Network Design and Implementation
Request for Quote (RFQ)
Prepared by CTC Technology and Energy for
Banning Library District (BLD)

Background
Banning Library District (BLD) is part of the California State Library (CSL) system. BLD provides valuable services and programs to support local neighborhoods and communities. BLD’s current on-premise networks, cabling, broadband internet access and public WiFi have been pieced together over time, as new services and uses have emerged. BLD’s network and systems are lacking a unified and cohesive design, and several elements are outdated or are being used in operational roles that exceed their intended design. BLD also lacks operational tools and technical support for critical processes including hardware and software maintenance, fault monitoring and notification, and vendor technical support.

Scope
The scope includes Services, Systems, and Infrastructure as described in the following subsections. A high-level drawing of “in-scope” systems is shown in Figure 1.

Figure 1 – Schematic architecture and WLAN coverage areas
Services
This RFQ is for the turnkey delivery of fully operational network system upgrades. The services component of this RFQ includes all necessary labor to deliver a fully engineered design, and its installation, configuration, integration, migration, testing and as-built documentation. This shall include integration and interoperability with legacy systems remaining in operation. Services also include up to 8 hours of orientation, knowledge transfer, and OAM training on new or upgraded systems. A more detailed description of services is in Appendix A - Integration Services.

Systems
The following is a list of network devices and systems that are in-scope for this RFQ. Electronic network equipment must include 3 years of vendor maintenance and technical support. General guidance, requirements and more detailed minimum technical specifications for these items can be found in Appendix B - Systems Requirements.

- NG Firewall
- Distribution Switch
- Access Switch with PoE
- WLAN Control and WAPs
- Dual Server for PDC/BDC and Core Network Services
- Network Management System (NMS)

Infrastructure
The following is a list of infrastructure components and systems that are in-scope for this RFQ. Detailed minimum technical specifications for these items can be found in Appendix C - Infrastructure Requirements.

- Cabinets, PDUs (A/B circuits)
- Cable Management
- Structured Cabling
- AC Electrical Power (A/B circuits)
- Uninterruptable Power Supply (A/B)
- HVAC / Environmental Control

Site Information
Address
Banning Library District
21 West Nicolet Street
Banning, CA 92220

Google maps link: https://www.google.com/maps/place/Banning+Library/@33.9291425,−116.8785219,17.04z/data=!4m5!3m4!1s0x80db414372b51c15:0x6410f6371374aeb718m213d33.929256314d-116.8768454
Floor Plan
Facility documentation, such as network layout, work areas, WAP locations, cabling diagrams may be available from the CSL jurisdiction during a scheduled site survey. The facility’s floor plan is shown in Appendix F – Floor Plan.

Broadband Connection
BLD plans to have a new 1 Gbps broadband connection turned up and operational by the last quarter of 2020. This connection will likely be upgraded to a higher speed within the operational lifespan (5-7 years) of the network equipment specified in the RFQ.

Current Network
A schematic diagram of the existing network devices and systems is shown in Appendix E – Current Network Schematic Diagram.

Site Survey
The contractor should contact the library directly to arrange for a site survey of the facility. Please note that the library may have specific visitor guidelines and health controls in place due to the recent health crisis. Suggested systems and recommended survey data are provided in Appendix D - Site Survey.

BLD Site Contacts
Kevin Lee, District Director 
951-849-3192 ext. 228 
kevin@banninglibrarydistrict.org

Fernando Morales, Circulation Manager 
951-849-3192 - Ext 224 
fernandom@banninglibrarydistrict.org
Quote Request

Content and Format

The contractor’s quote should include:

- Contractor qualifications such as staff training and any relevant industry certifications
- Brief description of all services to be provided, noting standards or best practices that will be followed
- Three professional references:
  - Recent references for projects with similar scope / scale
  - If possible, include one past performance for State, County, Local government
- Detailed Bill-of-Materials (BOM) in a single spreadsheet file (multiple tabs ok)
  - Fully engineered design with all subsystems and components included
  - Vendor quotes attached for all materials
- Pricing summary table as shown in Table 1: Pricing Summary Worksheet by Category
- Logical drawing(s) to represent the recommended solution
- Capacity and interoperability assessment of legacy systems to remain in operation
- Financial terms and conditions, and a sample contract agreement
- Project timeline (procure, install, configure, integrate, test, train, handoff)
- Quote submission:
  - To: kevin@banninglibrarydistrict.org; fernandom@banninglibrarydistrict.org;
  - Cc: izimmermann@ctcnet.us; mdehaven@ctcnet.us;

Pricing

The pricing portion of the quote must be formatted to fit into the tables below. These tables align with budget categories used by CA State Library, and this is a required format for quote processing and funding approval.

