

Pleasanton Unified School District



District Technology Plan July 2022 - June 2025

"Our Students will make a better world"

District Vision

Every student will be a resourceful, resilient, responsible and engaged world citizen

District Mission

Our students will make a better world

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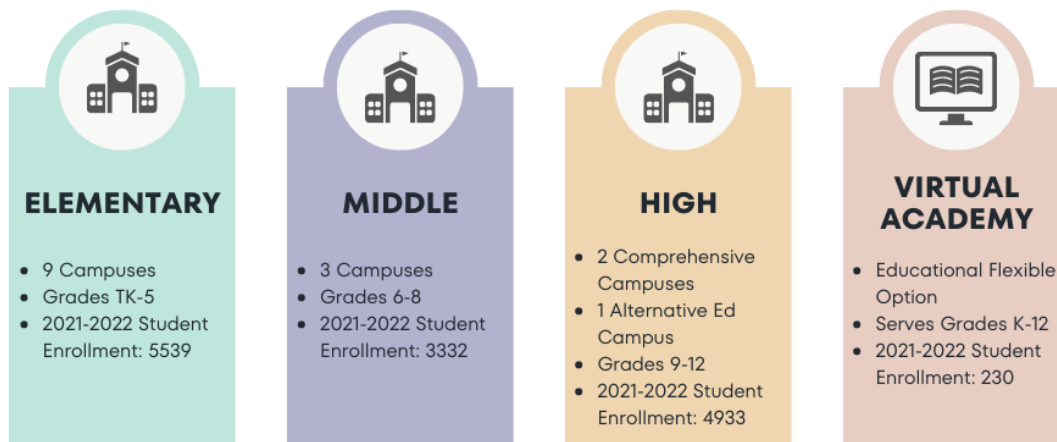
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Introduction

Who We Are - Background

The Pleasanton Unified School District (PUSD) serves approximately 14,000 students in nine elementary schools, three middle schools, two comprehensive high schools, one virtual academy, and one alternative high school. All schools are located in Pleasanton, California, a suburban community located in Alameda County. Pleasanton is a Bay Area and Silicon Valley bedroom community with a population of approximately 80,000 according to 2020 census.

Schools in Pleasanton offer a rich learning experience for all students. The PUSD recognizes that the skillful integration of educational technology is a component of a 21st-century learning experience for all students. The District also recognizes the need for stable electronic communications and operations infrastructure that allows for effective information sharing and collaboration with all staff, students, and community members. The District Technology plan will outline the goals and objectives for the instructional and operational use of technology for three years, beginning in July 2022 and ending in June 2025.



The Governing Board outlines a variety of goals and objectives in the District's Strategic Plan. All goals and objectives outlined in the District Technology Plan are aligned to the District's Strategic Plan.

Several of these goals are specifically aligned to the use of classroom technology and the robust network infrastructure outlined in this plan:

- All students, regardless of race, ethnicity, socio-economic status, or gender will be proficient/advanced and college/career ready upon graduation
- The District will optimize student learning by utilizing innovative technologies
- All students and staff will be provided a high-quality physical environment that facilitates teaching and learning

Technology infrastructure is expensive to acquire, maintain and repair. By creating a comprehensive plan for the technology-related expenditures that will occur throughout the life of the plan, projects and operational activities can be effectively planned and monitored.

- Students will be central to all fiscal decisions
- Ensure fiscal health through investing in today while planning for tomorrow

The use of technology to facilitate communication and collaboration by staff and students requires thoughtful consideration of digital citizenship practices. The District's Strategic Plan goals that define the vision to ensure that all members of the PUSD community are engaging in respectful, considerate, and civil online collaboration are:

- Empower all students to develop character, compassion, civility, and community consciousness.
- Every student and staff will feel safe, respected and enjoy a positive connection

PLEASANTON UNIFIED SCHOOL DISTRICT STRATEGIC PLAN

MISSION

Our students will make a better world.

WE BELIEVE...

- * With guidance and support all students can reach their greatest potential;
- * All students and staff have the right to a safe and respectful learning environment that fosters positive connections;
- * Public education should focus on the whole child, provide equitable opportunities for all students and create socially responsible individuals with character and integrity;
- * In ensuring a culture and climate that promotes a highly-skilled, dedicated, and passionate educational team;
- * In providing learning that is innovative, irresistible, creative, relevant and rigorous;
- * It is our responsibility to inspire curiosity and a passion for life long learning.

VISION

Every student will be a resourceful, resilient, responsible and engaged world citizen.

CURRICULUM & INSTRUCTION	LEARNING ENVIRONMENT	PERSONAL GROWTH	FISCAL STEWARDSHIP
All students, regardless of race, ethnicity, socio-economic status, or gender will be proficient/advanced and college/career ready upon graduation.	All students and staff are provided a high-quality physical environment that facilitates teaching and learning.	Empower all students to develop character, compassion, civility, and community consciousness.	Students will be central to all fiscal decisions.
Optimize student learning by utilizing innovative technologies.	Every student and staff will feel safe, respected, and enjoy positive connections.		Ensure fiscal health through investing in today while planning for tomorrow.

The current plan was strengthened in the revision process through assessment, consultation, input from district staff familiar, and via student and teacher surveys. The plan has three purposes: 1) support and maintain classroom technology to improve teaching and learning with more effective usage and integration with PUSD curriculum; 2) provide a roadmap for district technology infrastructure redundancy, monitoring, and its improvement and maintenance of data, video, and voice systems; and 3) minimize response times for technical support, cybersecurity, safety, and wellness.

During the life of this plan the funding, needs, and activities may change due to Board or Executive direction, or changes, improvements, and obsolesce of technology.

The end goal of this plan is to provide a robust and reliable technology infrastructure that facilitates teaching and learning for PUSD students and staff. It also provides a methodology (Change Management™) for making changes in the selection of technology when in the years to come, new technology may not be predictable.

A. PUSD Technology Programs

In order to support all instructional and non-instructional use of technology throughout the district, the Technology Services department maintains a robust technical infrastructure platform in all schools and the district office. The district and school site technology specialists also provide basic technical support to all staff members.

Funding for technology hardware and network infrastructure has been historically provided by many sources, including the district general fund and voter-approved school improvement bond. The district has invested \$24.4M from Measure I1 on the district's technology-related needs.

During the previous technology plan the District put into motion a plan to equip teachers with internet-enabled laptops, and began its 1:1 student device take-home initiative with Grades 6 to 12. During the pandemic the District fast-tracked the 1:1 initiative to provide 3,000 laptops for grades TK to 5 grades to learn from home. The district utilized Measure I1 bonds to supplement the costs to provide staff and students with access to internet-enabled devices. Measure I1 is projected to fund devices through the 2024-25 school year.

