Rocky Hill Public Schools Technology Plan

January 1, 2023 – June 2027

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1. Mission Statements

Rocky Hill Public Schools District Mission

The Rocky Hill Public Schools are committed to providing an educational environment in which all students discover and achieve their maximum potential in preparation for productive meaningful lives and responsible citizenship.

Rocky Hill Public Schools District Vision Statement

The Rocky Hill Public Schools believe in the development of competent, ethical, healthy, responsible, and intellectually reflective citizens who demonstrate high levels of achievement in critical academic domains, and can develop their interests and aptitudes in an atmosphere that respects the differences of others and values learning as a life-long pursuit.

Rocky Hill Public Schools Technology Mission

The Rocky Hill Public Schools Office of Technology aims to provide robust, reliable and efficient technology to maximize curriculum delivery and educational opportunity for our entire school community. By fulfilling our mission in a timely, professional, and efficient manner, we will maintain and build up a strong technological foundation to enhance 21st century learning and foster administrative productivity.

Rocky Hill Public Schools Technology Vision

The Rocky Hill Public Schools Office of Technology Vision is to integrate modern technology within the curriculum to maximize student engagement, collaboration, and inclusivity to create a 21st Century learning environment. The department strives to provide staff with the necessary technology to actively cultivate new, innovative, and captivating learning experiences across Rocky Hill Public Schools.

2. Introduction

The Rocky Hill Public Schools Office of Technology prides itself on providing a technology experience that is both engaging and reliable. The Technology Department works with administrators and faculty to establish and implement a quality educational experience to increase student achievement and support the effective use of technology for all students and staff members.The infrastructure that has been constructed is maintained on a daily basis and acts as a cornerstone to district initiatives. It is the foundation for the district's business processes and supports the deployment of all technology-related equipment.

The purpose of this document is to highlight the various areas and aspects of the yearly Technology Budget while also laying the groundwork for the critical upgrades and maintenance that are needed in the next five years. This Technology Plan will provide insight and opportunities to further the advancement of classroom technology access that will enhance the learning environment for students.

While the landscape of technology as a whole is constantly changing and unpredictable, this document is an attempt to provide some clarity and insight into how the district will plan and budget to maintain and expand the available technology for use by the entire Rocky Hill Public Schools community.

3. Network Infrastructure

Overview: The backbone of our operations and conduit for all digital educational platforms, Rocky Hill Public Schools' network infrastructure is the core of all operations within the Technology Department. Rocky Hill's network infrastructure is strong and robust and has allowed the rapid growth of devices and was incredibly successful at expanding to a full 1:1 device deployment during the COVID-19 Pandemic. Maintenance and refresh of these core components must continue to be a priority in order to keep the Rocky Hill School District compliant while also adjusting to changing trends throughout the educational technology space.

a) Internet Access

Internet access is contracted through the Connecticut Education Network (CEN) currently with 2 Gbps symmetrical (up and down) bandwidth. This was upgraded from 1 Gbps during the COVID lockdowns to facilitate the increased activity caused by remote learning. There is no need to increase this bandwidth further at this time.

CEN access costs are partially covered by Category I E-Rate funding each year which drastically reduces the district's cost for very high quality service.

CEN Internet services enter the district through the high school data center.

b) Network Switching

Rocky Hill Public Schools standardizes on Extreme Networks as a vendor for all of our network infrastructure needs. Over the past 5 years, the district has slowly upgraded to current switching technologies with the help of high quality professional services and relying heavily on Category II E-Rate funding (at a 50% reimbursement rate) to accomplish these goals.

During the Summer of 2022, this trend continued as the main core network at the high school was updated to new Extreme Networks Fabric Switching. E-Rate funding from 21-22 began a project to replace the access level switching at the high school which is the only building remaining on previous generation equipment.

With the 22-23 fiscal year and E-Rate funding, the remaining switching closets will be replaced at the high school, bringing it up to date with the rest of the district. Additionally, Fabric Switching technologies will be added to GMS, and existing Fabric switches installed at Moser during the construction project will begin to blanket the district in a management layer that gives us increased reach and flexibility to cut administrative efforts and consolidate some services across the district.

Rocky Hill Public Schools will continue to leverage E-Rate funding to ensure that the district infrastructure remains capable of supporting all future technological enhancements that are deemed necessary to provide a strong and diverse curriculum.

For fiscal year 23-24, E-Rate funding will be used to complete the fabric network as the top level umbrella to drive the district. With that, we will move into a hosted network management platform – Extreme's XIQ platform – to enhance the ease of control and maintenance in the cloud.