A Microsoft Excel template [CSL RFQ Pricing Matrix 20200710.xlsx] is attached for this pricing table / format.¹

<table>
<thead>
<tr>
<th>Data Network Equipment</th>
<th>Materials</th>
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<th>Maintenance</th>
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<td>WLAN controllers, Access Points, Antennas</td>
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<td>$ -</td>
<td>$ -</td>
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<tr>
<td>Network servers &amp; core network services</td>
<td>$ -</td>
<td>$ -</td>
<td>$ -</td>
<td>$ -</td>
</tr>
<tr>
<td>Network Management Software</td>
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<td>$ -</td>
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<td>$ -</td>
</tr>
<tr>
<td>Patch cabling &amp; connectors</td>
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<td>Other (add description)</td>
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<td>$ -</td>
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<tr>
<td><strong>Subtotal</strong></td>
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<table>
<thead>
<tr>
<th>Building &amp; Facilities (Infrastructure)</th>
<th>Materials</th>
<th>Labor</th>
<th>Maintenance</th>
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<td>Racks, cabinets, cable management, PDU’s</td>
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<td>$ -</td>
<td>$ -</td>
<td>$ -</td>
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<td>UPS</td>
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<td>$ -</td>
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</tbody>
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¹ If applicable, CMAS pricing and CMAS contract number must be included in the response
Technical Contacts for RFQ Questions

- To: jzimmermann@ctcnet.us; mdehaven@ctcnet.us;
- Cc: kevin@banninglibrarydistrict.org; fernandom@banninglibrarydistrict.org;

Project Timeline

An estimated project timeline is shown in Table 2. The dates listed in the table are subject to change. CSL administrative funding processes are outside of the library’s control and every attempt will be made to keep the selected contractor apprised of timeline changes. The CSL jurisdiction requests, barring unforeseen delays, project completion no later than November 30, 2020.

Table 2: Estimated Project Timelines

<table>
<thead>
<tr>
<th>Project Phase</th>
<th>Days</th>
<th>Start</th>
<th>Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. RFQ sent out</td>
<td>0</td>
<td>08/07/20</td>
<td>08/07/20</td>
</tr>
<tr>
<td>2. Site survey window</td>
<td>10</td>
<td>08/07/20</td>
<td>08/17/20</td>
</tr>
<tr>
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<td>7</td>
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<td>08/24/20</td>
</tr>
<tr>
<td>4. Selection &amp; Notification</td>
<td>7</td>
<td>08/24/20</td>
<td>08/31/20</td>
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<tr>
<td>5. CSL funding processes</td>
<td>42</td>
<td>08/31/20</td>
<td>10/12/20</td>
</tr>
<tr>
<td>6. Funding Notification</td>
<td>0</td>
<td>10/12/20</td>
<td>10/12/20</td>
</tr>
<tr>
<td>7. Procurement</td>
<td>42</td>
<td>10/12/20</td>
<td>11/23/20</td>
</tr>
<tr>
<td>8. Install, Configure, Integrate, Test</td>
<td>7</td>
<td>11/23/20</td>
<td>11/30/20</td>
</tr>
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Procurement

The contractor will procure all materials required and specified in original quote, unless otherwise stipulated and agreed to by BLD.

The CSL jurisdiction reserves the right to provide or procure any subset of materials included in the bill of materials and pricing summary.

Materials provided by the CSL jurisdiction will be accounted for by removal from the quoted bill of materials.

The contractor should not enter into any procurement obligation prior to receipt of official “Funding Notification” and a signed mutual agreement to proceed.

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Evaluation Criteria

The proposed solution must meet or exceed all technical and operational requirements described in this RFQ and its appendices.

The proposed project schedule must also reflect a completion date, including staff orientation and OAM training by the requested finish date of November 30, 2020. At the time of award, and again at time of funding notification the project schedule will be re-confirmed and adjusted if necessary due to any unexpected delays with CSL or the CSL jurisdiction.

In addition, the proposed solution will be evaluated and scored against the weighted criteria shown in Table 3.

Price is the most heavily weighted, however substantial emphasis is shared with additional categories to help ensure high quality work, and the overall ease of use and management. Networking and system management are not primary skills for most CSL jurisdiction’s staff, and it is essential that the proposed solution is easily understood, managed and maintained. This includes automated monitoring and event notification, vendor maintenance notifications, unified interfaces for configuration and provisioning changes, and simplified processes for software updates, security patches, and feature upgrades.