1. Pleasanton Virtual Academy (PVA)

The Pleasanton Virtual Academy (PVA) is an educational flexible option that allows learners to learn from home, in person, and online. Courses are a blend of in-person and online support and experiences. PVA started in Fall 2020 and provides a structured independent path for students in grades K-12. High School courses are WASC accredited and most are UC A-G aligned. Families who choose to homeschool their students may select this option to complement homeschooling. PVA works well to support students who are eligible to and who wish to concurrently enroll in local community college courses.

Students who choose to enroll in the Pleasanton Virtual Academy will require access to reliable internet for several hours per day. Students may need to connect with their teachers via video conferencing, they may be required to watch web-based videos, and complete a multitude of assignments using the G Suite of tools. Students will be provided with a Pleasanton USD Chromebook.

2. Project Lead The Way (PLTW)

The Project Lead The Way (PLTW) program serves as a gateway program to meet the needs of students' increased interest in Science, Technology, Engineering, and Mathematics (STEM). PLTW is the leading provider of rigorous, relevant, activity, and project-based STEM curriculum, and PUSD joined the PLTW network with over 9,000 schools in all 50 states using the PLTW curriculum programs at the elementary, middle, and high school levels.

The PUSD program launched in the Fall of 2012 with the gateway program for middle school students at two of the three middle schools and the Engineering program for high school students at Amador Valley High School. In the Fall of 2013, the Biomedical Sciences program was launched at Foothill High School. In 2014, the Engineering program was launched at FHS along with adding the Gateway program to Hart Middle School. That same year Mohr Elementary embraced the Launch elementary STEM program, which has grown to include several of the district's elementary schools. And in 2016, the Computer Science programs at both comprehensive high schools began the transition to the PLTW curriculum. The high school programs continued to add courses to build out a three-course program for Biomedical

Sciences, a four-course program for Engineering, and a three-course program for Computer Science at both comprehensive high schools.

3. Differentiated Instruction and Personalized Learning

Student learning can be personalized to recognize different learning modalities, preferred expressions, and student interests. Educational technology can be used to quickly and effectively gather and present information to teachers about how to meet the needs of each child in the classroom.

Educational technology can also be used to facilitate targeted instruction for students in reading and mathematics. Various digital applications support intervention strategies and can be hosted via the *Clever* platform that is available to students and teachers district-wide.

Clever allows for students and staff to have all of their digital applications accessible from one central website. A wide range of digital applications on *Clever* also supports Single Sign-On (SSO) in order to make logging in a more simple task for all users.

Students with disabilities are provided support using a variety of online software tools and apps that can augment communication and provide alternatives to typical communication methods.

4. Digital Citizenship

A core component of online curriculum tools is the ability for students to interact with other students and teachers in the provided software. Digital citizenship resources are available to all students in PUSD and utilize the Common Sense Media curriculum and lesson tools. Providing instruction and setting district-wide expectations for student digital behavior is a key component of the successful integration of technology for learning at school, at home, and in other locations where online learning occurs.

5. Digital Health & Wellness

PUSD has in place and will maintain an internet content filter at all times for all district-owned student devices while on or off-campus. The district currently uses Securly associated with student Google accounts and provides a mechanism to monitor and block inappropriate content found online. The E-rate program requires an internet content management system to be in place at all times while using federal funding while providing internet access.

In partnership with Student Support Services, the district actively deployed and maintained advanced technologies for 24/7 monitoring to alert district personnel when a student requires intervention for health and safety while online. The current application Securly provides the capability to flag and alert district personnel when safety or wellness activity is identified to offer services to a student.

During the 2021-22 school year, PUSD rolled out *GoGuardian* as the digital classroom management software. This tool allows teachers to share content directly from their own devices to student devices, and to monitor student behavior on District-owned devices.

B. Technology Infrastructure and Operations

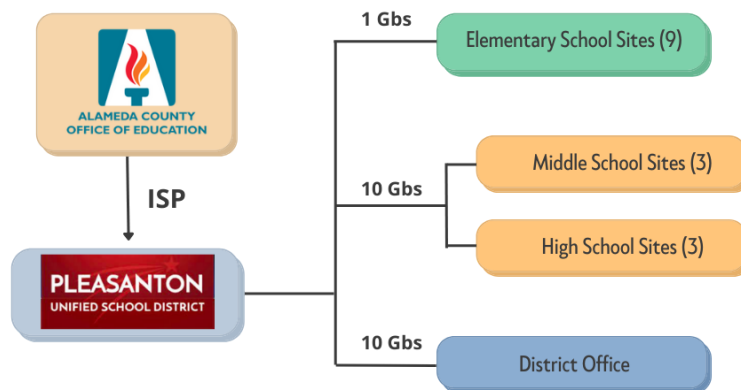
1. Internet Connectivity

All schools are provided access to the internet. District-wide internet access is provided using a “hub and spoke” network model, where the internet is delivered centrally to the District office (DO) by our internet service provider (ISP). Connections from the DO are served to a central point in the school sites using leased wide area network (WAN) lines. The internet is then distributed to classrooms and offices using network drops and wifi access points. Access points can support 50-60 devices per classroom (depending on the age and specification of the devices).

Alameda County Office of Education currently serves as the internet service provider, coming into the core switch in the District’s Network Operations Center, shared by the entire district. During the 2021-2022 school year, District-wide utilization averaged 2.8Gbps with occasional peaks of 3.8Gbps of the shared 5Gbps circuit. The elementary school site connection is currently at 1Gbps and has an existing contract in place through 2025 with AT&T. The district expects to increase to 10Gbps at a small increase (\$1,100 monthly) during this plan period, thus completing the district’s goal of a 10Gbps backbone to all schools. The secondary (middle and high school) sites and the district offices are currently at 10Gbps and will be monitored for additional growth needs. The district will create an alternative plan through E-rate to bring the main internet services back to the district data center from ACOE to provide improved redundant capabilities for failover during an outage.

The district’s reliance on the Internet is a key component for curricular and business operations. A secondary ISP is a key need to create a second redundant path for continuity during an Internet outage. A redundant ISP will illuminate downtime that results from a single point of failure. The district will plan for the district data center to host two ISP connections and add additional network equipment (firewall and core network switch) needed to automatically failover if an outage occurs. One ISP connection will be partially funded through the E-rate program and the other through the district general operating budget. The goal of this plan is to have the redundant internet connection in place at the District office in the next three months if the fiber public pathways are in place and don’t require time to build out by the carriers.

The district will continue to utilize the Federal E-Rate Universal Service Program for Schools and Libraries annually to offset connections for Telecommunications and an Internet Services Provider. The District’s estimated federal discount is forty (40) percent for WAN services and internet access.



2. Network

During the Measure I1 bond the network infrastructure cabling and equipment at all district schools and offices was improved. The network upgrades increased the network speed between campus buildings, added capacity for Voice Over IP (VOIP) and video, including landline telephones, clocks, bells, cameras, and public announcement speakers.