The District will need to begin replacing the oldest Extreme switching, starting at the Middle School in FY 24-25 as all buildings, with the exception of the high school, will see their infrastructure reach end of support in January of 2028. As a result, we will continue to replace the equipment at West Hill Elementary in FY 25-26, Stevens Elementary in FY 26-27 and Moser Intermediate in fiscal year 27-28. Additionally, the core switching at Moser will need to be replaced during FY 25-26 in order to stay compliant with warranty and service.

Network switching is imperative in the district to maintain connection between each student and staff member's devices. Category II E-Rate funding helps with these costs on a five-year refreshing budget. This funding will be utilized each year to accomplish these required refreshes.

c) Wireless Networking

Rocky Hill Public Schools also utilizes Extreme Networks as a vendor for wireless technologies throughout the district. Usage of wireless technologies are at an all-time high in the District. The wireless infrastructure is used on a daily basis in classrooms as well as for yearly district and state level student assessments. General education relies on the use of the wireless networks as well as vital intervention and special education services.

The district wireless services are currently housed and controlled out of a Moser Construction project purchased wireless controller (and redundant backup) which support all wireless services. For FY 23-24, the Technology Department will begin the process of moving management to the XIQ hosted services to lessen management and on-premises equipment. This migration will be rolled into the next maintenance cycle, increasing the annual maintenance by roughly $10,000 but eliminating on-premises equipment and compute capacity.

A Bring Your Own Device "BYOD" guest network is also provided to anyone in the district at the expense of the district for security and Network Access Control licensing. This, too, will be migrated into the XIQ cloud platform to expand the functionality of the guest networks and enhance district security from those using BYOD.

Access points in the High School, Middle School, Moser, and Stevens Elementary School must be replaced before the November 2024 End of Support dates to maintain the integrity of the products and security. Replacement of this infrastructure will utilize as much E-Rate funding as possible in order to reduce the cost on the District. On-Campus Wireless Controllers, purchased during the Moser Construction project must be replaced before the end of the 25-26 fiscal year as they will also be at the manufacturer's end of support phase. Understanding that this factor was neglected in the past budget cycles, the Technology Department will do its best to minimize cost while pushing to ensure the infrastructure is compliant with changing technologies.

Once the next generation of wireless access points have been installed districtwide, the Technology Department will maintain and monitor for the next round of device expiration dates.

d) Wide Area Network

The Wide Area Network (WAN) interconnects each of the district buildings into a single large network which allows for shared services, single internet connection and converged security for the whole organization. These services are also paid at 50% reimbursement through Category 1 E-Rate funds on a yearly basis.

In fiscal year 21-22, the contracted WAN services were upgraded with new switching and increased capabilities. The current WAN Infrastructure supports 10Gb bandwidth between buildings with the capability of increasing individual connections to 25Gb or 40Gb if the need arises.

With the evolving nature of our fabric switching technologies, this upgrade will allow for new traffic protocols and processes to facilitate these internal changes

There should be no need for upgrade or changes to this infrastructure over the next 5 years, but the district will maintain support and maintenance on these services.

e) Network Infrastructure 5-year plan

The network infrastructure remains the vital lifeline for all connections and services used daily by students, staff, and administrators within the district and must be maintained as such. Over the next 5 years, End of Support equipment will be replaced to maintain a near-zero downtime environment and the ability to replace equipment within 1 business day in the case of a failure.

The exercise of preparing this document has unearthed some urgent needs to keep the infrastructure at Rocky Hill Public Schools at the highest level of efficiency and availability. The Technology Department will first work to expand the fabric switching umbrella and complete the high school network refresh that has been taking place over the previous and current fiscal years (21-22, 22-23). The next set of projects will be to refresh the wireless access points and migrate to the XIQ hosted network platform to better manage and fully integrate each piece of equipment into one management console as the vendor sunsets the existing product line. Access points for the High School, Middle School, Stevens Elementary, and Moser Intermediate schools will be replaced in fiscal year 23-24 and 24-25, with the on-premises wireless controllers needing replacement in FY 25-26, however this may be moved to a cloud service in XIQ. During the 24-25 and 25-26 fiscal years, the district will need to begin replacing the EXOS switching that exists in all buildings (except the high school) as the equipment will become end-of-support in 2028.