Table 3: RFQ Evaluation Criteria

<table>
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<th>Factor</th>
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</thead>
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<tr>
<td>Total price of all products and services</td>
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<tr>
<td>Prior experience, personnel qualifications</td>
<td>15%</td>
</tr>
<tr>
<td>Technical design, performance, resilience, interoperability</td>
<td>15%</td>
</tr>
<tr>
<td>Sustainability; ease of operation, administration, management</td>
<td>20%</td>
</tr>
<tr>
<td>Vendor maintenance and technical support</td>
<td>15%</td>
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<tr>
<td>Technology roadmap for capacity and performance upgrades</td>
<td>10%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Disclaimer

This request does not represent a commitment to procure the services or materials specified. The CSL jurisdiction reserves the right to cancel this request or reject any bid or portion thereof for any reason it deems to be in its best interest.
Appendices

Appendix A - Integration Services

Plan, Design, Configure, Integrate, Test

The contractor shall:

- Meet with key library staff
  - Document operational activities and processes with dependencies on network systems
  - Identify and document configuration requirements to support operational processes

- Analyze existing network system configurations to verify, validate and document
  - Configuration details which support the established requirements
  - Document new requirements discovered or revealed during configuration analysis

- Document baseline configurations for
  - New systems to be integrated into the network environment
  - Existing systems which will remain in service and require reconfiguration
  - Firewall configuration to replicate existing rules, permissions, translations, and requirements

- Before onsite work
  - Provide daily schedule for installation, configuration, integration, testing, and training / orientation
  - Provide acceptance test plan (ATP) for review and approval by the CSL jurisdiction
  - Stage, configure and burn in as much equipment as possible ahead of maintenance window
  - Prepare a backout / recovery plan if the cutover can’t be completed in the allotted window
  - Archive all operational running configurations and hardware inventories

- Onsite work - Configure, Integrate, Test
  - Follow the day-by-day schedule and notify the CSL jurisdiction immediately of potential changes
  - Configure all “in-scope” devices and systems, with strict adherence to industry standards, conventions, best practices, and vendor configuration guides
  - Integrate all “in-scope” devices and systems to support current and planned operational environment
  - Execute the ATP and successfully demonstrate testing of all components for final acceptance by the CSL jurisdiction

- CSL Jurisdiction specific scope
  - Migrate existing Windows Server to 2019

System Documentation

- As-built documentation to include system level drawings, running configurations, list of assigned IP addresses, addressing conventions, DHCP scope, system hostnames, DNS names
- Structured cabling specifications, port assignments, site diagrams, and test/certification results for all cabling

OAM Training and Orientation

- Contractor will provide up to 8 hours of basic OAM training for common operational tasks including:
  - User provisioning, role/group provisioning
  - WLAN provisioning
  - NMS configuration, fault monitoring and notifications
  - Using vendor maintenance and technical support
Vendor Maintenance and Technical Support

- Contractor will include pricing for three (3) years of vendor provided maintenance and technical support to cover all installed network systems and components as follows:
  - Next business day (8 x 5) onsite hardware replacement
  - Software hot fixes, feature upgrades, new releases
  - Technical phone support
- Include vendor configuration guides and system administration guides for all systems

Appendix B - Systems Requirements

General Technical Requirements

This list includes general requirements that are applicable to all network systems. Some exceptions may be acceptable, provided they are identified, footnoted and justified in the proposed design.

- Mounting kits for 19” rack, tapped rails (or 24-inch mounting kits for cabinet installations)
- NEMA 5-15P power cords (NEMA 5-20P if required)
- Dual AC power supplies (120v)
- Minimum 1 Gbps uplink and downlink ports (prefer copper)
- Dual uplink and downlink ports for link aggregation
- Optical transceivers – on premise use SFP/MM (SFP+/MM for 10 Gbps) uplinks / downlinks
- Optical transceivers – Firewall or distribution switch uplink to PE/CPE (coordinate with provider)
- Out-of-band management: 10/100/1000BASE-T Ethernet physical RJ45 (8P8C)
- LC / APC optical connectors expect cases where a different connector is required
- Airflow front-to-rear always preferred
- Support for
  - IEEE 802.3ad/802.1AX link aggregation on all uplink and downlink ports
  - IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
  - IEEE 802.1Q VLAN Tagging and Q-in-Q VLAN stacking
  - Port-based VLAN, MAC-based VLAN, Voice VLAN
  - IEEE 802.1p CoS and DiffServ code point (DSCP/IP) prioritization
  - IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)
  - IEEE 802.1X: Port access control
  - Persistent MAC (sticky MAC)
  - Layer 3 VLAN-tagged sub-interface
  - SNMP v3
  - Syslog facility levels
  - SSH / Kerberos login access
  - HTTPS web GUI
  - User Authentication, Authorization, Accounting (AAA)
  - Role-Based Access Control (RBAC)
  - Centralized AAA: RADIUS / TACACS+ / (Windows AD integration strongly preferred)
  - IPv4, IPv6 / Unicast and Multicast support

