

# Somerville Public Schools

## Technology Plan

2023 – 2026



John Breslin  
Director of Technology

# Table of Contents

- Overview ..... 3**
- Plan Evaluation ..... 5**
- Partnership With City Hall ..... 6**
- Executive Summary of Expenditures ..... 7**
- Instructional Rationale ..... 9**
  - Technology in Schools ..... 9
  - Why Technology? ..... 9
  - Technology Mission Statement, Somerville Public Schools ..... 10
  - How can technology be integrated into the school program? ..... 10
  - Learning Progression ..... 11
  - Students ..... 11
  - Staff Development ..... 15
  - Technology Sustains Somerville Educational Core Values ..... 16
- Year Two Priorities ..... 19**
- Other Priorities ..... 23**
- Appendix A – Description of Hardware/Software ..... 24**

## OVERVIEW

Over the last four years the School Department has been able to accomplish the goals of the prior four-year technology plan under stable budget conditions, despite much of the cycle and our goals occurring during the global COVID-19 pandemic.

In our annual technology budget we focus on system maintenance, replacement cycles, and service renewals. Through numerous grant awards and donations, we are also fortunate to be able to support new investments and grow our technology capacity in the District without increasing our base budget. In the last cycle, the additional investments through outside funding was especially helpful in our rapid Chromebook growth that provided critical support during remote learning through the pandemic. In addition, grant funds and donations have been added to the annual technology budget to be able to seed and sustain teacher laptops and current 1:1 Chromebook to student ratio in our grade 4-8 classrooms, expand 1:1 into grades 9-12, and allow the option of 3<sup>rd</sup> grade 1:1.

A continued, primary goal for the department is to maintain an adequate number of computers for students and staff at all. As we have completed the transition from virtual PC desktops and shared PC laptop carts to 1:1 student Chromebooks, we will need to continue to find the best balance of performance and cost to keep the current ecosystem viable.

We have continued to keep print costs down by negotiating aggressive pricing on toner, bulk purchasing affordable replacement printers, and restricting users from printing multiple copies. In addition, Chromebook devices that are designed to leverage digital collaboration and file sharing are restricted from printing directly to printers. Since the COVID-19 pandemic, smaller classroom printers have been harder to source and may require less individual classroom printers at some schools and the use of more shared spaces for printing.

Projectors and Interactive Whiteboards we have been purchasing and installing continue to be a huge success in the classrooms. For new classrooms that come online, the projectors have the Interactive capability built in. For existing classrooms with a physical Interactive Whiteboard and Projector, we continue to maintain and update the projector as it becomes end of life to work with the existing interactive whiteboard. To date, all previously designated District classrooms are equipped with this technology while additional classrooms are accommodated as budgeting permits.

Online testing is on the rise. We have been able to meet new State requirements for computer-based WIDA-ACCESS testing and have transitioned to the next generation computer-based MCAS test. Students are able to take these exams on Chromebooks.

Our Wi-Fi infrastructure has continued to grow over the past 4 years, with primary growth being attributed to the new SHS building coming online. All schools have near 100% enterprise-grade wireless coverage in their buildings. With recent changes to E-Rate guidelines, we continue to plan to leverage available funds to increase saturation and refresh aging wireless equipment to sustain the infrastructure.

As always, the continued financial commitment of the City and School Committee is critical for SPS to be able to adapt to the ever-changing Technology driven-world. Due to the constant advancements in technology, we will continue to plan in four-year cycles.

As we plan for the next four years, it is important for us to continue to protect and maintain our previous/current investments and to acquire what is needed to advance the District technologically. Consistent with the last plan, clear goals and objectives must be established and adhered to so that our priorities are defined and attainable. Necessarily, we must know our inventory and have a schedule in place for assuring the acquisition of needed equipment and replacement of that which has become obsolete.

To facilitate adopting new technologies at a pace faster than what the annual budget could support, the budget is often augmented by grants, donations, capital projects, and cost-sharing from other departments in the District. These opportunities can provide for hardware otherwise not funded in a budget cycle, such as a teacher laptop or student Chromebook rollout faster than expected.