Table 1 : Fiscal Projections – Network Infrastructure Equipment

Category	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	Notes
Internet Access	$11,790.00	$11,790.00	$11,790.00	$11,790.00	$15,000.00	2Gb CEN internet access, paid out of utilities
				Last Year of Current Contract	Expected Increase	
Network Switching	$54,300.16	$9,500.00	$50,000.00	$70,000.00	$70,000.00	includes 50% e-rate discounts
	Finish HS edge upgrades	Complete Fabric Network	GMS Switching Refresh	West Hill Switching Refresh + Moser Fabric	Stevens Switching Refresh	
Wireless Networking	$0.00	$45,000.00	$35,000.00	$0.00	$0.00	includes 50% e-rate discounts
		Replace 140 3935s @ HS and ST	replace half 3935s (out of support year)	On-Prem controller out of support 3/2026)		
Wide Area Network	$32,916.00	$32,916.00	$32,916.00	$32,916.00	$32,916.00	10GB, upgradeable to 25 or 40, includes 50% e-rate discount, Paid out of utilities
Network Support Maintenance	$30,808.86	$40,000.00	$42,000.00	$44,000.00	$46,000.00	Includes License Migrations to XIQ Platform

4. Cybersecurity and Disaster Recovery

Overview: In the aftermath of the COVID-19 pandemic and the current geopolitical climate, cybersecurity threats have been at the forefront of every public and private sector Technology Department's policy and decision-making process. State actors and private organizations alike wish to steal personal information in the form of breaches, ransomware attacks, and virus activity are bolder than they have been in the last decade. Rocky Hill Public Schools takes this seriously and has put in place many measures to prevent and ultimately combat these threats to our security and infrastructure.

a) Firewall

Three years ago, the district invested in next-generation firewall technologies with Palo Alto Networks. This system, which consists of a pair of high availability firewalls in our core at the high school, acts as the gatekeeper and web filter for the entire district. When properly configured, the firewall keeps the bad traffic and malicious actors out, while allowing for integration and access across our platforms. It also acts as a necessary web filter for those within our walls to prevent access to malicious or explicit websites and traffic. Additionally, it allows for VPN access into the district with a direct connection to our annex location so that all resources available to the high school are also available to those programs.

Our maintenance renews yearly for these products, and while costly, the benefits and peace of mind are worthy of the cost. Our maintenance includes monitoring and device updates, as well as troubleshooting and device changes for our ever expanding network and services suite. Our firewalls are still for sale and have not had any indication of end of sale or end of support and should function and be covered in the near future.

b) Antivirus and Antimalware

In Rocky Hill Public Schools, we employ the Palo Alto Cortex XDR antivirus and antimalware system. This is also a leading technology protecting our students and faculty from the ever present threats that exist on the internet. This is more than the traditional antivirus software as it goes beyond to isolate and inspect every aspect of our computer systems and activities. While the firewall cannot account for every piece of traffic that comes into the system, endpoint protection is there as a backup to prevent any malicious material from being executed.

Rocky Hill licenses each of our desktops and laptops individually with Cortex XDR and includes basic monitoring and maintenance by a trusted third party vendor. This includes curated updates and basic problem resolution.

This is a hosted platform that will continue to update itself as it progresses. At this time there is no need to upgrade or move in another direction. The only cost increase would be that posed by the company in their renewals, or if additional devices need to be licensed (new, additional laptops and/or desktops).

c) Hardware Redundancy

As of July of 2022, all district infrastructure in the core and server level have been upgraded to utilize redundant hardware. Our core networking at both the High School and Moser have redundant core switching to be fault tolerant and keep the buildings up and running. Our firewalls are redundant to maintain access to the internet up until our handoffs with our ISP (Internet Service Provider) to maintain the availability that is crucial to the educational process in the 21st century.

Server hardware is in "clustered" platforms, which allows for fault tolerance in hardware, while keeping the virtual server infrastructure available for all users to connect and consume media and authentication. A vital part of the disaster recovery plan starts with an "N-Plus-One" style cluster where the district could lose an entire piece of hardware without losing any productivity. This orientation also allows for easy scaling in a situation where additional computing power is required to accomplish the district's technology goals.

Wherever fiscally and operationally possible, the Technology Department strives to maintain redundant equipment in the infrastructure to maintain as close to 100% availability as possible to better serve the needs of staff and students.

d) Backup Solution

The District utilizes a Unitrends on-premises and cloud back-up solution for data backup and system recovery. This backup system was just upgraded during the Summer of 2022 and should be both sufficient and supported through fiscal year 24-25 with yearly maintenance including Unitrends Cloud backups. This system allows for on-prem data recovery in the case of lost, erroneously deleted, or corrupted data, as well as the only true way to recover from a Ransomware Attack on the district's data center and systems.