CIPA Compliance

The CSL jurisdiction’s public workstations and public network systems require compliance with the Children’s Internet Protection Act (CIPA). CIPA compliance can be achieved in multiple ways, including endpoint
protection, firewall feature configuration, or through third party (off premise) services, such as OpenDNS, or Cisco Umbrella. More information on CIPA can be found here:


**NG Firewall**

- Meet or exceed all capabilities of existing firewall
- Minimum 3 zones: Trusted, Untrusted, DMZ
- Effective throughput >85% line rate with all features enabled
- VPN / Remote access (staff use)
- Layers 3-7 DPI / Application-aware
- Traffic shaping policy – by user / app / subnet
- CIPA compliance (URL filtering on FW, or use DNS with a forwarder to CIPA compliant service)
- NG / Unified Threat Management (UTM) features:
  - URL filtering / Whitelisting / Blacklisting
  - SSL Proxy / Decryption
  - Advanced Malware Protection (AMP)
  - Anomaly Detection / Zero-day threat protection
  - Intrusion Prevention
  - Endpoint protection (optional / consult with jurisdiction)
  - Email protection (optional / consult with jurisdiction)
- Optional
  - HA / stateful failover (if running HA)
  - Upgradeable optics (1 Gbps to 10 Gbps)
  - Dual optics for spare downlink or aggregation (to MDF)
  - Configure QoS support for links to remote branches with VoIP (if any)

**Distribution Switch**

- Meet or exceed all capabilities of existing Distribution Layer Switch
- Distribution switch with L2/L3 base image
- Include downlink ports to connect all IDF’s, with extras for expansion, spare, link aggregation
- Optional
  - Collapsed Distribution/Access into single switch (or stack) for smaller installations with no IDF
  - Dual (HA) Distribution switches – especially with (HA) firewalls
  - Full layer-3 image and routing capabilities image for larger installations
  - Configure QoS support if use VoIP

**Access Switch**

- Meet or exceed all capabilities of existing Access Layer Switch
- Stacked switches or chassis based
- L2/L3 image (consult with CSL jurisdiction on routing and QoS requirements)
- Access ports 10/100/1000Base-TX
- Support for IEEE 802.3at (30W PoE+) and 802.3bt Type 3 (51W 4PPoE)
  - Cisco UPOE (60W) may be used with supporting devices
- Access port count: 125% the planned number of access layer devices at MDF and each IDF
- Power supplies adequate to support 125% of planned PoE budget
• Scalability to add access / PoE port capacity, including power supply to support them
• Dual uplink ports for spare use or link aggregation
• Optional
  o Collapsed Distribution/Access into single switch for smaller installations with no IDF
  o Include optical ports for 1 Gbps optical endpoints (WAP, CCTV, other ...)
  o Configure QoS support if use VoIP

WLAN

• Contractor will perform a wireless coverage site survey to determine number of indoor and outdoor
  AP’s to provide full coverage, while minimizing signal bleed beyond the property boundary
• Meet or exceed all capabilities of existing WLAN Controller and WAPs
• Minimum 802.11ac Wave2, Multiuser MIMO
• Multiple SSID, guest isolation (guest anchor)
• Captive portal with password / AUP
• Indoor AP – minimum 1 Gbps backhaul
  o Dual port for backhaul aggregation is preferred
  o Optimized antenna selection / configuration for higher-density areas
• Outdoor AP – minimum 1 Gbps backhaul
  o Dual port for backhaul aggregation is preferred
  o Antenna selection and configuration to limit coverage to the property, by using
    single or dual-band and omnidirectional or directional
• WLAN controllers
  o Cloud based, appliance based, or embedded (software in switch, firewall, or WAP)
  o Must support Guest/Public SSID separation and security (guest anchor)
  o Must support mobility / handoff between AP’s
  o Indoor and Outdoor WAPs – same vendor, controller, SSIDs (advertised or not)
  o Rogue AP detection
  o Traffic shaping / rate limiting capability is strongly preferred
• Optional
  o Configure QoS support on staff VLAN if use VoIP