The average operations budget for technology over the last four years has been stable around \$650,000 per year and has received some one-time supplements to achieve the quadrennial replacement of 1:1 Chromebooks in Grades 3 – 12 and to cover the added costs of replacing teacher desktops with laptops. The actual average budget needed to support our current systems is \$750,000. We will need to be stable for each of the next four years to effectively maintain our data systems and student/“modern” computer ratios and afford the cost-effective, scalable technologies needed. Examples of acquisitions over the next four years would be to continue our annual computer replacement cycle, continue the quadrennial Chromebook cycle in grades 3-12, update teacher and admin desktops to laptops, replace existing laptops as they age, and improve Wi-Fi infrastructure in schools.

The future of technology for the Somerville Public Schools will continue to emphasize increased investment in initiatives that produce tangible, measurable results for improving student achievement. Whether it be through mobile devices in classrooms, laptop for teachers, learning management systems that parents and students can access over the Internet, concerted effort will continue to be

focused on the development of skills through which teaching and learning can soar as was in the last four-year plan.

What follows is an action plan for technology in the Somerville Public Schools covering the current and next three school years. An assumption has been made that a minimum of \$750,000 at the start of this plan, and a minimum \$750,000 per year thereafter, will be available for expenditures. This plan does not account for additional contributions from grants, donations, capital projects, and other departments that often help further advance technology in the District, not does it account for significant enrollment increases that could not otherwise be absorbed with existing technology.

This document includes an Executive Summary of Expenditures, a priority plan for Year Two and descriptions of the hardware and software solutions itemized in the Executive Summary of Expenditures. As is imperative for the success of any plan, as goals are realized and or as priorities change, appropriate updating can occur, as was done with the previous plan.

## **PLAN EVALUATION**

The City of Somerville and Somerville Public Schools operate on a July 1 – June 30 fiscal year cycle. The budget for an upcoming fiscal year typically takes shape over the winter months prior to July 1. We try as much as possible to fund all items in this plan. However, circumstances arise that can impact the plan and budget.

An important part of the process is to make sure we are not budgeting for items that no longer fit well into our curriculum and instructional goals. Over a 4-year plan, a technology item at the time may seem like a great need and then a year or two later become unnecessary. At the same time, we may have implemented a great tool or service and need to expand it faster than planned.

Throughout the year, the Technology Administrator and School District officials meet to discuss the effectiveness of all technology as observed hands-on and from interactions with Students and Staff, to determine if any adjustments are needed to our District Technology Plan. We then use the annual budget process to determine if the amount of funding will be adequate to cover the needs and adjust accordingly.

## **PARTNERSHIP WITH CITY HALL**

The Somerville Public Schools partners with the City Hall Information Technology and Communications & Community Engagement Departments for many of our telecommunications needs. This partnership is responsible for our voice and data networks, including but not limited to, VoIP phone equipment, Copper phone service, Network switches and ports, Network protection software/services, Anti-virus/Endpoint protection software/services, and Firewall appliances.

The City Hall Information Technology and Communications & Community Engagement Departments proactively monitor and assess these services on the SPS network and make recommendations when upgrades are needed. City staff assists with deployment of services and renewals of related licenses when necessary.

# EXECUTIVE SUMMARY OF EXPENDITURES

## **“Year One (2022-2023) Expenditures” \$750,000.00**

Laptop Upgrades (150 units) = \$140,000.00

Replacement Workstations (50 units) = \$30,000.00

1:1 Chromebooks Gr.3-8 (1000 devices) = \$230,000.00

1:1 Chromebooks Gr.9-12 (250 devices) = \$70,000.00

Wireless Access Points (80 units) = \$80,000.00

System Renewals/Maintenance (Aspen, BlackboardConnect, EMC, Microsoft, Wi-Fi, etc) = \$120,000.00

Supplies (Printer Consumables, Repair parts, etc) = \$80,000.00

## **“Year Two (2023-2024) Expenditures” \$750,000.00**

Laptop Upgrades (150 units) = \$142,000.00

Replacement Workstations (50 units) = \$30,000.00

1:1 Chromebooks Gr.3-8 (965 devices) = \$227,000.00

1:1 Chromebooks Gr.9-12 (310 devices) = \$88,000.00

Wireless Access Points (30 units) = \$30,000.00

System Renewals/Maintenance (Aspen, BlackboardConnect, EMC, Microsoft, Wi-Fi, etc) = \$122,500.00

