# City of Burnsville
# Comprehensive Technology Assessment

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# INTRODUCTION

## PROJECT DEFINITION AND PROCESS

The City of Burnsville seeks to provide its citizens and employees with high-quality leadership and municipal governance. In today's world, this means ensuring that staff members have ready access to needed tools, including a wide variety of technology. As part of its continuous improvement effort, the City of Burnsville is studying the current state of technology at its facilities and establishing technology standards and future goals. To this end, the City of Burnsville retained technology specialist True North Consulting Group to assess current technology systems, identify needs/gaps, and recommend next steps as the city plans for its future budgets and staffing plans. This project also utilizes condition-based assessments to inform the City's 5-year CIP. The technology systems within the scope of this assessment include the following:

- Data Center – servers, storage, virtualization, backups, disaster recovery, and room elements (racks, cooling, power, battery backup, generator)
- Internet Systems – routers, firewalls, content filtering, and internet connections
- Wide Area Network – building-to-building connectivity, including fiber optic infrastructure
- Network Systems – data cabling, network switches/routers, phone systems, and wireless network (including vendor-agnostic wireless site survey)
- Physical Security Systems – video surveillance cameras, access control components, intrusion detection, building entrance/exits, visitor management system
- Audio Visual Systems – city-wide training locations, board and conference rooms, multipurpose spaces, public address system.
- Staff Devices and Printers – technology devices used by staff across the City
- Monopole Towers – towers typically used for telecommunications, lighting, and other utility applications.

To evaluate the current state of technology at the City of Burnsville facilities, True North deployed an assessment team to examine 70 of the City's facilities, met with city staff, and reviewed available documents, maps, and plans. The team assessed telecom infrastructure and spaces, performed wireless surveys, and evaluated conference rooms and the City Council chambers. The team used on-site assessment checklists and methodologies to ensure consistency across visited facilities. The City's Technology Director ensured the consulting team had access to all technology staff members and the in-scope facilities. The building visits included a review of the current technology systems listed above.

Once True North gathered and collated the needed information, they compared the existing systems to best practices, industry standards, and the City's stated goals and developed findings for each technology category. The findings describe the current situation, list identified needs and requirements and identify concerns that need to be addressed.

True North interviewed IT staff members to gain a clear understanding of the City's successes and challenges.

These observation-based findings frame an understanding of the usage and relative importance of technology in the city facilities and describe the overall state of the services provided by the technology team.

## ASSESSMENT SYSTEM

Major technology categories and components were reviewed, and scores were given based on a combination of component age, life expectancy, and consultant evaluation.

| Condition | Description |
|---|---|
| 1 | Components are in poor condition, and/or have reached the end-of-life and end-of-support, and require immediate attention |
| 2 | Components are in below-average condition and/or will reach end-of-life and end-of-support in the next 1 to 4 years |
| 3 | Components are in average condition |
| 4 | Components are in good condition |
| 5 | Components are in excellent condition and/or have been recently updated |

## INFORMATION AND OPERATIONAL TECHNOLOGY ASSESSMENT

## DATA CENTER FACILITIES

A data center is a facility that houses centralized technology systems and associated components, such as telecommunications, computers, and storage subsystems. It includes redundant or backup power systems, redundant data communications connections, environmental controls (e.g., air conditioning, fire suppression), and various security devices. Typically, centralized systems are in a primary facility with redundant systems distributed at a second, geographically diverse facility, known as a Disaster Recovery site.


## Findings/Deficiencies

### Location

The primary data center is located at the City Hall at 100 Civic Center Pkwy, Burnsville, MN 55337, which was constructed in 1989 and is in the space originally designated for printing services. There is a single 4-pane window with a mirrored filament that faces the exterior of the building and is monitored with a glass-break sensor. The facilities department maintains all data center environmental and electrical systems.

### Space

The data center space was expanded during a City Hall renovation project to accommodate computing and storage equipment and is now approximately 12’x25’. According to the technology department, the 300-square-foot space should be adequate for the future needs of the city's technology infrastructure. There has been little hardware growth due to migrating physical servers to cloud-hosted solutions and virtualization. The main system growing is the audio-visual equipment, which has a headend system that controls the city’s advanced multimedia systems and TV broadcasting equipment. The VCT flooring has no static-dissipating features. There are two 4-post racks for technology hardware that are not fully utilized due to the increased adoption of virtualization. One rack is dedicated to computing and storage equipment, while the other is for audio-visual equipment. There are eight 2-post racks for low-voltage Ethernet patch panels, fiber optic cabling, and networking switches. Access layer switching equipment is installed in some of these racks. Ideally, it would be installed in a dedicated MDF room. A receiving dock near the IT staging room is used to ship and receive technology equipment.

The City is undergoing a large construction project at the City Hall/Police Department, consisting of a new primary data center space, cabling, and network infrastructure. This space will have no exterior walls, with the IT storage room located across the hall for easy access and staging.

### Power

A 3-phase 40 kVA APC battery backup system powers two smart APC rack-mounted PDUs (rPDU) per equipment rack to which servers connect their power cords. Each rPDU in the racks is connected to distinct circuits of the UPS, creating an A&B power setup that creates a redundant power source for equipment with dual power supplies. The rPDUs are connected to the UPS with long power cords traveling on the ladder rack. The UPS battery backup system is contained in two 4-post racks. APC's StruxureWare software monitors all APC battery equipment. This system will alert the technology department when the UPS system is on generator or utility power. The battery backup system provides equipment in the racks with power for 49 minutes and only utilizes 20% of the capacity of the batteries. The battery backup is only intended to provide power to equipment while the emergency generator is turned on and powered up. A natural gas generator manufactured by Cat was installed in 2018 and provides emergency power to the entire City Hall. The data center has a portable generator that can be used specifically when additional power is needed.

The city's facilities department maintains and tests the building generator monthly and the portable generator and Automatic Transfer Switch (ATS), which are inspected and tested annually. All tests are logged and checked for accuracy. During the last check of these logs, it was noted that the portable generator was not inspected or tested in the previous year. The data center and all enclosed racks are grounded and bonded to the building ground. Additional lightning protection is incorporated into the building structure.

### Cooling

The data center racks are laid out to use a hot aisle containment cooling system. This layout uses a curtain to separate the cold air supplying the intake side of the equipment from the hot exhaust side of the equipment. There are no return air vents in the hot aisle, which would further increase the efficiency of this cooling system. Two Liebert HVAC units provide cooling to the data center. The primary unit is a floor-standing, in-row cooling unit and is the primary system used. The building management system controls this HVAC system, and it runs continuously. The secondary water-cooled system is on standby only for primary unit failures. Both compressors are located next to each other outside and are inspected, tested, and maintained once a summer, and they are cleaned twice a year.

### Fire Suppression

Fire suppression is provided by a 3M Novec Inert gaseous system. This system is inspected and maintained every year. There are no water sprinklers in the space.

### Physical Security

Two Axis security cameras in the data center have motion detection analytics enabled and are connected to the NetBotz device with alerts to the technology department for movement after hours. The alerts are only sent if a person is in the data center for over a few seconds during non-working hours. These two cameras record any motion detected in the data center to the Milestone VMS platform. A card reader controls access to the data center. Access is granted to the technology department, the multimedia manager, and the facilities department, including janitorial staff. All staff members with access to the data center must undergo a background check performed by the FBI for CJIS compliance. To maintain CJIS compliance, these staff members must partake in yearly CJIS training as Minnesota state law requires. The data center has no dedicated monitoring solution like an Intrusion Detection System.

### Cabling

The WAN fiber optic cabling enters the data center underground through two different vaults. One of the vaults is on the north side of the building, while the other is on the northeast side of the building. Two vaults provide distinct pathways and remove the risks associated with a single point of failure. The transition boxes and vaults have fire-stop protection. Inside the data center, cabling is routed on the ladder racks installed above the server enclosures. Most cabling for server equipment is not required to traverse cabinets as the Cisco Nexus 9000 switch connecting the equipment is installed at the top of the server equipment rack. The Cisco Nexus 9000 switch is at full capacity and is an issue that will need to be addressed by either changing how the servers are laid out in server enclosures or by purchasing a higher port count switch. The next switch refresh is currently scheduled for 2025. The only cabling on the ladder rack is the fiber optic cable that connects the Cisco Nexus 9000 server switch to the distribution switches and the structured cabling for access layer switches. An identified goal for the city is to clean up the patch cable management. The patch cables are currently unorganized and loosely follow a color scheme of green for endpoints and blue or orange for infrastructure devices. The city uses Category 6 Ethernet cabling manufactured by CommScope, which was installed in approximately 2004. New CAT6A cabling will be installed as part of the new data center construction.

### Data Center Monitoring

The city has standardized APC's StruxureWare for its Data Center Infrastructure Management (DCIM) solution. A NetBotz Wall Monitor 355 appliance is mounted on the data center's wall and monitors temperature, motion detection, airflow, and humidity. Each 4-post rack has also been outfitted with a temperature sensor on the hot-aisle side of the rack. As mentioned above, each rack is equipped with smart rPDUs that report electricity usage, which can provide valuable information for diagnosing equipment hardware issues. These sensors feed into StuxureWare providing the city with a single system to monitor their data center infrastructure.

### Secondary Data Center

The secondary data center is located at the maintenance facility at 13713 Frontier Court, Burnsville, MN 55337, in a 10'x15' space. This location is about 2 miles southwest of the primary data center. This data center has many similar features to the primary data center except for a 6" raised floor with fire detection. Similarities include NetBotz monitoring, gaseous fire

suppression, a building generator with a portable generator connection, access control, and video monitoring. There is only one 4-post rack for computing equipment and one 2-post rack for the access layer switching. The computing equipment in this data center houses about half of the virtual machines in the production environment in an active-active manner. The 3-phase APC UPS system is 10 kVA, which is 53% utilized on average, with a runtime of 48 minutes. This data center is in relatively good condition.

## Recommendations

### Primary Data Center

Due to the construction of a new data center addressing findings in this assessment, no recommendations for the existing data center are needed. Monitor, maintain, and regularly test the facility measures in place for power, cooling, fire suppression, and physical security. Periodically audit all new systems, such as physical security, cooling, and fire suppression systems. Ensure all new equipment is properly labeled. Ensure all its elements are included in the city's APC StruxureWare DCIM solution and are configured to alert when predetermined thresholds are reached. Ensure that both the permanent and portable generators are properly tested and that the tests are logged, adhering to a well-defined and documented schedule.

### Secondary Data Center

Because the secondary data center is in relatively good condition, monitor, maintain, and regularly test the facility measures in place for power, cooling, fire suppression, and physical security. Ensure all its elements are included in the city's APC StruxureWare DCIM solution and are configured for alerting when predetermined thresholds are reached.

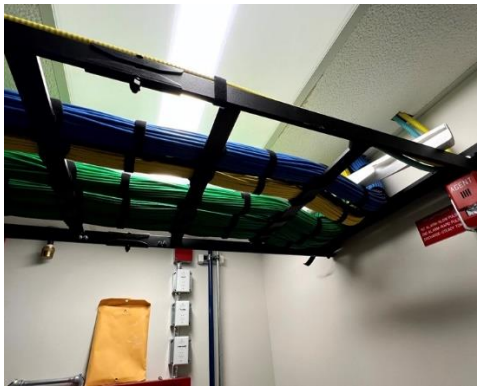
### Data Center Facilities Technology Improvements Cost Estimations - 5-year Outlook

| Components | Total | Consultant Fees | Total w/ Consultant Fees | Condition |
|---|---|---|---|---|
| Data Center (DC) Space | $ - | $ - | $ - | 5 |
| Disaster Recovery (DR) Space | $ - | $ - | $ - | 5 |

**A complete list of technology improvement cost estimations, conditions, and phasing is included at the end of this document. The condition for primary data center is for newly constructed location.*

### Data Center Pictures

*Front view of data center racks*



*Ladder rack cable management*

*Fire suppression system*


*Power generator outside of the building*

## ENTERPRISE SYSTEMS AND APPLICATIONS

## COMPUTE AND ENTERPRISE RESOURCES

Compute, storage, and backup represent the centralized servers, storage area networks, and backup strategies deployed in the City to support internal-use applications, data storage, and data protection.

Per industry leaders, more than four-fifths (83 percent) of workloads were processed by cloud data centers in 2021, with the remaining fifth (17 percent) processed by traditional data centers. Ninety-four percent (94%) of enterprises already use a cloud service. An estimated thirty percent (30%) of all IT budgets are allocated to the cloud. In 2025, the public cloud infrastructure is estimated to grow by 35%.

### Findings/Deficiencies

### Server Hardware and Storage

The city currently uses a pair of Cisco UCS B-series blade servers as VMWare hosts, with one

chassis at each data center, each housing multiple blades. Production workloads run on each UCS chassis. This hardware is on a lifecycle replacement schedule with budget already in place to replace the hosts as part of the transition to the new data center in the next 12-14 months. This move provides an ideal time to migrate to a new hyper-converged infrastructure. Server hardware is not end of life, providing time for proper evaluation of replacement solutions to ensure the best long-term value.

See below for a server inventory, including end-of-life/end-of-sale status.

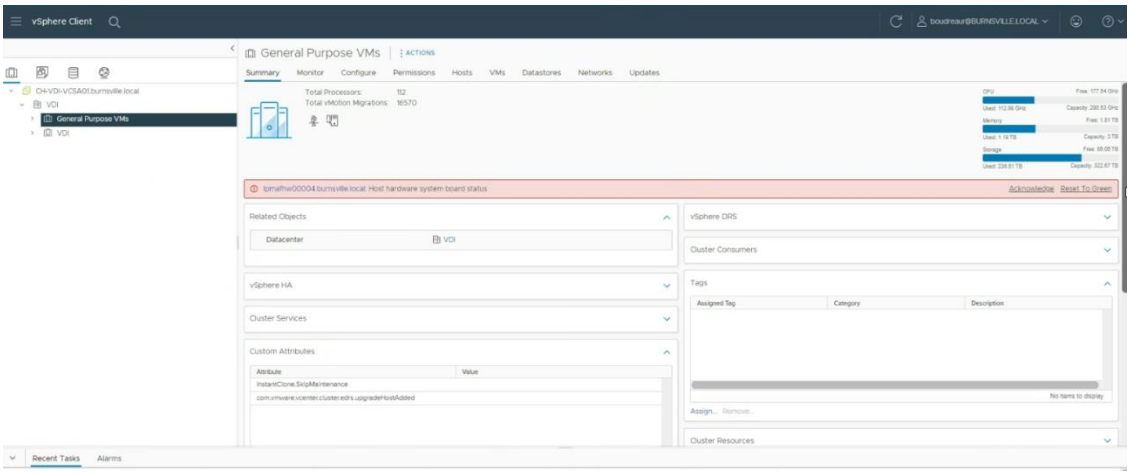
| Make | Model | Qty | EoL/EoS |
|---|---|---|---|
| **Cisco** | UCS 5108 AC2 | 2 | Not Announced |

Data storage is local to the UCS servers and is presented to VMware as 309TB, which is enough capacity on both UCS chassis. Distributed Resource Scheduler (DRS) configured with full resiliency and provides the ability to migrate loads between sites. Pure Storage and NetApp storage with daily snapshots support point-of-time restoration of virtual machine disks (VMDKs).

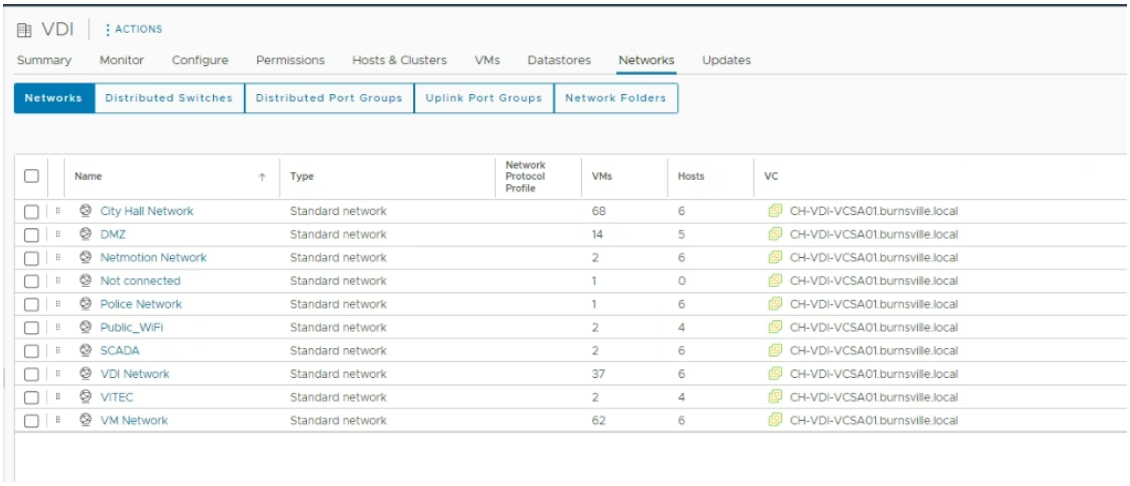
| Make | Model | Location | Total Capacity | Free Space |
|---|---|---|---|---|
| **Pure Storage** | Flash Array X20R2 | City Hall | 11.5TB | 5.67TB |
| **Pure Storage** | Flash Array X20R2 | Maintenance | 11.5TB | 7.25TB |
| **NetApp** | 2806 | City Hall | 196TB | 59TB |
| **NetApp** | 2806 | Maintenance | 124TB | 72TB |

### Virtualization

VMware vSphere is the server virtualization software used by the city. The current version is 7.0.3. CoB has confirmed that VMware version 8 is not compatible with their UCS hardware, so the City cannot upgrade. This was determined by the City using its standard of confirming new versions are stable before applying them to the production systems. VMware licensing costs have seen an increase due to VMware's recent Broadcom acquisition, prompting many current users to look to alternative solutions for migration. With this acquisition, VMware has outsourced its support to a third-party, which the City has had terrible experiences with during several incidents in the past year. Access to direct support is no longer possible for an organization of the City's size. There are currently 190 virtual servers in the environment, of which 40 are powered down.




The city utilizes virtual desktop infrastructure (VDI) for remote staff and outside vendor access to provide a consistent experience to all users. The VDI cluster consists of one server blade on each UCS chassis. There are currently 100 VDI users. VMware has recently sold its VDI infrastructure to Omnissa. As such, the City's support contract is now with Omnissa, which has separated maintenance agreements of the City's ESXi hypervisors and VDI infrastructure.




| Name | Type | Network Protocol Profile | VMs | Hosts | VC |
|---|---|---|---|---|---|
| City Hall Network | Standard network | | 68 | 6 | CH-VDI-VCSA01.burnsville.local |
| DMZ | Standard network | | 14 | 5 | CH-VDI-VCSA01.burnsville.local |
| Netmotion Network | Standard network | | 2 | 6 | CH-VDI-VCSA01.burnsville.local |
| Not connected | Standard network | | 1 | 0 | CH-VDI-VCSA01.burnsville.local |
| Police Network | Standard network | | 1 | 6 | CH-VDI-VCSA01.burnsville.local |
| Public_WiFi | Standard network | | 2 | 4 | CH-VDI-VCSA01.burnsville.local |
| SCADA | Standard network | | 2 | 6 | CH-VDI-VCSA01.burnsville.local |
| VDI Network | Standard network | | 37 | 6 | CH-VDI-VCSA01.burnsville.local |
| VITEC | Standard network | | 2 | 4 | CH-VDI-VCSA01.burnsville.local |
| VM Network | Standard network | | 62 | 6 | CH-VDI-VCSA01.burnsville.local |

## Management Tools

vSphere is currently in use for managing the virtual environment. The UCS hosts are managed by Cisco's UCS Manager. VDI sessions are managed with the VMware Horizon Manager Portal.

## Backups

Veeam backs up the VMware environment. Backups of each data center are sent to the opposing site's datastore. Full backups are performed weekly, with differentials performed daily. SQL is running in an HA environment with multiple tiered backups per day:

- Full backup daily
- Differential every 4 hours

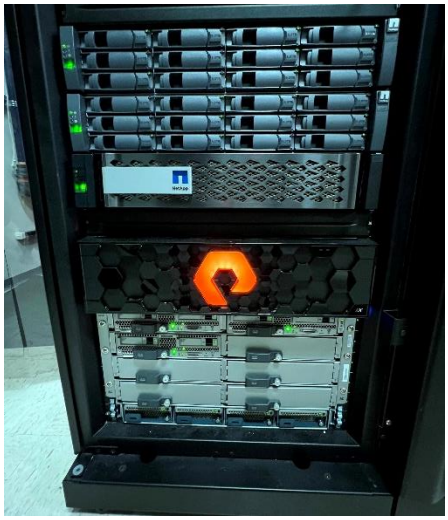
- Hourly logs

Veeam also backs up the Microsoft 365 environment daily, including:

- Teams sites
- User accounts
- OneDrive
- Azure user profiles

Because the City's current backup environment does not comply with CJIS requirements, the City has expressed interest in moving away from Veeam and towards a platform that provides backup, recovery, immutable storage, secure data segmentation, and integration/storage within Azure Cloud or Amazon Web Services.

### Compute and Enterprise Pictures



*Pure Storage Array*

*Cisco Server Hosts*

### Recommendations

### Hardware and Storage

True North supports the City's plans to evaluate replacement options for the virtual server host infrastructure, considering Hyperconverged Infrastructure (HCI) systems, which may provide an alternative to the existing VMware environment. Determine actual storage used as part of the evaluation process for the new potential server environment, accounting for powered-down virtual machines to reduce necessary physical resources. Replace existing VMware hosts with new, fully licensed hardware properly sized to handle the anticipated compute needs of the city for the next 5 to 10 years. Use evaluations of HCI systems to determine if this solution would be more beneficial to the City.

### Virtualization

Due to the increasing costs of VMware licensing due to VMware's recent Broadcom acquisition,

the City should consider evaluating alternative solutions for migration and the potential of purchasing 5 to 7 years of licensing up front to avoid budget drift over time. Consider backing up and removing powered-down virtual machines to reduce server resource requirements. Once the new hardware is in place and running, establish a documented policy defining when to update to new versions, how to test functionality prior to installing updates, and what the reversion process will be in the event of a failed update.

### Backups

True North supports the City's plan to move to a new backup solution that would provide backup, recovery, immutable storage, secure data segmentation, and integration/storage within Azure Cloud or Amazon Web Services, to adhere to CJIS requirements.

## ENTERPRISE APPLICATIONS (ON-PREMISES AND CLOUD)

Enterprise applications are those significant applications and software tools that organizations use as a part of their primary functions. This includes both on-prem and cloud-hosted applications.

### Findings/Deficiencies

### Operational Functions

Enterprise Resource Planning (ERP): **Tyler Technologies on-premises**

The respective departments maintain the modules, but the technology department manages the application health and infrastructure. This platform should ideally be the single source of truth (SSoT) for all platform accounts. However, due to poor data hygiene, Microsoft Active Directory is used to create and delete user accounts automatically. An RFP will be released in the next three years to select a new ERP platform. The technology department wants this new system to be the SSoT for all other platforms. Active Directory accounts will be created automatically from the employee database when the new ERP system is in place.

Productivity Suite: **Microsoft Office 365 Online**

The current licensing model is G3 with additional G5 step-up licensing for enhanced cybersecurity tools. After the city moves to Microsoft Teams' telephony system, the full G5 licensing will be used.

Email: **Exchange Online**

There are about 370 email accounts on the City of Burnsville's domain.

