



Technology Equipment Replacement and Enhancement Plan, 2015

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1. Purpose

The Rocklin Unified School District is fast approaching a crisis in obsolescence of its technology equipment. The purpose of this document is to establish an ongoing replacement schedule that will achieve operational sustainability with the District's technology equipment, identify necessary budgeting, and create a "Technology Equipment Replacement and Enhancement Program" to avoid future and further obsolescence. For many years, a facilities "Master Plan" and "Deferred Maintenance" program have been used to schedule preventative or planned repair and replacement of equipment and property before deterioration. The concept is relatively simple; prioritize replacement of equipment based on need and significance to the District's mission. A technology replacement program will help the District establish a predictable and reliable fleet of technology equipment. **Many computers are beyond useful life and are no longer capable of serving the intended function.** If left further unaddressed the District is facing a crisis in obsolescence, perhaps unrecoverable. This crisis will impact the ability to achieve district missions and ultimately become a detriment to best practices and student learning in the 21st century.

2. Justification

The District has been unable to achieve predictable, appropriate replacement cycles for technology equipment due to budget constraints and disparate funding sources; treating procurement of technology equipment as one time expenses rather than ongoing costs. This has been further exacerbated by the recent economic "Great Recession." **Technology, computers, and electronic equipment have become a pervasive and embedded tool used every day for work and to educate students. Technology is a key component of the new California College and Career Standards, plus California Common Core Standards beginning in Kindergarten.** In some cases technology is used as an accelerant to learning, engaging students and informing educators like never before; transforming the very process of learning that helps create relevant 21st century experiences. In other cases, technology has become a requirement; necessary and fundamental to perform certain tasks such as taking attendance, maintaining records, communication, procurement, state and federal reporting, assessments, and professional development. These digital tools in some cases help drive revenue, and in others are necessary simply to remain contemporary and relevant. It is reasonable to state that just about every staff member relies on technology equipment to do their job, or perform it effectively; and every student deserves frequent access to technology in order to receive a relevant learning experience. What is important to recognize is **technology equipment must be reliable, predictable, and must perform adequately in order to make use of its intended purpose.** When technology is unreliable, there are two typical results: 1) it is abandoned—hindering progress; or 2) it becomes a liability—with lost productivity, or students missing learning opportunities. Perceiving technology as an investment is crucial to properly leverage the value it has to offer. **A replacement and enhancement strategy is crucial to achieving the District's Strategic Plan,** underpinning many areas and specifically addressing Actions:

- 1.3 – Appropriate technology tools and resources are integrated to support effective instruction and learning
- 2.4 – Ensure deeply engaging and creatively stimulating learning experiences that lead to successful and fulfilled lives
- 2.7 – Identify and implement strategies for healthy, appropriate, and responsible cyber ethics that promote positive online identities and interactions
- 3.1 – Develop a centralized support system to lead and create partnerships for professional learning
- 3.2 – Create and implement a plan for blended professional development

3. Replacement and Enhancement Strategies, Methods, and Scope

With 17 schools serving pre-K through 12th grades, the scope of technology equipment already in use across the District is broad. **Computers, mobile devices, network and data infrastructure, printers, and Audio/Visual projection systems are all considered in this plan;** as were numerous replacement strategies and sustainability models. District and school leadership, Technology Services Department staff and The Rocklin Educational Technology Team (RETT) were consulted for input and recommendations. The District has been acquiring this technology equipment for over 15 years. The majority of this equipment was purchased to equip new schools and facilities in response to the tremendous growth the Rocklin community experienced in the years prior to the economic “Great Recession.” Creating a replacement plan from the ground up that meets all the needs of each individual school across the District, and is flawless upon implementation is a tremendous yet worthy undertaking. Achieving equity across all schools in the effort to serve all students is, and will continue to be an ongoing challenge. **There are multiple moving targets and this plan must serve as a living, working document guiding district efforts,** requiring on-going review and retooling to address constant changes in technology, educational best practices, and the evolving needs of students, schools, and the communities served.

The fundamental strategy is to surplus (remove) the oldest and most problematic equipment and replace with new. New replacement equipment will be deployed in locations and roles that are most effective to needs or can enhance efforts; quantities will be identified in the replacement program with exact locations being determined by **joint efforts between Technology Services, school administrators and leadership.** In some cases the “trickle-down” method will be used where new equipment will replace viable equipment which will then be repurposed to other locations, ultimately resulting in the removal of the oldest equipment.

When replacing existing outdated equipment, it is critical to recognize the following:

- A) The purpose of replacement equipment is to modernize the entire “fleet,” not a means to add more equipment. Keeping outdated equipment identified as surplus creates an even larger sustainability problem and increases the overall replacement costs to the District.
- B) Re-purposing existing equipment (trickle-down) creates additional work (labor). Each time equipment is moved and reconfigured to serve another role is roughly the equivalent in labor to deploying a new piece of equipment—this should be minimized when possible.

Scope and Additional (Supplemental) Equipment

For the purposes of equity and establishing a required or standard level of technology by classroom, by grade level, or by program across the District, **only the technology equipment funded by the District is identified in this plan.**

- Additional technology equipment purchased by schools that go above the District standard (PTC funded, donations, site discretionary, or other alternative monies) are **not** represented and must be sustained outside of this plan.
- Assistive technology equipment unique to the Special Education program serving the individual needs of students is a function already performed by that program and not included in this plan. This equipment will be replaced per Individual Education Plan (IEP) needs and requirements.
- Technology equipment used by district departments is a function of the respective department and not included in this plan, i.e. Nutrition Services Point of Sale terminals, Business Services PCs, etc.

It is important to recognize that additional or supplemental equipment purchased with alternative funding sources, beyond what has been identified in this plan will create an **unfunded liability** if not sustained. If the District were to assume financial on-going responsibility of devices beyond the scope of this plan the consequences are:

- The overall cost to sustain all equipment increases.
- It creates further inequities to students in other schools who do not have access to the additional equipment.
- If the annual replacement budget is not increased to accommodate additional devices, it further reduces or dilutes the ability to replace the existing equipment at all locations. For example, if a school was to purchase a cart of iPads using school funds or PTC monies, and the District were to assume ongoing replacement costs it would: a) create an inequity with other schools that were not able to purchase like equipment or have chosen a different priority, and b) reduce the ability to replace existing equipment and therefore extend lifecycles for all equipment.

4. Technology Equipment (Assets)

This plan identifies 3 major categories of technology equipment: Data Network Infrastructure, Data Center, and Devices.