Supplies (Printer Consumables, Repair parts, etc) = \$110,500.00

**“Year Three (2024-2025) Expenditures” \$750,000.00**

Laptop Upgrades (150 units) = \$144,000.00

Replacement Workstations (50 units) = \$30,000.00

1:1 Chromebooks Gr.3-8 (950 devices) = \$228,000.00

1:1 Chromebooks Gr.9-12 (350 devices) = \$101,500.00

Wireless Access Points (30 units) = \$30,000.00

System Renewals/Maintenance (Aspen, BlackboardConnect, EMC, Microsoft, Wi-Fi, etc) = \$125,000.00

Supplies (Printer Consumables, Repair parts, etc) = \$91,500.00

**“Year Four (2025-2026) Expenditures” \$750,000.00**

Laptop Upgrades (150 units) = \$146,000.00

Replacement Workstations (50 units) = \$30,000.00

1:1 Chromebooks Gr.3-8 (965 devices) = \$231,500.00

1:1 Chromebooks Gr.9-12 (360 devices) = \$104,500.00

Wireless Access Points (30 units) = \$20,000.00

System Renewals/Maintenance (Aspen, BlackboardConnect, EMC, Microsoft, Wi-Fi, etc) = \$127,500.00

Supplies (Printer Consumables, Repair parts, etc) = \$90,500.00

# INSTRUCTIONAL RATIONALE

## Technology in Schools

This rationale does not propose unjustified investments in glamorous or unproven technologies. Instead, it provides a plan to acquire well-established technologies that will effectively support the Somerville Public Schools educational curriculum at a reasonable rate and cost. It focuses on the informational and instructional uses of technology and ensures that both students and teachers have what is necessary technology to be successful and effective, namely, easy access to appropriate technology, and training and support to use the technology at all levels.

The Technology Plan includes the following components:

Year 1 (2022-2023):	see expenditure plan	\$750,000.00	-- In Progress
Year 2 (2023-2024):	see expenditure plan	\$750,000.00	
Year 3 (2024-2025):	see expenditure plan	\$750,000.00	
Year 4 (2025-2026):	see expenditure plan	\$750,000.00	

The Plan maintains staff computers as well as providing for laptop upgrades. It maintains student device counts while infusing 1:1 devices in grades 3 - 12, far exceeding the state recommended ratio of students per device. This plan will also expand and refresh our Wi-Fi infrastructure to school buildings.

This plan continues to support student-centered approaches to instruction. Students will be able to conduct research and engage in collaborative activities over the school network and the Internet. Teachers will continually be able to share information and dialog with their colleagues, school administration, and experts in the field, parents and others outside the boundary of their schools. In addition, the computers and shared resources will be available beyond the school day, enriching community-based education.

## Why Technology?

Technology is a key component to meeting evolving educational goals in the age of communication. Students must be able to access information, manipulate data, synthesize concepts and creatively express ideas to others. Technology can virtually bring the world to the child, providing a depth and richness of instructional approaches to reach children of all learning styles. Technology is also an administrative tool that can bring efficiency to classroom management and student assessment. This is especially important as teachers begin to use performance-based assessment to continuously improve students' learning. The power of the technology allows teachers to track student work, enabling them to develop and maintain individual learning profiles for all learners.

# Technology Mission Statement, Somerville Public Schools

## **School Technology Mission & Goals**

Updated by the District Technology Department November 2013

- Emerging technologies shall be used to enhance teaching and learning.
- Access to technology for learning shall be available for all learners irrespective of learning styles, differences, or capabilities.
- Technology shall be used to design learning environments that enhance and challenge each student's approach to learning.
- Technology shall be used to expand teaching and learning models.
- Technology shall be used to promote engaged learning.
- Technology shall be used to further six essential learnings by helping the student:
  1. Become an information seeker, navigator, and evaluator.
  2. Become a critical thinker, analyzer, and selector of information and technology.
  3. Create knowledge.
  4. Be an effective communicator.
  5. Become a life long learner with educational technology.
  6. Become a responsible user of technology in the 21<sup>st</sup> Century.

## How can technology be integrated into the school program?

Technology can become an integral part of the learning environment by:

**Supporting curriculum.** Use technology in support of educational goals, even invisibly (e.g., a class lesson prepared by teachers collaborating on the Internet; use of informative videos online).

**Developing skills.** Learn to use technology to be a productive, cooperative, and competitive participant in the 21<sup>st</sup> Century. (e.g., information management skills developed in the library; use of word processors, spreadsheets, calculators, video cameras).