Server for Network Applications and Core Services

• Windows Server 2019 (HA)
  o PDC and BDC
    ▪ Rack mount (1U) servers, 4 x 1 Gbps NIC
    ▪ System requirements: see vendor documentation
  o Network support
    ▪ PDC w Network Services DNS (CIPA compliance), DHCP, NTP, Role Based Access Controls
    ▪ BDC w Network Services DNS (CIPA compliance), DHCP, NTP, Role Based Access Controls
• Network Management System - Operations, Administration, Management (OAM)
  o Rack mount (1U) servers, 4 x 1 Gbps NIC
  o System requirements: see vendor documentation
  o Optional: evaluate / reuse existing domain controller hardware
Network Management Server

The NMS should support all operational systems and processes for hardware and software maintenance, fault and performance monitoring, event notification, syslog, secure role-based access control (RBAC). A unified platform and interface is preferred, and may include integration with subordinate NMS or EMS systems.

- NMS Application / node manager
  - SNMP v3, Configurable Polls/MIBs/Traps
  - Syslog Server
  - Notifications / Alerts by Email/SMS
  - Web GUI
- Installation options (see application requirements):
  - Run on VM if a host system is available
  - Rack mount (1U) server, 2 x 1 Gbps NIC

Patch Cabling

- High quality Category 6A patch cabling
- Uniform brand and connector type
- Patch cables sized properly for in-cabinet connections
- Patch cables in various lengths provided for any added remote wall jacks and panel locations

Appendix C - Infrastructure Requirements

Racks and Cabinets

- Four-post / 24-inch cabinet w side panels and locking doors preferred, or floor mounted (42U) two-post / 19-inch (tapped) rack if in a secure location
- Integrated PDUs for A/B power circuits (15A NEMA 5-15R or 20A NEMA 5-20R w T-slot)
- Integrated cable management system
- Rack location selection
  - Minimize disruption and inadvertent contact (use locked cabinet for high traffic area)
  - Optimize proximity to HVAC and AC breaker panel
- For heavy UPS/battery rack installations, consider floor load / point load limits
- Installation must be compliant with all applicable State, County, and Local codes (includes seismic strapping if required)
- Installed equipment must will be labeled (system / hostname) on front panel

Structured Cabling

- ANSI/TIA-568 Cat 6A cabling, solid wire, (23 Gauge)
- ANSI/TIA-568 Cat 6A 110 patch panels (8P8C) RJ45
- Cable terminations to support current PoE specifications / variants
- Each WAP location must have either:
  - Two (2) copper (8P8C) ports available for backhaul
  - Two (2) LC/APC fiber ports available for backhaul, and AC power source for DC converter
- If distance require use of an optical link, and fiber patch panels were not otherwise planned:
  - May use fiber “home runs” for switch uplinks
  - May use fiber “home runs” for WAP backhaul and alternate DC power source
  - Reconsider the use of fiber optic structured cabling
• Test and certify all structured cabling and provide test reports
• Wall jacks and patch panel ports will be clearly identified and labeled
• Recommended: Upgrade existing Cat “5” or lower rated structured cabling to Cat 6A

AC Electrical Power
• For network systems, the contractor must:
  o Determine 120V AC power load (max load) of proposed design
  o Verify existing AC circuit is dedicated to the proposed design
  o Verify existing AC circuit provides 125% (amperage) of max load
• For HVAC systems, the contractor must:
  o Install dedicated AC circuit as necessary for HVAC unit(s)
• All electrical work must be permitted, and comply with all applicable State, County, and Local codes
• Optional
  o Install dual dedicated (A/B) 120v circuits/breakers for the proposed MDF design

Uninterruptable Power Supply (UPS)
• Contractor must determine maximum load (“max VA”) required by the proposed MDF design, including any legacy equipment to remain
• Rack-mounted UPS must provide 125% of the max VA load
• Rack-mounted extended runtime batteries for 15-to-30 minutes runtime at max VA load
• UPS must be SNMP managed (or support email / SMS alerts)
• Optional
  o Dual UPS systems; connected to A/B commercial power and A/B rack PDU’s, with minimum runtime 15-to-30 minutes on each A/B side
  o Relocation of extended run batteries with an extension cable if needed for weight distribution