- **Data Network Infrastructure** is the “network” consisting of equipment, materials, and systems (software) required to operate the District’s large enterprise data network. The District network provides connectivity to all schools and facilities, all computers and a multitude of devices and systems including WiFi, phones, and even heating and air conditioning, clocks, bells, and paging at several campuses. **Rocklin Unified has a diverse and large data network with over 7,500 “nodes” or individually addressable devices connected to it.** Data infrastructure consists of wires, network switches and routers, fiber optics, copper cabling, Internet connectivity and content filtering, firewalls, etc. **Without the network the majority of district computers and devices would have less or in some cases no value.**
- The **Data Center** (also known as “the server room”) is the central location where the District physically houses its data systems like Aeries (student information system), email, network printing and file storage (H:,I: drives), etc. The Citrix systems are also housed in the data center; these systems are necessary to run the hundreds of thin and zero clients, deliver applications such as Office to all PCs, and provide remote access to staff. Equipment consists of servers, storage, data, backup and disaster recovery functions. **Without the Data Center many core and mission critical functions could not operate with high levels of predictability and reliability.**
- **Devices** are all the digital “tools” used on a daily basis to enhance learning or improve productivity. This equipment consists of: PCs, “thin” and “zero” clients, mobile devices like netbooks (Chromebooks), tablets (iPads), printers, digital classroom Audio/Visual and presentation systems, etc.

District Funded Technology Equipment Inventory Snapshot, 2014-15

Data Network Infrastructure	Approx. 200 network switches, 160 wiring closets, 430 wireless access points, miles of fiber optics and copper cabling, Internet content filtering, SPAM filtering (email), etc.
Data Center/ Server Room	Approx. 220 servers (mostly virtualized), 30 TB High Availability storage, Disaster Recovery and data backups, Uninterruptable Power Supply(UPS) “ battery backup.”
User Devices	Approx. 2,300 PCs; 900 Thin/zero clients; 2,000 Chromebooks; 700 printers; 550 digital classrooms (Audio/Visual presentation systems)

Notes:

- The figures above include the recent investment of \$1.4M in Common Core monies.
- **There are approximately 175 PCs, 390 Chromebooks, and 250 iPads in addition to the inventory covered in this plan that are funded by alternative school monies or directly by departments that require separate sustainability planning.**

5. System Lifecycle Management

System lifecycle management refers to the repetitive process using tasks and resources (people) to keep the technology equipment functional so staff, students, and even visitors remain productive during the lifetime of the equipment. This process starts just before acquisition and continues through disposal and transition to a replacement.

A computer has a useful lifespan, similar to a vehicle or an appliance. The type of technology, the quality of the craftsmanship/materials, and the type of software used all play a role in how long equipment can be considered useful. **Studies have been conducted for decades by independent analysts like Gartner Group, which consistently shows the older a computer gets, repair frequency and cost steadily increase while performance degrades.** Performance can be a driving factor in obsolescence due to newer versions of software, device and application incompatibilities, intensive graphics, growing virus and malware threats, and continuous patches and updates that all require greater processing speeds, increased memory, improved graphics, and hard drive capacity. The inverse relationship between ongoing repair costs and the degradation in performance often is what renders a computer to lose its value or usefulness. Much like a vehicle, at some point the cost and frequency of repair often leads to obsolescence for reasons of dependability, features, or performance.

The average lifecycle for Windows based Personal Computers is 4.0-4.6 years based on consumer, organizational purchasing trends and market research.

Further reinforcing this trend, the average release time between new major versions of Windows and Macintosh operating systems is about 3 years, with “mainstream support” lasting around 5 years. Why? Much like an automobile, these companies have shifted their resources to develop and support newer and better versions; supporting older versions indefinitely is cost prohibitive and hinders progress. **Software at time of development is designed to run on the hardware currently available;** it is the rare exception to make a system indefinitely backwards compatible. Sometimes upgrades can take place during the lifecycle of the system, however due to development cycles and constant engineering improvements, **the maximum functional lifecycle for a typical PC is approximately 8 years;** with the latter years providing a steady decline in reliability and performance and an increase in repairs and loss in productivity.

Windows Network Operating System Lifecycles (2002-present)

Operating System	Release Date	End of mainstream support (no further enhancements or bug fixes)	End of extended support (critical security patches only)
Windows XP	January 2002	April 2009	April 2014
Windows XPe (thin clients)	January 2002	November 2011	December 2016
Windows Vista	January 2007	April 2012	April 2017
Windows 7	October 2009	January 2015	January 2020
Windows 8	October 2012	January 2018	January 2023
Average Lifecycle/Planned Obsolescence (since 2007)			10.25

5.25

The District is experiencing a reflection of what has been realized in almost every industry and public sector abroad: ***after 6 years a very noticeable and negative impact to user productivity starts to take place as obsolescence sets in.*** Note the 5.25 year average indicated for end of mainstream support above. Replacing obsolete equipment becomes necessary in order to continue reliable and predictable operations. As trends indicate, ***most organizations replace computer equipment based on its value (cost to operate relative to the function it serves) not the ability to still power-on.***

Rocklin USD Recommended Device Lifecycles (replacement)

Network Infrastructure	
Network equipment	7-10 years
Plant wiring	10-20 years
Data Center	
Servers/storage	5-8 years
UPS/batteries	3 years
Devices	
Desktop PCs	6 years
Desktop PCs - High end (CTE, and elective programs)	5 years
Zero/thin clients	8 years
Notebook PCs	4 years
Tablets and netbooks (Chromebooks and iPads)	4 years
Printers, personal	4 years
Printers, high volume	8 years
Printers, color	8 years
Digital classrooms, Audio/Visual presentation systems (amplifier, speakers, wires, document camera and controls)	10 years
Digital classrooms, projector replacement	5 years

6. Computer Inventory

The following tables represent computer inventory at Rocklin Unified. These devices are displayed in detail due to the acute need to address obsolescence. They serve as a good example of how the “deferred maintenance” methodology is applied. Inventories are accurate to a high degree of confidence, however operational factors like deployment of new/replacement equipment, moves, non-networked devices, and dates of inventory census can cause some variances.

The Type of “Client” Makes a Difference

The District uses several types of computer equipment to deliver computing resources or a “user experience” to its users. Different types of devices or “clients” have been acquired to better manage both direct (equipment) and indirect (labor/support) costs by attempting to put resources only where they are needed. Certain devices like thin and zero clients are designed to perform either specific or limited functions with higher levels of predictability and reliability, while others, like a typical PC can offer greater flexibility and more computing power but require more support due to the broader capability and the user ability to change and manipulate configurations and settings. The timeless adage “you get what you pay for” is generally very accurate as it applies to computing

equipment and the associated support costs. *Gartner Group*, the world’s leading authority and researcher in computing costs has demonstrated for decades ***the higher the degree the client is “managed” the lower the cost of ownership becomes; with “highly managed” environments saving up to 40% in total costs.*** For these reasons the District uses Citrix to help “manage” the District computing environment by delivering a standard suite of applications to all computers (compared to loading software on each PC), and by delivering *virtual desktop* technology to zero clients which basically act as “dumb terminals” since all of the processing is being done on servers. **Without Citrix or a similar server based virtual desktop technology, thin and zero clients could not operate.** The District basically operates its own internal “cloud” computing environment by delivering software as a service (SaaS), reducing Total Cost of Ownership (TCO) in both hardware and staffing.