Main Distribution Frames (MDF) and Independent Distribution Frames (IDF) at all school sites, the district office, and the data center were redesigned and legacy network switching was replaced. The network switch backbone provides up to 40G connections to each IDF. New backbone fiber optic cabling was installed, to support 40G speeds to each IDF, including Category 6A ethernet structured copper cabling supporting up to 10Gbps speeds to devices in classrooms and offices. All network switches provide Power Over Ethernet (POE) with multi-gigabit ethernet access. POE allowed the district to add additional phones, access points, and/or POE devices. It is critical to ensure the network and phone service are functional in case of an emergency and/or power failure. One area that needs additional work is backup power for critical technology systems. During this technology plan period the Administration will review and add power backup and survivability capabilities with separate telecommunications services and equipment needed in the data center.

All school sites and the district offices have wireless access. Cisco Meraki indoor (Wi-Fi 6) access points were installed in classrooms, libraries, and offices during the last technology plan. Outdoor access points were added at all district campuses, expanding the wifi-covered areas. Devices will be connected to the regular district network as if it is being used inside any school or district building without any network connectivity interruptions. With Cisco Meraki, the district uses the Cisco Identity Services Engine (ISE), a next-generation identity and access control policy platform that enables the district to enforce compliance and infrastructure security.

The Network and Wi-Fi infrastructure will reach its useful life-cycle during the term of this plan and planning for replacement will begin in 2025. The district will continue to utilize the Federal E-Rate Universal Service Program for Schools and Libraries to offset internal connections (network equipment). The District estimates a discount under this program at forty (40) percent on eligible network equipment and basic maintenance for internal connections.

Recommended Actions and Project Timelines for Infrastructure Upgrades

<i>Item No.</i>	<i>Timeline:</i>	<i>Objective:</i>	<i>Estimated Costs:</i>
<i>B.2.1</i>	<i>2025</i>	<i>Wi-Fi equipment life-cycle replacement</i>	<i>\$2M one-time</i>
<i>B.2.2</i>	<i>2025</i>	<i>Network switch life-cycle replacement</i>	<i>\$3.5M one-time</i>
<i>B.2.3</i>	<i>2025</i>	<i>Virtual server farm life-cycle replacement</i>	<i>\$500K one-time</i>

3. Cybersecurity

The network infrastructure is a mission-critical piece to the District's educational learning environment providing voice, video, data, and internet services to all district sites. Network security is a top priority to

secure against threats and risks to the District’s data center. The Technology Services department will take steps to increase its cyber security strategies through risk assessment, strong mitigation measures, and ongoing best practices.

The District has a password policy and standard security protocols in place to safeguard its critical data from unauthorized access and malicious activities. The district recognizes policies and procedures will help to protect systems but it doesn’t address common risks due to human error. To add an extra layer of security, the district will require multi-factor authentication (MFA) as a standard practice for staff during the 2022-23 school year. To promote good cyber hygiene practices and safeguard school technologies, cybersecurity awareness and training will be ongoing.

Technology Services will use preventive measures to harden existing security systems on the network perimeter to block known threats before they reach internal systems. The technology staff will evaluate and deploy best-of-breed advanced security technologies to minimize the threat impact and loss of student learning. Develop a speedy remediation plan for sophisticated, custom threats, phishing, and zero-day attacks. The need for more visibility on the network infrastructure will remain a top priority to leverage modern technology tools to effectively detect, combat, and recover from attempted cyberattacks.

Recommended Actions and Projected Timelines for Cybersecurity

<i>Item No.</i>	<i>Timeline:</i>	<i>Objective:</i>	<i>Estimated Costs:</i>
<i>B.3.1</i>	<i>2022</i>	<i>Multi-Factor Authentication FIDO key</i>	<i>\$48K one-time</i>
<i>B.3.2</i>	<i>2022</i>	<i>Access Control and Security Monitoring</i>	<i>\$90K annually</i>
<i>B.3.3</i>	<i>2025</i>	<i>Zero Trust Data Protection System</i>	<i>\$40K annually</i>

4. Disaster Recovery

Disaster Recovery Site

The core of our district-wide network and all premise-based district servers are stored at the District Data Center located in the District Office campus. In the event of any sort of disaster, power outage, or security breach that affects that physical facility, all-district technology systems can be negatively impacted up to and including full inaccessibility. Because this location creates a significant “single point of failure,” a key objective of this plan is to create a redundant facility on district-owned property that will provide real-time, live backups of all premise servers and a backup internet connection where the WAN circuits converge.

The district currently uses Hart Middle School as its redundant facility and replicates its core server and data systems with a Cisco Hyperflex solution. The Administration will continue to enhance the operations at this secondary data center to include where applicable design and configuration strategies to use dual data centers for failover and redundancy. Given the vulnerability of a single fiber circuit is still susceptible to unforeseen failure a secondary backup Radio Frequency (RF) wireless link will be identified to replicate data services in the event of an outage of the single point of failure with the existing fiber connection.

Data Backup Systems

District data stored in premise database applications (including the servers themselves) are currently

backed up to a system that includes premise-based solutions and cloud storage. The system is effective for ensuring that data is available and recoverable if lost, however, the speed of the system is slow. In practice, this means that data recovery is possible but slow impacting recovery time.

Administration plans to enhance the current data backup system by installing an additional technology backup solution that will increase the network recovery and transfer speed for backups for both the premise and cloud-based data backups in the event of a security breach.

Backup Power Capabilities

At the present time the district does not have an alternative electrical power capability within the data center. The data center does provide smaller individual battery Uninterruptible Power Supplies (UPS) for the core equipment to provide proper shutdown of equipment during a power outage. This is a short-term approach that does not provide adequate power for network infrastructure continuity for all core systems required to allow schools to continue to operate without interruption. During this plan a permanent system to supply continuous power to keep the data center operational will be explored and plans to incorporate a generator system fueled by diesel or natural gas during an electrical outage.

5. Telephone (VOIP) and Emergency Notification Systems

The Cisco Voice over IP (VOIP) system is a telecommunications system that can enhance facility communication and provide security notification and messaging over IP networks. These VOIP systems utilize central servers to manage and administer devices that can be utilized as classroom/office telephones, teleconference systems, and campus-wide integrated clock/bell/speaker (public announcement) systems. The VOIP system is deployed in parallel with using the Informacast application providing mass notification to reach all audible devices in all offices and classrooms. This system doubles as an emergency notification system to use panic buttons, provide real time messages and audible alerts during an emergency. The system provides paging and intercom for schools and offices for normal and emergency situations. The VOIP is capable of failing over during an emergency to analog phone lines during a power outage or an internet outage. Given the complexity of this system will require an advanced technical skillset to update and maintain over the life of this solution. The district intends to address this need during its reorganization and assessment of staffing processes.

The maintenance and operational costs to maintain this system for 5 years was included with the Measure I1 bond and will need to be reviewed in year 4 to plan the next life cycle for the server replacement and software upgrades. The end devices, telephones and clock/bell/speaker are usable throughout the lifecycle of this plan. The technology team will implement a training plan and desk manual to work in partnership with the district's Emergency Operations Officer to activate these systems during an outage.