Document Collaboration: **Microsoft SharePoint Online and Microsoft Teams**

The City's intranet, which has content managed by the communications department, is hosted on SharePoint. Using a central collaborative cloud-based platform provides the staff always-on,

secure channels accessible from anywhere. There are currently 92 teams for various departments and groups. This number is expected to grow as only about 30% of the city departments utilize this platform. Reports are audited annually to see which teams are actively used and any that are not removed from the system.

MDM (Mobile Device Management): **Microsoft Intune**

Microsoft Intune is a cloud-based endpoint management solution. It manages user access to organizational resources and simplifies app and device management across many devices, including mobile devices, desktop computers, and virtual endpoints.

Remote Troubleshooting

The city uses **Microsoft SCCM Desktop Remote Control, Microsoft Quick Assist**, and third-party **Manage Engine** to provide users with remote support by IT staff.

Digital Signage: **VITEC** and **Reach Marketing**

VITEC is a new platform currently being tested to ensure it can perform the same tasks as Reach Marketing. Reach Marketing is currently used at the City Hall and the Ice Center. This system is tied into the Recreation Management platform and does room scheduling for meeting spaces. These are the two main functions required of the Digital Signage platform and will determine whether the city switches providers.

Website Hosting: **CivicPlus**

- The Communications department manages this platform.
- Billing Portals:
  - Tyler Technologies works with a third party, **Bill Trust**, to allow citizens to pay their utility bills online. **RevTrak** handles all other billing**.**
- The city selects new platforms based on their ability to authenticate through SSO and Active Directory synchronization.
- The technology department is moving from LDAP and SAML authentication methods to OAuth.

### Recommendations

Reach out to Tyler Technologies to inquire about integrating the current system with Active Directory. This should be supported in some form and could accelerate the process of cleaning up the existing user data. Continue investigating the impact switching from Reach Marketing to VITEC would have on IT and City staff. Determine the impact of switching from G3 to G5 licensing for Microsoft 365 from both billing and technology resource perspectives. Investigate which additional features the City would gain access to and utilize. Perform a cost-benefit analysis for relevant features and information. Continue to evaluate a new enterprise resource planning solution that meets the City's needs. The solution should be able to integrate with Microsoft Active Directory. Consider implementing a help-desk solution offering end-users a knowledge base with basic troubleshooting steps. Tracking issues can assist the city in

identifying common issues that may need to be addressed on a wider scale. Continue to migrate and grow cloud services to maximize ease of management, reduce risk, and reduce on-site footprint. Consider implementing self-service functionality for tasks such as password reset and MFA enrollment.

### Enterprise Systems and Applications Technology Improvements Cost Estimations - 5-year Outlook

| Components | Total | Consultant Fees | Total w/ Consultant Fees | Condition |
|---|---|---|---|---|
| Enterprise Systems | $1,180,108.00 | $70,806.48 | $1,250,914.48 | 2 |

**A complete list of technology improvement cost estimations, conditions, and phasing is included at the end of this document.*

## Wide Area Network/Internet Connectivity

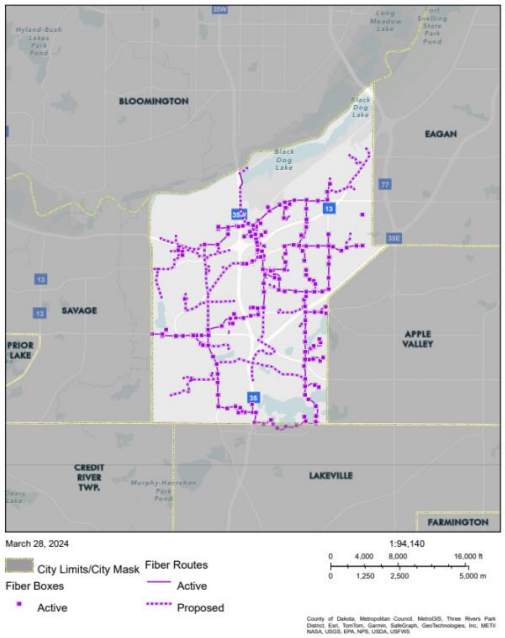
A Wide Area Network (WAN) is a data network that connects non-contiguous facilities, typically using fiber optic cabling. WAN speeds range from 1Gbps, 10Gbps, 40Gbps, 100Gbps, and beyond. It is possible to leverage multiple connections to achieve faster speeds, too. For example, two connections between different sites could provide a 20Gbps connection (2 x 10Gbps).

### Findings/Deficiencies

### Wide Area Network

The City's wide area network topology consists of over 40 miles of dual-pathed fiber, configured in a ring topology, connecting 63 individual sites together. This fiber design was performed in 2009 by True North (formerly Elert and Associates). This project was designed for a 50-year lifecycle, with regular maintenance cycles throughout to ensure carrier-class integrity and longevity of the fiber ring. All fiber used for the WAN is owned by the City. Installation occurred in 2009. The expected lifetime of this fiber is 50-70 years. Single-mode fiber is used across all paths. As new fiber is needed, the City technology team utilizes other City projects to lower installation costs. Most WAN sites are water sites or other City utility sites. These sites have at least one (1) switch for WAN connectivity. A map of existing and proposed fiber runs is maintained by the City, as shown below. This map is continually updated as new fiber is installed.

Burnsville Fiber Optics, current and future




The City of Burnsville maintains an agreement for fiber management as part of their membership in the Local Government Information Systems (LOGIS) consortium. LOGIS is responsible for providing fiber repair and other general maintenance services as requested by the City. The SLA for services is 4 hours, which is consistently met. Higher trafficked locations utilize a 10Gbps connection, while sites with less traffic have a 1Gbps connection. Most switches used for WAN connectivity are Cisco Catalyst 3650, with five (5) outdoor sites utilizing Axis outdoor-rated switches and the remaining outdoor sites utilizing Cisco outdoor-rated switches. Two (2) Cisco Nexus 9000 switches are used at the City data center for WAN connectivity. This model is appropriate for this role. A City-wide switch refresh is planned for 2025. This refresh has been appropriately built into the budget. No dynamic routing protocols are currently used within the City network. All routers are configured with static routes. Dynamic routing was previously in place, but the City found it caused issues and decided to switch to static routing. Hot Standby Routing Protocol (HSRP) provides resiliency across the WAN. HSRP provides network resiliency by ensuring traffic can transparently recover from first-hop failures. All WAN connections have two (2) links configured as port channels. A port channel is an aggregation of multiple physical interfaces that creates a single logical link. Port channels are Cisco-specific, though other vendor-agnostic protocols exist. Site-to-site VPNs connect public safety vehicles back to the City network. These vehicles consist of mobile command posts and all police and fire department vehicles. CradlePoint mobile routers provide the connection back to the City firewall. These routers use either 4g or 5g connectivity for communication. Not all devices always remain connected.

### Internet Connectivity

The State of Minnesota provides the City with Internet connectivity through its IT department (MNIT). Connectivity is demarcated at both City Hall and City Maintenance, with both sites providing a 1Gbps link. The ISP allows the City to go over 1Gbps at times, as it is typically for a

short period. MNIT provides a portal for the City to manage tickets and other general maintenance tasks. City staff describe the portal as useable but not always working and not a great toolset. Each connection takes a unique physical path from the demarcation point at the City to the service provider. This ensures a single isolated incident, such as a fiber cut, cannot take out both physical cable runs. Plans are in place to increase Internet bandwidth to 10Gbps. No formal date has been determined at this time. The City has an agreement with Comcast, which provides Internet service for non-City staff. This service provides 1Gbps Internet connectivity through Comcast's Ethernet Dedicated Internet (EDI) service. An additional 36-month agreement with Comcast provides an Ethernet handoff from City Hall to Red Oak Park, Sue Fischer Memorial Park, and Neill Park through their Ethernet Network Service (ENS). Each link is 100Mbps. All three (3) sites connect back to City Hall. This service was started on 10/19/2022. The existing agreement is valid through 10/19/2025. As recommended by True North in a recent assessment, the City has recently upgraded 54 CradlePoint modems to 5G, with approximately 10% of the remaining CradlePoint devices to be upgraded. Four (4) class C IP blocks are owned by the City and provided by the State of Minnesota. Each block is separated for specific services, including:

- Public Safety
- Non-Public Safety
- DMZ Devices
- Public Safety Mobile Units.

External DNS is also hosted by the State of Minnesota. Management is handled through the MNIT portal.

### Recommendations

Continue to upgrade remaining CradlePoint VPN devices to 5G to standardize speeds and devices across all mobile units. Approach MNIT regarding their existing customer portal to determine if they are aware of the current issues the City is having, so that they can be resolved. Standardize WAN switch models across similar sites through the upcoming switch refresh. Configure WhatsUp Gold with granular groups for WAN devices. These configured groups can run reports against metrics such as interface utilization and other important resource information. Ensure alerts are configured to be sent to appropriate personnel. Use optical time-domain reflectometers (OTDR) to conduct WAN fiber tests once every 10 years or as issues arise. Handholds should be inspected once every 5 years. The City should continue to pursue 10Gbps for its primary Internet services to remain ahead of the bandwidth curve. Establish a baseline for WAN connectivity across all sites. Baseline metrics allow technology personnel to quickly compare current readings against normal readings, which can help in many ways, including diagnosing potential issues and planning for future growth. Continue to actively monitor monthly reports to ensure usage is at an acceptable level. Once baselines are established, configure alerts to be sent to appropriate team members when bandwidth is consistently over expected speeds. Continue to evaluate and plan for upgrading site-to-site WAN bandwidth where needed. Utilize established baselines to project future growth. Continue to utilize new or existing City projects to implement new fiber runs as needed. Develop,

implement, and document a resiliency testing strategy for WAN and Internet connections. This plan should include testing failover situations such as fiber cuts and switch outages. Logical and physical redundancies should both be tested. Consider using dynamic routing protocols again. If properly configured, they provide automatic failover and rerouting of traffic in the event of outages, which would fully utilize the City's fiber ring. Dynamic protocols could also enable network load-balancing to spread traffic evenly across multiple links to not fully saturate individual links during large transmissions of data such as video streams or backups. Leverage an outside networking partner for design and implementation. Further, the city should consider implementing Quality of Service configuration across all network devices for the same reason to ensure prioritization of certain traffic when links are saturated. Document all findings as they are tested. Continue to maintain a detailed WAN topology map. This map should be continually updated to include all new fiber runs as they are installed and any new switches installed during the upcoming switch refresh.

### Wide Area Network/Internet Technology Improvements Cost Estimations - 5-year Outlook

| Components | Total | Consultant Fees | Total w/ Consultant Fees | Condition |
|---|---|---|---|---|
| Wide Area Network & Internet | $875,000.00 | $52,500.00 | $927,500.00 | 4 |

**A complete list of technology improvement cost estimations, conditions, and phasing is included at the end of this document.*

## CYBERSECURITY

Cybersecurity involves systems, tools, software, and procedures to mitigate digital threats from internal and external sources. Attackers may target computers, servers, databases, or Internet of Things devices such as IP cameras, network-based HVAC systems, or printers, attempting to gain access to systems to extract data or instigate service interruptions. This assessment provides a high-level overview of the City's currently observed and reported capabilities and services.

### Findings/Deficiencies:

### Firewall(s) and Content Filtering

Two (2) Palo Alto 6410 devices handle firewalling for the City of Burnsville. Firewalls are configured in an active/passive configuration. Devices are connected with 10Gbps fiber. Both firewalls were installed in November of 2023. Palo Alto is a leader on the Gartner Magic Quadrant for Next-Generation Firewalls (NGFW). During this assessment in late April 2024, the City of Burnsville suffered a zero-day attack against its active firewall. However, it recovered quickly by applying Palo Alto's patch to the passive (and unaffected) unit and then rebuilding the active unit from scratch. Content filtering is handled by Cisco Umbrella. Cisco Umbrella is in the Challenger quadrant for the Gartner Magic Quadrant for the security service edge category. The Cisco Umbrella tenant is handled through the City's partner, LOGIS. Filtering rulesets from NIST, an industry-recognized cybersecurity framework, and CISA (Cybersecurity and Infrastructure Security Agency) are automatically deployed to the system. Two (2) virtual machines (VMs) are deployed in a high-availability configuration to house the Umbrella services. The City is now a

member of the MNIT State and Local Cybersecurity Grant Program (SLCGP) Cybersecurity Whole-of-State initiative, using CrowdStrike MDR services to provide another tool in their cybersecurity toolbelt.

### Remote Access Resources

Remote access VPN (RA-VPN) is configured on the City firewalls to provide users with secure remote access to internal resources on the city network. Whether or not staff accounts are enabled for VPN is determined by their role. Those issued laptops are granted VPN access. Palo Alto's GlobalProtect VPN application is installed and configured on their laptops but multi-factor authentication (MFA) is not enforced. Public Safety and non-public safety resources use Absolute NetMotion as a secure, remote client. This application adds an additional layer of security for especially sensitive information.

### Email Security

Microsoft's Advanced Threat Protection (ATP) is used by the City for email security. ATP provides spam protection and active scanning for potential malware. The City has recently purchased KnowBe4, which will be used to continually monitor the cyber awareness of its employees by sending harmless phishing emails with mandatory new hires and yearly training. The sanctioned phishing campaigns track when users try to download attachments or visit websites that are linked in the safe phishing email. Tracking users who click on these safe phishing emails offers insight into who should receive additional training.

### Internal Network Security (East/West Traffic)

*East-West Traffic refers to data traffic within the City network, specifically server-to-server or site-to-site communication.*

A DMZ (borrowed from the military term 'demilitarized zone') is configured on the Palo Alto device pair. By using a DMZ, Internet-facing servers and other devices with sensitive information can be further segmented from the rest of the internal network, allowing for more security and granular rules to be configured.

### Security Monitoring and Management

The City of Burnsville utilizes Microsoft Enterprise Mobility and Security (EMS). Microsoft's EMS is a cloud-based security solution that identifies, detects, and investigates advanced threats, compromised identities, and malicious insider actions directed at the organization. The City regularly audits Microsoft Active Directory using ManageEngine's ADAudit application. ADAudit is a web-based IT security and compliance solution for Windows environments. LOGIS provides additional monitoring through Tenable Vulnerability Management (formerly tenable.io) and Tenable Security Center for vulnerability scanning.

### Endpoint Security

The City uses CrowdStrike MDR to protect laptops, desktops, and servers from malware. CrowdStrike combines advanced technology with human expertise to rapidly identify and mitigate threats. Microsoft Intune and Endpoint Detection Management manage and monitor

endpoints.

### Cybersecurity Health Posturing

The City has an agreement with the State of Minnesota's Security Operations Center (SOC), which provides the following benefits:

- All outbound traffic from the City is filtered through the SOC.
- A managed detection and response (MDR) pilot program was deployed in 2024.

Additional programs will become available as the City and State continue to work together and expand. Cisco Duo MFA is utilized across all Microsoft applications for all staff. A public safety audit was performed on the City's network in 2023. Mitigation from this audit is still ongoing. An assessment performed by the LOGIS Security-as-a-service (SaaS) is currently ongoing.

### Recommendations

### Short-term tactical activities:

Evaluate the need to give remote access to all users with laptops. Remote access should be restricted only to those users who require it for their day-to-day duties. Continue to implement MFA across as many platforms and departments as possible. MFA is key in protecting the City's devices and sensitive information. Work with Duo and Palo Alto to implement MFA for all remote access VPN connections. Consider forcing current and future MFA instances to use an authenticator application instead of SMS text messages. SMS messages can be intercepted and, therefore, can pose a security risk.

### Long-term strategic initiatives:

Implement a Network Access Control (NAC) security solution to enhance network security by configuring network access and policies more granularly. NAC solutions work with many applications and devices, centralizing access configurations, logins, and many other aspects of network security. Conduct annual cybersecurity training for staff and include it in new staff orientation to ensure they practice safe Internet use to mitigate the threat of cybersecurity attacks. Consider conducting yearly cybersecurity audits to ensure the City stays aware of any security risks that may be prevalent. Cybersecurity risks are ever-evolving – regular audits of policies, configurations, and other IT elements are essential to maintaining user and data security. Consider using a 3rd party to conduct an IT risk assessment every 2 years. This 3rd party would ideally assist in developing a healthy cybersecurity posture within the City and developing a cybersecurity policy. Conduct cybersecurity assessments biannually to ensure compliance. Continue to employ an MDR, which can detect and combat threats 24x7x365, such as the zero-day attack that recently occurred. Managed threat detection service providers should be re-evaluated regularly to ensure they bring optimal value and visibility to the City.

### Cybersecurity Technology Improvements Cost Estimations - 5-year Outlook:

| Components | Components | Total w/ Consultant Fees | Components | Condition |
|---|---|---|---|---|
| Cybersecurity Systems | $280,000.00 | $16,800.00 | $296,800.00 | 4 |

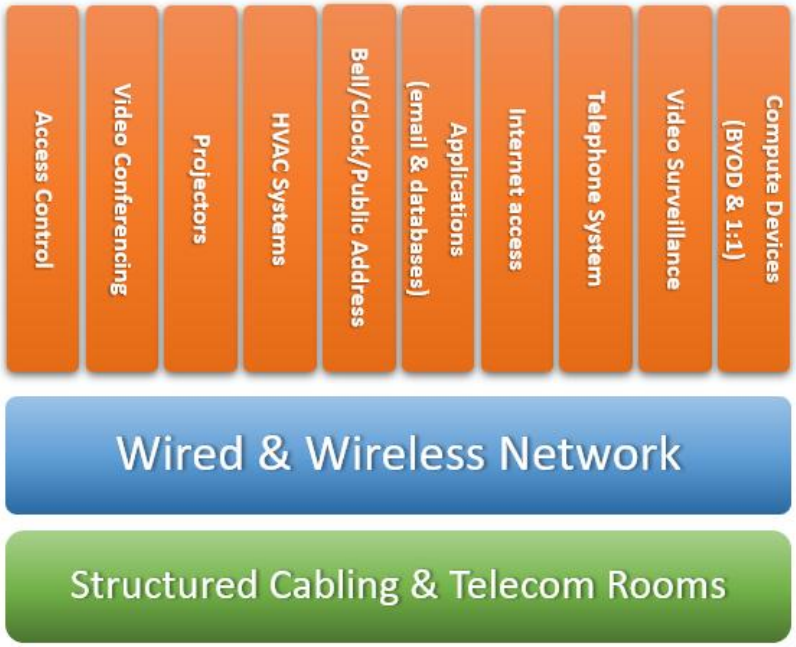
**A complete list of technology improvement cost estimations, conditions, and phasing is included at the end of this*

*document.*

## TELECOMMUNICATIONS/TECHNOLOGY ROOMS AND STRUCTURED CABLING

Telecommunications rooms (TR), also known as main and intermediate distribution frames (MDF/IDF), are rooms or spaces that provide an area for building telecommunications systems. These rooms house cabling terminations as well as voice and data network electronics. Structured cabling includes backbone cabling connecting all telecommunications spaces and horizontal cabling connecting telecom rooms with station information outlets in offices throughout each building.

As the network has become a 24x7 utility-type service, having properly designed and maintained telecom rooms is critical to delivering highly reliable technology systems. The wired and wireless network is the platform for most communications and automation systems, including voice, video, data, safety and security, audiovisual, and building management. As illustrated in the diagram below, many systems sit on top of the underlying infrastructure.




### Findings/Deficiencies

General findings from TNCG's on-site inspections and City-provided information are as follows:

Most (86%) of the TRs visited were in shared spaces. Shared spaces allow non-authorized personnel access to rooms with essential network equipment, posing a security risk. Only 22% of observed spaces had dedicated cooling systems in place. The current City standard is for MDFs and larger IDFs to have dedicated cooling, with the remainder being cooled by the general

building cooling system. The primary data center has two (2) Leibert units for cooling. These are configured as primary and backup, with the backup only coming online if the primary fails. Both units are tested annually. Both units are monitored within the APC StruxureWare system. Wall-mounted cabinets are equipped with exhaust fans to vent heat. At Fire Station 1 and the golf course, True North observed exhaust fans completely blocked with dust and debris. Blocked exhaust fans can lead to switches overheating, damaging components, and potentially causing an outage. At the maintenance facility, excess trash and debris were observed inside the IDF. A few other observed sites had minimal trash and debris within closets. Environmental sensors were utilized in most observed rooms. Sensors are connected to the closet UPSs, which report to APC StruxureWare. 47% of observed rooms were grounded correctly. Improper grounding can lead to electrical issues, which can damage equipment. The network rack inside the Ames Center IDF 1 was not properly bolted to the floor. 19% of observed TRs do not have proper cable management. 44% of observed rooms were accessible with access cards. Another 38% utilize standard keyed entry, and the remaining observed rooms had no security on the room's exterior. All staffed sites are equipped with generators. These are tested regularly.

See the table below for a summary of findings from True North's on-site visits:

| | |
|---|---|
| **Number of MDF/IDF Spaces** | **84** |
| **Ethernet Cables Counted** | **2,470** |
| **Average MDF/IDF Temperature** | **68° F** |
| **Maximum MDF/IDF Temperature** | **85° F** |
| **Spaces w/Dedicated HVAC Systems** | **22%** |
| **Spaces with Functional UPS Systems** | **94%** |
| **Spaces w/Adequate Grounding** | **47%** |
| **MDF/IDF with Dedicated Spaces** | **16%** |
| **MDF/IDF Needing Cable Management** | **7%** |

*See Appendix D for a detailed, per-space breakdown of the information above. The table above and Appendix C only represent the spaces True North visited.*

### Inside Plant Fiber Optic Cabling

50 Micron multimode fiber is used between all telecommunications rooms except Fire Station 2, the Golf course, the Civic Center maintenance facility, and the Ice Center. Fiber was installed within the last 15 years. Two pairs of fiber connect each MDF to each IDF for resiliency. These pairs are connected to each closet's top and bottom switch.

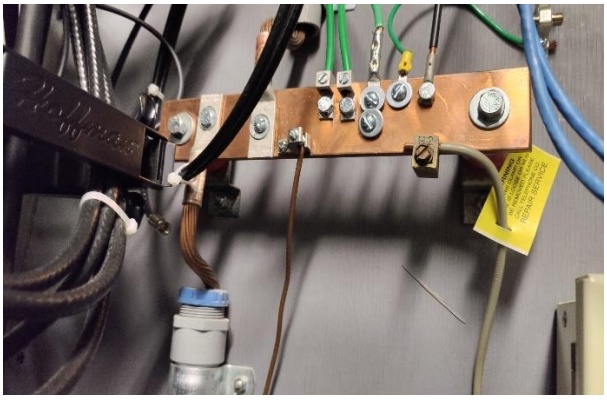
### Copper Cabling

The City's current standard is Cat 6A cabling for all data drops, utilizing small diameter .24-.26 AWG cabling. Some older locations still utilize Cat 5e cabling, but these are actively being replaced with the new standard. The Maintenance building MDF has the most non-standard (Category 5e or older) cabling.