Type of Client	Functionality	Processing	Storage	System Requirements	User Flexibility	"Managed" Solution	Citrix Servers	Approx. Cost/ Unit incl. Monitor	Indirect Support Costs	Overall Cost
Full or "fat"	Most flexible: applications on hard drive, servers, or cloud	Mostly on PC	RAM + Hard Drive	Can operate stand alone, use network for resources	Greatest	Lowest	Deliver most applications	\$800	Highest	Highest
Thin	Limited: most applications from servers or cloud	Some on PC (video), some on server	Some RAM	Uses network and servers for most features	Limited	Moderate	Deliver all applications except Web browser	\$725	Lower	Lower
Zero	Specific/ limited: All applications from servers or cloud	All on server	None	Requires network and servers to operate	Lowest	Highest	Deliver entire desktop/OS and all applications (virtual desktop)	\$600	Lowest	Lowest

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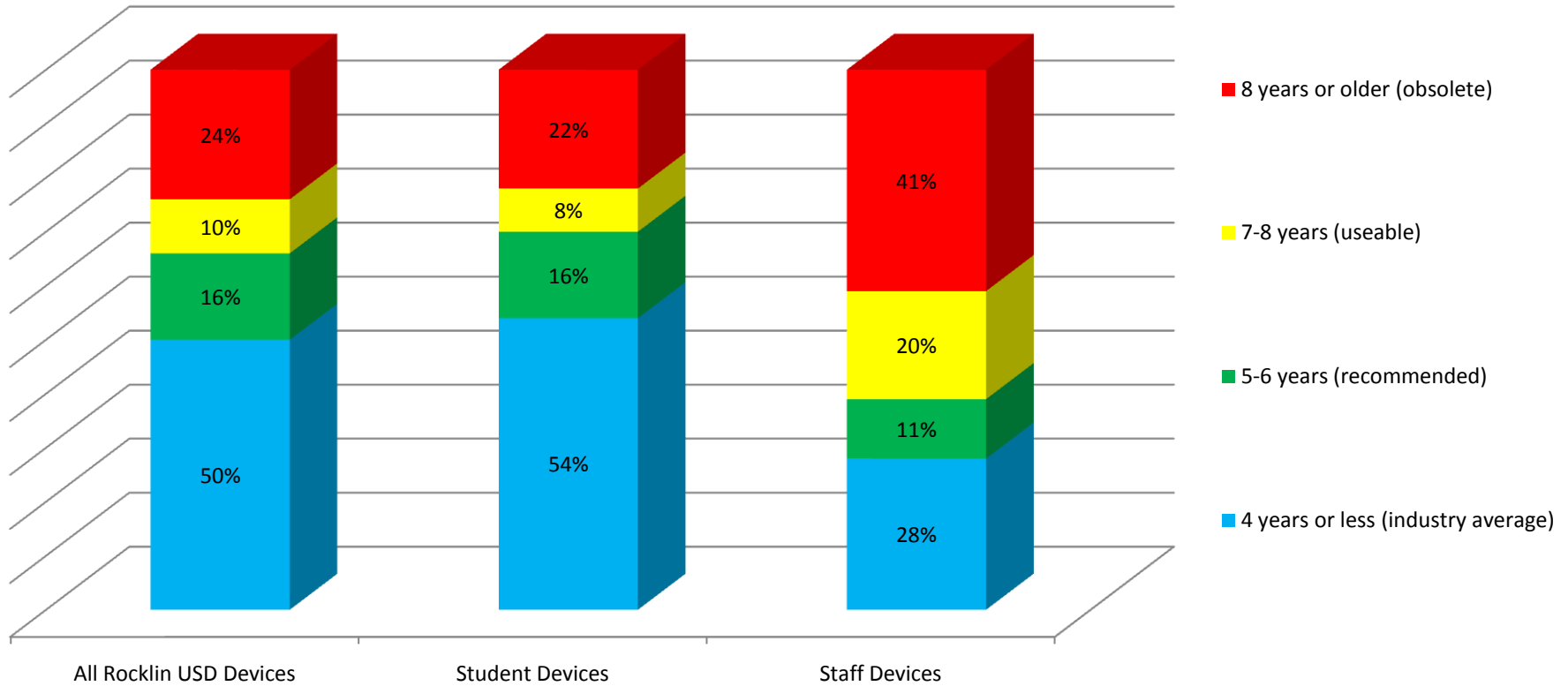
Approximate Number and Type of Computing Device, 2014-15

Site	Staff PCs	Student					Total
		PCs	Thin Clients	Zero Clients	Chromebooks	Tablets (iPads)	
Antelope Creek	27	53	34	4	108	0	226
Breen	28	48	38	0	72	0	186
Cobblestone	25	43	36	0	72	0	176
Granite Oaks	52	22	100	1	180	0	355
Parker Whitney	29	88	10	0	72	0	199
Rocklin Alt. Ed.	20	19	25	24	92	0	180
Rock Creek	37	107	10	0	72	6	232
Rocklin Elem.	35	84	5	32	196	47	399
Rocklin High	108	303	80	40	216	0	747
Ruhkala	28	99	1	0	72	0	200
Sierra Elem.	33	25	40	30	72	0	200
Sunset Ranch	36	5	0	178	108	0	327
Spring View	63	28	92	37	305	0	525
Twin Oaks	29	71	27	1	72	0	200
Valley View	30	85	42	0	72	0	229
Whitney High	134	465	14	1	216	0	830
Total	714	1,545	554	348	1,997	53	5,211

*Note: The inventory above is Inclusive of purchases originally made using district funds; this **does not reflect approximately 815 additional devices (iPads, Chromebooks, etc.) purchased by individual schools or outside organizations/donations.***

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Age of Rocklin USD Devices (all), 2014-15



The recent purchases of Chromebooks for classroom learning environments and to address Smarter Balanced Assessments and California Common Core implementation has made a significant impact on the overall age of the District’s device fleet and have **increased the total number of student devices by 80%**. However the original or existing equipment still remains. The following tables identify inventories by type of device.