The cloud retention adds an "off-site" backup solution to our system which acts as physical disaster recovery in the event of a natural disaster, structure fire, or other situation where both district on-premises server equipment is destroyed along with the physical backup solution at the high school at the same time. Cloud backups allow for a new appliance to be pre-loaded and shipped as well have data pulled from this repository for rapid recovery in these extreme cases.

Annual maintenance through FY 24-25 is fixed and will only alter if additional space is needed. Based on our current trajectory of cloud-based data retention in Google, there is little indication that the district would need to expand beyond what has already been purchased in terms of storage.

e) Disaster Recovery Plan

One important goal of this Technology Plan is to reinstate a distinct disaster recovery plan. Individual concepts are in place to protect the district in a time of cybersecurity or data

crisis, however a specific set of guidelines will be created and put in place so that staff knows how to act in the occurrence of an event that warrants such action.

This will be a living document that will be updated early to encompass new and remove decommissioned systems.

f) Staff Security Training and Testing

The number one cause of breaches in any network lies with staff members. Insufficiently trained staff lead to successful social engineering attacks as well as voluntary release of personal or confidential information. As a district, while there have been a few tests over the last 4 years, our awareness training and social engineering tests are still needed to educate our staff on how to recognize and avoid malicious emails, links, and other factors that could compromise their personal information or data that is held and curated by the district.

Password reset policies, simulated phishing and vishing campaigns as well as other training will be created or contracted from third parties to enhance district staff's awareness and readiness to do their part to protect our students and staff from malicious actors trying to use them as an avenue of attack.

To enhance our staff's ability to protect themselves and the district, the need for Multi-Factor Authentication (MFA) is quickly approaching. As a new initiative in the coming years, staff accounts will need to have MFA enabled to protect themselves and students from social engineering and phishing attacks.

g) Cybersecurity 5-year plan

Rocky Hill has always prioritized security and infrastructure in the budget to ensure that staff and student data are protected while maintaining the highest level of availability possible for our internal systems. Through backups, redundancy, robust firewalls, and Antimalware systems, the district Technology Department works to maintain the critical infrastructure's security and integrity.

One priority that needs to be addressed is the need for Multi-factor Authentication at least among staff to prevent account hijacks. This can be accomplished in many ways, but should best support the district without burdening staff with untenable processes. Below is a sample of the more costly products that provide daily security and disaster recovery services to the district.

Table 2: Cybersecurity and Disaster Recovery

Category	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	Notes
Firewall	$29,808.89	$30,000.00	$32,000.00	$32,000.00	$32,000.00	Firewall Maintenance and support
Antivirus (Cortex XDR)	$20,950.00	$22,000.00	$22,000.00	$22,000.00	$22,000.00	AntiMalware / Virus, 1000 agents (Windows)
Backup Solutions	$15,400.00	$15,400.00	$15,400.00	$17,000.00	$17,000.00	Unitrends Appliance and Cloud service and support.

5. Building Security Technologies

Overview: Building security is a hot topic for all public school systems. This is largely a joint effort between the Technology Department and the Facilities Director to bolster and maintain the security systems attached to our network. The primary responsibilities of the Technology Department are maintenance and administration of the district phone systems, Video Surveillance systems, and back-end maintenance of the Access Control systems for the Rocky Hill Public Schools District.

a) Phone Systems

The Technology Department considered the district phone systems to be of utmost importance in terms of the safety and security of our buildings. As such they are tested and maintained regularly to ensure proper operation for immediate use in the event of an emergency.

The district employs Avaya IP Office Server Edition to manage, maintain, and control the phone systems across its six buildings. Each location has a local sub station which connects up to the centralized servers which reside at Moser and the high school. These are a redundant pair of servers, separated geographically in order to provide the best chance at failover. This project is on-going, as there continues to be a need for update and configuration changes to ensure all of the criteria are met. These services are managed and monitored by both Technology Department Personnel and an outside vendor.

Over the fiscal year 22-23 old copper PRI lines will be upgraded to new fiber handoffs from our phone system vendor – Frontier – and old copper analog lines will be converted over to standard phone lines that better align with current standards for reliability and quality. Also during this time, new phone handsets will be purchased for West Hill and the high school to better integrate their connections with the centralized servers and provide redundant backups for each location. New handsets for Stevens were purchased in the current fiscal year, while the Middle School and Moser School's handsets were replaced with compatible units in 2019.

After that period, maintenance will continue and updates will be performed as necessary to keep the systems functional, reliable, and up to date.

b) Video Surveillance

Rocky Hill Public Schools employs local NVR (video recorder) servers at each of the 5 school locations. These systems are vital for both our own staff as well as the Rocky Hill Police Department as a means of warning and protection of both our staff and students. These systems themselves are relatively new, however the camera hardware that provides the imagery are showing their age.