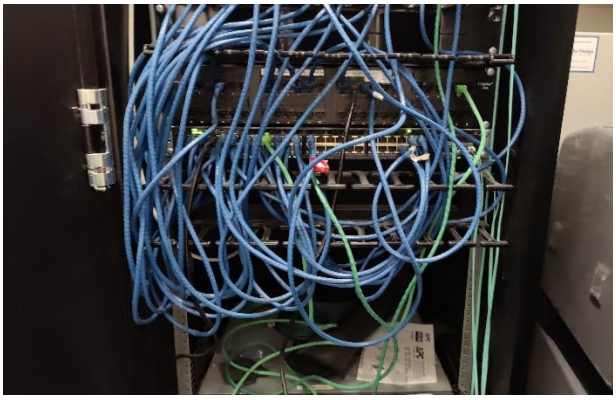
### Technology Room Pictures

*Clogged exhaust fan at Fire Station 1*


*Backup generator*



*Example of properly grounded TR*



*Example of TR needing cable management*

Telecommunications/Technology Rooms and Structured Cabling Summaries:

*See Telecom Spaces Appendix C for a complete list of spaces.*

| Campus | Room Name | Status | Dedicated Cooling | Env. Sensor? | Unit Status | Current Temp | Dedicated Space? | Space Security | Rack Type | Secured to Floor? | Ladder Racks | Cable Mgmt Panels | Need Cable Cleanup? | Trash? | Space Rating |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| City Hall/Police Department | Police Dept IDF 1 | Good | Yes | Yes | Good | 70 | Yes | Card | 2-Post | Yes | Yes | Both | No | No | 5 |
| City Hall/Police Department | Police Idf 2 | Bonded to Building Steel | No | No | Good | 77 | No | Card | Wall | | | Horizontal | No | No | 4 |
| Maintainence | MDF | Good | Yes | Yes | Good | 72 | Yes | Card | 2-Post | Yes | Yes | Both | Yes | No | 4 |
| Maintainence | IDF | No Grounding | No | No | None Present | | No | Key | Wall | | No | None | No | No | 3 |
| Fire Station 1 | mdf | Good | Yes | Yes | Good | 68 | Yes | Card | 2-Post | Yes | Yes | Both | No | No | 5 |
| Fire Station 1 | idf | Bonded to Building Steel | No | No | None Present | 78 | No | Key | Wall | | | Horizontal | No | No | 4 |
| Water Treatment Plant | idf 1 | Bonded to Building Steel | No | No | None Present | 74 | No | Key | Wall | | | Horizontal | No | Yes | 4 |
| Water Treatment Plant | idf 2 | No Grounding | No | No | None Present | 70 | No | None | Wall | | | Horizontal | No | No | 3 |
| Ames Center (PAC) | IDF 1 | Good | Yes | Yes | Good | 71 | Yes | Card | 2-Post | No | Yes | Both | No | No | 4 |
| Ames Center (PAC) | idf 2 | Good | No | No | None Present | 71 | Yes | Key | 4-Post | No | Yes | Horizontal | Yes | Yes | 4 |
| Ames Center (PAC) | idf 3 | Good | No | No | None Present | 75 | No | Key | Wall | | | Horizontal | No | No | 4 |
| Ames Center (PAC) | idf 4 | Good | Yes | No | Good | 82 | No | Key | Wall | | | Horizontal | Yes | Yes | 4 |
| Ames Center (PAC) | idf 5 | Good | No | No | None Present | 75 | No | Key | Wall | | | Horizontal | No | No | 5 |
| Fire Station 2 | idf 1 | Good | No | No | None Present | 73 | No | Key | Wall | | | Horizontal | Yes | No | 2 |
| Birnamwood Golf Course | idf 1 | Bonded to Building Steel | No | No | None Present | 65 | No | None | Wall | | | None | Yes | No | 2 |
| Birnamwood Golf Course | idf 2 | Bonded to Building Steel | No | No | None Present | 65 | No | None | Wall | | | None | No | No | 2 |
| Ice Center | idf 1 | No Grounding | No | No | None Present | 68 | No | Key | Wall | | | Horizontal | Yes | No | 2 |
| Ice Center | idf 2 | No Grounding | No | No | None Present | 72 | No | None | Wall | | | | No | No | 2 |
| North River Hills Park | IDF 1 | Good | Yes | No | Good | 64 | No | Key | Wall | | | Horizontal | No | No | 4 |
| North River Hills Park | IDF 2 | Bonded to Building Steel | No | No | Unknown | 43 | No | Key | Wall | | | None | No | No | 1 |
| Red Oak Park | IDF 1 | Bonded to Building Steel | No | No | None Present | 85 | No | Card | Wall | | | Horizontal | No | No | 3 |
| Cliff Fen Park | IDF 1 | Bonded to Building Steel | No | No | Good | 75 | No | Card | Wall | | | None | No | No | 2 |
| Terrace Oaks West Park | IDF 1 | Good | No | No | None Present | 76 | No | Card | Wall | | | None | No | No | 3 |
| Alimagnet Park Shed | IDF 1 | Bonded to Building Steel | Yes | Yes | Good | 46 | No | None | Wall | | | Horizontal | No | No | 3 |
| Crystal Beach Concessions | IDF 1 | Bonded to Building Steel | No | No | None Present | 50 | No | Card | Wall | | | None | No | No | 2 |
| Lac Lavon Park | IDF 2 | No Grounding | No | No | Good | 42 | No | Card | Wall | | | None | No | No | 2 |
| Lac Lavon Park | IDF 1 | Good | No | No | None Present | 51 | No | Card | Wall | | | None | No | No | 2 |
| Neil Park | IDF 1 | Bonded to Building Steel | No | No | None Present | 71 | No | Key | Wall | | | None | No | No | 3 |
| Sue Fischer Fields | IDF 1 | Bonded to Building Steel | No | No | None Present | 58 | No | Card | Wall | | | None | No | No | 2 |
| Nicollet Commons Park | IDF 1 | Bonded to Building Steel | No | No | None Present | 74 | No | Card | Wall | | | None | No | No | 2 |
| Civic Center Maintenance Facility | idf 1 | Bonded to Building Steel | No | No | None Present | 76 | No | Card | Wall | | | Horizontal | No | No | 3 |
| Civic Center Maintenance Facility | IDF 2 | Bonded to Building Steel | No | No | None Present | 75 | No | None | Wall | | | None | No | No | 2 |

***Room Rating Key:***

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Construct new room | Significantly remodel room | Some improvements needed | Minor improvements suggested | No improvements are necessary |

### Recommendations:

Refer to the Telecom Spaces Appendix C for specific details on which spaces have deficiencies that need remediation. In general:

### Short-term tactical activities:

Ensure all spaces are equipped with a locking mechanism to keep out unauthorized individuals. Clean up and remove trash or debris from telecommunication rooms. Develop a regular housekeeping schedule to dust and clean all telecommunication spaces. Clean all exhaust fans of dust and debris on wall-mounted racks. Dirty fans trap heat inside cabinets, which can lead to switches overheating and becoming inoperable. Utilize Appendix C to address cable management on necessary closets. A clean cabling layout allows for more efficient identification and troubleshooting of issues. Consider color coding similar devices' Ethernet cables for easier identification. Ensure all network racks are properly bolted to the ground or wall. Improperly secured racks can fall or be knocked over, causing major damage. Install environmental sensors at all necessary locations. Configure alerts for all sensors to be sent to appropriate personnel.

### Long-term strategic initiatives:

Replace all 62.5 micron fiber cabling with 50 micron or single-mode cabling. Renovate or

relocate spaces that do not meet industry standards. Dedicated HVAC units should be added to telecommunication spaces. Upgrade lighting to at least 50-foot candles, measured at 3 feet (very bright light) from the floor. Install or complete a telecom ground backbone system with dedicated telecom busbars connecting all telecom spaces where one is not present. Attach all recommended telecommunications equipment (racks, cabinets, trays, armored cable) to the bonding busbars. Consider installing locking enclosures if a dedicated space cannot be provided for technology equipment. Add badge access to technology rooms and grant access only to required staff employees.

### Telecommunications/Technology Rooms Improvements Cost Estimations and Condition - 5-year Outlook:

| Campus | Telecommunication Room Components | Consultant Fees | Total w/ Consultant Fees | Condition |
|---|---|---|---|---|
| City Hall/Police Department | $ - | $ - | $ - | 5 |
| Maintainence | $22,400.00 | $1,344.00 | $23,744.00 | 3 |
| Fire Station 1 | $13,100.00 | $786.00 | $13,886.00 | 4 |
| Ames Center (PAC) | $33,000.00 | $1,980.00 | $34,980.00 | 4 |
| Water Treatment Plant | $33,400.00 | $2,004.00 | $35,404.00 | 3 |
| Fire Station 2 | $25,350.00 | $1,521.00 | $26,871.00 | 2 |
| Birnamwood Golf Course | $56,300.00 | $3,378.00 | $59,678.00 | 2 |
| Ice Center | $57,300.00 | $3,438.00 | $60,738.00 | 2 |
| North River Hills Park | $29,400.00 | $1,764.00 | $31,164.00 | 2 |
| Red Oak Park | $19,800.00 | $1,188.00 | $20,988.00 | 3 |
| Cliff Fen Park | $19,950.00 | $1,197.00 | $21,147.00 | 2 |
| Terrace Oaks West Park | $17,000.00 | $1,020.00 | $18,020.00 | 3 |
| Alimagnet Park Shed | $11,600.00 | $696.00 | $12,296.00 | 3 |
| Crystal Beach Concessions | $28,150.00 | $1,689.00 | $29,839.00 | 2 |
| Lac Lavon Park | $45,800.00 | $2,748.00 | $48,548.00 | 2 |
| Neil Park | $19,800.00 | $1,188.00 | $20,988.00 | 3 |
| Sue Fischer Fields | $28,150.00 | $1,689.00 | $29,839.00 | 2 |
| Nicollet Commons Park | $28,150.00 | $1,689.00 | $29,839.00 | 2 |
| Civic Center Maintenance Facility | $47,950.00 | $2,877.00 | $50,827.00 | 2 |
| Able Fire Training Center | $19,800.00 | $1,188.00 | $20,988.00 | 3 |
| Burnsville High School PD Liason Office | $10,300.00 | $618.00 | $10,918.00 | 4 |
| HOC | $42,350.00 | $2,541.00 | $44,891.00 | 3 |
| Carbon Injection Building | $25,350.00 | $1,521.00 | $26,871.00 | 3 |
| Kramer Pump Building | $17,000.00 | $1,020.00 | $18,020.00 | 4 |
| Well 1 | $17,000.00 | $1,020.00 | $18,020.00 | 3 |
| Well 2 | $17,000.00 | $1,020.00 | $18,020.00 | 3 |
| Well 3 | $17,000.00 | $1,020.00 | $18,020.00 | 3 |
| Well 4 | $17,000.00 | $1,020.00 | $18,020.00 | 3 |
| Well 5 | $17,000.00 | $1,020.00 | $18,020.00 | 3 |
| Well 6 | $17,000.00 | $1,020.00 | $18,020.00 | 3 |
| Well 7 | $17,000.00 | $1,020.00 | $18,020.00 | 3 |
| Well 8 | $17,000.00 | $1,020.00 | $18,020.00 | 3 |
| Well 9 & 10 | $17,000.00 | $1,020.00 | $18,020.00 | 3 |
| Well 11 | $17,000.00 | $1,020.00 | $18,020.00 | 3 |
| Well 12 | $17,000.00 | $1,020.00 | $18,020.00 | 3 |
| Well 13 | $17,000.00 | $1,020.00 | $18,020.00 | 3 |
| Well 14 & 15 | $17,000.00 | $1,020.00 | $18,020.00 | 3 |
| Well 16 | $17,000.00 | $1,020.00 | $18,020.00 | 3 |
| Well 17 | $17,000.00 | $1,020.00 | $18,020.00 | 3 |

| | | | | |
|---|---|---|---|---|
| Meadow Acres Sanitary Lift Station | $2,100.00 | $126.00 | $2,226.00 | 4 |
| McAndrews Sanitary Lift Station | $2,100.00 | $126.00 | $2,226.00 | 4 |
| Echo Valley Sanitary Lift Station | $2,100.00 | $126.00 | $2,226.00 | 4 |
| Keller Lake Sanitary Lift Station | $2,100.00 | $126.00 | $2,226.00 | 4 |
| Crystal Lake Sanitary Lift Station | $2,100.00 | $126.00 | $2,226.00 | 4 |
| Bluebill Bay Sanitary Lift Station | $2,100.00 | $126.00 | $2,226.00 | 4 |
| Maple Island Sanitary Lift Station | $2,100.00 | $126.00 | $2,226.00 | 4 |
| Savage Sanitary Lift Station | $2,100.00 | $126.00 | $2,226.00 | 4 |
| Washburn Sanitary Lift Station | $2,100.00 | $126.00 | $2,226.00 | 4 |
| Woods Trail Sanitary Lift Station | $2,100.00 | $126.00 | $2,226.00 | 4 |
| Buck Hill Sanitary Lift Station | $2,100.00 | $126.00 | $2,226.00 | 4 |
| Sodomka Sanitary Lift Station | $2,100.00 | $126.00 | $2,226.00 | 4 |
| Valley View Sanitary Lift Station | $2,100.00 | $126.00 | $2,226.00 | 4 |
| Meadow Acres Storm Lift Station | $2,100.00 | $126.00 | $2,226.00 | 4 |
| McAndrews Storm Lift Station | $2,100.00 | $126.00 | $2,226.00 | 4 |
| Summit Oaks Storm Lift Station | $2,100.00 | $126.00 | $2,226.00 | 4 |
| Yellowstone Storm Lift Station | $2,100.00 | $126.00 | $2,226.00 | 4 |
| Parkwood Muir Storm Lift Station | $2,100.00 | $126.00 | $2,226.00 | 4 |
| Sunset Pond Storm Lift Station | $2,100.00 | $126.00 | $2,226.00 | 2 |
| Savage Interconnect Storm Lift Station | $2,100.00 | $126.00 | $2,226.00 | 4 |
| Maple Island Pressure Monitor | $2,100.00 | $126.00 | $2,226.00 | 4 |
| Savage Pressure Monitor | $2,100.00 | $126.00 | $2,226.00 | 4 |
| Cederbridge Pressure Monitor | $2,100.00 | $126.00 | $2,226.00 | 4 |
| Yellowstone Pressure Monitor | $2,100.00 | $126.00 | $2,226.00 | 4 |
| Rambush Pressure Monitor | $2,100.00 | $126.00 | $2,226.00 | 4 |
| Summit Lane Pressure Monitor | $2,100.00 | $126.00 | $2,226.00 | 4 |
| Nicollet Reservoir | $8,800.00 | $528.00 | $9,328.00 | 4 |
| Buck Hill Tower | $8,800.00 | $528.00 | $9,328.00 | 3 |
| Colonial Hill Tower | $8,800.00 | $528.00 | $9,328.00 | 3 |
| Heather Hill Tower | $8,800.00 | $528.00 | $9,328.00 | 3 |
| MN River Front Park | $8,800.00 | $528.00 | $9,328.00 | 4 |
| Total: | $1,005,000.00 | $60,300.00 | $1,065,300.00 | |

## Structured Cabling Improvements Cost Estimations and Condition - 5-year Outlook:

| Campus | Fiber and Cabling Components | Consultant Fees | Total w/ Consultant Fees | Condition |
|---|---|---|---|---|
| City Hall/Police Department | $ - | $ - | $ - | 5 |
| Maintainence | $42,500.00 | $ 2,550.00 | $ 45,050.00 | 2 |
| Fire Station 1 | $ - | $ - | $ - | 5 |
| Ames Center (PAC) | $ - | $ - | $ - | 5 |
| Water Treatment Plant | $ - | $ - | $ - | 5 |
| Fire Station 2 | $ - | $ - | $ - | 5 |
| Birnamwood Golf Course | $ - | $ - | $ - | 5 |
| Ice Center | $ - | $ - | $ - | 5 |
| North River Hills Park | $ - | $ - | $ - | 5 |
| Red Oak Park | $ - | $ - | $ - | 5 |
| Cliff Fen Park | $ - | $ - | $ - | 5 |
| Terrace Oaks West Park | $ - | $ - | $ - | 5 |
| Alimagnet Park Shed | $ - | $ - | $ - | 5 |
| Crystal Beach Concessions | $ - | $ - | $ - | 5 |
| Lac Lavon Park | $ - | $ - | $ - | 5 |
| Neil Park | $ - | $ - | $ - | 5 |
| Sue Fischer Fields | $ - | $ - | $ - | 5 |
| Nicollet Commons Park | $ - | $ - | $ - | 5 |
| Civic Center Maintenance Facility | $10,000.00 | $ 600.00 | $ 10,600.00 | 4 |
| Able Fire Training Center | $ - | $ - | $ - | 5 |
| Burnsville High School PD Liason Office | $ - | $ - | $ - | 5 |
| HOC | $ - | $ - | $ - | 5 |
| Carbon Injection Building | $ - | $ - | $ - | 5 |
| Kramer Pump Building | $ - | $ - | $ - | 5 |
| Well 1 | $ - | $ - | $ - | 5 |
| Well 2 | $ - | $ - | $ - | 5 |
| Well 3 | $ - | $ - | $ - | 5 |
| Well 4 | $ - | $ - | $ - | 5 |
| Well 5 | $ - | $ - | $ - | 5 |
| Well 6 | $ - | $ - | $ - | 5 |
| Well 7 | $ - | $ - | $ - | 5 |
| Well 8 | $ - | $ - | $ - | 5 |
| Well 9 & 10 | $ - | $ - | $ - | 5 |
| Well 11 | $ - | $ - | $ - | 5 |
| Well 12 | $ - | $ - | $ - | 5 |
| Well 13 | $ - | $ - | $ - | 5 |
| Well 14 & 15 | $ - | $ - | $ - | 5 |
| Well 16 | $ - | $ - | $ - | 5 |
| Well 17 | $ - | $ - | $ - | 5 |

| | | | | |
|---|---|---|---|---|
| Meadow Acres Sanitary Lift Station | $ - | $ - | $ - | 5 |
| McAndrews Sanitary Lift Station | $ - | $ - | $ - | 5 |
| Echo Valley Sanitary Lift Station | $ - | $ - | $ - | 5 |
| Keller Lake Sanitary Lift Station | $ - | $ - | $ - | 5 |
| Crystal Lake Sanitary Lift Station | $ - | $ - | $ - | 5 |
| Bluebill Bay Sanitary Lift Station | $ - | $ - | $ - | 5 |
| Maple Island Sanitary Lift Station | $ - | $ - | $ - | 5 |
| Savage Sanitary Lift Station | $ - | $ - | $ - | 5 |
| Washburn Sanitary Lift Station | $ - | $ - | $ - | 5 |
| Woods Trail Sanitary Lift Station | $ - | $ - | $ - | 5 |
| Buck Hill Sanitary Lift Station | $ - | $ - | $ - | 5 |
| Sodomka Sanitary Lift Station | $ - | $ - | $ - | 5 |
| Valley View Sanitary Lift Station | $ - | $ - | $ - | 5 |
| Meadow Acres Storm Lift Station | $ - | $ - | $ - | 5 |
| McAndrews Storm Lift Station | $ - | $ - | $ - | 5 |
| Summit Oaks Storm Lift Station | $ - | $ - | $ - | 5 |
| Yellowstone Storm Lift Station | $ - | $ - | $ - | 5 |
| Parkwood Muir Storm Lift Station | $ - | $ - | $ - | 5 |
| Sunset Pond Storm Lift Station | $ - | $ - | $ - | 5 |
| Savage Interconnect Storm Lift Station | $ - | $ - | $ - | 5 |
| Maple Island Pressure Monitor | $ - | $ - | $ - | 5 |
| Savage Pressure Monitor | $ - | $ - | $ - | 5 |
| Cederbridge Pressure Monitor | $ - | $ - | $ - | 5 |
| Yellowstone Pressure Monitor | $ - | $ - | $ - | 5 |
| Rambush Pressure Monitor | $ - | $ - | $ - | 5 |
| Summit Lane Pressure Monitor | $ - | $ - | $ - | 5 |
| Nicollet Reservoir | $ - | $ - | $ - | 5 |
| Buck Hill Tower | $ - | $ - | $ - | 5 |
| Colonial Hill Tower | $ - | $ - | $ - | 5 |
| Heather Hill Tower | $ - | $ - | $ - | 5 |
| MN River Front Park | $ - | $ - | $ - | 5 |
| Total: | $ 52,500.00 | $ 3,150.00 | $ 55,650.00 | |

**A complete list of technology improvement cost estimations, conditions, and phasing is included at the end of this document.*

## LOCAL AREA NETWORKS

Local area networks (LANs), which provide access to shared data and technology systems within buildings, are networks within individual buildings. LAN devices communicate over the wired and wireless technology infrastructure.

The lifespan of network electronics is between 5-7 years, depending on the quality and features of the equipment purchased. For example, 10GE over twisted pair (10G Base-T) began shipping in 2012-2013 and will soon become the predominant connectivity. In other words, buying today's top-of-the-line switch will come closer to approaching the 7-year lifespan.

### Findings/Deficiencies:

The City of Burnsville uses Cisco switches across all sites. Cisco has been an industry leader in the networking space for 30 years and remains in the Leader quadrant in Gartner's Magic Quadrant for Wired & Wireless Networks.

The City is currently evaluating switch replacements across all sites to:

- Make models consistent across all sites and use cases.
- Implement new security and feature sets, such as MAC authentication security.
    - MAC authentication is a security mechanism used to verify the authenticity of a device trying to communicate across the network.
- Ensure core services switches are kept under support contracts, and spares of each model are readily available in stock for replacements when failures occur.

Switches across all sites are stacked where possible. Stacking allows multiple switches to be interconnected to provide high-speed switch-to-switch communications and reduce the administrative burden of managing individual components.

The table below shows inventory obtained from the City of Burnsville technology team:

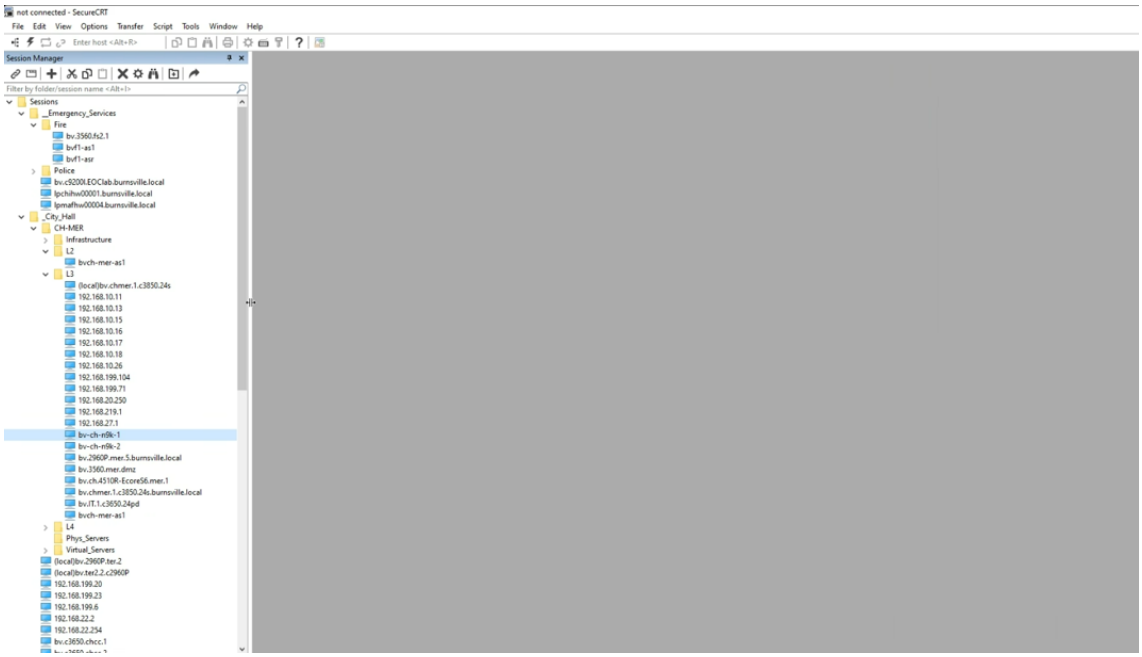
| Make | Model | Quantity | EoL/EoS |
|---|---|---|---|
| Cisco | Catalyst 3650 | 33 | 10/31/2026 |
| Cisco | IE2000 | 19 | 3/31/2026 |
| Cisco | Catalyst 3560CX | 18 | 4/30/2029 |
| Cisco | Catalyst 9200 | 12 | N/A |
| Cisco | Catalyst 9300 | 11 | N/A |
| Cisco | IE4000 | 8 | 7/31/2029 |
| Cisco | Catalyst 3850 | 6 | N/A |
| Cisco | Nexus 93180 | 2 | 7/31/2029 |
| Cisco | IE3300 | 1 | N/A |
| Cisco | IE3200 | 1 | N/A |
| AXIS | T8504 | 1 | N/A |
| Rockwall | 1783 | 1 | N/A |

**Switches marked in red have reached or will reach end-of-life and end-of-support in the next two years.*

The City's network is made up of all Class C networks. VLANs are typically used to segment networks into smaller "broadcast domains" by grouping devices such as data, voice, wireless, cameras, and security devices. Each network is designed to use the third octet for similar network devices. An example of this design is:

- 192.168.Y.Z
    - Y (Third octet) = Device Type
    - Z (Fourth octet) = Endpoint/Client

Class C networks are used by many organizations due to these reasons. Day-to-day changes are made by the City IT team, with major changes or special circumstances being performed by LOGIS, a contractor whom the City has been working with for many years. LOGIS is utilized by the City for technical projects and tickets. Switches are managed through the program SecureCRT, using the secure, encrypted SSH protocol to prevent unauthorized users from 'listening in.' Access to switches is limited to only those who need it.