All devices (staff & student) by approximate age, 2014-15

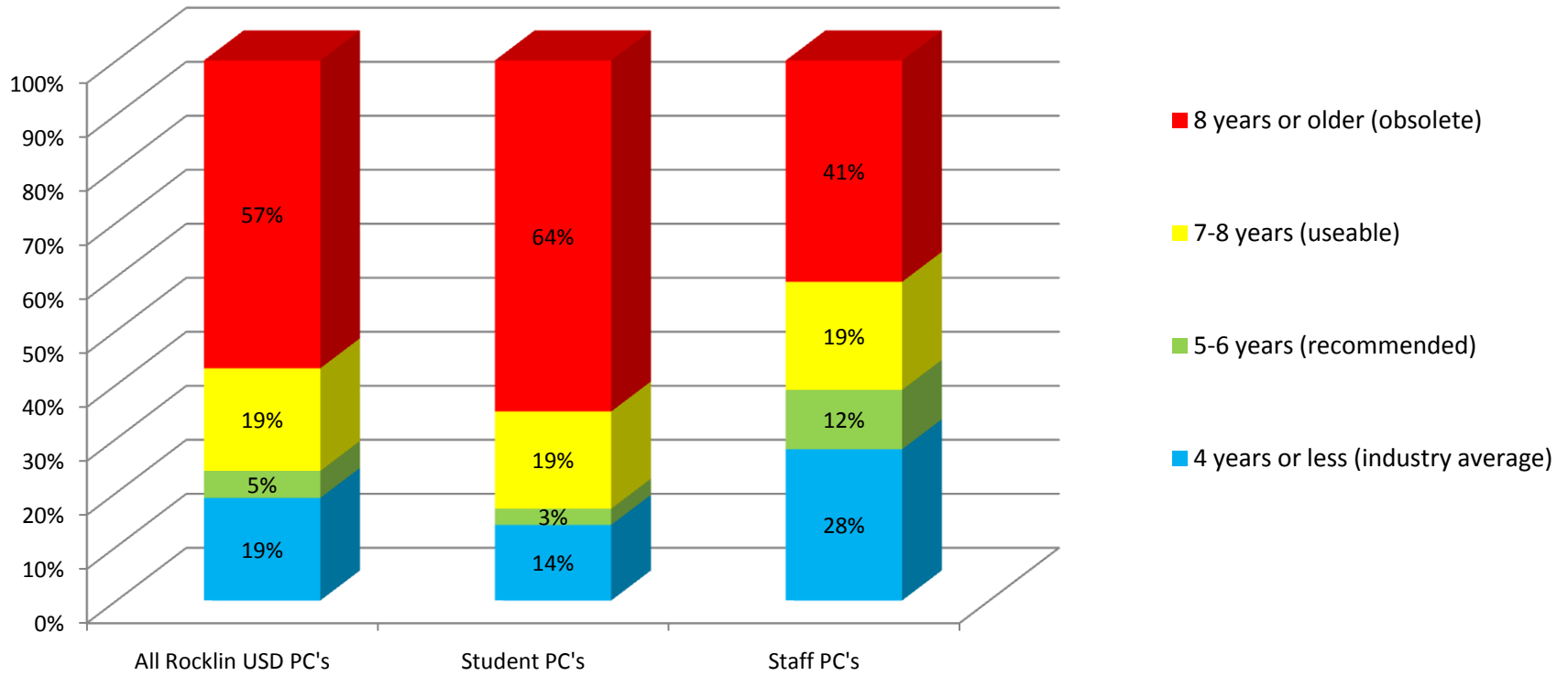
	Average Industry Lifecycle														
	Rocklin USD Recommended Lifecycle														
	Maximum Useable Lifecycle								Obsolescence						
Site	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years	9 years	10 years	11 years	12 years	13 years	14 years	Total
Model(s)	800G 1 9470 c720 iPads	8300 XE303 xenith	8200 6570 t5740e xenith	8100 Z600 6540 xenith	8000 3100 6510 4410 t5740 xenith	7900 5740 t5730	7800 5730 t5720	7700 5720 5150	7600 N6120	D530 5100 7100	D510 5000	Pentium 4 D500	Pentium 3	Pentium 3	
Antelope Creek	115	3	4		39		1	3	14	10		36	1		226
Breen	73	2			29	11	2	20	17	2		30			186
Cobblestone	73	2	3		45		9	9		1	1	30	3		176
Granite Oaks	190	4	5	11	43	14	55	20	1	2		10			355
Parker Whitney	81	26			14	9	16	1	38	6	5	3			199
Rocklin Alt. Ed.	92		9	24	2	24	15	10	2	2					180
Rock Creek	79	5	2	1	14			7	1		20	103			232
Rocklin Elem.	247	6	28	1	38	1	4	9	3	4	1	57			399
Rocklin High	226	71	58	33	78	51	85	35	3	59	9	35	4		747
Ruhkala	72	3	1		3			6	1	114					200
Sierra Elem.	78	3	5	20	17	38		5	11	1	7	6	4	5	200
Sunset Ranch	108	27	7	44	141										327
Spring View	193	131	11	35	60	42	35	8	4	3	2	1			525
Twin Oaks	82	7		1	30	9	13	23		3		20	10	2	200
Valley View	74		1		41	4	2	24	12	5	5		4	57	229
Whitney High	221	8	3	5	22		12	81	181	297					830
Total	2,004	298	137	175	616	203	249	261	288	509	50	331	26	64	5,211
% of fleet	38%	6%	3%	3%	12%	4%	5%	5%	6%	10%	1%	6%	0%	1%	100%
	50%														
	66%						34%								
	76%								24%						

Student devices by approximate age, 2014-15

	Average Industry Lifecycle														
	Rocklin USD Recommended Lifecycle														
	Maximum Useable Lifecycle								Obsolescence						
Site	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years	9 years	10 years	11 years	12 years	13 years	14 years	Total
Model(s)	800G 1 9470 m c720 iPads	8300 XE303 xenith	8200 6570 t5740e xenith	8100 Z600 6540 xenith	8000 3100 6510 4410 t5740 xenith	7900 5740 t5730	7800 5730 t5720	7700 5720 5150	7600 N6120	D530 5100 7100	D510 5000	Pentium 4 D500	Pentium 3 	Pentium 3 	
Antelope Creek	113		4		37		1	1	3	4		35	1		199
Breen	73	2			27	11	1	13	2			29			158
Cobblestone	72		3		38		3	3		1		28	3		151
Granite Oaks	180	2		11	38	12	54	4	1	1					303
Parker Whitney	80	15			13	6	9	1	36	4	4	2			170
Rocklin Alt. Ed.	92		1	24	1	24	10	6	1	1					160
Rock Creek	78				10			1			20	72			181
Rocklin Elem.	247	5	2		34	1	4	8	1	3		56			361
Rocklin High	224	49	40	32	68	39	70	34	3	34	7	35	4		639
Ruhkala	72	3			1			5		91					172
Sierra Elem.	78		5	20	13	34			3		6	2	1	5	167
Sunset Ranch	108	20	5	12	141										286
Spring View	188	124	4	35	55	41	5	3	3	1	2				461
Twin Oaks	80	1		1	26	6	9	23		3		10	10	2	171
Valley View	74		1		39	4	2	10	2	2	4		4	57	199
Whitney High	216	5	3	5	18		7	78	157	207					696
Total	1,975	226	68	140	559	178	175	190	212	352	43	269	23	64	4,474
% of fleet	44%	5%	2%	3%	12%	4%	4%	4%	5%	8%	1%	6%	1%	1%	100%
	54%														
	70%						30%								
	78%								22%						

PCs are notably the oldest equipment, and the biggest challenge both in quantity of units needing replacement and ongoing support costs and repair in the current method of funding. When looking exclusively at the PC “fleet” the obsolescence problem and sustainability challenge that the District is facing becomes apparent.