The cameras at the High School and Middle School are beginning to fail as they are more than 7 years old. The Technology Department, in conjunction with the Facilities

department and building administrators have slowly been replacing and updating the cameras. Over the next several budget cycles, these aging cameras will be replaced and updated which will require a standing line item in the Technology Department budget to accomplish that task.

Additionally, as the network infrastructure allows within the Technology Plan, the surveillance system at Moser School will be brought up on the platform that is used at all other buildings, unifying the system, and allowing for a single point of access across the district for both district staff and emergency services.

c) Building Access Control

The Technology Department works closely with the Facilities Director in maintaining the infrastructure and server that provides access control to the district's perimeter doors. The Kantech Access Control systems that are employed in each of our buildings are network enabled and communicate to and from a centralized server at the high school. This server will need to be replaced or migrated to a virtual platform within the next two fiscal years as the device itself begins to age.

d) Building Security Technologies 5-year plan

With the above systems aging, over the next 5 years cameras will be phased out and replaced, phone systems will be updated and the surveillance system platforms will slowly be unified in order to ensure operability in key areas.

6. Services and Hosting

Overview: While universal hosted servers are still cost-prohibitive for Rocky Hill Public Schools' purposes, several stand alone applications employ "SaaS" (Software as a Service) models for hosting data and applications.

a) On Premises Servers and services

Rocky Hill Public Schools maintains many on-premises server systems outside of explicit security systems. These include network control, domain control, file storage, print management and other critical systems. In most cases, these standard systems are too expensive to host outside of our environment.

The largest investments and highest impact are the two Hyper-V virtual clusters. The main one, at the high school, comprises three high-end server appliances, a high-speed storage SAN (Storage Area Network) appliance, as well as a redundant system off-site for replication and disaster recovery. The three main server appliances are slated for replacement in the 22-23 fiscal year and will be deployed in stages. Fiscal year 23-24 has the SAN appliances and the replication appliance due for updates.

After the primary cluster has been replaced, the secondary cluster at Moser is the next to receive an update as we will be at the 5-year mark on those devices. The Moser cluster consists of a pair of Hyper-V servers and a dedicated SAN for that system.

b) Hosted Services

On top of our local appliances, Rocky Hill Public Schools also employs several "hosted" or off-site stored programs and applications. The two largest of these are our Google Enterprise for Education Suite and our Powerschool Student Information System and its various components. Both of these services are off-site and are yearly expenses based on our population and usage. As our enrollments increase, so do our licensing costs for these services.

Additional services include our GoGuardian platform which is vital for both filtering student devices and classroom management of the same, our iPad management system Jamf Pro, as well as various application rostering and data synchronization services. Most if not all of these services are linked directly to our student or staff populations and fluctuations in those numbers affect the licensing costs accordingly.

One major new hosted service will be the district network management platform. This will move from the on-prem model we are currently utilizing to a hybridization model including a cloud-enabled and hosted model that the vendor is pushing clients to. This allows for anywhere monitoring and access to our network dashboards and will increase our control and options when it comes to wireless technology and systems throughout the district.

It is appropriate to mention that any services that are hosted by a third party that may contain, maintain, or in other ways house student data of any sort must be vetted and sign a student data privacy agreement before we can employ those services.

Many of the Technology hosted application services overlap with Curriculum and as such will not be represented in the overall technology plan.

c) Services and Hosting 5-year plan

While hosted services are appealing in terms of management and physical equipment overhead, true computing power is still much more affordable in an on-premise environment. While hardware costs and maintenance appear high to begin with, hosted services for generic computing models and file storage are still very high when compared to a 5 year life cycle of server equipment.

As a rule, if the off-site hosting of an application or service is equally priced or lower than self-hosting, the Technology Department will entertain moving those services out of our network to increase security and lower the man-hours needed to maintain those services if they were hosted on district-owned devices. Hybridization will continue as the recurring costs slowly recede for hosted services and the cost of server equipment inevitably increases.

7. Classroom Hardware

Overview: A large proportion of the Technology Budget is appropriately focused on the maintenance and refresh cycles of classroom hardware. This includes equipment assigned to staff to operate classroom Audio-Visual equipment, access to Rocky Hill network resources, and any peripherals used to deliver curriculum to students within that classroom. There has been discussion about a new direction for classroom hardware and the standardization of classrooms to make movement within the district more tenable as well as allowing the Technology Department to better maintain the equipment in a timely and efficient manner.

a) Network Access Hardware (Desktops, Laptops)

Nearly every classroom in the district is equipped with a stationary micro form factor desktop PC and monitor. These desktop computers are connected directly to the rest of the equipment in the classroom and are presented in the same way to every staff member who is assigned to the room or arrives to do any sort of instruction. Desktop computers generally have a 5-7 year life-cycle where they stop being an efficient interface between the staff and students. Desktops can generally have their life extended with simple upgrades, but as applications and use cases begin to become more intensive, a refresh of this equipment is necessary.