**Learning about principles and ethics of technology.** Become an informed user by understanding underlying structures and principles of technology in both technical and ethical terms (e.g., learn to question the authenticity of information; discuss tradeoffs involved in energy production, recycling, and pollution control; or consider the implications of biological engineering and medical advances).

**Developing expertise in technology.** Provide opportunities to develop, enhance, or support technology for those so inclined (e.g., science fairs, experimental labs, electronics study).

## Learning Progression

As stated in the Massachusetts Curriculum Framework for Digital Literacy and Computer Science, “Digital literacy and computer science knowledge, reasoning, and skills are essential both to prepare students for personal and civic efficacy in the twenty-first century and to prepare and inspire a much larger and more diverse number of students to pursue the innovative and creative careers of the future. The abilities to effectively use and create technology to solve complex problems are the new and essential literacy skills of the twenty-first century.”

Massachusetts Curriculum Framework for Digital Literacy and Computer Science  
Learning Progression Chart

Learning Progression				
Grade Spans	Strands			
K-2	<b>Computing and Society [CAS]</b>	<b>Digital Tools and Collaboration [DTC]</b>	<b>Computing Systems [CS]</b>	<b>Computational Thinking [CT]</b>
3-5	a. Safety and Security	a. Digital Tools	a. Computing Devices	a. Abstraction
6-8	b. Ethics and Laws	b. Collaboration and Communication	b. Human and Computer Partnerships	b. Algorithms
9-12	c. Interpersonal and Societal Impact	c. Research	c. Networks	c. Data
			d. Services	d. Programming and Development
				e. Modeling and Simulation
Practices				
Connecting, Creating, Abstracting, Analyzing, Communicating, Collaborating, Research				

## Students

Practices cultivate the internalization of dispositions and skills that students apply to solve digital literacy and computer science problems. As students progress through their education, they should acquire increasingly sophisticated practices. Effective instruction couples practices with digital literacy and computer science content to provide a context or performance.

The students’ needs can be summarized as follows:

- **Creating:** Digital literacy and computer science are disciplines in which students demonstrate creative thinking, construct knowledge, and develop innovative artifacts and processes using technology. Students engage in

the creative aspects of computing by designing and developing interesting computational artifacts and by applying techniques to creatively solve problems.

- **Connecting:** Developments in computing have far-reaching effects on society and have led to significant innovations. The developments have implications for individuals, society, commercial markets, and innovation. Students study their effects and draw connections between different computing concepts.
- **Abstracting:** Computational thinking requires understanding and applying abstraction at multiple levels. Students use abstraction to develop models and to classify and manage information
- **Analyzing:** Students use critical thinking and analytical skills to locate, evaluate, and analyze information, information sources, their own computational artifacts, and the computational artifacts others have produced.
- **Communicating:** Communication is the expression and exchange of information between two or more people. Communication includes written and oral mediums, as well as tangible representations supported by graphs, visualizations, demonstrations, stories, and analysis. Effective communication is accurate, clear, concise, persuasive, and responsible
- **Collaborating:** People working collaboratively in teams, locally or globally, can often achieve more than individuals working alone. Effective collaboration draws on diverse perspectives, skills, knowledge, and dispositions to address complex and open-ended problems or goals.
- **Researching:** Students apply digital tools to gather, evaluate, and use information in a legal, safe, and ethical manner.

## Students - Progression of Core Concepts from MA DLCS Frameworks

### 1. **Computing and Society (CAS)**

Computing impacts all people and has global consequences on such things as communications, assistive technology, social networking, and the economy. Society values many different computing innovations. Computing is a key component of many professions and the content of digital media influences all citizens and society. Global disparities in access to the Internet, media, and devices may lead to an imbalance in equity and power. Principles of privacy, ethics, security, and copyright law influence digital safety and security, as well as interpersonal and societal relations.

- a) **Safety and Security:** Responsible citizens in the modern world apply principles of personal privacy and network security to the use of computing systems, software, the Internet, media, and data.

- b) Ethics and Laws:** Ethics include standards of conduct, fairness, and responsible use of the Internet, data, media, and computing devices. An understanding of principles and laws of software licenses, copyrights, and acceptable use policies are necessary to be responsible citizens in the modern world.
- c) Interpersonal and Societal Impact:** The use of computing devices, assistive technologies and applying a computational perspective to solving problems changes the way people think, work, live, and play. Computational approaches lead to new understanding, discoveries, challenges, and questions. Most professions rely on technology and advances in computing foster innovations in many fields. Differential access to principles of computing, computing devices, digital tools, and media in the global society, has potentially significant effects.