Age of Rocklin USD PC's, 2014-15



(Continued)

All PCs (Student & Staff use) by approximate age, 2014-15

	Average Industry Lifecycle					Rocklin USD Recommended Lifecycle					Maximum Useable Lifecycle					Obsolescence				
Site	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years	9 years	10 years	11 years	12 years	13 years	14 years	Total					
Model(s)	800G1 9470m	8300	8200 6570	8100 Z600 6540	8000 3100 6510 4410	7900 5740	7800 5730	7700 5720 5150	7600 N6120	D530 5100 7100	D510 5000	Pentium4 D500	Pentium 3							
Antelope Creek	7	3			5		1	3	14	10		36	1		80					
Breen	1	2			3		1	20	17	2		30			76					
Cobblestone	1	2			12		9	9		1	1	30	3		68					
Granite Oaks	10	4	5	11	5	2	4	20	1	2		10			74					
Parker Whitney	9	26			4	9	16	1	38	6	5	3			117					
Rocklin Alt. Ed.			9		1		15	10	2	2					39					
Rock Creek	1	5	2	1	4			7	1		20	103			144					
Rocklin Elem.	4	6	28	1	2		4	9	3	4	1	57			119					
Rocklin High	10	71	58	33	10	27	57	35	3	59	9	35	4		411					
Ruhkala		3	1		2			6	1	114					127					
Sierra Elem.	6	3			4	6		5	11	1	7	6	4	5	58					
Sunset Ranch		7	2	32											41					
Spring View	13	6	11		7	1	35	8	4	3	2	1			91					
Twin Oaks	10	7			4	8	13	23		3		20	10	2	100					
Valley View	2		1		4		1	24	12	5	5		4	57	115					
Whitney High	5	8	3	4	8		12	81	181	297					599					
Total	79	153	120	82	75	53	168	261	288	509	50	331	26	64	2,259					
% of fleet	3%	7%	5%	4%	3%	2%	7%	12%	13%	23%	2%	15%	1%	3%	100%					
	19%																			
	24%					76%														
	43%								57%											

- Approximately 76% of all PCs are beyond the 6 year target lifecycle
- Approximately 57% of all PCs are obsolete

Student PCs by approximate age, 2014-15

	Average Industry Lifecycle															
	Rocklin USD Recommended Lifecycle															
	Useable Lifecycle								Obsolescence							
Site	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years	9 years	10 years	11 years	12 years	13 years	14 years	Total	
Model(s)	800G1 9470m	8300	8200 6570	8100 Z600 6540	8000 3100 6510 4410	7900 5740	7800 5730	7700 5720 5150	7600 N6120	D530 5100 7100	D510 5000	Pentium4 D500	Pentium 3			
Antelope Creek	5				3		1	1	3	4		35	1		53	
Breen	1	2			1			13	2			29			48	
Cobblestone					5		3	3		1		28	3		43	
Granite Oaks		2		11			3	4	1	1					22	
Parker Whitney	8	15			3	6	9	1	36	4	4	2			88	
Rocklin Alt. Ed.			1				10	6	1	1					19	
Rock Creek								5			20	82			107	
Rocklin Elem.	4	5	2		1		4	8	1	3		56			84	
Rocklin High	8	49	40	32		15	42	34	3	34	7	35	4		303	
Ruhkala		3						5		91					99	
Sierra Elem.	6					2			3		6	2	1	5	25	
Sunset Ranch				5											5	
Spring View	8		4		2		5	3	3	1	2				28	
Twin Oaks	8	1				5	9	23		3		10	10	2	71	
Valley View	2		1		2		1	10	2	2	4		4	57	85	
Whitney High		5	3	4	4		7	78	157	207					465	
Total	50	82	51	52	21	28	94	194	212	352	43	279	23	64	1,545	
% of fleet	3%	5%	3%	3%	1%	2%	6%	13%	14%	23%	3%	18%	2%	4%	100%	
	14%															
	17%						83%									
	36%								64%							

- Approximately 83% of all student PCs are beyond the 6 year target lifecycle
- Approximately 64% of all student PCs are obsolete

Staff PCs by approximate age, 2014-15

	Average Industry Lifecycle														
	Rocklin USD Recommended Lifecycle														
	Useable Lifecycle								Obsolescence						
Site	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years	9 years	10 years	11 years	12 years	13 years	14 years	Total
Model(s)	800G1 9470m	8300	8200 6570	8100 Z600 6540	8000 3100 6510 4410	7900 5740	7800 5730	7700 5720 5150	7600 N6120	D530 5100 7100	D510 5000	Pentium4 D500	Pentium 3		
Antelope Creek	2	3			2			2	11	6					27
Breen					2		1	7	15	2		1			28
Cobblestone	1	2			7		6	6			1	2			25
Granite Oaks	10	2	5		5	2	1	16		1		10			52
Parker Whitney	1	11			1	3	7		2	2	1	1			29
Rocklin Alt. Ed.			8		1		5	4	1	1					20
Rock Creek	1	5	2	1	4			2	1			21			37
Rocklin Elem.		1	26	1	1			1	2	1	1	1			35
Rocklin High	2	22	18	1	10	12	15	1		25	2				108
Ruhkala			1		2			1	1	23					28
Sierra Elem.		3			4	4		5	8	1	1	4	3		33
Sunset Ranch		7	2	27											36
Spring View	5	6	7		5	1	30	5	1	2		1			63
Twin Oaks	2	6			4	3	4					10			29
Valley View					2			14	10	3	1				30
Whitney High	5	3			4		5	3	24	90					134
Total	29	71	69	30	54	25	74	67	76	157	7	52	3	0	714
% of fleet	4%	10%	10%	4%	8%	4%	10%	9%	11%	22%	1%	7%	0.4%	0%	100%
	28%														
	40%						60%								
	59%								41%						

- Approximately 60% of all staff PCs are beyond the 6 year target lifecycle
- Approximately 41% of all staff PCs are obsolete

Thin Clients (Student use) by approximate age, 2014-15

Site	1 year	2 years	3 years	4 years	5 years	6 years	7 years	Total
Model			t5740e		t5740	*t5730/w	t5720	
Antelope Creek					34			34
Breen					26	11	1	38
Cobblestone			3		33			36
Granite Oaks					37	12	51	100
Parker Whitney					10			10
Rocklin Alt. Ed.					1	24		25
Rock Creek					10			10
Rocklin Elem.					4	1		5
Rocklin High					28	24	28	80
Ruhkala					1			1
Sierra Elem.					8	32		40
Sunset Ranch								0
Spring View					51	41		92
Twin Oaks					26	1		27
Valley View					37	4	1	42
Whitney High					14			14
Total	0	0	3	0	320	*150	81	554

- ***Reliability issues are being recognized with the t5730 models. Based on operational data, these units may need to have replacement accelerated.**

Thin clients have a small amount of local memory (RAM) and processing which can provide for a better video viewing experience when compared to zero clients. Unfortunately, local storage requirements increase as the lifecycle progresses due to new versions of software and operating system patches, ultimately forcing quicker obsolescence when compared to a zero client. For example, **thin clients can not be upgraded to run the latest version of Internet Explorer** because a Windows operating system upgrade is not supported. Another example is **a thin client cannot run the Chrome browser effectively because it does not have enough local memory (RAM)—the Chrome web browser wasn't even produced when thin clients were purchased.** The recommended strategy for ongoing use of thin clients is to convert these devices into zero clients running virtual desktop technology so they the user can experience Windows 7 and modern web browsers. To achieve this, additional RAM and server resources are needed.