As a result of the needs created with the COVID-19 pandemic, all certified staff members are assigned a Windows laptop. This allows staff to move about the building, always being connected in meetings and at home to develop and deliver their curriculum. At present, this is in addition to the devices that are stationary in the classroom. Windows laptops do not have the same lifespan as a desktop computer. Heat cycles, and the smaller form factor play roles in this fact, as well as the inability to do any meaningful upgrades to laptop devices. Laptops need to be kept to a 5-year lifespan in the district to maintain quality equipment for delivery of instruction.

b) Student Devices

Rocky Hill Public Schools already has a robust 1:1 device deployment that exists from Pre-K through 12th grade. In Rocky Hill, Pre-K and kindergarten students are assigned a district-owned iPad with individualized software and logins. These devices stay in the classroom in carts and are utilized for instructional deployment and enrichment. Grades one through twelve are assigned a Chromebook. In grades one through three, these devices are stored in carts in the classroom and are not generally sent home. In grades 4 through 12, student Chromebooks go home for classwork, homework, projects, and research.

Since students are now responsible for their devices in class and at home, the District has established an insurance plan called the "Device Protection Plan". Traditionally families have had to pay a $25 annual fee per student in grades 4-12 to cover one accidental damage per year. Starting in fiscal year 22-23, the Board of Education has waived these fees and covered the cost of the insurance or "DPP" for all students.

Chromebooks are cost effective and well managed through the Google Workspace and Google Admin consoles. The district provides curriculum applications, word processing, and even state mandated testing through the Chromebook platform. For these reasons, there is no plan to change this format in years to come.

Annually, the Technology Department replaces two grade levels of Chromebooks (generally grade 4 and grade 9) with newly purchased devices. Seniors are allowed to retain their assigned Chromebook at graduation as a matter of equity and to allow them to have a device to begin their post-secondary education or entrance to the workplace. Any Chromebooks that are replaced when a student begins high school are filtered down to replace aging equipment at the elementary school levels. Chromebooks generally have a 5 - 6 year lifespan in circulation.

c) Interactive Classrooms

Rocky Hill employs a variety of audio/visual equipment in the classroom in order to create robust interactive environments for staff and students. Every classroom utilizes a SMART Display or interactive whiteboard to present curricular materials and manipulatives to fully engage students in the lesson.

Much of this equipment needs to be updated, however. In the previous fiscal year and the current budget, a total of 34 classrooms at Stevens and West Hill Elementary Schools have been replaced with new SMART Display interactive panels. These replaced ten and eleven year old A/V equipment that had been failing for years. This process will continue in the 23-24 budget with the goal of completing the elementary school refresh in that timeframe.

After the elementary schools are replaced, the high school's equipment will have reached at least seven years of service and will need to be replaced. Fiscal year 24-25 and 25-26 need to see the A/V at the high school replaced with new SMART Displays (Warranties ended in FY 22-23).

Once the High School is complete, both the Middle School and Moser will need refreshing as their equipment will have aged past the 7-year threshold.

d) Classroom Standardization

In coordination with the Curriculum Team, classroom standardization is a priority for the Technology Department for several reasons. Not only does it allow for Technology Staff to address issues in a much more timely manner, it also allows for the District Instructional Technology Facilitator to better create training materials to target the like-equipment and setups in each classroom.

Per the Board of Education's request, the Technology Department is suggesting three different classroom standards that we could move forward with:

Option 1: Laptop, Dock, Tablet (iPad), SMART Display / Interactive Projector

This option is one that has been piloted and highly recommended by those who are actively using this set of equipment at the high school. This configuration would allow staff to travel with their laptop and ipad from room to room as necessary, connect to the local A/V equipment via stationary universal computer docks that would reside in the classroom, and allow the staff member to teach from anywhere in their room with the use of a program called "AirServer" which lets an iPad interact with the screen and laptop on the desk.

This option has been piloted by the Math Department at the High School with success. So much so that other departments are already requesting this technology set up in their own classrooms. Teachers currently hook their laptop up to the docking station. The docking station allows the teacher to have 2 screens, the laptop, and a monitor along with the display board. The teacher is able to use the iPad as they circulate around the room for instruction. The teacher can write notes on the iPad for the whole class to view, take pictures of student work to display on the interactive board, can post all the notes from the class onto Google Classroom, or give students the opportunity to place their work on the iPad without having to leave their seat. The technology upgrade in the math department has had a great impact on how teachers instruct, plan, and keep student engagement in their learning.