6. Staff and Student Data Systems

Student Information System

The primary record retention system for all student records is the Student Information System (SIS). The current SIS is used by all staff in the District since 2007 to maintain a wide variety of student data records including enrollment, demographic, attendance, behavior/discipline, schedules, grades, and other

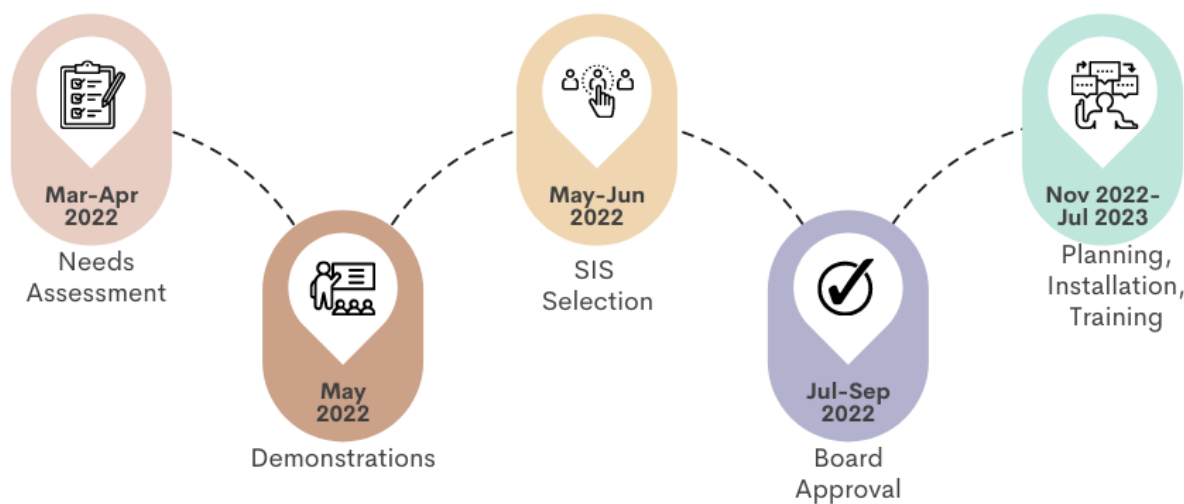
information. Staff in middle and high schools record assignments and course grades in the Gradebook module, and report cards and progress reports for secondary students are generated in this system.

Students in middle and high school access the Student Portal in order to review their assignment scores and obtain grade information. Parents/guardians are also able to access student assignments and grade information using the Parent Portal. Parents/guardians also use this system in order to enroll their students in the District and to provide annual registration updates about their family contact information and student emergency information.

The SIS is physically hosted at the District Office as a clustered database server for failover redundancy to serve all staff, students, and parents/guardians. All connections to this system are provided over secure socket layer web connections. Four web servers are used in conjunction with each other in order to provide a stable and failover redundant front end, however, the District only has a single database server that houses all backend data.

In order to ensure that the District is utilizing the best SIS for our needs, the Administration began the process of replacing this system during the 2021-2022 school year. Working with stakeholders across the district conducted a needs assessment during March/April 2022. The needs assessment identified all requirements for the new SIS. Using the pre-bid SIS Educational Technology Joint Power Authority (Ed Tech JPA) the district invited the 2 qualified vendors for demonstrations in May 2022. The district participants will score each vendor and make their selection in May/June 2022. The Ed Tech JPA will be used to negotiate contract terms and pricing for the selected SIS and submit it to the Board of Education at the start of the 2022-2023 school year. Beginning in October 2022, the district will work with the selected SIS system to start the transition and implementation process. Training will be planned and created for the PUSD users during this time. The district is planning for the new SIS to be operational and ready for the 2023-2024 school year. With the planning for internet redundancy the system will be cloud based to reduce server and maintenance cost in the future.

Timeline New SIS implementation



Recommended Actions and Projected Timelines for Student Information System

Item No.	Timeline:	Objective:	Estimated Costs:
B.6	2022	Student Information System Startup	\$225K one-time
B.6	2023-25	Student Information System Annual Subscription	\$150K annually

Student Assessment Systems

The district utilizes Illuminate Education and NWEA MAP Growth District Wide Assessment for assessment, data analysis, and reporting that informs instruction and curricular planning. Technology Services will work in partnership with the Teaching & Learning Division’s Assessment and Accountability Department to ensure the student information system and various assessment platforms are integrated properly for accurate data reporting.

Student Data Privacy

The district takes student data privacy very seriously and reviews all vendor user agreements for all software and online subscriptions. As a part of the process of review, the district reviews if there is any data collected and if so what data is being collected. Along with is any data being shared with anyone else. The district also looks to see if the vendor has signed the California Student Data Privacy Agreement (CSDPA).

With the ever-increasing amount of technology available to schools, it is essential that the district provides staff development in the area of student data privacy so all staff understands the importance of protecting student data.

The district website also maintains a webpage regarding student data privacy information and resources for parents. As best practices and the law evolve, PUSD must remain nimble, responsive, and alert to the ever-changing world of digital privacy and keep student data privacy a core focus of our technology procurement and implementation.

7. Communications

Information is being shared among all district stakeholders in order to foster collaboration and engage all members of the PUSD community. The district is committed to providing timely communication among all parents, students, staff, and community members. This section outlines the various electronic communication methods and tools supported by the district Technology department for use by students, staff, and volunteers in the district.

The district utilizes Google Apps for Education for email, calendaring, and contact management for all staff. Students are also provided with Google Apps for Education accounts that include an email address. However, email setting restrictions vary for elementary and secondary grade levels.

All PUSD staff and students are provided access to the Google Apps for Education Suite and are utilized for its file sharing, productivity, and collaboration tools. The Google services will be provided and maintained until a student reaches their final year of 12th grade or if the student exits the district sooner.

For PUSD staff, Google services will be maintained until the staff member separates from the district at which time accounts will be disabled and any associated data files can be distributed to respective supervisors as needed.

The district's primary website online presence is pleasantonusd.net. The district and all schools maintain websites that are hosted by Edlio, which provides an easy updating and management system of all content on the websites. In Fall 2022, the district website hosting services will transition to Finalsite. Technology Services will work collaboratively with the Communications Department in supporting the launch and implementation of this transition. Technology Services will be responsible for resolving any technical and functionality issues, as well as ongoing training for staff on website functionality. The Communications Department will support district departments and school sites on content management.

PUSD utilizes a two-way mobile communications software application for its primary communication and engagement to families and students via email, text, and robo-calls. Starting in the 2021-2022 school year the district transitioned to ParentSquare to send out a regular electronic newsletter called the PUSD E-Connection to all families District-wide with information, resources, and opportunities. Families may opt out of these messages if they so desire. This application integrates with the district's SIS and will also be integrated with the selected new Student Information System in the 2023-2024 school year. The contact information housed in this database is provided by families when they register their children for school each year. This information is maintained in a confidential database and is not shared or sold with anybody outside of the district. This system is used for official announcements generated by the administrative team at schools and the district office.