Zero Clients (Student use) by approximate age, 2014-15

Site	1 year	2 years	3 years	4 years	5 years	Total
Antelope Creek			4			4
Breen						0
Cobblestone						0
Granite Oaks					1	1
Parker Whitney						0
Rocklin Alt. Ed.				24		24
Rock Creek						0
Rocklin Elem.					32	32
Rocklin High					40	40
Ruhkala						0
Sierra Elem.			5	20	5	30
Sunset Ranch		20	5	12	141	178
Spring View				35	2	37
Twin Oaks				1		1
Valley View						0
Whitney High				1		1
Total	0	20	14	93	221	348

- No replacement is necessary at this time for zero clients

(Continued)

7. Obsolescence

As discussed in System Lifecycle Management, obsolescence is the primary driver for equipment replacement. The tables below indicate numbers of computers that require replacement as soon as possible due to end of product support lifecycles. **Note: “Extended Support” by Microsoft for Windows XP expired in April 2014.** Computers beyond 6 years old have been determined incapable of, or not viable for an operating system update to Windows 7, therefore rendering them further obsolete. Computers 6 years or newer can be upgraded to Windows 7; some models will require a memory (RAM) upgrade.

Number of PCs by Operating System Version, 2014-15

Site	Windows XP	Windows XPe (thin clients)	Windows 7	Total
Antelope Creek	75	34	5	114
Breen	76	38	0	114
Cobblestone	65	36	1	102
Granite Oaks	64	100	10	174
Parker Whitney	108	10	9	127
Rocklin Alt. Ed.	39	25	0	64
Rock Creek	142	10	2	154
Rocklin Elem.	118	5	1	124
Rocklin High	341	80	70	491
Ruhkala	127	1	0	128
Sierra Elem.	58	40	0	98
Sunset Ranch	41	0	0	41
Spring View	79	92	12	183
Twin Oaks	90	27	10	127
Valley View	115	42	0	157
Whitney High	582	14	17	613
Total	2,120	554	137	2,811

(Continued)

It is typical and considered best practice for large organizations to slowly adopt or be deliberate “late adopters” of new operating systems, specifically to wait for programming flaws (bugs) and patches to be identified and fixed. This reduces the unreliability and unpredictability that can be introduced into the computing environment with new major versions of software. During this overlap, typically 18-24 months, new equipment is purchased with the licensing to run the newer software, however it is typically delayed for a planned future upgrade. Often, one platform generation behind will also meet hardware specifications and is capable of being upgraded with the purchase of licenses. The following table identifies the quantity of PCs in the District that currently run Windows XP yet meet hardware specifications and are capable of running Windows 7 (some may require additional memory/RAM). **Due to Windows XP obsolescence, the recommendation is to upgrade all of these PCs in the table below to Windows 7** to provide a newer and more functional user experience. Licensing costs for the operating system upgrade are already covered by the District’s annual Microsoft licensing agreement.

Number of PCs capable of running Windows 7 (upgradable), 2014-15

Site	1 year	2 years	3 years	4 years	5 years	6 years	Total
Antelope Creek	8	2			5		15
Breen	1	2			3		6
Cobblestone	1				12		13
Granite Oaks	10	4	5	11	5	2	37
Parker Whitney	9	26			4	9	48
Rocklin Alt. Ed.			9		1		10
Rock Creek	1	5	2	1	4		13
Rocklin Elem.	4	6	28	1	2		41
Rocklin High	10	71	58	33	10	27	209
Ruhkala		3	1		2		6
Sierra Elem.	9				4	6	19
Sunset Ranch		7	2	32			41
Spring View	13	6	11		7	1	38
Twin Oaks	10	7			4	8	29
Valley View	2		1		4		7
Whitney High	5	8	3	4	8		28
Total	83	147	120	82	75	53	560

Conversely, **equipment that does not meet hardware specifications is not recommended for upgrade and moved into the obsolescence phase.** The majority of this equipment identified in the table below is both too old and not supported for Windows 7, or upgrading would create a poor user experience due to underpowered system processors and is not recommended.

Number of PCs NOT capable of running Windows 7 (NOT-upgradable), 2014-15

Site	7 years	8 years	9 years	10 years	11 years	12 years	13 years	14 years	Total
Antelope Creek	1	3	14	10		36	1		65
Breen	1	20	17	2		30			70
Cobblestone	9		9	1	1	30	3		53
Granite Oaks	4	20	1	2		10			37
Parker Whitney	16	1	38	6	5	3			69
Rocklin Alt. Ed.	15	10	2	2					29
Rock Creek		7	1		2	121			131
Rocklin Elem.	4	9	3	4	1	57			78
Rocklin High	57	35	3	59	9	35	4		202
Ruhkala		6	1	114					121
Sierra Elem.		5	11	1	7	6	4	5	39
Sunset Ranch									0
Spring View	35	8	4	3	2	1			53
Twin Oaks	13	23		3		20	10	2	71
Valley View	1	24	12	5	5		4	57	108
Whitney High	12	81	181	297					571
Total	168	252	297	509	32	349	26	64	1,697

- **Total number of obsolete PCs in need of replacement: 1,697**
- **Total number of PCs in need of operating system upgrade to Windows 7: 560**
- **Total number of PCs requiring RAM upgrade to run Windows 7 (ages 4-6 years): approx. 210**

8. Sustainability Calculations

As discussed in System Lifecycle Management, the key to sustainability is changing the operational and funding mindset from that of one-time acquisition to an annual, repeatable process. When total outlay costs are averaged or leveled by lifecycle to calculate an annual cost, an ongoing or sustainable annual budget can be developed. The following budget sheet reflects the entire scope of Rocklin Unified's Data Infrastructure, Data Center, and User Devices in annualized budget form. **The following table identifies the total annual cost of ownership to sustain what the District currently owns.** Funding at a lower dollar amount will force equipment to remain in use beyond the recommended lifecycle increasing unreliability and obsolete equipment. Conversely, funding at a higher amount can shorten lifecycles closer to industry averages and recommendations.