Fiscally, this may be a more responsible solution being that a standard iPad is half the cost of a laptop or desktop while still employing a second device for classroom mobility and instruction. The docking station and A/V equipment would be affixed to the classrooms and faculty or staff would connect their tech to the room's dock to access those displays. Additional classroom equipment would include a pair of monitors as well as a keyboard and mouse attached to the docking station so that any device that connects would be able to use this equipment as well.

For budgetary purposes, laptops will remain at 5 years for refresh cycle, the A/V will remain at 7 years for refresh cycle, and the docking station will remain at 5 years to be replaced with the laptops. iPads are subject to Apple's ability to keep the hardware updated with security patches.

At a Per-Room Basis, average cost per year would look as follows (does not include repairs or spares):

Equipment	Initial Cost	Refresh Rate	Cost Per Year Averaged	Total for 5-years
Dock	$229.00	5 years	$45.80	$229.00
Laptop Computer	$843.15	5 years	$168.63	$843.15
Smart Display (installed)	$3,950.00	7 years	$564.29	$2,821.45
Dual Monitors	$527.78	7 years	$75.40	$377.00
iPad	$352.00	5 years	$70.40	352
Cables	$75.00	7 years	$10.71	$53.55
Total per Room	**$5,976.93**		**$935.23**	**$4,676.15**

NOTE: Inflation is causing these values to increase. Some vendors have suggested 15-20% increases after Jan 1, 2023

Option 2: Desktop, Laptop, SMART Display / Interactive Projector

In this model, each classroom is assigned a Desktop computer, a Laptop, and an interactive whiteboard of some form. This is the current standard among the majority of classrooms at Rocky Hill Public Schools. The laptops are a new addition in the last two fiscal years as a result of the strains on staff caused by COVID/remote learning requirements as well as a Board decision after conversations with the Teachers Union. Laptops allow for staff to have a portable device for both working at home on district accounts and materials as well as having the mobility to attend meetings or just move about the classroom while they are in district.

In this scenario, the Technology Department must maintain a set of spares of both desktop and laptops, but only enough to replace broken devices. Loaners in any case shouldn't be required except in the case of extended leaves of absence as each room has a self-sustaining set of equipment available to whomever arrives in that room to provide instruction.

Annual and average costs are listed based on six-year refresh cycles for desktops, five-year refresh cycles for the laptop, and a seven-year refresh cycle for the display equipment in the classroom.

At a Per-Room Basis, average cost per year would look as follows (does not include repairs or spares):

Equipment	Initial Cost	Refresh Rate	Cost Per Year Averaged	Total for 5-years
Desktop Computer	$865.20	6 years	$144.20	$721.00
Laptop Computer	$843.15	5 years	$168.63	$843.15
SMART Display (installed)	$3,950.00	7 years	$564.29	$2,821.45
Dual Monitors	$527.78	7 years	$75.40	$377.00
Cables	$75.00	7 years	$10.71	$53.55
Total per Room	**$6,261.13**		**$963.23**	**$4,816.15**

NOTE: Inflation is causing these values to increase. Some vendors have suggested 15-20% increases after Jan 1, 2023

Option 3: Laptop, Dock, SMART Display / Interactive Projector

This option would simply be the most economical, but would not allow the mobility and versatility of both other solutions. In this model, a staff member would be assigned a laptop that they would carry with them. A universal docking station and two monitors would be employed with a keyboard and mouse in each classroom which would not move with the staff member.

Again, in this scenario, the Technology Department would need to maintain a set of spare laptop devices to both replace broken equipment and also to provide loaners to classrooms where staff members are out sick or the classroom equipment is otherwise unavailable.

Annual and average costs are listed based on five-year refresh cycles for the assigned laptop and a seven-year refresh cycle for the display equipment in the classroom. The docking station refresh cycle will remain at 5 years to be replaced with the corresponding laptops.