## 2. **Digital Tools and Collaboration (DTC)**

Digital tools are applications that produce, manipulate, or store data in a digital format (e.g., word processors, drawing programs, image/video/music editors, simulators, Computer-Aided Design (CAD) applications, publishing programs). Digital tools are critical for conducting research, communicating, collaborating and creating in social, work, and personal environments. The use of digital tools is integral to success in school and career.

- a) Digital Tools:** Digital tools are used to create, manipulate, analyze, edit, publish, or develop artifacts. Individuals and groups identify, evaluate, select, and adapt new tools as they emerge.
- b) Collaboration and Communication:** A variety of digital tools are used to work collaboratively anytime and anywhere, inside and outside the classroom, both synchronously and asynchronously, to develop artifacts or solve problems, contribute to the learning of others, and communicate.
- c) Research:** A variety of digital tools are used to conduct research, answer questions, and develop artifacts to facilitate learning and convey understanding. Access to the Internet and digital tools allows people to gather, evaluate (for validity, bias, relevance, accuracy, etc.), organize, analyze, and synthesize information, data and other media from a variety of sources. Effective use of information, data, and media requires consideration of validity, ethics, and attribution of sources.

## 3. **Computing Systems (CS)**

Computing systems are comprised of components, such as devices, software, interfaces, and networks that connect communities, devices, people, and services. They empower people to create, collaborate, and learn via human-computer partnerships. The design of many computing systems empowers people to debug, extend, and create new systems. Computing systems require troubleshooting and maintenance to consistently function.

- a) **Computing Devices:** Computing devices take many forms (e.g., car, insulin pump, or robot), not just personal computers, phones and tablets. They use many types of input data (collected via gesture, voice, movement, location, and other data) and run instructions in the form of programs to produce certain outputs (e.g., images, sounds, and actions). Computing will continue to be increasingly embedded into devices that are used in social, recreational, personal, and workplace environments.
- b) **Human and Computer Partnerships:** Some tasks, such as repetitive tasks, or those involving complex computations, are best done by computers, while other tasks that do not have defined rules or are dynamic in nature, are best done by humans. Many tasks, however, are done through human-computer partnerships. Human-computer partnerships are characterized by the interaction of humans with devices and systems that work together to achieve a purpose or solution that would not be independently possible. These skills and knowledge inform the decision to use technology in creating, innovating, or solving a problem or sub-problem.
- c) **Networks:** Network components, including hardware and software, carry out specific functions to connect computing devices, people, and services. The Internet facilitates global communication and relies on considerations of network functionality and security.
- d) **Services:** Data storage and computing occurs in many interconnected devices creating computational “services” that are the building blocks of computing systems. These services make use of data, algorithms, hardware, and connectivity that may occur on remote systems.

#### 4. **Computational Thinking (CT)**

Computational thinking is a problem-solving process that requires people to think in new ways to enable effective use of computing to solve problems and create solutions. The capacity of Massachusetts Curriculum Framework for Digital Literacy and Computer Science 16 computers to rapidly and precisely execute programs makes new ways of designing, creating, and problem solving possible.

Computational thinking is characterized by:

- analyzing, modeling, and abstracting ideas and problems so people and computers can work with them;
  - designing solutions and algorithms to manipulate these abstract representations (including data structures); and
  - identifying and executing solutions (e.g., via programming)
- a) **Abstraction:** Abstraction is a process of reducing complexity by focusing on the main idea. By hiding details irrelevant to the question at hand and bringing together related and useful details, abstraction reduces complexity and allows one to focus on the problem. This

process creates a new representation, which successfully reframes the problem. At the most basic level of abstraction, data structures are used to represent information so that algorithms can operate on the data to create a result.

- b) Algorithms:** An algorithm is a sequence of precisely defined steps to solve a particular problem. Carefully designed algorithms are essential to solving complex problems using computers. Effective algorithms are efficient, clear, reusable, and accurate.
- c) Data:** Collecting, managing, and interpreting a vast amount of raw data is part of the foundation of our information society and economy. The storage of data impacts how data is used and accessed. Computational tools enable insights and decisions through new techniques for data collection and analysis.
- d) Programming and Development:** Programming articulates and communicates instructions in such a way that a computer can execute a task. Programming makes use of abstractions, algorithms, and data to implement ideas and solutions as executable code through an iterative process of design and debugging. The process of creating software includes understanding the development life cycle, such as testing, usability, documentation, and release. Software development is the application of engineering principles (usually by a team) to produce useful, reliable software at scale and to integrate software into other engineered artifacts.
- e) Modeling and Simulation:** Computational modeling and simulation help people to represent and understand complex processes and phenomena. Computational models and simulations are used, modified, and created to analyze, identify patterns, and answer questions of real phenomena and hypothetical scenarios.