*Screenshot of SecureCRT obtained from the City of Burnsville*

Updates are performed by the LOGIS team. LOGIS monitors Cisco and other Cybersecurity entities for security advisories and informs the City when an update is needed. Regular updates are also applied as new versions are released. Multiple switches observed by True North had excessive dust and debris buildup on switch ports and fans. Particles can cause switches to overheat or otherwise malfunction.

### Core Switching

These network switches are located in the City Hall data center and provide high-speed connectivity between buildings, the data center, compute and storage resources, and the Internet. Core switching is handled by Cisco switches. The models currently in use are:

- Cisco Catalyst 9300 – more commonly found at the distribution layer and not the core
- Cisco Catalyst 3650 – more commonly found at the distribution layer
- Cisco Nexus 9000 – appropriate for this role

All core switches will be replaced with the data center project, which is currently ongoing.

### Building Core / Distribution Switching

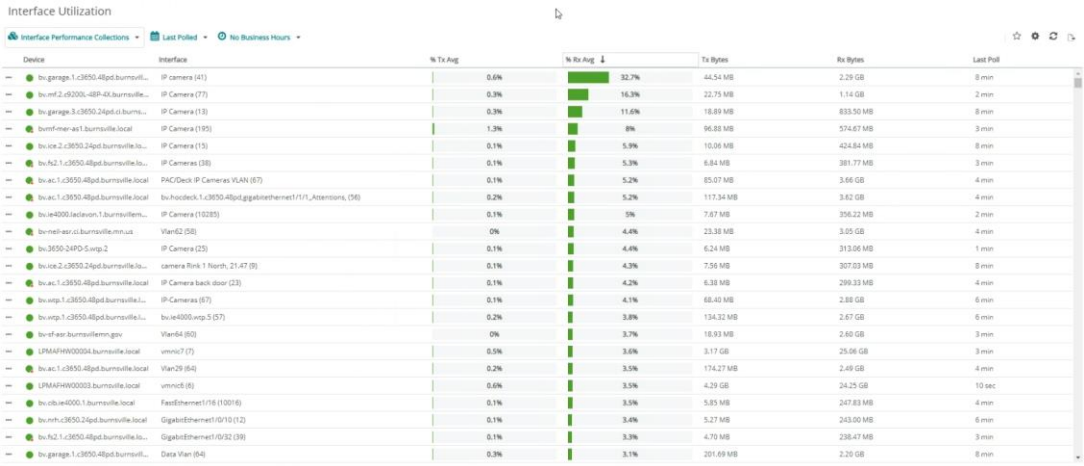
These switches are located in each building's MDF and provide building-level data routing, a fiber aggregation point from the building access layer switches in IDFs, and the main connection point to the WAN. Building core switching is also handled by mostly Cisco switches, with some Axis outdoor switches in use at utility sites. Many of these utility sites utilize a collapsed-core design. In a collapsed-core design, a single switch or set of switches act as both the distribution and access layer of a building or network. At these sites, WAN connectivity and edge access are all configured and connected to the same switch or switch stack.

### Edge / Access Switching

These switches are located in the various IDFs within buildings and provide direct connectivity for computers, cameras, printers, IP phones, wireless access points, IP-based security systems, and other Internet-connected devices. The City's Access switches are mostly Cisco Catalyst 9200L series model switches, with the rest being a mixture of other Cisco model switches. The 9200Ls are designed for access layer connectivity – this is appropriate. Access switches provide power-over-ethernet (PoE) to access points, phones, cameras, and other low-power devices across the City. During True North's on-site visits, Cisco's outdoor/industrial rated IE series switches were observed at outdoor locations, such as parks – these are appropriate for their use case.

### Switch Configuration, Monitoring, and Security

Switches are monitored through the paid application WhatsUp Gold (WUG). WUG is a network logging and monitoring solution that actively monitors switches for configured alerts, such as up/down status, interface traffic rates, etc. These alerts are sent to the appropriate City staff member for remediation. Not all switches have been added to the WUG system yet. The City continues adding- devices as they roll out the platform. No abnormal interface utilization or packet loss was observed by True North during a month-long analysis of switches. SNMP is used to gather information from most LAN devices. Those without SNMP capabilities can still be monitored through ping, though this method is severely limited.




*Screenshot of WUG interface utilization metrics example*

Remote access to switches is limited to SSH only. SSH is a secure protocol that encrypts all traffic between the user and the switch. Access control lists (ACLs) are configured to prevent unauthorized traffic from reaching the law enforcement portion of the network. ACLs work by denying all access between two networks other than those specifically configured. Multicast routing is configured to facilitate IPTV traffic. Multicast is a protocol that sends traffic from one device to many and is typically used with audio/visual technologies. Daily backups of configurations are performed by LOGIS. Backups consist of a complete configuration copy and a copy with changes made over the last day.

### Uninterruptible Power Supplies

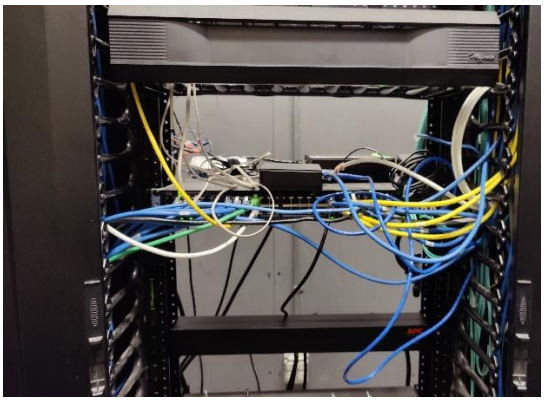
The City utilizes APC for their UPSes across all sites. APC's StruxureWare is used to monitor all connected APC devices. StruxureWare uses collected data to inform staff when batteries need replacement. The City uses this data to replace batteries as needed. A running budget is in place for battery replacement. StruxureWare also collects other analytics from devices, such as load percentages, expected battery runtime, and more. Alerts are configured within the system and are sent out to appropriate personnel. One (1) UPS without a face plate was observed at the Ames Center.

The following information was gathered while True North was onsite:

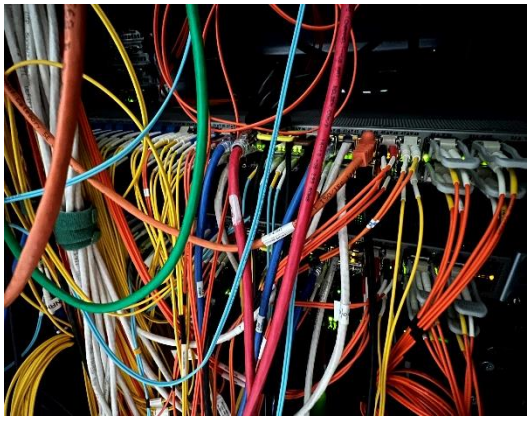
| | |
|---|---|
| **Average Load %** | **20%** |
| **Average Runtime (minutes)** | **47** |
| **UPS with Network Cards Connected** | **91%** |
| **UPS with Environmental sensor** | **6** |

### Local Area Network Pictures

*Dusty switch at Maintenance*



*PoE Injectors in use at Ames Center*



*Fiber optic switches in data center*

*Switch stacking at City Hall*

### Recommendations:

### Short-term tactical activities:

Ensure all UPSes on the network are connected to APC StruxureWare through a network card. Without network cards, the City cannot take advantage of the monitoring and management that StruxureWare offers. Ensure all UPSes are equipped with environmental sensors. These are essential in protecting devices from potential environmental issues. Ensure all UPSes have faceplates installed. Faceplates help prevent dust and other particles from entering the inside of the UPS. Configure WhatsUp Gold with granular groups for LAN devices, such as switches and UPSes. These configured groups can be used to run reports against metrics such as interface utilization and other important resource information. Ensure all LAN devices are configured with SNMP strings to allow for all possible information to be reported to the WUG application. All devices configured with SNMP should use SNMPv3 where possible. SNMPv3 is the most secure version of SNMP currently available for use.

### Long-term strategic initiatives:

**During the upcoming switch refresh, standardize the make and models of switches for similar purposes. Standardization makes task management, updating, and troubleshooting easier. True North supports the City's plans to replace all switches under their current replacement plan.** Develop a plan for regular cleaning of LAN devices. Particles such as dust and other debris can hinder LAN devices' performance and reduce their service life. Continue to inventory all LAN devices as changes are made. Inventory should include LAN device information such as make, model, IP address, location, and other relevant information. WhatsUp Gold can be used to assist with this process. Develop a resiliency testing plan for LAN devices. Plan should include testing physical and logical failover situations. Findings should be well-documented. Continue to replace UPS batteries on a consistent schedule. Replacing UPS batteries regularly is essential in UPS maintenance. Develop a network topology map for the City LAN. The map should include all device types, link speeds, and redundant connections. WhatsUp Gold can also assist with topology map creation.

### Local Area Network Technology Improvements Cost Estimations - 5-year Outlook

| Components | Total | Consultant Fees | Total w/ Consultant Fees | Condition |
|---|---|---|---|---|
| Network Infrastructure | $1,257,000.00 | $75,420.00 | $1,332,420.00 | 2 |

**A complete list of technology improvement cost estimations, conditions, and phasing is included at the end of this document.*

## WIRELESS LOCAL AREA NETWORKS

The global economic value of Wi-Fi is estimated at more than $3.5 trillion USD, according to a study commissioned by Wi-Fi Alliance®. By 2025 that value is expected to grow to nearly $5 trillion. This explosive growth in mobile devices requires faster and denser wireless networking components.

Given the reliance on personal cellular devices, the wireless network has become as mission-critical as the wired network for data, voice, and video communications.

Also, wireless technology is becoming a standard transport medium for most building systems, such as safety and security, clocks, audiovisual equipment, HVAC equipment, and more.

### Findings/Deficiencies:

The City's wireless connectivity is provided by a Cisco wireless infrastructure. This infrastructure provides wireless networking for City staff, devices, and guests. Cisco has been a leader in the WLAN industry for 20 years. The city IT team manages this system, with LOGIS assisting as needed. Eleven (11) wireless networks are broadcast across different buildings.

See table below for detailed information:

| SSID | Security | Purpose |
|---|---|---|
| PACLIGHTS | [WPA2][PSK][AES] | Ames Center Lighting System |
| PACAUDIO | [WPA2][PSK][AES] | Ames Center Audio System |
| PD-Sonos | [WPA2][PSK][AES] | Police Audio in Locker Rooms |
| BVAPCITY | [WPA2][PSK][AES] | General Employee Access |
| AmesCenterStaff | [WPA2][PSK][AES] | Ames Center Unused |
| BarcoAV | [WPA2][PSK][AES] | Unused AV Platform WiFi |
| TM1entry | [WPA2][PSK][AES] | Ames Center TicketMaster WiFi |
| City of Burnsville Public WiFi | [open] | Public Access |
| bvREACHMenu | [WPA2][AES] | Television Access to Advertise Platform |
| Burnsville AV | [WPA2][PSK][AES] | Unused AV Platform WiFi |
| NCP-Control | [WPA2][PSK][AES] | Nicolette Commons Park Lights and Water Controller |

- *Wi-Fi Protected Access 2 (WPA) – Second generation of the Wi-Fi Protected Access wireless encryption standard.*
- *Pre-shared Key (PSK) – Plain text password used for wireless security.*
- *Advanced Encryption Standard (AES) – Encryption algorithm widely supported by wireless networks.*
- *Open – No password or login is needed to connect to the network.*

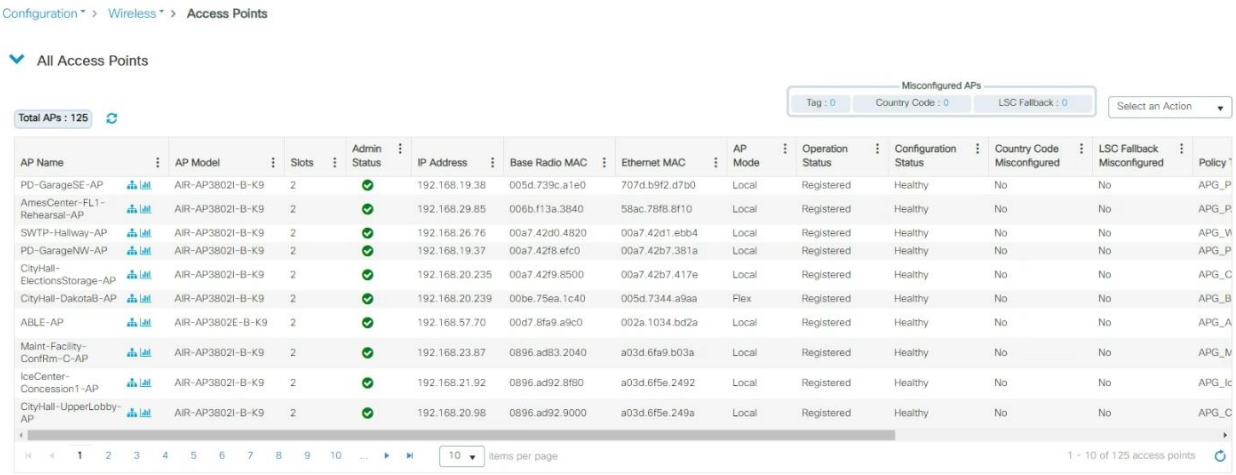
### Wireless Access Points (AP)

Access points are all named similarly, with each APs location, floor, and AP number included. This naming convention makes troubleshooting and maintenance more efficient.

See the tables below for a breakdown of access points by model, quantity, and end-of-support date:

| Model | Qty | End of Support Date |
|---|---|---|
| AIR-AP1562E-B-K9 | 7 | 01/31/2028 |
| AIR-AP1562I-B-K9 | 1 | 01/31/2028 |
| AIR-AP2802I-B-K9 | 3 | 10/31/2027 |
| AIR-AP3802E-B-K9 | 9 | 10/31/2027 |
| AIR-AP3802I-B-K9 | 87 | 10/31/2027 |
| C9124AXI-B | 8 | Not Announced |
| C9130AXI-B | 12 | Not Announced |

No City access points are currently end of life. Only 20 of 127 (16%) APs are currently Wi-Fi 6 capable. The City is replacing all APs without Wi-Fi 6 capabilities in an upcoming refresh planned for 2025. The industry's current wireless standard, 802.11ax (Wi-Fi 6), was released in 2019. 802.11ac Wave 2 (Wi-Fi 5) was released in 2016, 802.11n (Wi-Fi 4) was released in 2009, and 802.11g (Wi-Fi 3) was released in 2003. Wi-Fi 6 has a typical data rate of around 5 Gbps, Wi-Fi 5 around 1.3 Gbps, Wi-Fi 4 around 600 Mbps, and Wi-Fi 3 around 54 Mbps. For comparison, Wi-Fi 6 is approximately 90 times faster than Wi-Fi 3. Indoor and outdoor-rated APs are in use across the City. Most access points are powered by power-over-ethernet (PoE), which switches provide. A few APs are powered with power injectors due to PoE not being unavailable at those locations. The City is working towards powering all APs with PoE.




*Screenshot of APs within the WLC*

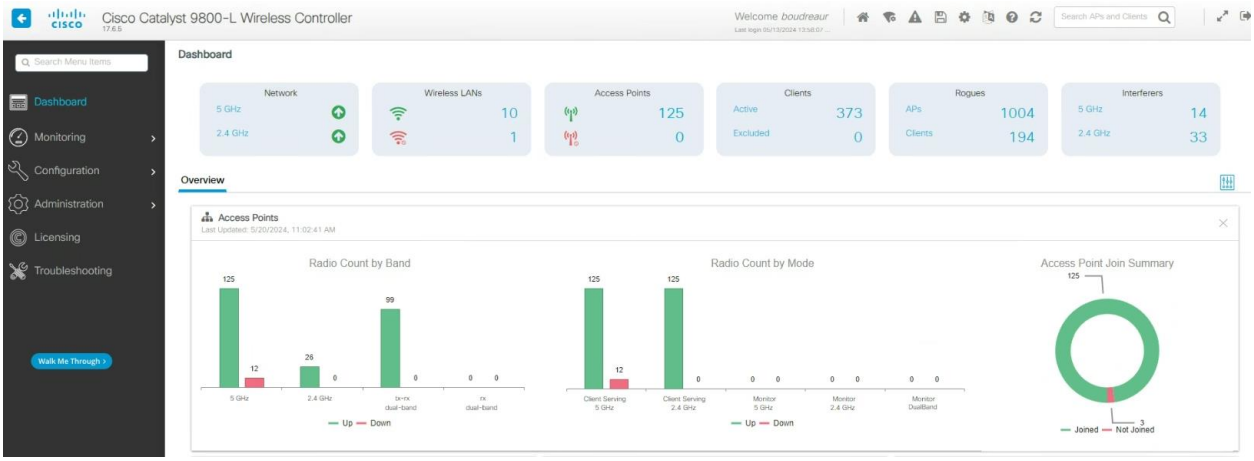
## Wireless security and authentication

Wireless networks are configured to use WPA2 with pre-shared key (PSK) authentication. The WPA2 protocol is no longer considered secure due to newly discovered vulnerabilities, which have been fixed with the latest standard, WPA3. PSKs are also insecure because they can be shared by anyone who knows the existing PSK. Publicly available networks are not configured with any security or authentication. Access Control Lists (ACLs) are configured on network switches to ensure unauthorized access to devices is not obtained by connected users. All public

network traffic is routed to a separate outbound Internet connection. The City is considering implementing a splash page for this network. Splash pages can be configured to force connecting users to enter their identifying information, as well as agree to the City's Acceptable Use Policy (AUP). The city does not use 802.1X technology for any wireless systems. The 802.1X standard is used to control access to networks, authenticate users and devices, and enforce security policies.

## Wireless system management

The wireless system is managed with two (2) Cisco C9800 wireless controllers (WLC) that are configured in a high-availability (HA) pair. One (1) WLC is located at the City Hall data center, and the second is located at the City's secondary data center inside the maintenance building. These two (2) controllers are connected to each other with a 10Gbps link. High-availability allows for increased resiliency in the event of one (1) WLC becoming inoperable or otherwise unavailable as the second takes over controller responsibilities.




*Screenshot of City of Burnsville WLC Dashboard*

The wireless system has both Cisco's Network Advantage and DNA Advantage license sets for all APs. Advantage licensing provides additional benefits over Cisco's "Essentials" license tier. Benefits include policy-based automation with Cisco SDA, additional analytics, and detection and mitigation of security threats. See the full licensing matrix at Cisco's wireless licensing website.


*Screenshot of current licensing*

Wireless controllers are connected to the City's log management system, WhatsUp Gold (WUG), through SNMP for monitoring. WUG has been implemented recently, and the City is continually working to integrate technologies. No alerts are currently configured, but plans are in place to use WUG for wireless alerting. Alerts will be sent to the appropriate City team member for remediation. LOGIS notifies the City when firmware updates are made available by Cisco; they also deploy those updates.

### Wireless Survey Results

True North conducted wireless surveys at sixteen (16) city sites, as listed below.

- City Hall
- Birnamwood Golf Course
- Fire Station 1
- Fire Station 2
- Ice Center
- Maintenance Facility
- Performing Arts Center
- Water Treatment Plant
- Alimagnet Park
- Crystal Beach Park
- Lac Lavon Park
- Nicollet Commons Park
- North River Hills Park
- Terrace Oaks West Park
- Cliff Fen Park
- Red Oak Park
- Crystal Beach Concessions

During the site assessments, True North used Ekahau AI Pro, an industry-leading wireless assessment tool, to identify rogue access points, gaps in coverage, and other information about the wireless network.

Notable information found during the site assessments include:

A general lack of wireless signal coverage was observed at the following locations:

- City Hall
- Ice Center
- Maintenance Facility
- Alimagnet Park (5 GHz)
- Lac Lavon Park (Issues on east path)
- Red Oak Park
    - Wireless signal at this location did not meet the minimum threshold for measurement.

- North River Hills Park (Outdoor)
- Nicollet Commons Park
- Terrace Oaks West Park
- Cliff Fen Park
  - Wireless signal at this location did not meet the minimum threshold for measurement.
- Crystal Beach Concessions

Significant channel overlap at the following locations:

- City Hall
- Performing Arts Center (2.4 GHz band)

Signal-to-noise ratio (SNR) issues at the following locations:

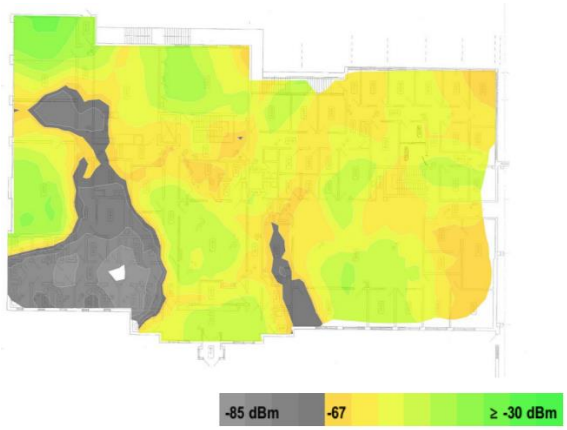
- City Hall
- Ice Center
- Maintenance Facility (5 GHz band)
- Crystal Beach Park
- Lac Lavon Park (5 GHz band)
- Nicollet Commons Park
- Terrance Oaks West Park
- Alimagnet Park (5 GHz)

Excessive packet loss at the following locations:

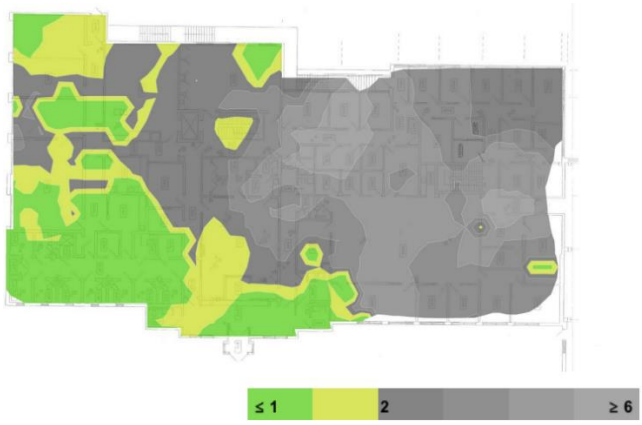
- City Hall
- Birnamwood Golf Course
- Fire Station 1
- Fire Station 2
- Ice Center
- Maintenance Facility
- Nicollet Commons Park

The use of 40 MHz wide channels on the 5 GHz band at all locations.