Annual Total Cost of Ownership, Full (Complete) Sustainability Calculations - 2014-15

Item	Historical Total Capital Outlay	Estimated Lifespan	Replacement Cycle in Years	Unit Cost *current pricing	Estimated Annualized Cost
Data Network Infrastructure					
Network equipment	1,423,000	7-10 years	8	Not applicable	177,875
Wiring closets	770,000	10-20 years	15	Not applicable	51,333
Wiring	1,052,000	10-20 years	15	Not applicable	70,133
Wifi	375,000	7-10 years	8	Not applicable	46,875
Total Infrastructure	3,620,000				346,217
Data Center					
	1,375,000	5-8 years	7		196,429
	Number of units	Estimated Lifespan	Replacement Cycle in Years	Unit Cost *current pricing	
Computers					
Desktop PCs					
Student PCs	1,319	4-8 years	6	775	170,371
Student PCs High end (CTE, and elective programs)	225	3-7 years	5	1500	67,500
Student Thin/Zero Clients	902	6-10 years	8	645	72,724
Staff PCs - Desktop (20% of staff fleet)	143	4-8 years	6	875	20,854
Total Desktops					331,449
Mobile devices					
Staff PCs - Notebooks (80% of staff fleet)	572	3-5 years	4	900	128,700
Netbooks (Chromebooks)	1,997	3-5 years	4	345	172,241
iPads	53	3-5 years	4	345	4,571
Total mobile devices					305,513
Total Computers					
					636,961
Printers					
Personal	415	3-5 years	4	300	31,125
High volume	225	6-10 years	8	1000	28,125
Color	50	7-9 years	8	1500	9,375
Total Printers					68,625
Digital Classrooms (Audio/Visual presentation equipment)					
5 year projector replacement	550	8-12 years	10	2700	148,500
	550	3-7 years	5	500	55,000
Total Digital Classrooms					203,500
Grand Total (annualized cost)					1,451,731

9. Annualized Cost Models

In evaluating the question, “*what does it cost to keep what the District has?*” it is natural to inquire how much does it cost to sustain certain technologies, or how much does a specific amount of dollars get us? The following tables demonstrate four additional cost models to help understand costs of sustainability relative to types of equipment and lifecycles.

1. \$300,000 Annual Replacement Budget (current allocation)

	Inventory	Unit Cost	Lifecycle in Years	Annual Cost	Number of Units Replaced Annually
Infrastructure	Deferred to alternate funding source (TBD)				
Data Center		1,375,000	16	86,000	
Staff PC	143	875	16	8,000	10
Staff Notebook	572	900	16	33,000	37
Student PC	1,319	775	16	64,000	83
Student PC - High end program	225	1,500	16	22,000	15
Chromebooks	1,997	345	16	44,000	128
iPads	53	300	16	1,000	4
Printers*	690	615	16	27,000	44
Digital Classroom projectors (“Smart” classrooms)	550	500	16	18,000	36
Digital Classroom Audio/Visual systems	Deferred to alternate funding source (TBD)				
<i>*averaged unit cost and lifecycle, see sustainability calculations table for specific detail</i>				303,000	357

Note: \$300,000 in annual replacement monies result in a 16 year replacement cycle for all equipment.

2. Maximum Lifecycle (High end of equipment life)

	Inventory	Unit Cost	Lifecycle in Years	Annual Cost	Number of Units Replaced Annually
Infrastructure	Deferred to alternate funding source (TBD)				
Data Center		1,375,000	8	172,000	
Staff PC	143	875	8	16,000	19
Staff Notebook	572	900	4	129,000	144
Student PC	1,319	775	8	128,000	166
Student PC - High end program	225	1,500	7	49,000	33
Chromebooks	1,997	345	4	173,000	502
iPads	53	300	4	4,000	14
Printers*	690	615	7	61,000	100
Digital Classroom projectors (“Smart” classrooms)	550	500	7	40,000	80
Digital Classroom Audio/Visual systems	Deferred to alternate funding source (TBD)				
<i>*averaged unit cost and lifecycle, see sustainability calculations table for specific detail</i>				772,000	1,058

3. Recommended Lifecycle (excluding highest lifecycle assets)

	Inventory	Unit Cost	Lifecycle in Years	Annual Cost	Number of Units Replaced Annually
Infrastructure	Deferred to alternate funding source (TBD)				
Data Center		1,375,000	7	197,000	
Staff PC	143	875	6	21,000	24
Staff Notebook	572	900	4	129,000	144
Student PC	1,319	775	6	171,000	221
Student PC - High end program	225	1,500	5	68,000	46
Chromebooks	1,997	345	4	173,000	502
iPads	53	300	4	4,000	14
Printers*	690	615	6	71,000	116
Digital Classroom projectors (<i>"Smart" classrooms</i>)	550	500	5	55,000	110
Digital Classroom Audio/Visual systems	Deferred to alternate funding source (TBD)				
<i>*averaged unit cost and lifecycle, see sustainability calculations table for specific detail</i>				889,000	1,177

4. Recommended Lifecycle+Digital Classrooms

	Inventory	Unit Cost	Lifecycle in Years	Annual Cost	Number of Units Replaced Annually
Infrastructure	Deferred to alternate funding source (TBD)				
Data Center		1,375,000	7	197,000	
Staff PC	143	875	6	21,000	24
Staff Notebook	572	900	4	129,000	144
Student PC	1,319	775	6	171,000	221
Student PC - High end program	225	1,500	5	68,000	46
Chromebooks	1,997	345	4	173,000	502
iPads	53	300	4	4,000	14
Printers*	690	615	6	71,000	116
Digital Classroom projectors (<i>"Smart" classrooms</i>)	550	500	5	55,000	110
Digital Classroom Audio/Visual systems	550	2,700	10	149,000	56
<i>*averaged unit cost and lifecycle, see sustainability calculations table for specific detail</i>				1,038,000	1,233

10. Strategies and Assumptions

Buy vs. Lease

One of the benefits of leasing is that it commits the District to budgeting and a forced annualized replacement cost. This can be a good thing to help stabilize annual costs and avoid ballooned expenses. However, should economic conditions change the District would be financially obligated to its debts and therefore would lose flexibility to redirect funds in dire circumstances to other priorities (just like what was experienced in the recent great recession). The current economic climate has districts seeing and forecasting increases in one-time, not ongoing monies from the state. For these reasons at this time it is recommended to purchase rather than enter into leasing agreements without long-term or sustainable guaranteed revenues.