## Staff Development

A technology-literate teacher is critical to the success of the technology plan. Only when teachers become proficient with new technology will they be able to guide their students to employ these tools effectively. In conjunction with proficiency in technology use, teachers need to learn how to expand classroom learning using technology. The plan proposes to have qualified professionals to model lessons and instructional uses of technology in the classroom. Stories of unsuccessful attempts at school technology integration have been reported nationwide. Staff development includes (1) teacher training on student learning software, communications software, electronic research and teacher productivity software, (2) ongoing dialog between teachers and Technology Support Staff, and (3) ongoing dialog between Curriculum Coordinators, Technology Support Staff, and Parents. Staff development requires ongoing teacher support and technical assistance. Teachers must be provided with ready access to facilities,

formal training sessions, and informal consultation and collaborative support. In order to do this successfully, there must be day-to-day on-site involvement by qualified technology professionals.

## Technology Sustains Somerville Educational Core Values

The Somerville Public Schools have established the core values addressing individuality and diversity; continuous improvement; and shared responsibility. Technology is a partner to these values. Studies show that given the tools, teachers will make effective use of technology and, in the process, substantially change their roles and teaching techniques in just a few years. The goals of education reform resonate within the changes experienced. Technology tools provide a means for student-centered instruction and individualized learning. Such tools often require active learning and encourage higher-order thinking skills. Computers offer an environment of joint study, shared resources and shared work, facilitating large and small group activities. Forms of technology must be viewed, not as ends in themselves, but as tools to accomplish specific educational goals. The plan does not seek to introduce all of the latest technologies. Instead, it has defined those technologies that will best support Somerville core values. Networked computers and sophisticated educational software engage teachers and students in authentic problem solving and extend, invigorate and publicize new approaches to education. Thanks to impressive advances in hardware, software, and networked technologies, effective tools now serve all seven of the multiple intelligences linguistic/verbal, logical/mathematical, spatial, kinesthetic, musical, and interpersonal, intrapersonal.

## **Massachusetts Frameworks for Digital Literacy and Computer Science.** **Developed in 2016**

### **Grades K through 2**

Early elementary school students are introduced to foundational concepts by integrating basic digital literacy skills with simple ideas about computational thinking. They learn that tools help people do things better, or more easily, or do some things that could otherwise not be done at all. Through the exploration of differences between humans, computing devices, and digital tools, students begin to understand if, when, and how they should use technology. Kindergarten through grade 2 standards integrate all seven practices.

### **Grades 3 through 5**

Upper elementary students learn to differentiate tasks that are best done by computing systems or digital tools and those best done by humans. Students explore a variety of computing devices and digital tools and further develop their computational thinking problem solving skills. As students progress through grades 3–5, they begin to evaluate the uses and limitations of existing artifacts and modify parts of existing artifacts to develop something new. Students are able to describe and document their computational work in writing, using presentation tools and through demonstrations of their work. Grade 3 to 5 standards integrate all seven practices.

### **Grades 6 through 8**

The goal for middle school students is to define problems more precisely, to conduct a more thorough process of selecting the best devices, tools, and solutions. Students learn to differentiate problems or sub-problems that are best solved by computing systems or digital tools and those best solved by humans. Students further develop their computational thinking problem solving skills, which facilitates the use of technology. Grade 6 to 8 standards integrate all seven practices.

### **Grades 9 through 12**

The concepts and skills in grades 9–12 build on K–8 experiences and progress to more technical and sophisticated applications. Students continue to refine their skills in differentiating problems or sub-problems that are best solved by computing systems or digital tools and those best solved by humans. Students work independently and collaboratively to achieve the high school standards. Students further develop their computational thinking problem solving skills, which facilitate the selection and use of technology. The high school standards provide opportunities for students to gain proficiency and incorporate substantive expectations of the College Board’s Computer Science Principles, the widely recognized benchmark for post–secondary preparation. The high school standards specify the skills that all

students should study in order to be college and career ready. Grade 9 to 12 standards integrate all seven practices.