See examples of signal strength and channel overlap issues below. Additional information on each site can be found in extensive reports given to the technology department, and in Appendix B.




*Signal Strength Issues at City Hall*



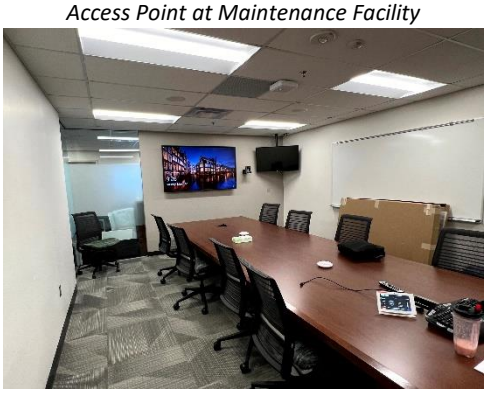

*Channel Overlap Issues at City Hall*

### Wireless Local Area Network Pictures

*Cisco 9800-L Wireless Controller*

*Access Point at Maintenance Facility*

*Access Point at Fire Station 1*



*Access Point in City Hall*

### Recommendations:

### Short-term tactical activities:

Consolidate or reduce the quantity of SSIDs used or detected in any given physical space to as few as possible. The potential for general wireless network health issues increases with each broadcasted SSID. Consider making all non-standard SSIDs hidden. Hidden SSIDs still broadcast their signal, but to connect, a user must know both the SSID name and the PSK. Ensure all SSIDs

that are not in use are disabled. Consider removing SSIDs from the configuration after being disabled for a set period. Deploy WPA3 or 802.1x authentication across all City wireless networks. Reduce channel size to 20MHz in locations that are currently using 40MHz. Implement splash pages for guest networks. Guest networks should have the City's Acceptable Use Policy (AUP) presented to all users attempting to connect. Require guests to input identifying information before granting access. Consider throttling guest network bandwidth across all sites. Although guest traffic is routed through a separate Internet connection, the traffic must first travel across the network. By reducing the bandwidth guests can use, city devices have more potential bandwidth to work with.

### Long-term strategic initiatives:

Fine-tune the wireless network at the locations where network health issues exist. Tasks might include:

- Ensure the lowest possible wireless power transmit setting to minimize channel overlap and interference. Ideally, the Wi-Fi system should manage these settings automatically.
- Disable lower-speed data rates to optimize the client-to-access-point associations.
- Confirm in the WLC dashboard that neighboring APs at buildings have chosen channels that are not overlapping.
- If channel tuning does not improve the conditions, consider moving or removing access points.

Utilize Cisco support for assistance if needed. Consider adding access points in areas lacking coverage. Full wireless coverage in a building is necessary to support the diverse needs of occupants, enhance productivity, ensure connectivity reliability, and future-proof the network infrastructure. Conduct an independent wireless site survey periodically (every 1-2 years, when major changes to a building layout or access point standards have been changed) to measure the effectiveness of the wireless network. Plan to refresh existing access points as lifecycle dictates, commonly every 3 to 5 years, with then-current Wi-Fi technology. With Wi-Fi networks demanding more speed and capacity, organizations must consider 6Ghz-capable access points for their next refresh. These high-performance APs will enhance the user experience. In parallel, the city must understand that these 6GHz APs are best utilized when connected to greater-than-1Gbps switch ports, so organizations must also consider timing and budgets for their network switch refresh to maximize the functionality of the new APs. Standardize on two Category 6A cables per access point to leverage future Multigigabit Ethernet switch and 802.11ax technologies. Consider implementing Multigigabit switches to provide future access points with full bandwidth potential.

### Wireless Local Area Network Technology Improvements Cost Estimations - 5-year Outlook

| Components | Total | Consultant Fees | Total w/ Consultant Fees | Condition |
|---|---|---|---|---|
| Wireless Infrastructure | $146,150.00 | $8,769.00 | $154,919.00 | 2 |

**A complete list of technology improvement cost estimations, conditions, and phasing is included at the end of this document.*

# SAFETY AND SECURITY TECHNOLOGY

## VIDEO RECORDING

This report defines “Video Recording” as the camera devices, mounting hardware, cabling/wiring, power supplies, storage, local area network, and software required for a fully functioning video security surveillance system.

“Servers” is defined as a video recording storage system optimized for video surveillance processing and recording.

### Findings/Deficiencies:

The City IT staff manages the video recording system and all its components. Recorded footage is typically reviewed weekly, with requests coming from many different City organizations, such as Parks and Recreation, Police, and Fire. City employees can view feeds or export recordings based on their configured permissions. Typically, the end user will have permission to complete the task but not the knowledge base, in which case they will contact the IT team. Live feeds of cameras are broadcast to monitors at both the Ice Center and the lobby area of City Hall. The staff monitors these on location as needed, but no staff members are specifically tasked with watching camera feeds. The City has self-described its approach to video surveillance as reactive. A reactive approach is defined as reacting to events after they occur rather than proactively monitoring events in real time.

### Back-end Software

The City utilizes Milestone, an open-platform system, for its Video Management System (VMS). Open-platform video management systems have the ability to work with large quantities of device makes and models. Milestone is installed on virtualized servers located at both data centers. In a failover event, servers can operate from the City’s DR site at the Maintenance building. An additional Milestone instance exists inside of the City’s mobile unit for six (6) of its own cameras and can be used for the rest of the City if needed. This instance includes its own software, hardware, and storage. The Milestone system was implemented in 2007. City staff can access Milestone via their website or mobile app. Milestone is integrated with Microsoft Active Directory for authentication and access. On occasion, a local account is created for a user who needs access but does not have an Active Directory account. Milestone’s XProtect suite provides advanced video management, including live monitoring, video recording and analytics, and integration with other security systems. Software and hardware updates are performed on the VMS annually. Though the City’s VMS can integrate with its access control system (ACS), it is not due to licensing costs. The current VMS cannot purge license plate recognition (LPR) data once every 24 hours, which Minnesota state law requires if LPR cameras are to be used. Multiple existing camera models have LPR capabilities. Intercom cameras are connected to both the city access control and phone systems. This allows for audio calls to be answered by City staff on their existing phone.

### Cameras

65 different models of Axis cameras are used across all City sites, for a total of 385 cameras. Organizations worldwide trust Axis cameras for their reliability, performance, and versatility in video surveillance applications. 90% of cameras record footage at 1080p, with the remaining recording at 720p. Some cameras can record up to 4k but are not currently configured to do so. The majority (90%) of cameras in use are motion-activated. There have been instances where an incident was not recorded due to the motion activation not being triggered as it should be. Motion activation is triggered by configured thresholds, which control when to begin recording. Due to the large number of motion-activated cameras, the City has configured all cameras with a median threshold for activation. Approximately twelve (12) cameras record 24/7, typically in high-traffic areas. Using Axis' ZipStream, cameras record with a 30% compression rate. The standard frame rate in use is 8 frames per second (FPS). Retention time for video recordings is as follows:

- Default – 14 Days
- Parking Garage & Deck – 21 Days
- Police Booking & Processing – 30 Days

Axis is the current standard for camera manufacturers. CoB does not currently standardize on a single-camera model. Many camera models currently in place can recognize faces, but the Milestone VMS does not allow this data to be searched or retrieved meaningfully. 251 of the 380 cameras (66%) are currently end-of-life and end-of-support or will be so within the next year. The City has a ten (10) year cycle for camera replacement. The manufacturer suggests replacement after seven (7) years. Complete camera coverage is present across the majority of City sites. A few City parks are not fully covered, but plans are in place to work towards this goal.

A breakdown of the Axis video surveillance cameras with the resolution, quantity, End-of-Support date, and pictures of the Axis cameras is shown below.

| Model Number | Qty | Resolution (Megapixels) | End of Life and End of Support Date |
|---|---|---|---|
| Axis A8004-VE | 3 | 1 | EoS |
| Axis A8105-E | 1 | 2.3 | EoS |
| Axis A8207-VE MK II | 3 | 6 | N/A |
| Axis F44 Dual Audio Input | 1 | N/A | EoS |
| Axis I8016-LVE | 1 | 5 | N/A |
| Axis M1054 | 8 | 1 | EoS |
| Axis M1065-L | 1 | 2.5 | 01/31/2029 |
| Axis M1144-L | 2 | 1 | EoS |
| Axis M1145-L | 1 | 2.5 | 11/30/2027 |
| Axis M3004 | 3 | 1 | EoS |
| Axis M3007 | 2 | 5 | EoS |
| Axis M3014 | 3 | 1 | EoS |

| | | | |
|---|---|---|---|
| **Axis M3015** | 1 | 2.5 | 08/31/2028 |
| **Axis M3024-L** | 51 | 1 | 03/31/2025 |
| **Axis M3027** | 1 | 5 | EoS |
| **Axis M3044-V** | 1 | 1 | 06/30/2025 |
| **Axis M3045-V** | 7 | 2.5 | 06/30/2025 |
| **Axis M3046-V** | 4 | 4 | 06/30/2025 |
| **Axis M3046-V 1.8MM** | 2 | 4 | 06/30/2025 |
| **Axis M3057-PVE** | 1 | 4 | 09/30/2029 |
| **Axis M3065-V** | 4 | 2.5 | 05/31/2028 |
| **Axis M3114** | 5 | 1 | EoS |
| **Axis M3204** | 1 | 1 | EoS |
| **Axis P1357** | 5 | 5 | EoS |
| **Axis P1425-L** | 1 | 2.5 | EoS |
| **Axis P1425-LE** | 7 | 2.5 | EoS |
| **Axis P1427-E** | 31 | 5 | EoS |
| **Axis P1427-LE** | 8 | 5 | EoS |
| **Axis P1435-LE** | 1 | 2.5 | 06/30/2027 |
| **Axis P1447-LE** | 5 | 5.3 | 05/31/2028 |
| **Axis P1448-LE** | 6 | 8.3 | 05/31/2028 |
| **Axis P1477-LE** | 3 | 5.3 | 05/31/2028 |
| **Axis P3214-V** | 2 | 1 | EoS |
| **Axis P3225-LV Mk II** | 19 | 2.5 | 01/31/2025 |
| **Axis P3225-LVE Mk II** | 17 | 2.5 | 01/31/2025 |
| **Axis P3228-LVE** | 1 | 8.3 | 03/31/2027 |
| **Axis P3245-LV** | 12 | 2.5 | 12/31/2027 |
| **Axis P3245-LVE** | 13 | 2.5 | 12/31/2027 |
| **Axis P3245-V** | 2 | 2.5 | 12/31/2027 |
| **Axis P3248-LVE** | 3 | 8.3 | 02/28/2028 |
| **Axis P3265-LV** | 1 | 2.5 | N/A |
| **Axis P3267-LVE** | 1 | 5 | N/A |
| **Axis P3344** | 1 | 1 | EoS |
| **Axis P3354** | 22 | 1 | EoS |
| **Axis P3363** | 1 | 0.48 | EoS |
| **Axis P3364** | 4 | 1 | EoS |
| **Axis P3364-L** | 3 | 1 | EoS |
| **Axis P3374-V** | 4 | 1 | 09/30/2027 |
| **Axis P3707-PE** | 13 | 2.5 | 08/31/2024 |
| **Axis P3715-PLVE** | 1 | 2.5 | 11/30/2028 |
| **Axis P3717-PLE** | 16 | 2.5 | 07/23/2027 |
| **Axis P3719-PLE** | 26 | 3.7 | 02/28/2030 |
| **Axis P3727-PLE** | 2 | 2.5 | N/A |

| | | | |
|---|---|---|---|
| **Axis P3807-PVE** | 13 | 8.3 | 12/31/2029 |
| **Axis P3905-R Mk II** | 1 | 2.5 | 03/31/2030 |
| **Axis P5635-E** | 1 | 2.5 | 11/29/2024 |
| **Axis P7214** | 1 | N/A | 09/15/2024 |
| **Axis Q1786-LE** | 4 | 4 | N/A |
| **Axis Q3505** | 4 | 2.5 | EoS |
| **Axis Q3505 Mk II** | 4 | 2.5 | EoS |
| **Axis Q6035-E** | 1 | 1 | EoS |
| **Axis Q6045-E** | 2 | 2.5 | EoS |
| **Axis Q6054-E** | 1 | 1 | EoS |
| **Axis Q6215-LE** | 1 | 2.5 | 04/21/2028 |
| **Axis Q8414-LVS** | 5 | 1 | 06/30/2025 |
| **Axis T8705** | 4 | N/A | 12/30/2029 |

*Cameras with red text are end-of-life and end-of-support, will be so in the next year, or the manufacturer lists no date due to the age of the model*

The City is working towards replacing existing EoL/EoS cameras across all sites with Verkada cameras. This plan would utilize Verkada's bridging system, allowing the City to retain newly installed Axis cameras that can be managed through the Verkada system.

### Video Surveillance System Pictures

*Interior camera at Maintenance Center*

*Fire Station camera monitor*

*Exterior camera at fire station*

*Interior camera at Ames Center*

### Recommendations:

### Short-term tactical activities:

The City should replace all end-of-life and end-of-support devices as soon as possible. These devices no longer receive software updates from their manufacturer, leading to cybersecurity concerns. Establish a baseline for motion-activated cameras to minimize no-trigger events. Once baselines are established, configure groups of cameras according to the findings. Ensure that all network-based cameras update their firmware to the latest versions. Document all information about the existing CCTV camera systems being used.

### Long-term strategic initiatives:

True North supports the City's plan to replace all EoL/EoS camera models with Verkada cameras, while using Verkada's bridging solution to continue utilizing Axis cameras that are not at their EoL/EoS. This solution enables existing devices to remain in use while replacing EoL/EoS devices. Continue to deploy cameras across all City sites that do not currently have adequate coverage. Develop a long-term strategy to implement a proactive camera deployment strategy across the City as needs grow. Evaluate integrating Milestone with the existing access control system. Integration allows for a more robust security environment, including tying video footage to access control events, allowing for better monitoring and investigation of security incidents. Explore options for implementing license plate recognition (LPR). Ensure data can be purged once every 24 hours to comply with Minnesota state law.

### Camera System Improvements Cost Estimations and Condition - 5-year Outlook:

| Components | Total | Consultant Fees | Total w/ Consultant Fees | Condition |
|---|---|---|---|---|
| Camera Systems | $307,500.00 | $18,450.00 | $325,950.00 | 2 |

**A complete list of technology improvement cost estimations, conditions, and phasing is included at the end of this document.*

## ACCESS CONTROL

Access control consists of the door control system and equipment that allows authorized personnel into designated secure areas, such as exterior door access and secured interior rooms. Access control also refers to the process of managing databases or records of access and determining levels of authorized entry. Access control systems create records of authorized access and can alarm when unauthorized access is attempted or when doors are propped open. Access control reduces the staff's need to issue and track keys. It also reduces the need to rekey doors for personnel changes, thus decreasing administrative costs and burdens while reducing vulnerabilities.

### Findings/Deficiencies:

### Head-end System:

The City of Burnsville uses Feenics Keep for their access control system (ACS). Feenics Keep is a cloud-based platform owned by Acre. A mobile application is available for City staff to use remotely. Though the application is fully featured, the interface was described by city

employees as unintuitive and generally difficult to use. Due to these concerns, only IT staff and building managers use the mobile application. Alerts are currently configured and are sent out via email. Mobile app alerts can be configured, but due to the poor nature of the application, they are not currently set up. Alerts are set to notify staff if doors are propped open on a small number of doors. Access to the ACS is achieved by installing and logging in to the Feenics Keep thick client. Users are configured locally for administration. The system is tied to Microsoft Active Directory for LDAP synchronization. LDAP automatically synchronizes name, title, and position within the organization. Synchronized information is not automatically removed from the system when it is removed from Active Directory. Single sign-on is not currently configured.

Configuration and management of the system is broken down into three roles, which are outlined below:

- Administrators – This consists mostly of the IT team and handles the majority of configuration.
- Building Managers – Set door schedules.
- HR – Handles onboarding and offboarding of staff.

### Access Control Hardware:

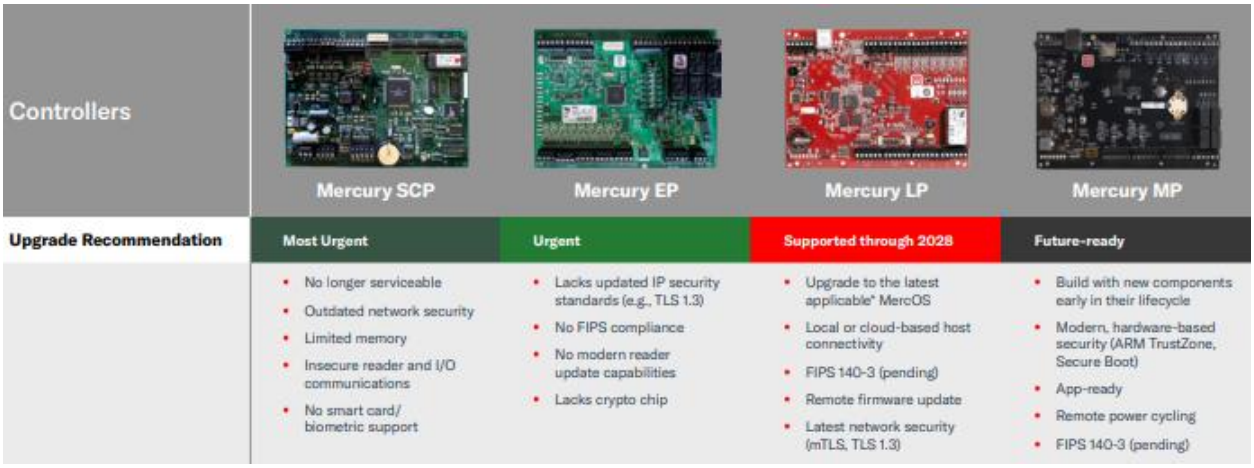
Each door connected to the ACS uses a mercury board. All mercury boards are connected to a UPS. UPSes are tested regularly. All essential City sites are also backed up with a generator. The majority (90%) of controlled doors have Maglocks with crash bars. A smaller portion (10%) of doors have exit buttons. Vehicle gates across the City use pavement sensors and push buttons. The City Fuel Management System is integrated into the ACS, allowing employees to obtain gas in City-owned vehicles.

79 controllers are in place across the City. See table below for more information, including model and quantity.

| Make | Model | Quantity |
|---|---|---|
| Mercury | LP1501 | 64 |
| Mercury | LP1502 | 15 |
| Mercury | EP1501 | 1 |

**Items marked in red are no longer supported and in need of immediate replacement*

Mercury is supporting LP boards through 2028 and advises customers to replace any remaining EP boards as soon as possible. The City has one (1) EP board, located at the Buck Hill water tower. See additional information from Mercury's data sheet below.




### Badge Readers and Cards:

Door access is controlled by card readers. HID iClass cards are given to all city staff, volunteers, and contractors and are used with city vehicles. HID iClass cards are recognized for their robust security features, which include a universal card command interface compliant with ISO/IEC 7816-4 standards and a Secure Identity Object (SIO) data model. Over 500 total access cards are currently in circulation. A handful of doors also have keypads for PIN entry. Cards are printed by the City Human Resources (HR) department. The Police department manages their own card printing and assignment.

### Video Intercoms

There are six (6) video intercoms throughout the City of Burnsville.

See the table below for intercom information.

| Model Number | Qty |
|---|---|
| Axis A8004-VE | 3 |
| Axis A8207-VE MK II | 3 |

*Cameras with red text are end-of-support*

Intercom calls are sent to the front desk person's phone or the building manager. All intercoms are connected to the City access control system. Intercom cameras are set to record when the configured motion-activation threshold is met. These devices are configured with the same thresholds as standard cameras across the City.

### Recommendations:

### Short-term tactical activities:

Replace all end-of-support intercom devices and the EP model controller located at the Buck Hill water tower. These devices no longer receive security updates and are a security risk. Consider implementing single sign-on for user authentication. Ensure that all door controllers are updated to the latest firmware. Maintain the latest version of the ACS platform and server

operating system. Configure alerts for forced or door-held opens. Notifications can be configured to be sent during a set time to reduce the number of alerts. User pictures should be included in the access control system's database. Consider implementing dedicated staff to monitor all City camera feeds.

### Long-term strategic initiatives:

Prepare to replace all LP model controllers within the next few years, as they will no longer receive support as of 2028. Approach Feenics Keep with mobile application concerns. Develop a procedure to physically inspect all card readers and look for signs of tampering. Annually audit the database of users with access badges assigned to card readers. Develop a procedure to notify the technology department when an employee is terminated so that access rights may be revoked immediately.

### Access Control Improvements Cost Estimations and Condition - 5-year Outlook:

| Components | Total | Consultant Fees | Total w/ Consultant Fees | Condition |
|---|---|---|---|---|
| Access Control Systems | $104,000.00 | $6,240.00 | $110,240.00 | 2 |

**A complete list of technology improvement cost estimations, conditions, and phasing is included at the end of this document.*

## INTRUSION DETECTION

Intrusion detection systems are typically installed within an environment to protect against physical loss, theft, or vandalism. When armed, an intrusion detection system may communicate either internally to the City or internal staff responsible for responding to alarms or externally to a central monitoring service. Intrusion detection systems may consist of door position sensors, motion sensors, and control keypads for authorized users to arm or disarm the system.

### Findings/Deficiencies

The City of Burnsville utilizes a variety of systems and manufacturers for intrusion detection across buildings, which introduces unnecessary complexity and risk. Not all sites are protected by an intrusion detection system (IDS).

The only sites currently monitored are:

- Ice Staking Arena
- Golf Course
- Ames Center
- Water Treatment Plant

The IDSes are managed by building managers, who are responsible for adding and removing users to systems. Building managers also receive alerts when an IDS is triggered. It is currently unknown how they are notified and for which situations. No existing IDSes are integrated with any other systems, such as security or camera systems. The City has acknowledged that

documentation of their IDS is lacking and that steps should be taken to remedy this fact.

### Recommendations

#### Short-term tactical activities:

The City should determine the exact processes for IDS management, notifications, and any other pertinent information. All information should be documented and kept up to date. The city should also audit all IDSes and purge all unnecessary users and user codes from the systems.

#### Long-term strategic initiatives:

The City should standardize a single intrusion detection system that integrates with camera and access control systems. Deploy the standardized IDS solution across all essential sites. Regularly test functionality, alerting, and document the results.