The district office utilizes a wide variety of social media platforms (i.e. Facebook, Twitter, and Instagram) to share important news, updates, images, and success stories from our students, staff, and schools across the District. All posted content is approved by the school administrator or district designee.

All content posted on the Internet must adhere to privacy guidelines and regulations outlined in the district board policies, local, state, and national policy.

8. Paging, Bell and Clock System

All classrooms and common areas at each campus are equipped with AtlasIED, an IP-based speaker and clocks system. This wall mounted equipment was installed with Measure I1 and used in conjunction with Informcast. InformaCast is a mass notification system that allows for the interior, exterior, and classroom paging, bell schedule, and synchronized central clock system. The paging system can be accessed from the regular classroom and office VOIP phones. The digital clocks and speakers will need some replacing throughout the years as they fail, but the system is fairly low maintenance and considered a long-term solution. Given the complexity of this system will require an advanced technical skillset to update and maintain over the life of this solution. The district intends to address this need during its reorganization and assessment of staffing processes.

9. Emergency Communication Systems

The district currently uses an emergency radio system for its schools and administrators. The radio system allows for continued communication with the loss of power, land-based phones, loss of internet access, and loss of cell reception.

The district uses InformaCast as the emergency notification system. InformaCast can send mass notifications to VOIP phones, AtlasIEP speakers and clock systems, mobile and other district devices. It provides the ability to page school-wide in case of an emergency, including the capability to page and notifications district-wide from the district office.

10. Asset Inventory System

In order to provide the newest technologies and support for both students and staff, Technology Services needs to maintain a current inventory of available equipment. The Follett Destiny Library and Resource Management system is utilized to track the circulation of library books in all school sites and is also used to track the distribution of instructional resources including textbooks and laptops to staff and students.

Technology Services will set standard procedures for technology inventory management and review of current data to ensure accurate information across all school sites. As Technology Services advances toward this goal, an accurate inventory will help determine the status of the district and school sites' technology environment for efficient and appropriate support.

Making improvements to our asset and inventory controls will be a key area of focus during this plan period to ensure we have good reliable data to make informed decisions.

C. Staff, Student, Classroom, and Instructional Technology

1. Student Devices

Access to internet-enabled devices such as desktop computers, laptops, and tablets are necessary for staff and students to access information, communicate, collaborate and create content.

The District began purchasing internet-enabled laptops for students to use from Measure I1 bond funds. The student 1:1 take-home device initiative initially started with middle and high school students. In 2021-2022, the initiative expanded to Grades 3-5, while providing 1:1 devices in the Grades K-2 in the classroom. The data for the elementary student 1:1 take-home initiative is being reviewed by the district, and the district will explore various charging and storage solutions if needed. As the funding from Measure I1 comes to an end, the district will review alternative funding sources for 1:1 student devices. Students are expected to come to school prepared to learn by charging their devices at home.

Recommended Actions and Projected Timelines for Student Devices

<i>Item No.</i>	<i>Timeline:</i>	<i>Objective:</i>	<i>Costs:</i>
<i>C.1.1</i>	<i>2022-23</i>	<i>Students in grade 6 for the 2022-23 school year will be issued a new device, which they will keep until they complete 8th grade. At that time, those three-year-old devices will be provided to elementary schools until they are no longer useful. Students in grade 9 for the 2022-23 school year will be issued a new device, which they will keep until they complete 12th grade.</i>	<i>\$990K Measure I1 fund (210)</i>
<i>C.1.2</i>	<i>2023-25</i>	<i>Incoming students for Grades 6 and 9 will be issued a new device and keep it until the end of Grade 8 and 12. Collected devices will be provided to elementary schools and be used until they are no longer useful.</i>	<i>\$1.1M annually Measure I1 fund (210)</i>
<i>C.1.3</i>	<i>2022-25</i>	<i>Maintenance and repair parts for students' Chromebook devices until the device's end-of-life term.</i>	<i>\$30K annually</i>

2. Staff Devices

All certificated staff will be provided with an internet-enabled laptop. The Measure I1 bond funds provided laptops to certificated staff, however, Measure I1 will not sustain funding for the replacement of these laptops for certificated staff. The district will review the Sycamore Tech Set-aside fund and alternative funding as a source of sustainable funding, including leasing options to minimize the financial impact on the general fund. Classified and management staff devices were traditionally funded through the Sycamore Tech Set-aside fund. The Sycamore Tech Set-aside funds are adjustable annually based on the Tech Plan's objectives.

The District standard for certificated and management staff laptops is the Macbook Air 13". Certificated staff whose curriculum requires the use of a Windows laptop will be provided an equivalent Windows-based device every 5 years.

Classified staff will be provided with an internet-enabled device based on job classification. The district has standardized five types of staff devices: Windows laptop, Windows desktop, MacBook laptop, and Chromebook. The duties of each job classification for the device standards have been defined for each position in the district. Device standards may change at any time in order to reflect the evolving hardware and software tools that are used to support particular duties and job functions. Individual staff members who utilize specific hardware and software resources may also have reasons to utilize different types of devices than those that are assigned to a particular classification. For these reasons, the defined standards are a guideline that may be revised when needed.

Recommended Actions and Projected Timelines for Staff Devices

<i>Item No.</i>	<i>Timeline:</i>	<i>Objective:</i>	<i>Costs:</i>
<i>C.2.1</i>	<i>2022-24</i>	<i>Certificated, Classified, and Management Device Refresh - Macbook Airs, estimated 1000 devices</i>	<i>\$1.6M</i>
<i>C.2.2</i>	<i>2022-24</i>	<i>Certificated Device Refresh - Windows Laptop estimated 120 devices</i>	<i>\$300K</i>
<i>C.2.2</i>	<i>2022-25</i>	<i>Classified Device Refresh - desktops and laptops</i>	<i>\$105K</i>

3. Classroom Technology

21st Century classrooms are places where a variety of content and information can be presented by teachers and students. In order to facilitate high-quality classroom presentations, students and teachers need access to user-friendly audiovisual equipment that can display digital and “real-world” multimedia content. Audio amplification of the displayed content and the teacher’s voice can increase learning benefits for many students and are a key component of effective classroom presentation tools.