# YEAR TWO PRIORITIES

## *Laptop Upgrades<sup>1</sup>*

District-wide:                      150 Laptops at \$946.67/unit    =    \$ 142,000.00

**Total =                      \$ 142,000.00<sup>2</sup>**

---

<sup>1</sup> Laptops with docking stations to replace staff desktops, where applicable.

<sup>2</sup> This price assumes a 5 year cycle.

## ***Replacement Workstations<sup>3</sup>***

District-wide:      50 Workstations at \$600.00/unit    =    \$    30,000.00

**Total =            \$    30,000.00**

---

<sup>3</sup> Amount of desktop workstations needed to have a consistent 5 year replacement cycle.

***Classroom Chromebooks***  
***Wireless Access Points***

1:1 Chromebooks Gr.3-8:	965 units at \$235.23/unit	=	\$ 227,000.00
1:1 Chromebooks Gr.9-12:	310 units at \$283.87/unit	=	\$ 88,000.00
Wireless Access Points:	30 units at \$1000.00/unit	=	\$ <u>30,000.00</u>
		<b>Total =</b>	<b>\$ 345,000.00</b>

**Systems Renewals/Maintenance  
Supplies**

Systems Renewals/Maintenance: = \$ 122,500.00

(Aspen, BlackboardConnect, EMC, Microsoft, Wi-Fi, Backups, etc)

**Subtotal = \$ 122,500.00**

Supplies: Printer Consumables = \$ 48,500.00

Supplies: Repair Parts = \$ 27,000.00

Supplies: Classroom and Administrative Support = \$ 30,000.00

Supplies: Misc. = \$ 5,000.00

**Subtotal = \$ 110,500.00**

**Total \$ \$ 233,000.00**

## **OTHER PRIORITIES**

The overall plan for District Technology includes other items that are funded by the School Facilities Department and therefore are not mentioned in the preceding sections. These items include maintaining and expanding our Telecommunications systems, primarily Voice over IP (VoIP) and some remaining copper lines for security systems. They also include maintaining and expanding our wired network infrastructure, primarily Power over Ethernet (PoE) switches and Ethernet drops.

Over the next four years, the District is looking to keep its VoIP telephony capacity and bandwidth at a maximum. This could require additional Call Management systems as well as related Switches. In addition, the schools have several classrooms and computer labs that were not previously wired or provided adequate Wi-Fi to appropriately handle a dynamic computing environment. We plan to outfit these locations and will require additional Ethernet drops, Switches, and Wi-Fi to achieve this goal.

## **APPENDIX A – DESCRIPTION OF HARDWARE/SOFTWARE**

### **Aspen**

The Aspen Information System is an extremely robust and functional tool with a powerful and effective system of administrative reporting and tracking for student and staff information. Aspen helps districts dramatically improve data management through time saving workflow technologies, automating time-consuming data collection and reporting processes, and getting the information into the hands of those who need it with access to the web-based system anytime, anywhere.

### **BlackboardConnect**

The BlackboardConnect service enables school administrators to record, schedule, send, and track personalized voice messages to tens of thousands of students, parents, and staff in minutes. The BlackboardConnect service offers is a key vehicle to deliver emergency communication and community outreach notification to help schools at all levels improve awareness, increase involvement, and audit communication on a regular basis.

### **Chromebooks**

HP Chromebook 11 G9 is designed for accelerating the movement to cloud based applications. Features the Chrome OS and a 11” HD LED anti-glare display.

### **Microsoft Enrollment for Education Solutions**

Enrollment for Education Solutions (EES) is an easy, cost-effective offer that provides qualified academic customers a simplified way to acquire Microsoft software and services under a single, subscription agreement. It offers benefits such as assured coverage for on-premises desktop platform products with one annual count of employees, the ability to easily add additional products in any quantity, self-service tools for simplified asset management, and immediate access to benefits such as product upgrades through Microsoft Software Assurance so you can boost the productivity of your faculty and staff and optimize the return on your technology investments.

### **Workstations (Desktops and Laptops)**

HP Elite and Pro or Lenovo Think series are equipped with latest powerful processor technology from Intel®.

Sample Specifications:

Intel processor, 2-4 cores

Solid-state Hard drive

>= 8 GB RAM

Windows 10/11 x64