## VISITOR MANAGEMENT

Visitor Management Solutions are typically implemented in an environment to log visitors entering a facility. Utilizing a visitor management system provides historical records of additional building occupants, tracks irregular activity, and may provide automated screening of visitors against internal or external databases. Automated screening can include verifying that a contractor or service provider is approved to enter or include additional policy checks for restricted visitors. Temporary display badges may be printed through the interface for approved visitors to help identify approved visitors within the facility. A Visitor Management System may also issue temporary access cards when integrated into the physical access control system.

### Findings/Deficiencies:

Visitors must sign in at the front desk of the City building they are entering, where a temporary sticker badge is handed out and must be worn. This badge is manually created by the staff member working at the front desk. Other than at the Police Department, the City does not have a system to scan driver's licenses or vet visitors. Visitors to the Police Department must be either escorted by an approved party or be cleared for entrance by the Criminal Justice Department. The majority of staffed buildings have a locked door with a badge reader and camera allowing staff to see outside. Staff must open the door via the access control system to allow visitors entrance. Staffed buildings with always unlocked doors have an interior security vestibule with a camera and access-controlled door inside. City buildings that can be rented out, such as some park structures, are also equipped with this capability. There is currently no formal standard for any City building other than the Police Department. A mass notification system exists, which can send out notifications to all staff. This system is not currently configured to send notifications on a per-group basis. A mass notification is sent to all staff. No formal blacklist or whitelist is maintained by the City. If someone needs to be black or whitelisted, this information is sent via email or phone.

### Visitor Management Pictures

*Video intercom at Fire Station*


*Security Vestibule at Fire Station*

### Recommendations:

### Short-term tactical activities:

The City should implement a centralized visitor management system. All visitors should present identification to be run through the VMS before entry to the building. A centralized VMS provides tracking of all visitors who have entered City buildings.

### Long-term strategic initiatives:

Develop a uniform procedure for visitors and then communicate instructions clearly to all necessary staff. Develop a written security vestibule standard for all building types. This standard should include exterior cameras and/or video intercoms for staff communication with visitors before they enter the building. Exterior doors should be access-controlled where possible. Vestibule interior doors should be accessed controlled in all cases. Once a visitor is authorized for entrance, the City staff member should be able to press a remote release button, opening the interior door briefly.

### Security Systems Improvements Cost Estimations and Condition - 5-year Outlook:

| Components | Total | Consultant Fees | Total w/ Consultant Fees | Condition |
|---|---|---|---|---|
| Security Systems | $214,850.00 | $12,891.00 | $227,741.00 | 2 |

**A complete list of technology improvement cost estimations and phasing is included at the end of this document.*

## VOICE SYSTEMS/UNIFIED COMMUNICATIONS

Unified Communications (UC) is a system that leverages the network to provide telephone-type services, often combined with newer features such as instant messaging, voicemail, and video calling into a single platform.

### Findings/Deficiencies:

The current phone system is provided by Mitel and utilizes an IP-3300 controller with one physical controller and one virtual. Centralized system with the physical appliance at the main data center and the virtual appliance able to reside at either DC. Appliance software is current as of the time of this assessment per city staff. Includes NuPoint Unified Messaging. Mitel handset models in use are 5304, 5320, 5330, 5340, 6930, and 6940, with the 6900 series being the current city standard. The Mitel 5300 series handsets will reach end of support in July 2025. MyCollab is used for Unified Messaging (chat and presence). Includes a mobile app for handsets that is not used much within the city. There is a softphone application available that is not currently used. Mitel Border Gateway (MBG) provides services for handsets and softphones located off-network. Some IP-to-analog conversion is being performed at certain locations, but only for fire code compliance with fire panels, elevators, and related equipment. Budget is in place for a migration to a hosted platform to replace Mitel. Microsoft Teams is the most likely selection due to the existing Microsoft Enterprise Agreement. Discussions with vendors have already started, verifying the migration procedure and to start to get pricing. PSTN connectivity to the city is via two PRI trunks from Centurylink/Lumen. Integrations with other systems include door cameras that allow a desk phone to view visitors before unlocking a door, and AD for voicemail. 911 calls send source call information such as location to the carrier that is readable by 911 operators. The PSALI state/federal 911 platform pulls information from a city-maintained database. 911 calls send the DID or department number. Calls generate automated voice messages and texts to the 911 operator and department-assigned contact. Faxing is handled by an online IP government platform, EGoldFax. Five (5) multifunction fax machines are located in departmental offices within the city: two at police, one at fire admin, one at maintenance, and one at HR. Voice system redundancy is achieved through the use of multiple appliances; local site/building redundancy is achieved via a fiber ring with dual links to each location.



### Recommendations:

### Short-term tactical activities:

Prior to considering any new phone system it is critical to define your normal usage patterns and administrative tasks to properly evaluate how you would utilize the new system. When evaluating phone system replacements, consider how you would recover from a site outage and what redundancy options you could employ to improve survivability. Also consider the phone system's integration into other safety systems for notification.

### Long-term strategic initiatives:

Consider the impact of moving to a fully cloud-based phone system like a Microsoft Teams phone system. What physical devices are compatible with it? How will the cost over time compare to a hosted solution? How much time can you expect to spend on management tasks and how variable will that time cost be throughout each year? Will your staff embrace soft phones and mobile applications?

### Unified Communications Improvements Cost Estimations and Condition - 5-year Outlook:

| Components | Total | Consultant Fees | Total w/ Consultant Fees | Condition |
|---|---|---|---|---|
| Unified Communications | $165,000.00 | $9,900.00 | $174,900.00 | 3 |

**A complete list of technology improvement cost estimations and phasing is included at the end of this document.*

## MULTIMEDIA SYSTEMS

Effective communication is paramount for a well-functioning organization in the dynamic city government environment. Multimedia systems are required for transparency, civic engagement, and administrative efficiency. This report section looks at these multimedia systems, providing insights into the various platforms.

### Findings/Deficiencies:

There are currently eight Teams rooms throughout the city, using Microsoft Teams conferencing tools.

Six rooms are at Fire Station 1. These rooms have large displays, ranging from 65” to 86”. A panel on the wall is used for scheduling and room function. Each room has a camera for video conferencing. Teams functionality for each room is hosted on a Lenovo small form factor PC. Staff have access to a dedicated room PC that can be used for presentations. Each room is equipped with wireless presentation software, HDMI inputs, and a wireless keyboard/mouse for participants.

As part of the current City Hall/Police Department renovation, all AV systems and devices are being replaced across the facility. Currently, two rooms exist at City Hall, with a similar configuration as Fire Station 1, but use a Logitech Rally Bar for AV and Intel NUC PC’s. The older conference rooms at City Hall need new equipment and currently have Extron panels and speakers, all of which are being replaced as part of the renovation project at City Hall. The Maintenance facility received an inexpensive refresh last year, consisting of a 75” smart TV, Vitec encoder, Barco Clickshare wireless presentation, sound bar, and Logitech webcam.

The Police Department had a complete AV refresh in 2018, which includes the following: a Crestron-based IPTV system with AMX encoders/decoders, a headend in the network closet, conference rooms with selectable inputs, five rooms with Barco wireless presentation equipment, dedicated presentation PCs, and selectable inputs, and 20 additional displays with selectable inputs. This location is also being completely updated with new AV equipment as part of the renovation project.

The City Council meeting room was built in 2015 and will also be replaced as part of the ongoing facilities project. The current equipment in this room is aging, but still functional. IPTV broadcast system includes dedicated AV network that encodes and broadcasts meetings to local cable and YouTube. Five Sony network cameras. Large displays and one projector. Crestron system with HDMI input and HDMI/IP extenders. Dedicated presentation PC on dais with displays for live broadcast and presentation. Ceiling speakers and microphones. Control room that houses broadcast equipment. Teams meetings can be recorded within Teams as a M365 hosted service. Room scheduling panels are Logitech and allow scheduling through Teams. Collaboration functions provided via Microsoft Teams, utilizing G3 Microsoft licensing. Licenses will be upgraded to G5 which is required for the upcoming telephony migration. Licensing is currently on a 3-year Enterprise agreement, which expires this fall, and will be renewed with the G5 level licensing. SharePoint is used alongside Teams. Zoom is available for public-facing meetings and for meeting broadcasts. The Ice Center maintains its own broadcast AV equipment, for which the city IT team only provides network infrastructure.

### Recommendations

### Short-term tactical activities:

Conduct routine tests of audio, visual, and connectivity components to identify and address

potential problems proactively. Encourage users to give feedback regarding their experiences with the multimedia systems and use this input to make continuous improvements. Document the technical information and wiring diagrams of all complex AV systems. Develop and enact a semi-annual maintenance schedule for A/V equipment. Regular maintenance, proper handling, and avoiding extreme conditions will maximize the lifespan of AV equipment. Maintenance of AV equipment should include the following:

- Cleaning of components such as amps
- Testing controller functions
- Checking audio levels for stable performance
- Ensure that presets function as programmed

### Long-term strategic initiatives:

Ensure all new equipment installed during the renovation project is properly labeled and inventoried. When refreshing the AV equipment in public meeting spaces, assisted listening systems should be included. Create a sustainable replacement schedule for all AV equipment. When purchasing displays for existing or new meeting spaces, displays should have a minimum brightness rating of 350 nits. These brighter displays allow use in rooms with windows or while lights are turned on. In even brighter areas, 700-nit displays should be considered.

### Multimedia Improvements Cost Estimations and Condition - 5-year Outlook:

| Components | Total | Consultant Fees | Total w/ Consultant Fees | Condition |
|---|---|---|---|---|
| AV Systems / Multimedia | $95,000.00 | $5,700.00 | $100,700.00 | 4 |

**A complete list of technology improvement cost estimations and phasing is included at the end of this document.*

## STAFF DEVICES

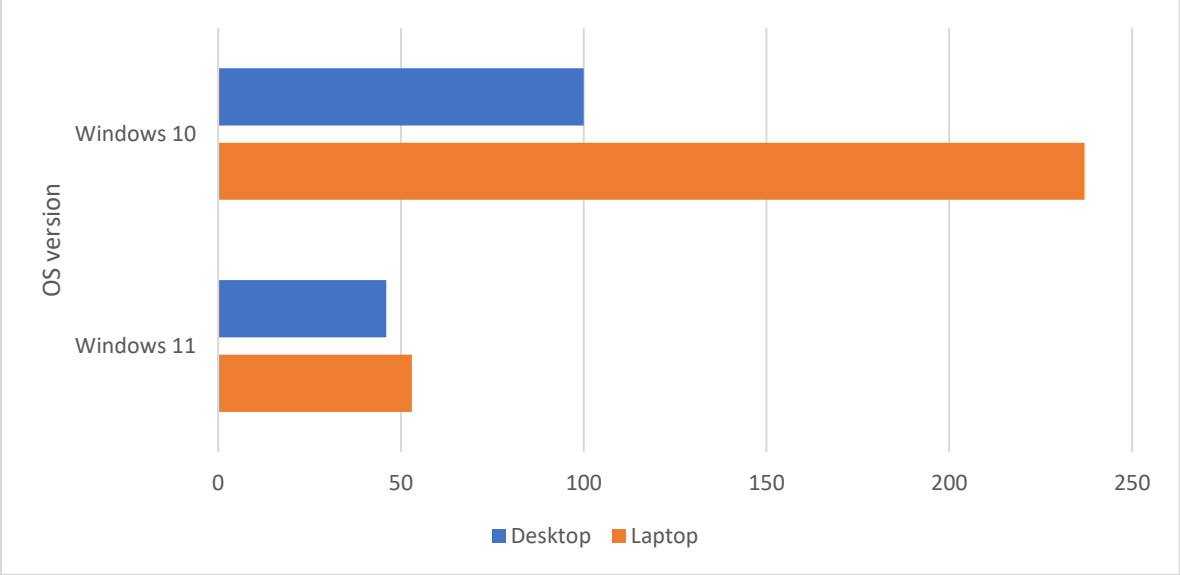
Staff devices are the technology endpoints used by individuals to facilitate positional needs, leveraging the applications and digital tools supported by the City and enabled by the technology infrastructure. Perhaps the most critical component of the workplace, the devices and their adoption by the staff, are only as successful and productive as the plan and the execution for the adoption and rollout of technology.

### Findings/Deficiencies

The City has a lease agreement with Dell to replace devices through a staggered leasing schedule. This is a “rolling” agreement that began in 2024. With this plan, Dell will become the standard for the majority of end-user devices. This will be a four or five-year lease, with replacement devices issued at the end of each period. For ease of replacement, the process will include Dell shipping the City boxes and packaging slips, allowing devices to be sent back with minimal effort on the City’s part. The standard will consist of Dell business-class model devices, with 16Gb of RAM and Intel I7 processors, at minimum. Dell Latitude ruggedized devices will be used for all field-based departments, such as public works, inspections, and non-law

enforcement entities. In 2023, a refresh was performed on public safety devices, replacing existing devices with Panasonic VZ55 Tough Books. These are on a 5-year lease, and the City is attempting to coincide the Panasonic lease with the Dell lease. 98% of City devices are domain-connected, with the remaining consisting of public-facing kiosks, system controls (HVAC, lighting, IoT), and Teams rooms PCs. The City has in-depth conversations with all departments when selecting laptop and desktop models.

Most (66.5%) of City of Burnsville staff utilize laptop devices running Microsoft Windows 10. The remaining devices are operating on Windows 11. Microsoft will no longer support Windows 10 as of October 14, 2025. The City is upgrading to Windows 11 as they replace devices. The City utilizes Windows Enterprise licenses for all its Windows end-user devices. Ten (10) Mac devices are used across the City. Apple iMacs are used for video editing.




Dell devices are used by 347 of 436 total laptops and desktops. Other notable manufacturers include Panasonic, HP, and Lenovo.

| Manufacturer | Qty |
|---|---|
| Dell Inc. | 347 |
| Panasonic Corporation | 73 |
| HP | 10 |
| Mac | 10 |
| Lenovo | 3 |
| Microsoft Corporation | 2 |
| Intel(R) Client Systems | 1 |
| Total | 446 |

74 (17%) of these devices are currently end-of-life and end-of-support or will be so this year. See

the table below for more information on these devices.

| Make | Model | Quantity | Type | EoS/EoL |
|---|---|---|---|---|
| Dell | Latitude 7400 | 30 | Laptop | 2024 |
| Dell | Precision 7730 | 1 | Laptop | 2023 |
| Dell | OptiPlex 5060 | 29 | Desktop | 2023 |
| Dell | OptiPlex5070 | 12 | Desktop | 2024 |
| Dell | OptiPlex 5080 | 2 | Desktop | 2025 |

The City currently images computers using Microsoft's System Center Configuration Manager (SCCM). Dell has the capability to image devices before shipping, with the City's only responsibility being creating the initial image for each device type needed. Remote troubleshooting is performed with SCCM Remote Control for Windows devices and the built-in remote access tool for all iOS devices. The City has expressed the need for a more consistent approach to remote access for troubleshooting, with many solutions depending on VPN and SCCM having caveats to its remote management capabilities. End-users often have difficulty with remote connections, causing additional time and effort to be spent troubleshooting.

Android phones are provided to staff as needed. These devices are not typically added to the City's mobile device management (MDM) system. Public safety users receive iPhones. These are also not included in the MDM system. No inventory exists for these devices. The police department is on a replacement schedule for new phones, which will be added to the MDM system. Phone leases are provided by Verizon primarily, with some FirstNet AT&T in place. Public works prefers AT&T, while public safety does not.

Virtual desktops have been in place at the City since the mid-2000s. Police and remote workers primarily use these services. This service is software-based for employee-owned devices, while City-owned devices utilize "zero clients", small, highly secure computers that connect to a remote server for processing and storage. Thirty-five zero clients are currently in use. VMware Horizon View is used to provide this service. Horizon View is managed within the VMware administrative console. A complete refresh of this environment was performed in 2023, with Microsoft Windows 10 Enterprise licensing. This environment is updated quarterly, with plans to update monthly moving forward.

The City has a managed contract for printers through Marco Technologies. This contract manages 24 printers, manufactured by Sharp, Lexmark, and HP. The contract includes ink management and a 4-hour SLA but does not cover paper products. When the ink gets down to 10%, more is automatically ordered. Hardware maintenance on multi-function devices are also covered in the contract. The lease was recently extended an additional 36 months.

| Manufacturer | Qty |
|---|---|
| **Sharp** | **16** |
| **Lexmark** | **1** |

| | |
|---|---|
| HP | 7 |
| Total | 24 |

The Sharp multi-function devices (MFDs) are strategically spread across various City buildings and are under a three-year extended lease (six years total). They consist of the following models:

- MX-3071
- MX-4071
- MX-5071

The HP Devices are the following models:

- E5014DN
- XL3600DR
- M575DN

The Lexmark device is a laser printer, model M5163.

These devices are managed by Papercut, HID card readers, and FollowMePrint to allow for secure printing. Secure printing ensures documents are only printed when the user is physically present at the printer to release them. This helps prevent sensitive information from being left unattended and potentially accessed by unauthorized individuals. These features also track printer usage for HP laser printers, but do not provide secure printing on HP devices. Additionally, print jobs are purged every 48 hours.

Scanning stations are in use at six (6) City locations:

- HR/Finance (shared station) – Canon DR-G2210
- Finance – Canon DR-M160II
- City Clerk – DR-6030C
- Police – Canon DR-G2110
- Community Development – Canon DR-6030C
- Maintenance Facility – Canon DR-6030C

These scanning stations are used for high-performance document scanning, allowing up to 110 pages to be scanned per minute.

### Recommendations

Replace all end-of-life or end-of-support user endpoints as soon as possible, as they are a cybersecurity risk. Develop a plan to upgrade all devices on Microsoft Windows 10 to Windows 11, as support for Windows 10 will end on October 14, 2025. After this date, devices still on Windows 10 will no longer receive security updates, technical assistance, or software updates. Ensure virtual desktops are included in the update process. Continue to utilize capital leasing to plan for and spread out the cost of user endpoints across their lifecycle. Ensure future plans

enable devices to be replaced before they reach the end of their support cycle. Ensure non-domain-joined devices are included in the replacement schedule. Consider a replacement platform for remote troubleshooting to resolve issues more efficiently, ideally allowing IT team members to assist end-users without the end-user having to assist in the process. If the end-user must be involved, consider additional training on the steps needed to initiate the troubleshooting process. Continue to work with all departments when considering new device models to purchase. True North supports the City's plan to begin updating VDI monthly. Utilize Dell to image devices before they are shipped, cutting down on City employees' time to deploy new devices. Consider putting all mobile devices under the same service provider to increase the ease of management and troubleshooting of these devices. Incorporate all mobile devices into the City's MDM system for management and inventory.

### Staff Device Improvements Cost Estimations and Condition - 5-year Outlook:

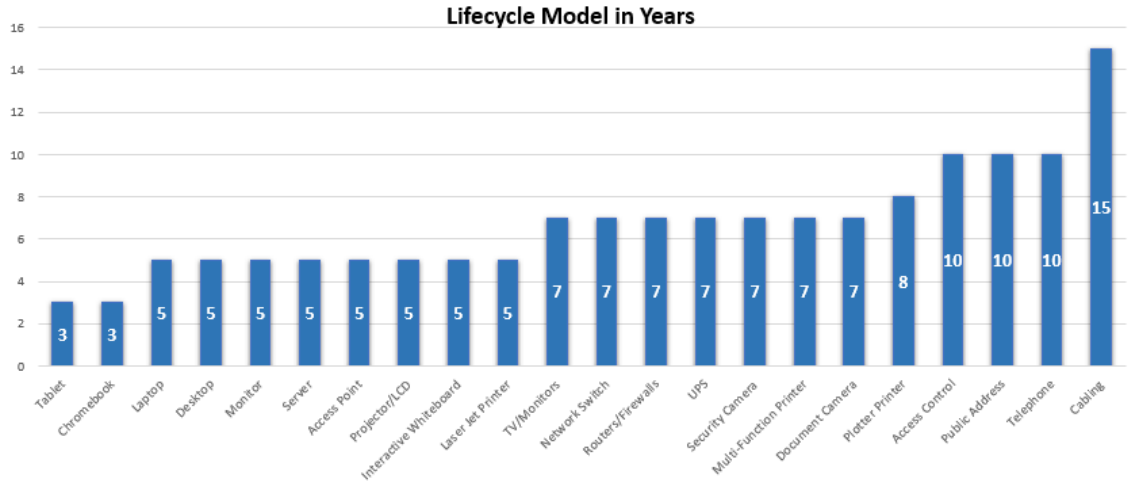
| Components | Total | Consultant Fees | Total w/ Consultant Fees | Condition |
|---|---|---|---|---|
| Staff Devices | $2,557,000.00 | $153,420.00 | $2,710,420.00 | 3 |

### Development of a Timeline Using Planning Estimates

Typically, the next step after a comprehensive technology assessment is for the City leadership to begin development of a timeline for technology improvements. Development of a timeline often requires planning estimates for any improvements that require funding.

True North Consulting Group has prepared planning estimates for areas covered by this report at the bottom of this report, and as a deliverable.

The graph below illustrates typical lifecycles for various technologies found in City governments. What this means is that despite what is frequently found in organizations – "we need to buy a lot of stuff this month because warranties are up" – IT expenditures can be strategically planned.



Based on True North's findings and recommendations, long-term costs to remediate systems to bring them to best practices and budget for refreshes can be found below in the screenshot. A large view is included in the overall deliverables package of this report. Budgetary estimates are based on 2025 prices and include hardware, software, warranty, installation, design, and project management fees. Figures in red represent systems at campuses that were not physically observed by True North; cost estimations for those are extrapolated using City-provided data and based on observations at the sample campuses visited.

### Sites Photos

True North took photos at each building surveyed during the onsite data collection phase of the project to capture typical settings and notable outliers. Each technology space, special space (meeting boards, boardrooms), security systems, and other key observations were captured.

For the complete collection of photos by campuses surveyed, see Appendix A – Site Photos.

### Wireless Survey Reports

True North Consulting Group performed onsite wireless site surveys at sixteen (16) City of Burnsville facilities using an enterprise-grade surveying tool independent of the wireless system currently deployed.

Wireless measurements were taken at many points within the buildings, and the results are based on the accuracy of the building maps provided.

While wireless environments are dynamic and ever-changing to their surroundings, the reports offer a snapshot in time of the environment at the site.

The results were analyzed for common trends and patterns and are the basis of the wireless section contained in this report. For the complete collection of wireless survey reports, see Appendix B – Wireless Reports.

### Detailed Telecom Spaces Statistics & Findings

Citywide observations and data recorded for all telecom spaces (MDFs / IDFs), including but not limited to grounding, power, cooling, and overall space ratings. See Appendix C – Telecom Spaces Detail.

### Monopole Assessment

True North conducted an asset management assessment for four (4) monopoles located within the city. Best practices and recommendations are found in Appendix D – Monopole Assessment.

## KEY FINDINGS

**Data Center Facilities:** The primary data center at City Hall is undergoing renovation to address space, power, cooling, and security needs. The secondary data center at the maintenance facility is in relatively good condition.

**Enterprise Systems and Applications:** The city's current virtual server infrastructure is outdated due to lack of support for existing hosts, as such the city is evaluating a move to a hyper-converged infrastructure as part of the data center refresh. The City uses a mix of on-premises and cloud-hosted applications, including ERP, productivity suites, email, document collaboration, MDM, remote troubleshooting, digital signage, website hosting, and billing portals.