At a Per-Room Basis, average cost per year would look as follows (does not include repairs or spares):

Equipment	Initial Cost	Refresh Rate	Cost Per Year Averaged	Total for 5-years
Dock	$229.00	5 years	$45.80	$229.00
Laptop Computer	$843.15	5 years	$168.63	$843.15
SMART Display (installed)	$3,950.00	7 years	$564.29	$2,821.45
Dual Monitors	$527.78	7 years	$75.40	$377.00
Cables	$75.00	7 years	$10.71	$53.55
Total per Room	**$5,624.93**		**$864.83**	**$4,324.15**

NOTE: Inflation is causing these values to increase. Some vendors have suggested 15-20% increases after Jan 1, 2023

e) Educator Training and Professional Development

As a district and as a department, we can install millions of dollars of equipment, but without proper training and development, that equipment will never be utilized to its fullest potential and thus our Return on Investment (ROI) will be very low.

Rocky Hill Public Schools has a single Instructional Technology Facilitator responsible for training and maintaining material to provide teachers with the knowledge they need to utilize the robust infrastructure and tools that they have at their disposal. Standardization and modernization of classrooms will not happen smoothly without the efforts of such highly skilled people to help make staff comfortable with the new technology and understand how they can use their tools to deliver engaging instruction to their students.

Additional Instructional Technology support would allow for more teachers to utilize technology to its fullest potential. Utilizing our current District Instructional Technology Facilitator and perhaps bolstering that position with an additional person would promote the return on investment that the Board would look for when they coordinate the implementation of this Technology Plan.

f) Classroom Hardware 5-year Plan

Regardless of which standardization plan is chosen, A/V refreshes will continue at the elementary level for 23-24 and will cascade upward in grade level, skipping Moser as that building has the newest equipment. Classroom equipment will be replaced based on the refresh cycles stated above over the next five years.

8. Classroom Software and Services

Overview: While the Assistant Superintendent for Curriculum and Instruction now manages the majority of classroom services and software, the Technology Department continues to maintain licensing and hosting of various platforms at a district level. Some of these are heavy-hitter applications that are utilized extensively across the district.

a) GoGuardian

State law mandates that all public school districts make a concerted effort to protect student information and prevent the viewing of explicit websites while using school owned accounts and equipment. GoGuardian allows the district to filter and monitor student accounts both on premises and at home. The suite that the district employs also allows for the classroom teacher to monitor the use of the devices in class and manage their classrooms from their own computers while using Chromebooks as a group. This product is utilized in our 1:1 Chromebook distribution which is deployed to grades one through twelve.

GoGuardian is paid annually out of the Technology budget and is based on per-pupil costs. The 21-22 cost for GoGuardian licensing was $20,187.00.

b) Google Workspace and Classroom

Google Workspace is a large cloud-based platform that houses district email access, reporting, student and staff word processing, as well as a single sign-on platform for various applications and rostering. Google Classroom is the online platform teachers in grades 1 - 12 use to post lesson content, links, videos, and assignments. This platform also allows command and control of the district's fleet of student and staff assigned Chromebooks, allowing for additional filtering, policy creation, and updated deployment and application assignment. A rapidly increasing amount of instruction relies on the Google Workspace platform. The budgetary figure for 21-22 was $10,728.00.

c) PowerSchool

After moving strictly educational software to the Curriculum Team's budget, the Technology Department interfaces with these resources by rostering, syncing, and maintaining the student assigned applications as prescribed by Curriculum.

Outside directly interfacing software, the Technology Department runs, maintains, and provides training for the PowerSchool Student Information System which is a hosted database that provides records for staff use and reports to be deployed to Connecticut State portals. This system drives the schools' scheduling, grading, behavior management and record keeping. The many add-ons to this platform create reporting modules for the state and administration, as well as support for Special Education and transportation.

PowerSchool and its related services are costly but necessary. Base SIS was $28,476.91 not including the various add-on modules for the 22-23 fiscal year. These figures are very dependent on the student enrollment as licensing is on a per-pupil basis.

d) Instructional Technology Software and Services 5-year plan

The Technology Department works with the Curriculum Team to maintain and roster software suites for students across the district. The platforms we are currently using in the Technology Department are working well to deliver instruction and meet the needs of teachers and students. One platform that we will seek to develop is a more inclusive single-sign-on application such as Clever or ClassLink to ease the use and access to technology and applications, especially among the youngest of our learners.

9. Conclusion

This Technology Plan is the vehicle to preserve the technology systems in place and cultivate the infrastructure required to give all students the knowledge and skills to be prepared for life in the digital world.

The Rocky Hill Public Schools Office of Technology takes great pride in the robust infrastructure and availability of technology provided to all staff and students. The school community has access to a reliable and secure wireless network and equipment that is not only functional, but innovative. The Board of Education's investments have allowed for a one to one technology model that is engaging, collaborative, and inclusive. These investments have deepened the reliance on technology and allowed for the successful delivery of curriculum. 21st Century learning is alive and well in Rocky Hill Public Schools.