HVAC / Environmental Control
• Determine the “net” BTU output of the proposed solution, less existing systems to be replaced
• Survey current HVAC systems for capacity to support any net increase in BTU output
• Include HVAC necessary for proper environmental control (portable units acceptable)
• Installation must be compliant with all applicable State, County, and Local codes

Appendix D - Site Survey
The contractor should schedule and perform a site survey of the CSL jurisdiction location(s) and facilities.
Additional facility documentation, such as network layout, work areas, patron gathering areas, WAP locations, PoE device locations, and cabling diagrams may be available from the CSL jurisdiction during a site survey.
At minimum, the site survey should include a careful evaluation of the following systems, subsystems, and resources.

Wired LAN/WAN Equipment
• Firewalls
• Routing, Switching
• Enterprise servers, network services, network management
Wireless LAN
- Number of indoor and outdoor AP’s to support requested coverage areas
- Antenna type / design to minimize signal bleed past property boundary
- WAP mounting locations, power, backhaul

PoE Sources (Switches, Injectors)
- Input (single or dual AC power supplies)
- Input (upgradeable for higher output or redundancy)
- Output (PoE, PoE+, 4PPOE, UPOE, ...)
- Output (max wattage / load) with existing and/or upgraded AC input

PoE Devices
- Inventory existing PoE endpoints (include WLAN, CCTV, VoIP, IoT, ...)
- Document existing PoE endpoints power profiles (PoE, PoE+, 4PPOE, UPOE, ...)

Racks and Cabinets
- Basic rack elevations
- Available capacity

Structured Cabling
- Contractor will survey structured cabling to provide quotes for additional cabling, or upgrades to existing cable plant
- Environments with obsolete cabling, or mixed cable plants (Cat 3, Cat 5, Cat 5E, Cat 6, Cat 6A) should be considered as candidates for cabling upgrades to a Category 6 or 6A standard everywhere that cabling is needed.
- Older cabling with legacy standards, poorly installed or terminated panels, or cabling to deprecated panel locations (e.g. due to wireless connectivity) should not be upgraded unless cabling will be needed there.

AC Power (all electrical work must be permitted and performed by a licensed electrician)
- AC power circuit(s) to MDF; capacity, estimate current load, note whether dedicated to MDF
- Identify breaker panel and availability of new/upgradable slots for MDF circuits
- AC power in WAP locations

Uninterruptable Power Supplies (UPS)
- MDF and IDF max capacity (VA)
- MDF and IDF extended run batteries
- Critical networked devices (Library systems, applications, ...)

HVAC
- Evaluate current BTU generated (heat output) of MDF equipment
- Determine capacity of any existing HVAC system for the MDF equipment
Appendix E – Current Network Schematic Diagram

Figure 3 – Schematic diagram of existing network systems and connections

- **Verizon / Frontier**
  - Netgear ProSAFE Plus Switch GS105e 5-port 1Gbps
  - Star2Star Communications Cloud Connection Manager 1000
  - "Slave 2" Netgear ProSAFE GS—OTP 8 ports and 2 unused optical ports
  - "Slave 1" Netgear (mod?) 24 ports (3 in use)

- **“Backoffice”**
  - Ethernet
  - Dell Power Connect 2816 (16 ports)
  - WiFi
  - Ruckus WiFi Rtr 5 ports

- **Local History Rm**
  - 1 wall jack
  - Ruckus WiFi Rtr 5 ports
  - Linksys switch 5 ports

- **Teen Room**
  - 6 wall jacks
  - Ruckus WiFi Rtr 5 ports
  - Linksys switch 5 ports

- **Patron Computers**
  - Ruckus WiFi Rtr 5 ports
  - Linksys switch 5 ports
  - Netgear 8-port switch 1 Gbps for public computers

- **Children’s Room**
  - Ruckus WiFi Rtr 5 ports
  - Linksys switch 5 ports
  - Netgear GS1051Gb switches 5-ports each

- **Photocopier, Microfiche, Card Catalog**
  - Two Netgear GS1051Gb switches 5-ports each

- **“Circulation Desk (distribution) HUB”**
  - Netgear 8-port switch (x3 = 24 ports)
  - 24 port wall-mounted switch
  - 24 port switch (72 ports to Local Hist, Patron Computers, Children’s Rm)
Appendix F – Floor Plan

Figure 4 – Floor plan diagram of Banning Public Library