In order to provide high-quality facilities that are conducive to teaching and learning, the District provides the following audio/visual equipment in all classrooms using Measure I1 funding:

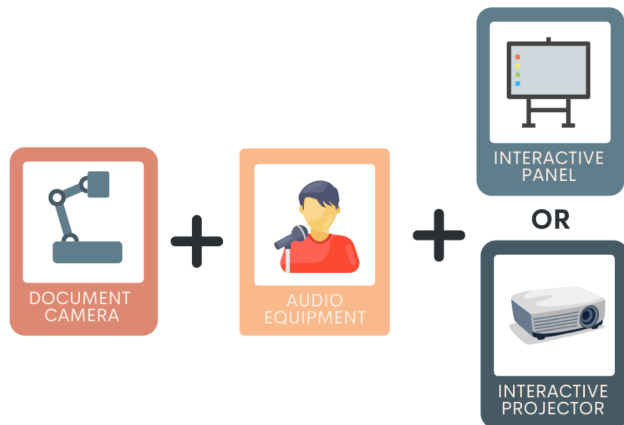
- Digital display with wireless projection capabilities and audio amplification
- Document camera
- Classroom voice amplification system (including lanyard microphone for presenter/teacher)

District-wide standards for these types of equipment were set during Measure I1; purchase and installation started during the 2020-21 school year and completion is expected at the end of the 2021-22 school year. The classroom technology equipment has an expected useful life cycle of up to 8 years. During the life cycle of these classroom technologies, Technology Services and Site Technology Specialists will troubleshoot and provide technical support to ensure the equipment is functioning properly and not impeding instruction.

The Viewsonic Panel (visual equipment) has an extended warranty of seven years. The Lightspeed RedCats (audio equipment) have a standard warranty of five years and the district purchased additional

replacement spares for faulty units. The interactive projectors (visual equipment) have a standard warranty of three years and will be replaced as needed. The document cameras will be replaced at the end of their usefulness.

Visual Equipment Standard	School Name
Interactive Panels	Harvest Park Middle School, Alisal Elementary School, Donlon Elementary School, Mohr Elementary School, Valley View Elementary School, Walnut Grove Elementary School, Pleasanton Virtual Academy
Projectors	Amador Valley High School
Both	Foothill High School, Village High School, Pleasanton Middle School, Thomas S. Hart Middle School, Fairlands Elementary School, Lydiksen Elementary School, Phoebe Hearst Elementary School, Vintage Hills Elementary School



Recommended Actions and Projected Timelines for Classroom Technology

Item No.	Timeline:	Objective:	Costs:
C.3.1	2022-25	Replacement cost for classroom technology equipment (document cameras and casting devices)	\$3,500 annually

4. Instructional Technology

The majority of core curricular adoptions include a robust online component. The use of these core curricular digital applications are supported by initial onboarding training and continued support options. The applications can be hosted via Clever for easy Single Sign-On access.

Supplemental digital applications are available and are online instructional tools meant to support the learning of the core curriculum. These applications are reviewed on a yearly basis to ensure that the support and efficacy of these tools continue to be present.

D. Technical Support

Technology Department and Site Technology Specialists provide support for all technology-related equipment and services in the District. The District Technology Department currently includes 10 full-time equivalent employees (FTE.) The following is a list of some of the key functions performed by the District Technology department staff:

- Installation, monitoring, repair, maintenance, and security of all IP network hardware and software
- Administration of the Student Information System, Google G Suite for Education, Microsoft Active Directory, and a wide variety of other District network services, including file management, printing, SSL
- Compilation and submission of district-wide CalPADS and CBEDS reports
- Configuration of student and staff access to third party curriculum portals and applications
- Preparation and distribution of report cards, progress reports, truancy letters and other routine communication with parent/guardians
- Administration of district-wide VOIP phone system and cellular phones

Site Technology Specialists are responsible for ensuring that site-based technology equipment and hardware are in good working order, and that staff and students are able to use technology for instructional and assessment purposes. The current staffing model includes one Site Technology Specialist per school site and reports directly to the site administrators. Under the current model of funding and calendar days for site technology specialists, there is inconsistency for support at the elementary level. The district funds 0.75 FTE for nine elementary site technology specialists for 220 workdays, however, several elementary site technology specialists receive an additional 0.25 FTE from donated funds to their assigned school sites. The inconsistency in additional funded hours and enrollment sizes can cause inequitable responses for support across elementary sites.

The district will evaluate staffing at district and site levels, and the systems in place to ensure adequate response times for all calls for service. Ongoing evaluation will involve help desk data, current model of support and tech skills to set appropriate service level commitments for support needs. A reorganization plan will assist to realign the technology staff members to efficiently triage and respond to support calls and address the current and future technology needs. To effectively support schools, the district recognizes site technology specialists as an integral part of this support system and requires a change to report under direction of the Technology Services department.

1. Obsolete Equipment

Computing equipment that no longer meets the technology needs of the district will be replaced. The best practice that is recommended for all educational agencies by the US Office of Education, Office of Educational Technology is “beyond four years, the combination of student wear and tear and software updates require devices to be replaced....Devices should be disposed of by resale, donation, salvage, recycling or other form of disposal to minimize harm to the environment.” While the usable life tends to be 3-5 years for end-point devices and 5-7 years for network infrastructure devices and servers, obsolescence is evaluated on a case-by-case basis. When equipment is removed from service, the district arranges e-waste removal or recycling.

2. Donation

The administration would like to move away from donated technology to ensure equity, compatibility, and standardized systems. Donations can be made monetarily to PPIE or the district where we can then allocate the funds strategically, equitably, and ensure operability. Any gift of computers and technology must be reviewed by Technology Services prior to acceptance. Donated technology may be accepted only if they are compatible with current district technology standards, have an existing warranty and cover any software licensing needed to incorporate into the PUSD network. All donations must be accepted by the Board of Education. If accepted, donated equipment will follow the obsolete equipment procedure at the end of its useful life cycle.

E. Professional Growth

Professional Development and training are key to the effective use of any operational or instructional technology. It is an investment in our teachers and non-instructional staff. In order to maximize the value of that investment, PUSD adheres to research-based best practices when planning and implementing professional development and adult learning opportunities.

The district recognizes that staff who are required to maintain records and analyze data contained in various systems (i.e. Student Information Systems, helpdesk) have context-based needs to understand the way in which they need to interact with those systems. Staff needs to know “how-to” navigate these complex systems in order to get their work done at the time they are interacting with the system. Context-based help documents and/or video tutorials are provided by various systems used within the district.

As the district transitions to a new student information system, training will be planned and created for staff who utilize the SIS during the year in a variety of areas. “How-to” reference materials will be available for staff after targeted training. The Teaching & Learning Division and Technology Services will collaborate on creating and providing ongoing professional development opportunities during collaborative teacher sessions, faculty meetings, district professional development, and summer institute.

Technical staff will be provided training on utilizing the helpdesk system. User training and guides will be provided to maximize the helpdesk system’s impact and efficiency of the staff. Technology Services will collaborate with staff on creating training materials and sessions based on the area of need. Ongoing professional development for the helpdesk system will be provided during team meetings or district professional development.

In addition, continuous professional development will be offered to technical staff, allowing them to hone their skills, and providing opportunities to improve is key to a successful technical support team. It is also important for technical staff to stay on top of recent technology trends, tools, and methods. The district will evaluate online learning platforms that allow staff to learn at their own pace and focus on specific skills in their respective areas of responsibility.

F. Continuous Assessment and Evaluation

This plan includes a comprehensive summary of the technology-related activities that are planned to be implemented between 2022 and 2025. District staff will utilize a variety of methods to receive and review information in order to ensure that technology services are provided that continue to advance District objectives.

