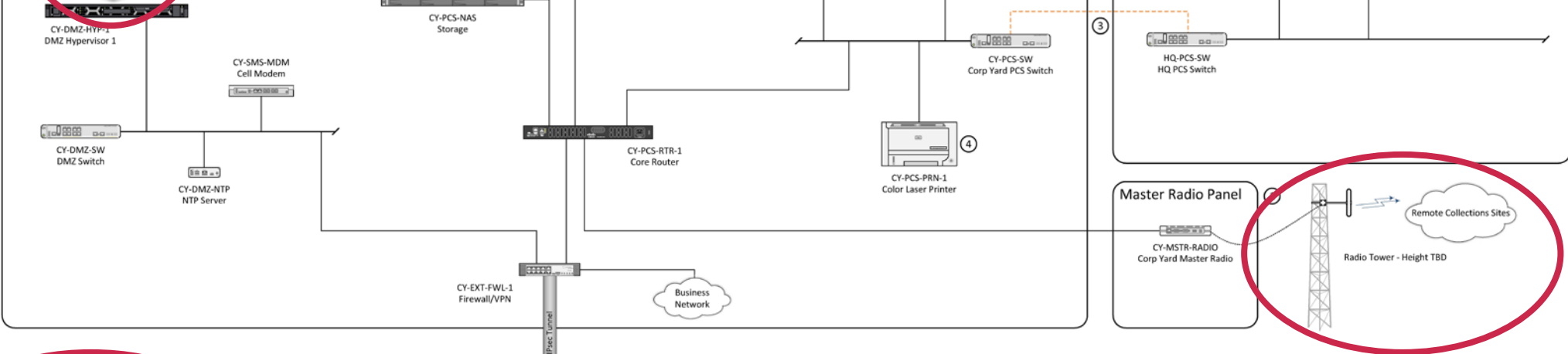
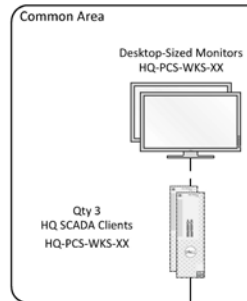
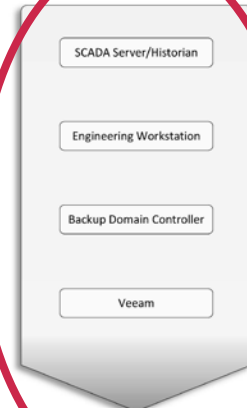
- Cybersecurity
- Open, industry-standard equipment/software
- Communication improvements
- Wider availability to staff
- Opportunity to standardize lineups

Corp Yard Site

Corp Yard Building



HQ Building



NOTES

- 1: Radio, Tower, and Antenna requirements incumbent upon Radio Study. Master Radio Panel to be placed at a location separate from the Corp Yard and HQ Buildings.
- 2: DMZ Domain Controller is Read-Only
- 3: Dedicated Fiber Pair
- 4: Location TBD

LEGEND

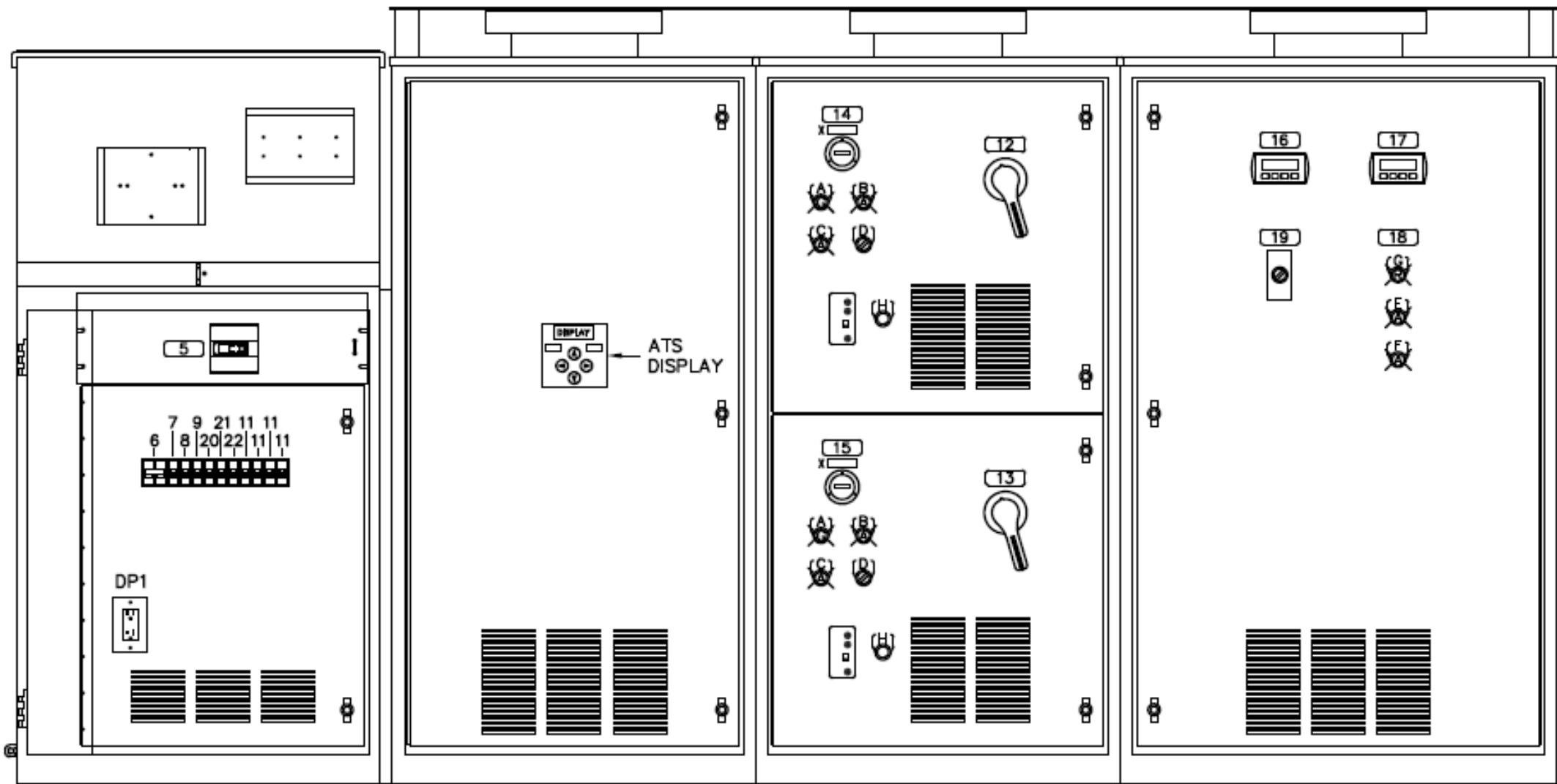
DP / HDMI	-----	CAT-5e / CAT-6	—————
SERIAL	-----	FIBER (MM)	-----
DEVICE NET	-----	FIBER (SM)	-----
MODBUS PLUS	-----	SWITCH	-----
COAX	-----	SWITCHED NETWORK	-----
NOTE TAG	⊙		
RF	⚡		