**Wide Area Network/Internet Connectivity:** The city maintains a dual-pathed fiber network connecting 63 sites, with plans to increase internet bandwidth to 10Gbps.

**Cybersecurity:** The city uses Palo Alto firewalls, Cisco Umbrella for content filtering, Microsoft ATP for email security, and CrowdStrike MDR for endpoint security.

**Telecommunications/Technology Rooms and Structured Cabling:** Most telecom rooms are shared spaces with inadequate cooling and grounding. Cabling is almost exclusively Category 6 or greater, with minimal 62.5-micron fiber in use.

**Local Area Networks:** The city uses Cisco switches across all sites, with plans for a switch refresh soon to replace aging devices, and to incorporate new security and feature sets to better secure the city network.

**Wireless Local Area Networks:** The city uses Cisco wireless infrastructure, with plans to replace access points soon. Wireless surveys were performed and found signal strength and channel interference issues at some locations.

**Safety and Security Technology:** The city uses Axis cameras for video surveillance and Feenics Keep for access control, with plans to migrate to a Verkada camera system that utilizing bridging technology to enable Axis cameras to be used in conjunction with new Verkada devices.

**Voice Systems/Unified Communications:** The city uses on-premises based Mitel for its phone system, with plans to migrate to cloud-based Microsoft Teams for voice communications.

**Multimedia Systems:** The city uses Microsoft Teams for conferencing, with AV equipment replacements ongoing as part of the city hall renovation.

**Staff Devices:** The city has a lease agreement with Dell for standardizing device replacements and plans to upgrade devices to Windows 11 as they are rolled out. Printers are leased and managed by Marco technologies.

## NEXT STEPS AND FUTURE CONSIDERATIONS

**Re-visit Condition Assessment:** Have condition based assessments performed by a third-party every 3-5 years.

**5-Year CIP:** Utilize condition-based assessments to inform the city's 5-year Capital Improvement Plan (CIP) and budget for technology improvements.

## ACRONYMS INDEX

**CIP**: Capital Improvement Plan

**CRM:** Customer Relationship Management

**CJIS**: Criminal Justice Information Services

**DCIM**: Data Center Infrastructure Management

**DRS**: Distributed Resource Scheduler

**ERP**: Enterprise Resource Planning

**GXR**: Global Experimentation and Research

**HA**: High Availability

**HCI**: Hyper-Converged Infrastructure

**HSRP**: Hot Standby Routing Protocol

**IDS**: Intrusion Detection System

**IPTV**: Internet Protocol Television

**LAN**: Local Area Network

**LDAP**: Lightweight Directory Access Protocol

**MDF**: Main Distribution Frame

**IDF**: Independent Distribution Fram

**MDM**: Mobile Device Management

**MFA**: Multi-Factor Authentication

**MNIT**: Minnesota IT Services

**NAC**: Network Access Control

**PDU**: Power Distribution Unit

**PSALI:** Public Safety Answering Location

**PSK**: Pre-Shared Key

**ODTR**: Optical Time-Domain Reflectometers

**RA-VPN**: Remote Access Virtual Private Network

**rPDU:** Rack-mounted Power Distribution Unit

**SCCM**: System Center Configuration Manager

**SLA**: Service Level Agreement

**SIO**: Secure Identity Object

**SOC**: Security Operations Center

**SSoT**: Single Source of Truth

**UPS**: Uninterruptible Power Supply

**VDI**: Virtual Desktop Infrastructure

**VMS**: Video Management System

**WAN**: Wide Area Network

**WLC**: Wireless LAN Controller

**WUG**: WhatsUp Gold

**END OF DOCUMENT**

City of Burnsville

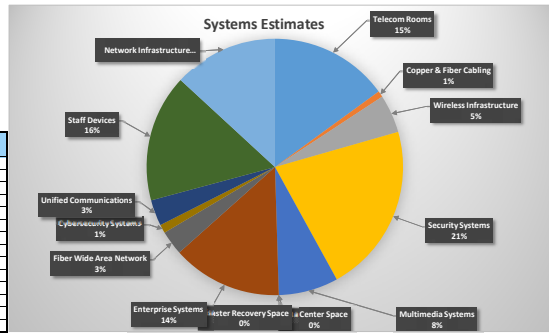
2025 Technology Improvements Cost Estimations - Five-Year Outlook

TRUENORTH.

| Campus | TRs | Network Infr. | Cabling | Wireless | Cameras | Access Ctrl | AV Systems | Total: | Consultant Fees | Total w/ Consultant Fees: |
|---|---|---|---|---|---|---|---|---|---|---|
| City Hall/Police Department | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ - |
| Maintainence | $ 22,400.00 | $ 78,000.00 | $ 42,500.00 | $ 95,359.20 | $ 79,700.00 | $ 73,000.00 | $ - | $ 390,959.20 | $ 23,457.55 | $ 414,416.75 |
| Fire Station 1 | $ 13,100.00 | $ 117,000.00 | $ - | $ 12,727.20 | $ 73,600.00 | $ 59,000.00 | $ - | $ 275,427.20 | $ 16,525.63 | $ 291,952.83 |
| Ames Center (PAC) | $ 33,000.00 | $ 109,200.00 | $ - | $ 33,272.80 | $ 76,500.00 | $ 38,000.00 | $ - | $ 289,972.80 | $ 17,398.37 | $ 307,371.17 |
| Water Treatment Plant | $ 33,400.00 | $ 39,000.00 | $ - | $ 22,104.00 | $ 61,000.00 | $ 10,000.00 | $ - | $ 165,504.00 | $ 9,930.24 | $ 175,434.24 |
| Fire Station 2 | $ 25,350.00 | $ 23,400.00 | $ - | $ 7,921.60 | $ 16,500.00 | $ 33,000.00 | $ 5,000.00 | $ 111,171.60 | $ 6,670.30 | $ 117,841.90 |
| Birnamwood Golf Course | $ 56,300.00 | $ 39,000.00 | $ - | $ 1,041.60 | $ 34,000.00 | $ 10,000.00 | $ - | $ 140,341.60 | $ 8,420.50 | $ 148,762.10 |
| Ice Center | $ 57,300.00 | $ 39,000.00 | $ - | $ 52,372.80 | $ 56,000.00 | $ 33,000.00 | $ - | $ 237,672.80 | $ 14,260.37 | $ 251,933.17 |
| North River Hills Park | $ 29,400.00 | $ 19,500.00 | $ - | $ 720.00 | $ 23,200.00 | $ 10,000.00 | $ - | $ 82,820.00 | $ 4,969.20 | $ 87,789.20 |
| Red Oak Park | $ 19,800.00 | $ 15,600.00 | $ - | $ 720.00 | $ 21,400.00 | $ 10,000.00 | $ - | $ 67,520.00 | $ 4,051.20 | $ 71,571.20 |
| Cliff Fen Park | $ 19,950.00 | $ 11,700.00 | $ - | $ 160.00 | $ 6,000.00 | $ 5,000.00 | $ - | $ 42,810.00 | $ 2,568.60 | $ 45,378.60 |
| Terrace Oaks West Park | $ 17,000.00 | $ 7,800.00 | $ - | $ 720.00 | $ 24,100.00 | $ 5,000.00 | $ - | $ 54,620.00 | $ 3,277.20 | $ 57,897.20 |
| Alimagnet Park Shed | $ 11,600.00 | $ 15,600.00 | $ - | $ 1,056.00 | $ 21,000.00 | $ 5,000.00 | $ - | $ 54,256.00 | $ 3,255.36 | $ 57,511.36 |
| Crystal Beach Concessions | $ 28,150.00 | $ 15,600.00 | $ - | $ 1,200.00 | $ 17,900.00 | $ 5,000.00 | $ - | $ 67,850.00 | $ 4,071.00 | $ 71,921.00 |
| Lac Lavon Park | $ 45,800.00 | $ 27,300.00 | $ - | $ 1,000.00 | $ 23,000.00 | $ 10,000.00 | $ - | $ 107,100.00 | $ 6,426.00 | $ 113,526.00 |
| Neil Park | $ 19,800.00 | $ 15,600.00 | $ - | $ 1,816.00 | $ 16,900.00 | $ 10,000.00 | $ - | $ 64,116.00 | $ 3,846.96 | $ 67,962.96 |
| Sue Fischer Fields | $ 28,150.00 | $ 15,600.00 | $ - | $ 979.20 | $ 14,200.00 | $ 15,000.00 | $ - | $ 73,929.20 | $ 4,435.75 | $ 78,364.95 |
| Nicollet Commons Park | $ 28,150.00 | $ 3,900.00 | $ - | $ 54,000.00 | $ 6,700.00 | $ 5,000.00 | $ - | $ 97,750.00 | $ 5,865.00 | $ 103,615.00 |
| Civic Center Maintenance Facility | $ 47,950.00 | $ 54,600.00 | $ 10,000.00 | $ 34,496.00 | $ 4,000.00 | $ 30,000.00 | $ - | $ 181,046.00 | $ 10,862.76 | $ 191,908.76 |
| Able Fire Training Center | $ 19,800.00 | $ 3,900.00 | $ - | $ - | $ 12,000.00 | $ - | $ - | $ 35,700.00 | $ 2,142.00 | $ 37,842.00 |
| Burnsville High School PD Liason Office | $ 10,300.00 | $ 15,600.00 | $ - | $ - | $ 1,600.00 | $ 5,000.00 | $ - | $ 32,500.00 | $ 1,950.00 | $ 34,450.00 |
| HOC | $ 42,350.00 | $ 31,200.00 | $ - | $ - | $ 178,250.00 | $ 5,000.00 | $ - | $ 256,800.00 | $ 15,408.00 | $ 272,208.00 |
| Carbon Injection Building | $ 25,350.00 | $ 11,700.00 | $ - | $ - | $ 3,200.00 | $ 5,000.00 | $ - | $ 45,250.00 | $ 2,715.00 | $ 47,965.00 |
| Kramer Pump Building | $ 17,000.00 | $ 11,700.00 | $ - | $ - | $ 3,200.00 | $ 5,000.00 | $ - | $ 36,900.00 | $ 2,214.00 | $ 39,114.00 |
| Well 1 | $ 17,000.00 | $ 3,900.00 | $ - | $ - | $ 3,200.00 | $ 5,000.00 | $ - | $ 29,100.00 | $ 1,746.00 | $ 30,846.00 |
| Well 2 | $ 17,000.00 | $ 3,900.00 | $ - | $ - | $ 5,600.00 | $ 5,000.00 | $ - | $ 31,500.00 | $ 1,890.00 | $ 33,390.00 |
| Well 3 | $ 17,000.00 | $ 3,900.00 | $ - | $ - | $ 4,800.00 | $ 5,000.00 | $ - | $ 30,700.00 | $ 1,842.00 | $ 32,542.00 |
| Well 4 | $ 17,000.00 | $ 3,900.00 | $ - | $ - | $ 4,800.00 | $ 5,000.00 | $ - | $ 30,700.00 | $ 1,842.00 | $ 32,542.00 |
| Well 5 | $ 17,000.00 | $ 3,900.00 | $ - | $ - | $ 4,800.00 | $ 5,000.00 | $ - | $ 30,700.00 | $ 1,842.00 | $ 32,542.00 |
| Well 6 | $ 17,000.00 | $ 3,900.00 | $ - | $ - | $ 3,200.00 | $ 5,000.00 | $ - | $ 29,100.00 | $ 1,746.00 | $ 30,846.00 |
| Well 7 | $ 17,000.00 | $ 3,900.00 | $ - | $ - | $ 5,600.00 | $ 5,000.00 | $ - | $ 31,500.00 | $ 1,890.00 | $ 33,390.00 |
| Well 8 | $ 17,000.00 | $ 3,900.00 | $ - | $ - | $ 5,600.00 | $ 5,000.00 | $ - | $ 31,500.00 | $ 1,890.00 | $ 33,390.00 |
| Well 9 & 10 | $ 17,000.00 | $ 3,900.00 | $ - | $ - | $ 6,400.00 | $ 5,000.00 | $ - | $ 32,300.00 | $ 1,938.00 | $ 34,238.00 |
| Well 11 | $ 17,000.00 | $ 3,900.00 | $ - | $ - | $ 3,200.00 | $ 5,000.00 | $ - | $ 29,100.00 | $ 1,746.00 | $ 30,846.00 |
| Well 12 | $ 17,000.00 | $ 3,900.00 | $ - | $ - | $ 5,600.00 | $ 5,000.00 | $ - | $ 31,500.00 | $ 1,890.00 | $ 33,390.00 |
| Well 13 | $ 17,000.00 | $ 3,900.00 | $ - | $ - | $ 4,800.00 | $ 5,000.00 | $ - | $ 30,700.00 | $ 1,842.00 | $ 32,542.00 |
| Well 14 & 15 | $ 17,000.00 | $ 3,900.00 | $ - | $ - | $ 5,600.00 | $ 5,000.00 | $ - | $ 31,500.00 | $ 1,890.00 | $ 33,390.00 |
| Well 16 | $ 17,000.00 | $ 3,900.00 | $ - | $ - | $ 3,200.00 | $ 5,000.00 | $ - | $ 29,100.00 | $ 1,746.00 | $ 30,846.00 |
| Well 17 | $ 17,000.00 | $ 3,900.00 | $ - | $ - | $ 3,200.00 | $ 5,000.00 | $ - | $ 29,100.00 | $ 1,746.00 | $ 30,846.00 |
| Meadow Acres Sanitary Lift Station | $ 2,100.00 | $ 3,900.00 | $ - | $ - | $ - | $ 5,000.00 | $ - | $ 11,000.00 | $ 660.00 | $ 11,660.00 |
| McAndrews Sanitary Lift Station | $ 2,100.00 | $ - | $ - | $ - | $ - | $ - | $ - | $ 2,100.00 | $ 126.00 | $ 2,226.00 |
| Echo Valley Sanitary Lift Station | $ 2,100.00 | $ 3,900.00 | $ - | $ - | $ - | $ - | $ - | $ 6,000.00 | $ 360.00 | $ 6,360.00 |
| Keller Lake Sanitary Lift Station | $ 2,100.00 | $ 3,900.00 | $ - | $ - | $ - | $ - | $ - | $ 6,000.00 | $ 360.00 | $ 6,360.00 |
| Crystal Lake Sanitary Lift Station | $ 2,100.00 | $ 3,900.00 | $ - | $ - | $ - | $ - | $ - | $ 6,000.00 | $ 360.00 | $ 6,360.00 |
| Bluebill Bay Sanitary Lift Station | $ 2,100.00 | $ 3,900.00 | $ - | $ - | $ - | $ - | $ - | $ 6,000.00 | $ 360.00 | $ 6,360.00 |
| Maple Island Sanitary Lift Station | $ 2,100.00 | $ 3,900.00 | $ - | $ - | $ - | $ - | $ - | $ 6,000.00 | $ 360.00 | $ 6,360.00 |
| Savage Sanitary Lift Station | $ 2,100.00 | $ 3,900.00 | $ - | $ - | $ - | $ - | $ - | $ 6,000.00 | $ 360.00 | $ 6,360.00 |
| Washburn Sanitary Lift Station | $ 2,100.00 | $ 3,900.00 | $ - | $ - | $ - | $ - | $ - | $ 6,000.00 | $ 360.00 | $ 6,360.00 |
| Woods Trail Sanitary Lift Station | $ 2,100.00 | $ 3,900.00 | $ - | $ - | $ - | $ - | $ - | $ 6,000.00 | $ 360.00 | $ 6,360.00 |
| Buck Hill Sanitary Lift Station | $ 2,100.00 | $ 3,900.00 | $ - | $ - | $ - | $ - | $ - | $ 6,000.00 | $ 360.00 | $ 6,360.00 |
| Sodomka Sanitary Lift Station | $ 2,100.00 | $ 3,900.00 | $ - | $ - | $ - | $ - | $ - | $ 6,000.00 | $ 360.00 | $ 6,360.00 |
| Valley View Sanitary Lift Station | $ 2,100.00 | $ 3,900.00 | $ - | $ - | $ - | $ - | $ - | $ 6,000.00 | $ 360.00 | $ 6,360.00 |
| Meadow Acres Storm Lift Station | $ 2,100.00 | $ - | $ - | $ - | $ 3,200.00 | $ 5,000.00 | $ - | $ 10,300.00 | $ 618.00 | $ 10,918.00 |
| McAndrews Storm Lift Station | $ 2,100.00 | $ 3,900.00 | $ - | $ - | $ - | $ - | $ - | $ 6,000.00 | $ 360.00 | $ 6,360.00 |
| Summit Oaks Storm Lift Station | $ 2,100.00 | $ 3,900.00 | $ - | $ - | $ - | $ - | $ - | $ 6,000.00 | $ 360.00 | $ 6,360.00 |
| Yellowstone Storm Lift Station | $ 2,100.00 | $ 3,900.00 | $ - | $ - | $ - | $ - | $ - | $ 6,000.00 | $ 360.00 | $ 6,360.00 |
| Parkwood Muir Storm Lift Station | $ 2,100.00 | $ 3,900.00 | $ - | $ - | $ - | $ - | $ - | $ 6,000.00 | $ 360.00 | $ 6,360.00 |
| Sunset Pond Storm Lift Station | $ 2,100.00 | $ - | $ - | $ - | $ - | $ - | $ - | $ 2,100.00 | $ 126.00 | $ 2,226.00 |
| Savage Interconnect Storm Lift Station | $ 2,100.00 | $ 3,900.00 | $ - | $ - | $ - | $ - | $ - | $ 6,000.00 | $ 360.00 | $ 6,360.00 |
| Maple Island Pressure Monitor | $ 2,100.00 | $ 3,900.00 | $ - | $ - | $ - | $ - | $ - | $ 6,000.00 | $ 360.00 | $ 6,360.00 |
| Savage Pressure Monitor | $ 2,100.00 | $ - | $ - | $ - | $ - | $ - | $ - | $ 2,100.00 | $ 126.00 | $ 2,226.00 |
| Cederbridge Pressure Monitor | $ 2,100.00 | $ 3,900.00 | $ - | $ - | $ - | $ - | $ - | $ 6,000.00 | $ 360.00 | $ 6,360.00 |
| Yellowstone Pressure Monitor | $ 2,100.00 | $ - | $ - | $ - | $ - | $ - | $ - | $ 2,100.00 | $ 126.00 | $ 2,226.00 |
| Rambush Pressure Monitor | $ 2,100.00 | $ - | $ - | $ - | $ - | $ - | $ - | $ 2,100.00 | $ 126.00 | $ 2,226.00 |
| Summit Lane Pressure Monitor | $ 2,100.00 | $ - | $ - | $ - | $ - | $ - | $ - | $ 2,100.00 | $ 126.00 | $ 2,226.00 |
| Nicollet Reservoir | $ 8,800.00 | $ - | $ - | $ - | $ 15,500.00 | $ 5,000.00 | $ - | $ 29,300.00 | $ 1,758.00 | $ 31,058.00 |
| Buck Hill Tower | $ 8,800.00 | $ 7,800.00 | $ - | $ - | $ 16,600.00 | $ 5,000.00 | $ - | $ 38,200.00 | $ 2,292.00 | $ 40,492.00 |
| Colonial Hill Tower | $ 8,800.00 | $ 7,800.00 | $ - | $ - | $ 20,900.00 | $ 5,000.00 | $ - | $ 42,500.00 | $ 2,550.00 | $ 45,050.00 |
| Heather Hill Tower | $ 8,800.00 | $ 7,800.00 | $ - | $ - | $ 10,200.00 | $ 8,000.00 | $ - | $ 34,800.00 | $ 2,088.00 | $ 36,888.00 |
| MN River Front Park | $ 8,600.00 | $ 3,900.00 | $ - | $ - | $ 23,000.00 | $ 8,000.00 | $ - | $ 43,700.00 | $ 2,622.00 | $ 46,322.00 |
| Total: | $ 1,005,000.00 | $ 881,400.00 | $ 52,500.00 | $ 321,666.40 | $ 932,950.00 | $ 502,000.00 | $ 5,000.00 | $ 3,700,516.40 | $ 222,030.98 | $ 3,922,547.38 |

| Centralized Resources: | Total | Consultant Fees | Total w/ Consultant Fees |
|---|---|---|---|
| Data Center (DC) Space | $ - | $ - | $ - |
| Disaster Recov. (DR) Space | $ - | $ - | $ - |
| DC/DR Networking | $ 300,000.00 | $ 18,000.00 | $ 318,000.00 |
| WAN Network Electronics | $ 131,250.00 | $ 7,875.00 | $ 139,125.00 |
| WAN Fiber | $ 72,600.00 | $ 4,356.00 | $ 76,956.00 |
| Enterprise Systems | $ 630,000.00 | $ 37,800.00 | $ 667,800.00 |
| Cybersecurity Systems | $ 73,100.00 | $ 4,386.00 | $ 77,486.00 |
| Unified Communications | $ 219,600.00 | $ 13,176.00 | $ 232,776.00 |
| Staff Devices | $ 1,075,000.00 | $ 64,500.00 | $ 1,139,500.00 |

| All Systems | Total | Consultant Fees | Total w/ Consultant Fees | Phasing |
|---|---|---|---|---|
| Telecom Rooms | $ 1,005,000.00 | $ 60,300.00 | $ 1,065,300.00 | 1 |
| Copper & Fiber Cabling | $ 52,500.00 | $ 3,150.00 | $ 55,650.00 | 2 |
| Wireless Infrastructure | $ 321,666.40 | $ 19,299.98 | $ 340,966.38 | 1 |
| Security Systems | $ 1,434,950.00 | $ 86,097.00 | $ 1,521,047.00 | 1/2/3 |
| Multimedia Systems | $ 502,000.00 | $ 30,120.00 | $ 532,120.00 | 3 |
| Data Center Space | $ - | $ - | $ - | - |
| Disaster Recovery Space | $ - | $ - | $ - | - |
| Enterprise Systems | $ 930,000.00 | $ 55,800.00 | $ 985,800.00 | 2 |
| Fiber Wide Area Network | $ 203,850.00 | $ 12,231.00 | $ 216,081.00 | 1/2 |
| Cybersecurity Systems | $ 73,100.00 | $ 4,386.00 | $ 77,486.00 | 2 |
| Unified Communications | $ 219,600.00 | $ 13,176.00 | $ 232,776.00 | 1 |
| Staff Devices | $ 1,075,000.00 | $ 64,500.00 | $ 1,139,500.00 | 1/2/3 |
| Network Infrastructure | $ 881,400.00 | $ 52,884.00 | $ 934,284.00 | 1 |
| **Grand Totals** | **$ 6,699,066.40** | **$ 401,943.98** | **$ 7,101,010.38** | |



TRUENORTH

## 1.1 Standards

The Telecommunications Industry Association (TIA) was officially formed in 1988 through the merger of two groups, the United States Telecommunications Suppliers Association (USTSA) and the information and Telecommunications Technologies Group of the Electric Industries Association (EIA). This Association is the leading trade organization representing the global information and communications technology market.

TIA is the standards development body for the structural design and fabrication of antenna-supporting structures, their foundations, and related supporting components. These antenna structural standards are detailed in TIA-222 standards document which currently resides at revision "I" released in January of 2024.

## 1.2 Maintenance and Condition

The TIA-222 is the "Structural Standard for Antenna Supporting Structures and Antennas" and is critically important for providing criteria for maintenance and condition assessment of structures. The TIA-222 document provides various dedicated sections detailing procedures for the assessment process. These detailed procedures spread across the various types of towers (guyed, self-supported) and touch on not only inspecting current conditions, but also reverifying structure design standards at times.