1. PUSD Change Management

Change Management CM™ is an end-user-centric approach to planning, purchasing, implementing, and scaling technology for teaching and learning in K-12 schools defined by five stages, as defined and illustrated below:

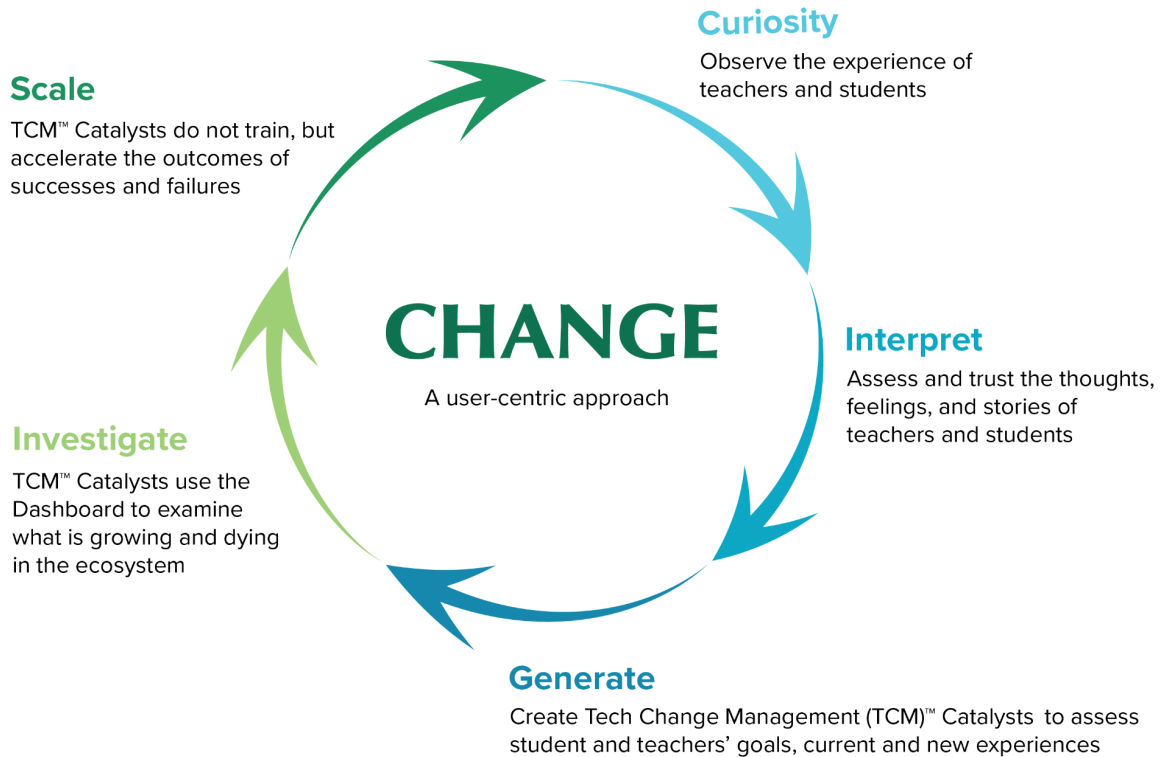
Curiosity — Observe the experience of teachers and students in their use of technology. Listen actively to their thoughts and feelings about teaching and learning from their experience. What are students' stories about engagement? What are teachers' stories about the technology improving student achievement and well-being and the delight or pain of these end-users experiences?

Interpret — Assess and *trust* the thoughts, feelings, and stories of teachers and students about teaching and learning technology. Identify existing uses of technology while discovering emerging technology, seeking students' and teachers' agency and efficacy. Determine teacher ease with the use of technology and emotional reactions in terms of time: Does it make their work harder or easier?

Generate — Create teachers and CM Catalysts™ to assess student and teachers' goals, interpreting existing and new technology. Introduce promising technology and grant permission to *stop* non-value-add technology. The latest technology is introduced in narrow prototypes to sets of extreme users. The Catalysts capture an inventory of current technology and what's on the horizon with a CM Dashboard™. Catalysts build, own, update, and share transparently to teachers, administrators, and stakeholders.

Investigate — CM Catalysts use the Dashboard to examine what technology is growing and *dying* in the technology ecosystem. A premium is placed on purposely *stopping* technology that is not providing agency and efficacy for students and teachers. Ease of use is considered for professional development time and costs. CM Catalysts leverage this system to make recommendations of what technology is in, out, and new.

Scale — CM Catalysts *do not train*, but accelerate the outcomes of successes and *failures* of technology. Like real catalysts, CM Catalysts introduce and accelerate prototypes to teachers and students via collaboration and invite teachers to embrace technology. Using an organic model, the technology ecosystem grows at a natural, iterative pace as CM Catalysts facilitate the use of new technologies. The Dashboard tells the story of current technology and what's on the horizon. With better student and teacher experiences, the quality of teaching and learning increases as costs fall.



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2. Technology Think-Tank

To collaborate and explore technology trends and share ideas from a cross-section of PUSD colleagues, Technology Services will assemble a new group for the 2022-2023 school year. This group will be referred to as the “Technology Think-Tank”. The topics for discussion will be predefined for each think tank session by the Technology Services and Teaching & Learning divisions identifying a specific technology, system, or software application. The collective input gathered will help the district with making future technology decisions to ensure that PUSD is providing a high-quality education to students. Members of the Think-Tank will be invited by Technology Services to bring a representative spectrum of skills and specialties from the certificated, classified, and management groups. Additionally, the Think Tank may bring leaders from the technology and education sector to provide input and information that may be valuable to the group. The Think-Tank will meet three times (Fall, Winter, and Spring) during the school year to connect minds, share thoughts, and create a bright educational future for the students of PUSD.

3. Service Management System

Technology Services understands the importance of customer-centric mindset to provide exceptional customer service. The goal is to provide quality and timely service when things don't go to plan with

technology in the classroom; both teachers and students need to know they can rely on someone above and beyond to help them out. In addition, a crucial part of helping all educators (not just innovators and early adopters) experiment with technology is knowing that someone has "got their back," which makes a big difference in people's willingness to try new things. Having a customer-focused, well-resourced, and supportive IT department is the keystone to creating this type of confidence.

For continuous improvement of services PUSD Technology department will seek feedback utilizing "Customer Service Surveys" after each call for service through the helpdesk system. This feedback will help the Administration understand how end-users (Teachers & Students) perceive the services and interactions with support staff to help better understand their needs and how we can serve them better.

F. Summary and Findings

The current plan was strengthened in a revision process through assessment, consultation, and student and staff surveys. The plan has three purposes:

1. Support and maintain classroom curricular applications and technology to aid teaching and learning with more efficiency and seamless integration with PUSD curriculum;
2. Provide a roadmap for district technology infrastructure redundancy, failover, monitoring, including improvement and maintenance of data, video and voice systems; and
3. Reassess and reduce response times for technical support, cybersecurity, safety, and wellness.