System Overview
Ignition Based System

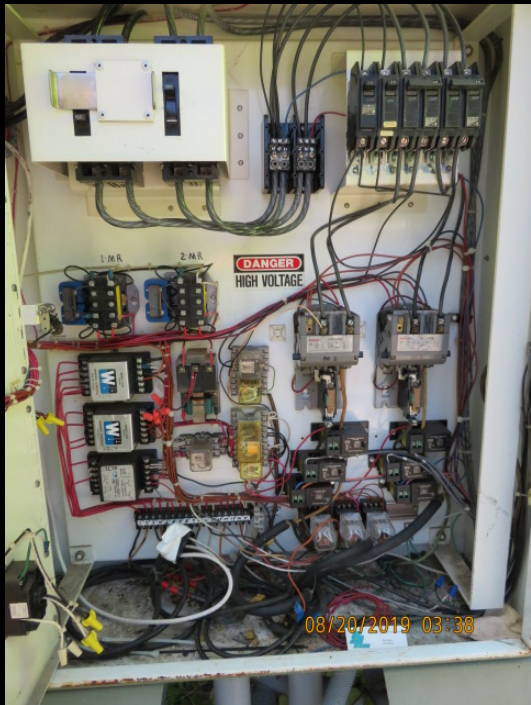
South Placer Municipal Utility District
ICS Architecture Model

DRAFTED	DESIGNED	DATE	REV. DATE	JOB NO.	DRAWING
TCI	TCI	2021-05-06	2021-07-28	T49596	01





PANEL DEADFRONT DOOR
(EXTERIOR DOOR REMOVED)



Costs

- Based on assessments made from visiting each site multiple times by multiple disciplines

TYPES OF SITES	#
Central Station (Corp Yard / HQ)	1
Repeater Sites	2
Flow Recorder Sites	10
Lift Station Sites	
New back panel assemblies and mods to MCCs	3
New PLC assemblies and new MCCs	10

Costs

Project Administration	\$ 125,000
Detailed System Assessment	\$ 75,000
Front-End Engineering Design	\$ 275,000
Central PCS/SCADA System Implementation	\$ 580,000
Local, Wide Area Network & RF Telemetry	\$ 225,000
PLC/RTU and Motor Control Centers	\$ 2,495,000
Field Deployment Services	\$ 185,000
Field Installation by C-10 Electrical Contractor	\$ 575,000
Project Closeout	\$ 211,000
SUBTOTAL	\$ 4,746,000

Costs

SUBTOTAL	\$ 4,746,000
Misc (Bonds & Insurance, Shipping, Travel)	\$ 98,000
Sales Tax	\$ 344,085
Contingency	\$ 474,600
TOTAL	\$ 5,662,685

Potential Phasing of Improvements

- Two systems in parallel for a time
 - Limit the duration of this scenario



Implementation Approaches

- Design-Bid-Build
 - Typical approach
- Design-Build
 - Single entity responsible for successful performance
 - Pre-qualification process
 - Select based on “best value”
 - Transfer of risk to DB entity

Questions & Discussion

ISP

South Placer Municipal Utility District

HQ Office Building

HQ Network Closet

Cisco
ASR 901
Router

Palo Alto Networks
PA-220
Firewall
192.168.1.1

IPsec Tunnel

Business Network

Dell
N2024P
Layer 3 Switch

IT Office

Gigabyte Technology
Z390 Aorus Elite
SCADA Client
TSD-014
192.168.1.129

Dell
OptiPlex 9020
SCADA Client
SCADA-HQ
192.168.1.146

Common Area

Corp Yard Building

Radio Panel

Data Flow Systems
TAC II RTU 202
SCADA Gateway/Radio Unit

Dipole
218.3 MHz

Rohn 25G

Network Closet

Dell
N2024P
Layer 3 Switch

Field Supervisor's Office

Dell
OptiPlex 3050
SCADA Client
FSD-012
192.168.1.109

SCADA Room

Netgear
FS103

Data Flow Systems
Hyper Server Module HSM003
SCADA Server

Dell
OptiPlex 760
SCADA Client/
Backup Repository
SCADAL-PC
192.168.1.179

Remote Access
Laptops/Phones