As some general recommendations on the intervals for performing a maintenance and conditional assessment the standard offers the following:

- Three-year intervals for guyed masts and five-year intervals for self-supporting structures.
- After severe winds and/or ice storms, severe seismic events, or other extreme conditions.
- Shorter intervals may be required for Risk Category III or IV structures and structures in coastal regions, in corrosive environments, and in areas subject to frequent vandalism.

## 1.3 Inspection Recommendations

Within the TIA-222 standards is also provided Annex "J" which is a checklist form for a maintenance and condition assessment as well as detail for field mapping of structures and appurtenances. These are not procedures providing means and methods, but rather listed as topics and subcategories provided to ensure a complete review of key areas.

The general topics are listed below, but will not apply to every tower structure:

- **Structure Condition**
- **Finish**
- Lighting
- **Grounding**
- Antennas and Lines
- **Other Appurtenances**
- Insulator Condition
- Guys
- **Concrete Foundations**
- Guyed Mast Anchors
- Tower Alignment

## 1.4 Burnsville Sites

Site and tower structure maintenance and condition support ultimately falls on the site owner but anyone operating on a tower needs to support these practices as well. A well maintained structure can almost last forever and be repaired or updated to support ever changing technologies.

The City of Burnsville identified four (4) antenna tower structures owned by the City for assessment by True North within this report. Design details and any recent structural analysis report information was shared to provide key understandings on each of these sites. All the towers are monopole type structures of varying ages, sizes, and heights all of which are located on City property.

The city has a specific antenna system used on one of the tower structures, but has local lighting supported on multiple towers. Otherwise, city sites support leased users having dedicated antenna systems and equipment shelters to support business operations.

### 1.4.1 Site – 911 140th Street

This tower structure located at the edge of this now vacant lot is believed to support the cellular carrier AT&T occupying the equipment shelter at the base. Documents indicated the construction of this 100' monopole in 1998 and it is registered with the FCC as Antenna Site Registration (ASR) #1048563.

Also within this site area is one of the City's warning sirens located on a dedicated telephone pole all surrounded by numerous trees and brush growth. This monopole was painted a lite blue color with installation covering the standard metal finish.

### 1.4.2 Site – 11501 19th Avenue

The tower structure located in North River Hills Park is the site serving wireless communication for the City of Burnsville being used in the collection of water tank telemetry signals. The monopole structure also serves to support lights illuminating the tennis courts next to which it is located.

Documents indicated the construction of this approximately 74' monopole around 2005 and it is a registered structure with the FCC as ASR #1301523. The city uses a single system antenna located at the top of the tower and supported by equipment cabinets and the tower base.

### 1.4.3 Site – 12155 Parkwood

Located on the property and behind the building housing Fire Station #2 is the monopole structure providing support as a T-Mobile network site. Documents indicated the construction of this 100' monopole around 2001 and does not appear to be an FCC registered site.

A fenced compound is located at the base of this site supporting an equipment shelter and backup generator within. This monopole was also painted a lite blue color with installation covering the standard metal finish.

### 1.4.4 Site – 13501 Upton Avenue

Also located in a city park and providing lighting support is a 100' monopole structure in Neal Park. The lighting serves to illuminate the local ice-skating arena along with a separate monopole located on the other side of the field, but not owned by the city.

This structure supports the cellular carrier AT&T and documents indicate design/installation around 2015. Multiple fenced areas enclosing equipment cabinets are located at the base of the tower structure which was found painted a deep red color. No FCC registration was found for the City's structure at this site.

TRUENORTH

**ANNEX J: MAINTAINANCE AND CONDITION ASSESSMENT (Normative)**

This annex provides checklists for: (a) maintenance and condition assessment, and (b) field mapping of structures and appurtenances.
Note: This annex does not provide means and methods for RF protection.

**J.1 Maintenance and Condition Assessment**

A) Structure Condition
1) Damaged members (legs and bracing)
2) Loose members
3) Missing members
4) Climbing facilities, platforms, catwalks – all secure
5) Loose and/or missing bolts and/or nut locking devices
6) Visible cracks in welded connections

B) Finish
1) Paint and/or galvanizing condition
2) Rust and/or corrosion condition including mounts and accessories
3) FAA or ICAO color marking conditions
4) Water collection in members (to be remedied, e.g., unplug drain holes, etc.)

C) Lighting
1) Conduit, junction boxes, and fasteners (weather tight and secure)
2) Drain and vent openings (unobstructed)
3) Wiring condition
4) Light lenses
5) Bulb condition
6) Controllers (functioning)
   a) Flasher
   b) Photo control
   c) Alarms

D) Grounding
1) Connections
2) Corrosion
3) Lightning protection (secured to structure)

E) Antennas and Lines
1) Antenna condition
2) Mount and/or ice shield condition (bent, loose, and/or missing members)
3) Feed line condition (flanges, seals, dents, jacket damage, grounding, etc.)
4) Hanger condition (snap-ins, bolt on, kellum grips, etc.)
5) Secured to structure

F) Other appurtenances (walkways, platforms, sensors, floodlights, etc.)
1) Condition
2) Secured to structure

G) Insulator Condition
   1) Cracking and chipping
   2) Cleanliness of insulators
   3) Spark gaps set properly
   4) Isolation transformer condition
   5) Bolts and connection secure

H) Guys
   1) Strand condition (corrosion, breaks, nicks, kinks, etc.)
   2) Guy Hardware Conditions
      a) Turnbuckles or equivalent (secure and safety properly applied)
      b) Cable thimbles properly in place (if required)
      c) Service sleeves properly in place (if required)
      d) Cable connectors (end fittings)
         (i) Cable clamps applied properly and bolts tight
         (ii) Wire serving properly applied
         (iii) No signs of slippage or damaged strands
         (iv) Preformed wraps – properly applied, fully wrapped, and sleeve in place
         (v) Poured sockets secure and showing no separation
         (vi) Shackles, bolts, pins and cotter pins secure and in good condition

   3) Guy Tensions
   4) Measure guy tensions (refer to Annex K)
   5) Record temperature, wind speed and wind direction

Notes:

1) Minor variations in guy tensions are to be expected due to temperature and low wind speed conditions. The cause of significant changes should be determined immediately and proper remedial action taken. Possible causes may be initial construction loosening, previously experienced extreme wind or ice, anchor movements, base settlement, or connection slippage.
2) Tension variations at a single level are to be expected because of anchor elevation differences, construction deviations, and wind effects.

I) Concrete Foundations
   1) Ground condition
      a) Settlement, movement or earth cracks
      b) Erosion
      c) Site condition (standing water, drainage, trees, etc.)
   2) Anchorage condition
      a) Nuts and/or nut locking device (tightened)
      b) Grout condition
      c) Anchorages and/or anchor rod condition
   3) Concrete condition
      a) Cracking, spalling, or splitting
      b) Chipped or broken concrete
      c) Honeycombing
      d) Low spots to collect moisture

J) Guyed Mast Anchors
   1) Settlement, movement or earth cracks
   2) Backfill heaped over concrete for water shedding
   3) Anchor rod condition below earth (Maintain required structural capacity of anchor during exploration. Attachment to temporary anchorage may be required)
   4) Corrosion control measures (galvanizing, coating, concrete encasement, cathodic protection systems, etc.)
   5) Anchor heads clear of earth

K) Tower Alignment
   1) Tower Plumb and Twist (See Figures J-1 and J-2)

**J.2 Field Mapping**

**J.2.1 Mapping of Appurtenances**

The mapping of appurtenances shall provide sufficient dimensional data in order to calculate the effective projected area, weight and location of all appurtenances.

The mapping of appurtenances shall include, as a minimum:

A) Inventory of existing antennas: Elevation, antenna type and dimensions/model number, support mount and location, spacing and orientation on cross-section, and corresponding transmission line(s).
B) Inventory of other appurtenances (such as climbing ladders, platforms, etc.): Elevation, appurtenance type and dimensions, location, spacing and orientation on cross-section.
C) A cross-section sketch locating and labeling the transmission lines (size and spacing) and showing the orientation of the lines and the structure with respect to North. For transmission lines in clusters: number of lines per row, number of rows, and separation between the lines, overall width and depth dimensions.

**J.2.2 Mapping of Structural Components**

In order to perform an analysis of a structure, the structural configuration and the size of all structural members must be mapped in order to calculate wind loading and member capacities.

The mapping of the structure and its main structural members shall include, as a minimum:

**J.2.2.1 Self-Supporting Latticed Structures**

A) Sketch of overall structure numbering all sections.
B) The Configuration of each section:
   1) Section height
   2) Panel height and number of panels
   3) Configuration of the panels (X, X with horizontal, K)
   4) Face width (Center to Center of legs) at all taper change locations.
   5) Sketch indicating the above for each typical section
C) Member sizes for each section:
   1) Leg member sizes - i.e. pipe diameter (outside diameter & wall thickness using ultra sound device), solid round diameter, or angle size & thickness (60 deg. or 90 deg.)
   2) Diagonal member sizes - i.e. pipe diameter (outside diameter & wall thickness using ultra sound device), angle size, thickness and orientation (long leg back to back, LLBB, or short leg back to back, SLBB)

3) Horizontal member sizes - i.e. pipe diameter (outside diameter & wall thickness using ultra sound device), angle size, thickness and orientation (LLBB, SLBB)
4) Subbrace member sizes (if applicable) - i.e. pipe diameter (outside diameter & wall thickness using ultra sound device), angle size, thickness and orientation (LLBB, SLBB)

**J.2.2.2 Guyed Masts**

A) Structure base type (fixed or pinned) and tapered or flat base
B) Guy anchor dimensions: distance from base to guy anchors and their relative elevations to base and their orientation.
C) Sketch of overall structure numbering all sections. Locate and label all guy wire levels.
   1) The configuration of each Section:
   2) Section height
   3) Panel height and number of panels
   4) Configuration of the panels (X, X with horizontals, K)
   5) Face width (center to center of legs) at all taper change locations
   6) Sketch indicating the above for each typical section
D) Member sizes for each section:
   1) Leg member sizes - i.e. pipe diameter (outside diameter & wall thickness using ultra sound device), solid round diameter, angle size & thickness (60 deg. or 90 deg.)
   2) Diagonal member sizes - i.e. pipe diameter (outside diameter & wall thickness using ultra sound device), angle size, thickness and orientation (long leg back to back, LLBB, or short leg back to back, SLBB)
   3) Horizontal member sizes - i.e. pipe diameter (outside diameter & wall thickness using ultra sound device), solid round diameter, angle size, thickness and orientation (LLBB, SLBB)
   4) Subbrace member sizes (if applicable) - i.e. pipe diameter (outside diameter & wall thickness using ultra sound device), angle size, thickness and orientation (LLBB, SLBB)
E) Guy wire elevation, size and type for each guy level

**J.2.2.3 Pole Structures**

A) Sketch of overall structure numbering all sections.
B) Configuration of each section:
C) Section height – For flanged type, the length from splice to splice. For telescoping poles, the length from butt to butt
D) If multi-sided, number of sides
E) Flat to flat dimension or diameter and circumference at top and bottom of each section
F) Port hole opening size, reinforcing and location
G) Size for each Section:
   1) Wall thickness of each section

**J.2.2.4 Connections**

In order to perform a rigorous structural analysis of a structure the details of all structural connections must be mapped in order to calculate connection capacities.

The mapping of the structure connections shall include, as a minimum, the following:

A) Member end connection details:
B) If Bolted: number, type and size of end bolts and center bolts
C) Size and thickness of gusset plate with related details (hole sizes, edge distances, weld size and length)
D) If Welded: weld size and length of end and center connections

E) Splice connection details:
F) Number, type and size of bolts
G) Size and thickness of splice plate with related details (hole sizes, edge distances, weld size and length,) and distance from panel intersection point
H) Anchor rod type, size, number, and bolt circle
I) Guy Assembly and connection details:
J) Preformed size/type, turnbuckle size, shackle size
K) Socket size, pin size, link plate dimensions with related details
L) Size and thickness of guy pull-off plate with related details (hole sizes, edge distances, weld size and length, stiffener size)
M) Guy anchor head plate size, thickness, holes size, spacing, and edge distances of holes, shaft type, size and extension length and angle from horizontal plane and weld size and length of connection between shaft and fan plate

| Campus | Room Name | Status | Dedicated Cooling | Env. Sensor? | Unit Status | Current Temp | Dedicated Space? | Space Security | Rack Type | Secured to Floor? | Ladder Racks | Cable Mgmt Panels | Need Cable Cleanup? | Trash? | Space Rating |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| City Hall/Police Department | Police Dept IDF 1 | Good | Yes | Yes | Good | 70 | Yes | Card | 2-Post | Yes | Yes | Both | No | No | 5 |
| City Hall/Police Department | Police Idf 2 | Bonded to Building Steel | No | No | Good | 77 | No | Card | Wall | | | Horizontal | No | No | 4 |
| Maintainence | MDF | Good | Yes | Yes | Good | 72 | Yes | Card | 2-Post | Yes | Yes | Both | Yes | No | 4 |
| Maintainence | IDF | No Grounding | No | No | None Present | | No | Key | Wall | | No | None | No | No | 3 |
| Fire Station 1 | mdf | Good | Yes | Yes | Good | 68 | Yes | Card | 2-Post | Yes | Yes | Both | No | No | 5 |
| Fire Station 1 | idf | Bonded to Building Steel | No | No | None Present | 78 | No | Key | Wall | | | Horizontal | No | No | 4 |
| Water Treatment Plant | idf 1 | Bonded to Building Steel | No | No | None Present | 74 | No | Key | Wall | | | Horizontal | No | Yes | 4 |
| Water Treatment Plant | idf 2 | No Grounding | No | No | None Present | 70 | No | None | Wall | | | Horizontal | No | No | 3 |
| Ames Center (PAC) | IDF 1 | Good | Yes | Yes | Good | 71 | Yes | Card | 2-Post | No | Yes | Both | No | No | 4 |
| Ames Center (PAC) | idf 2 | Good | No | No | None Present | 71 | Yes | Key | 4-Post | No | Yes | Horizontal | Yes | Yes | 4 |
| Ames Center (PAC) | idf 3 | Good | No | No | None Present | 75 | No | Key | Wall | | | Horizontal | No | No | 4 |
| Ames Center (PAC) | idf 4 | Good | Yes | No | Good | 82 | No | Key | Wall | | | Horizontal | Yes | Yes | 4 |
| Ames Center (PAC) | idf 5 | Good | No | No | None Present | 75 | No | Key | Wall | | | Horizontal | No | No | 5 |
| Fire Station 2 | idf 1 | Good | No | No | None Present | 73 | No | Key | Wall | | | Horizontal | Yes | No | 2 |
| Birnamwood Golf Course | idf 1 | Bonded to Building Steel | No | No | None Present | 65 | No | None | Wall | | | None | Yes | No | 2 |
| Birnamwood Golf Course | idf 2 | Bonded to Building Steel | No | No | None Present | 65 | No | None | Wall | | | None | No | No | 2 |
| Ice Center | idf 1 | No Grounding | No | No | None Present | 68 | No | Key | Wall | | | Horizontal | Yes | No | 2 |
| Ice Center | idf 2 | No Grounding | No | No | None Present | 72 | No | None | Wall | | | | No | No | 2 |
| North River Hills Park | IDF 1 | Good | Yes | No | Good | 64 | No | Key | Wall | | | Horizontal | No | No | 4 |
| North River Hills Park | IDF 2 | Bonded to Building Steel | No | No | Unknown | 43 | No | Key | Wall | | | None | No | No | 1 |
| Red Oak Park | IDF 1 | Bonded to Building Steel | No | No | None Present | 85 | No | Card | Wall | | | Horizontal | No | No | 3 |
| Cliff Fen Park | IDF 1 | Bonded to Building Steel | No | No | Good | 75 | No | Card | Wall | | | None | No | No | 2 |
| Terrace Oaks West Park | IDF 1 | Good | No | No | None Present | 76 | No | Card | Wall | | | None | No | No | 3 |
| Alimagnet Park Shed | IDF 1 | Bonded to Building Steel | Yes | Yes | Good | 46 | No | None | Wall | | | Horizontal | No | No | 3 |
| Crystal Beach Concessions | IDF 1 | Bonded to Building Steel | No | No | None Present | 50 | No | Card | Wall | | | None | No | No | 2 |
| Lac Lavon Park | IDF 2 | No Grounding | No | No | Good | 42 | No | Card | Wall | | | None | No | No | 2 |
| Lac Lavon Park | IDF 1 | Good | No | No | None Present | 51 | No | Card | Wall | | | None | No | No | 2 |
| Neil Park | IDF 1 | Bonded to Building Steel | No | No | None Present | 71 | No | Key | Wall | | | None | No | No | 3 |
| Sue Fischer Fields | IDF 1 | Bonded to Building Steel | No | No | None Present | 58 | No | Card | Wall | | | None | No | No | 2 |
| Nicollet Commons Park | IDF 1 | Bonded to Building Steel | No | No | None Present | 74 | No | Card | Wall | | | None | No | No | 2 |
| Civic Center Maintenance Facility | idf 1 | Bonded to Building Steel | No | No | None Present | 76 | No | Card | Wall | | | Horizontal | No | No | 3 |
| Civic Center Maintenance Facility | IDF 2 | Bonded to Building Steel | No | No | None Present | 75 | No | None | Wall | | | None | No | No | 2 |
| Able Fire Training Center | IDF | Bonded to Building Steel | No | No | None Present | | No | Key | Wall | | | None | No | No | 3 |
| Burnsville High School PD Liason Office | IDF | Good | No | No | None Present | | No | Key | Wall | | | None | No | No | 4 |
| HOC | Deck | Good | No | No | None Present | | No | Key | Wall | | | None | No | No | 3 |
| HOC | Ramp | Good | No | No | None Present | | No | Key | Wall | | | None | No | No | 2 |
| Carbon Injection Building | IDF | Good | No | No | None Present | | No | Key | Wall | | | None | No | No | 2 |
| Kramer Pump Building | IDF | Good | No | No | None Present | | No | Key | Wall | | | None | No | No | 3 |
| Well 1 | IDF | Good | No | No | None Present | | No | Key | Wall | | | None | No | No | 3 |
| Well 2 | IDF | Good | No | No | None Present | | No | Key | Wall | | | None | No | No | 3 |
| Well 3 | IDF | Good | No | No | None Present | | No | Key | Wall | | | None | No | No | 3 |
| Well 4 | IDF | Good | No | No | None Present | | No | Key | Wall | | | None | No | No | 3 |
| Well 5 | IDF | Good | No | No | None Present | | No | Key | Wall | | | None | No | No | 3 |
| Well 6 | IDF | Good | No | No | None Present | | No | Key | Wall | | | None | No | No | 3 |
| Well 7 | IDF | Good | No | No | None Present | | No | Key | Wall | | | None | No | No | 3 |
| Well 8 | IDF | Good | No | No | None Present | | No | Key | Wall | | | None | No | No | 3 |
| Well 9 & 10 | IDF | Good | No | No | None Present | | No | Key | Wall | | | None | No | No | 3 |
| Well 11 | IDF | Good | No | No | None Present | | No | Key | Wall | | | None | No | No | 3 |
| Well 12 | IDF | Good | No | No | None Present | | No | Key | Wall | | | None | No | No | 3 |
| Well 13 | IDF | Good | No | No | None Present | | No | Key | Wall | | | None | No | No | 3 |
| Well 14 & 15 | IDF | Good | No | No | None Present | | No | Key | Wall | | | None | No | No | 3 |
| Well 16 | IDF | Good | No | No | None Present | | No | Key | Wall | | | None | No | No | 3 |
| Well 17 | IDF | Good | No | No | None Present | | No | Key | Wall | | | None | No | No | 3 |
| Meadow Acres Sanitary Lift Station | IDF | Good | No | No | Unknown | | No | Key | | | | | | | 4 |
| McAndrews Sanitary Lift Station | IDF | Good | No | No | Unknown | | No | Key | | | | | | | 4 |
| Echo Valley Sanitary Lift Station | IDF | Good | No | No | Unknown | | No | Key | | | | | | | 4 |
| Keller Lake Sanitary Lift Station | IDF | Good | No | No | Unknown | | No | Key | | | | | | | 4 |
| Crystal Lake Sanitary Lift Station | IDF | Good | No | No | Unknown | | No | Key | | | | | | | 4 |
| Bluebill Bay Sanitary Lift Station | IDF | Good | No | No | Unknown | | No | Key | | | | | | | 4 |
| Maple Island Sanitary Lift Station | IDF | Good | No | No | Unknown | | No | Key | | | | | | | 4 |
| Savage Sanitary Lift Station | IDF | Good | No | No | Unknown | | No | Key | | | | | | | 4 |
| Washburn Sanitary Lift Station | IDF | Good | No | No | Unknown | | No | Key | | | | | | | 4 |
| Woods Trail Sanitary Lift Station | IDF | Good | No | No | Unknown | | No | Key | | | | | | | 4 |
| Buck Hill Sanitary Lift Station | IDF | Good | No | No | Unknown | | No | Key | | | | | | | 4 |
| Sodomka Sanitary Lift Station | IDF | Good | No | No | Unknown | | No | Key | | | | | | | 4 |
| Valley View Sanitary Lift Station | IDF | Good | No | No | Unknown | | No | Key | | | | | | | 4 |
| Meadow Acres Storm Lift Station | IDF | Good | No | No | Unknown | | No | Key | | | | | | | 4 |
| McAndrews Storm Lift Station | IDF | Good | No | No | Unknown | | No | Key | | | | | | | 4 |
| Summit Oaks Storm Lift Station | IDF | Good | No | No | Unknown | | No | Key | | | | | | | 4 |
| Yellowstone Storm Lift Station | IDF | Good | No | No | Unknown | | No | Key | | | | | | | 4 |
| Parkwood Muir Storm Lift Station | IDF | Good | No | No | Unknown | | No | Key | | | | | | | 4 |
| Sunset Pond Storm Lift Station | IDF | Good | No | No | Unknown | | No | Key | | | | | | | 4 |
| Savage Interconnect Storm Lift Station | IDF | Good | No | No | Unknown | | No | Key | | | | | | | 4 |
| Maple Island Pressure Monitor | IDF | Good | No | No | Unknown | | No | Key | | | | | | | 4 |
| Savage Pressure Monitor | IDF | Good | No | No | Unknown | | No | Key | | | | | | | 4 |
| Cederbridge Pressure Monitor | IDF | Good | No | No | Unknown | | No | Key | | | | | | | 4 |
| Yellowstone Pressure Monitor | IDF | Good | No | No | Unknown | | No | Key | | | | | | | 4 |
| Rambush Pressure Monitor | IDF | Good | No | No | Unknown | | No | Key | | | | | | | 4 |
| Summit Lane Pressure Monitor | IDF | Good | No | No | Unknown | | No | Key | | | | | | | 4 |
| Nicollet Reservoir | IDF | Good | No | No | Unknown | | No | Key | | | | | | | 3 |
| Buck Hill Tower | IDF | Good | No | No | Unknown | | No | Key | | | | | | | 3 |
| Colonial Hill Tower | IDF | Good | No | No | Unknown | | No | Key | | | | | | | 3 |
| Heather Hill Tower | IDF | Good | No | No | Unknown | | No | Key | | | | | | | 3 |
| MN River Front Park | IDF | Good | No | No | Unknown | | No | Key | | | | | | | 3 |