The Measure I1 bond added new classroom technology to enhance teaching through the use of end-user devices, software applications, interactive smart screens, and audio capabilities. With this major investment, the district has provided training through scheduled professional development days. The district integration specialists have created additional training materials to facilitate the effective use of the new technologies. In addition, site technology specialists have been instrumental resources to assist and support classroom technology. For these reasons, the district will need to continue its focus on professional development and integration towards digital literacy to maximize its return on investment with these new classroom technologies. The plan addresses these technologies, the ongoing professional development needed, and the maintenance and support required by the technical staff to keep it operational for students and staff.

The current network infrastructure also benefited from the Measure I1 bond to improve connectivity and expanded growth with wireless, physical ethernet (cat 6/6A), and single-mode fiber connections for enhanced network speeds for all devices. The network backbone is capable of 40Gbps at the core from the district office to all schools for the anticipated growth needs for the duration of this plan. Critical performance gains at the network layer is needed for resiliency to recover in the event of an internet or power outage or a malicious cyber-attack. If malicious activity occurs, the district has a backup strategy to protect its critical data systems in the main data center and at a secondary facility at Hart Middle with a replica set of data backups. The district also uses a cold storage backup in the cloud for off-premise storage of critical data systems. The current backup strategy protects the district from environmental and malicious breaches or disruptions of our systems. Finally, the plan does acknowledge a key finding with a single point of failure with one connection to the internet. With the critical need for internet access for core applications and state tests in the cloud, the district plans to address the need for a secondary redundant backup internet connection.

This plan evaluates and addresses the need to be service-oriented with timely responses for technical support, cybersecurity, safety, and student wellness through personnel and systems. Proper staffing levels, systems, and development of skills helps to improve the overall response time for tech support needs for PUSD users. The help desk system has features to track, monitor, and survey users to improve service and response times for continuous improvement. In the plan, the need for additional tools to take a proactive approach to monitor and protect against malicious attempts to disrupt the PUSD network are included to keep services available. And finally the pandemic introduced additional trauma with our students, their safety and wellness require other wrap-around services from other district departments to provide the best educational experience in the classroom. Through specialized systems the district is

able to monitor and alert when additional support services are needed to help when a student finds themselves in distress.

During the life of this plan the funding, needs, and activities may change due to Board or Executive direction, or changes, improvements, or the obsolescence of technology.

The end goal of this plan is to provide a robust and reliable technology infrastructure that fully supports teaching and learning for the students and staff of PUSD.

G. Technology Plan Funding Summary

The activities defined in this plan will be funded using a variety of sources, including the District's General Fund (including LCAP Supplemental funds), the Sycamore Technology Set-aside Fund and the Measure I1 Bond. The following tables summarize the items included in each of these funding sources, and their estimated budgets (when available). These budgets are estimates only, and are subject to change.

PUSD Technology Budget Summary			
Description	2022-23	2023-24	2024-25
INFRASTRUCTURE:			
Cell Phones	\$130,000.00	\$130,000.00	\$130,000.00
WAN Circuits	\$91,440.00	\$91,440.00	\$91,440.00
Phone & Data Lines	\$206,000.00	\$206,000.00	\$206,000.00
Internet Service Provider	\$61,800.00	\$61,800.00	\$61,800.00
Disaster Recovery System	\$34,000.00	\$34,000.00	\$34,000.00
Firewall	\$90,000.00	\$90,000.00	\$90,000.00
Risk/Threat Assessment System - WOOT	\$90,000.00	\$90,000.00	\$90,000.00
Data Backup System	\$3,486.00	\$3,486.00	\$3,486.00
APPLICATION & LICENSES:			
Escape Financial System	\$247,000.00	\$247,000.00	\$247,000.00
Google License	\$0.00	\$75,000.00	\$75,000.00
Student Information System	\$250,000.00	\$150,000.00	\$150,000.00
Content Filter/Safety	\$73,000.00	\$73,000.00	\$73,000.00
IT Help Desk Ticketing System	\$13,000.00	\$13,000.00	\$13,000.00
Mobile Device Management	\$15,000.00	\$15,000.00	\$15,000.00
Password Manager Self-service	\$9,595.00	\$9,595.00	\$9,595.00
VPN	\$1,500.00	\$1,500.00	\$1,500.00
Maintenance Agreements (Wireless, Cisco Call Manager, Switches, Video Security & Informacast)	Covered for plan duration		
Microsoft Office License	\$7,000.00	\$7,000.00	\$7,000.00
Zoom	\$35,000.00	\$35,000.00	\$35,000.00
HTTPS Certificates	\$100.00	\$100.00	\$100.00
Network Monitoring Tool	\$4,000.00	\$4,000.00	\$4,000.00
Workflow Digital Signature	\$40,000.00	\$40,000.00	\$40,000.00
Document & Archive Mangement	\$8,000.00	\$8,000.00	\$8,000.00

STAFF, STUDENT AND CLASSROOM TECHNOLOGY			
Teacher Devices (Laptop)	\$177,762.73	\$177,762.73	\$177,762.73
AVHS & FHS Digital Arts Lab	\$18,642.02	\$18,642.02	\$18,642.02
Student Devices (<i>Measure I1 Funds</i>)	\$1,500,000.00	\$1,500,000.00	\$1,500,000.00
Classified Devices	\$35,000.00	\$35,000.00	\$35,000.00
Device Repair Parts & Supplies	\$30,000.00	\$30,000.00	\$30,000.00
MFA	\$17,600.00	\$2,500.00	\$2,500.00
Classroom Presentation Systems	Covered for plan duration		
Document Cameras	\$1,500.00	\$1,500.00	\$1,500.00
Streaming/Casting Device	\$2,000.00	\$2,000.00	\$2,000.00
PROFESSIONAL SERVICES			
E-Rate Professional Services	\$10,000.00	\$10,000.00	\$10,000.00
Network Support Professional Services	\$30,000.00	\$30,000.00	\$30,000.00
CyberSecurity Professional Services	\$30,000.00	\$30,000.00	\$30,000.00
CalPads Professional Services	\$25,000.00	\$25,000.00	\$25,000.00
Device Repair Professional Services	\$10,000.00	\$10,000.00	\$10,000.00
Google Admin Professional Services	\$15,000.00	\$15,000.00	\$15,000.00
IT DEPARTMENT PROFESSIONAL DEVELOPMENT/TRAINING			
Tech Services Online Training	\$7,500.00	\$7,500.00	\$7,500.00
CyberSecurity Training	\$4,000.00	\$4,000.00	\$4,000.00
OPERATIONAL EXPENDITURES			
4300 Materials & Supplies	\$55,000.00	\$55,000.00	\$55,000.00
Raptor Equipment System	\$5,000.00	\$5,000.00	\$5,000.00
Conference & Travel	\$12,000.00	\$12,000.00	\$12,000.00
Fiscal Year Expenditure Totals	\$3,395,925.75	\$3,355,825.75	\$3,355,825.75