Strategies:

1. **Improve user computing experiences.**
2. **The District will surplus the oldest equipment first.** It is the oldest equipment that creates the greatest problems in achieving a reliable, predictable operating environment, and has the highest indirect labor/support costs.
3. **Deploy replacement equipment where it is needed the most.** With nearly 2,000 new Chromebooks for students, increasing the number of student devices by over 80%, the top priority is getting newer computers to teachers and staff.
4. If necessary, equity will be established by moving older computers between schools as newer replacement computers are brought in. Leveling or making equitable the “age” of computers at each campus.
5. **Staff’s computing needs and mobile technologies have changed.** With pervasive wireless on every campus the District will shift to providing mobile devices for teachers and administrators through attrition. Desktop PCs will be necessary in certain office and educational program applications. The District will meet these ongoing and changing needs by re-evaluating annually the types of equipment and technologies purchased in support of this plan. **The initial estimate is 80% mobile/20% desktop split in staff device needs.** Student computing will be an evolving target based on program requirements, but for general purpose and accessibility **it makes sense to transition to mobile devices moving forward.**
6. **Establish formal “Ed Tech Specifications” that support need and use.** The closest technology equipment “standard” the District has at this time is the most recent technology equipped in new construction or facilities modernization projects. To effectively execute this plan, Ed Tech Specs must be developed and established by classroom, grade, program, and school type. This work should begin right away and be complete by January 2016, then re-evaluated as needed by the appropriate staff; a joint effort by Ed Services, Tech Services, district Leadership, key educators, and RETT. **Ongoing efforts will be made across the District to bring and keep all classrooms/environments “up to spec.”**
7. **The District will standardize and stabilize all PCs (notebook and desktop) to Windows 7.** Currently, Windows 7 can be deployed in the District the fastest with the highest degree of success and reliability. Still recovering from the Great Recession and with limited Technology Services staff **it will take another 18-24 months to re-engineer and modernize the technologies that can be reliably deployed**, bringing us closer to “leading edge.” Windows 8 is not a viable upgrade for existing computers due to the age of the fleet and lack of touch enabled equipment. **Tech Services in partnership with schools will begin to pilot and pursue limited implementations of touch enabled computing with the goal of making it available as soon as reasonably possible.**

8. For PCs **the District will consider “skipping” a large scale deployment of Windows 8 in favor of Windows 10** over the next 18 months. Low cost devices like Chromebooks for Internet accessibility and cloud based services (Accelerated Reader, Lexia, Etc.) will continue to be used and further evaluated. Tablets and iOS devices will be explored for best use cases by discipline and grade level. Windows 8 and touch computing will be piloted in select locations to establish strategies and methods for large scale deployment of the next version of Microsoft Windows.
9. **One of the biggest issues is slow computers.** The District will use *Virtual Desktop technology (VDI)* to help fix and improve the performance of outdated equipment without having to immediately replace every computer older than 6 years. This is the same technology used with zero-clients, and will be used to convert many of the outdated PCs and thin-clients into zero-clients or “kiosks.” **A balance of replacing the oldest equipment and converting remaining (obsolete) equipment to virtual desktops will further stretch dollars and improve the end user experience until all obsolete equipment is replaced.** Citrix services have and will continue to be upgraded to achieve higher levels of reliability and quality of experience to users. ***With over 1,200 PCs older than 8 years Citrix has enabled the District to continue use of outdated equipment well beyond its reasonable lifespan which would have otherwise been rendered nonfunctional years ago. Virtual desktop technology is a short term solution to keep obsolete equipment running in schools, but the long term replacement plan still needs to be carried out.***

Assumptions:

1. The District will purchase new technology equipment instead of leasing to maintain flexibility in how long it can or must keep equipment. **Ownership gives the District the flexibility to repurpose equipment beyond the typical 3-4 year lease term** to lesser demanding roles; further maximizing dollars should a full replacement budget be unrealized or funding become limited.
2. To “surplus” equipment means the oldest equipment is completely removed from the environment and sent to recyclers. **When new replacement technology is installed, the oldest equipment will be removed in the same quantities**, not repurposed. Keeping equipment identified for replacement will only compound the obsolescence problem and require further costs in licensing, infrastructure, support, and sustainability.
3. **Citrix and virtual desktop technologies will continue to reduce operating costs** and will remain in use until the age of equipment and system lifecycles are predictable and can re-evaluated. ***Thin and zero clients require Citrix technology to function. It is cost prohibitive to remove Citrix from the current district operating environment and to revert to “traditional” or legacy computing at this time*** due to the one-time capital outlay in equipment and the additional ongoing funds needed in technical support personnel. All outdated PCs, all zero and thin clients would have to be replaced, plus remote access, and new management systems for PCs (update, patch, remote installation and maintenance) would need to be purchased and implemented costing approximately \$1.6M, plus additional staffing.
4. **The District will match the device or technology with the appropriate use.** PCs (laptops or desktops) remain the most flexible but the highest total cost to own; while Chromebooks provide the least expensive access to the Internet and cloud resources. Defining Ed Tech Specs will help identify which environments and roles these technologies work best in meeting the needs of the users and purpose. **Mobile computing and laptops will be pursued for staff uses to provide the greatest flexibility for use in the classroom, collaborating with teams, mobility in the learning environment, and planning and working in various locations.** As best practices are established and newer technologies vetted, the specific type of device may change, updating Ed Tech Specs.

5. **Maintain current Citrix licensing levels and costs.** New chrome devices do not need Citrix to achieve their intended purpose; however they can be further enhanced by use with Citrix, but are not licensed. Efforts will be made to explore the viability of replacing PCs with Chrome devices if and where possible to reduce equipment costs without adding to current Citrix software licensing costs.
6. **Staffing levels and ratios will be established as operations are stabilized or with growth.** As newer replacement equipment and technologies are brought in, certain workloads should reach a predictable state, however Technology Services is still understaffed and new, **additional devices regardless of funding sources create ongoing challenges to meet service demands and support expectations if maintaining existing staffing levels.** All support roles such as existing Computer Lab Technicians will be revisited, student technicians will be explored and work aligned to the District’s changing and future needs.

11. Funding Sources

All available funding sources are considered in sustaining technology equipment. However, when creating a replacement program the funding stream must be reliable and ongoing. There are a few special purpose funds available to schools like Title 1, Perkins Grant, etc. that are sometimes used to purchase equipment, however at this time there are no guaranteed district level funding sources besides the General Fund that are applicable to fund a replacement program on an ongoing annual basis. One-time monies like STEM grants and Microsoft Voucher monies can also be used by individually qualifying schools to accelerate their replacement needs, but can not be used at the District level to supplant efforts. At this time, the majority of new revenues to the District coming from the State are “one-time,” thus making it very difficult to establish an ongoing funding stream. However, **one-time monies can be an excellent source for seeding or propelling aged equipment into a younger fleet and closer to achieving a sustainable replacement program.** Future conversations around long term financing and alternative funding sources to maintain data network infrastructure and/or digital classrooms warrant investigation.

12. Annual Replacement Action Plan

Year 1, 2014-15 - \$300,000

Category	Recommended actions:	Budget:
Data Network Infrastructure	*The Data Infrastructure has been largely modernized as a result of the WiFi Implementation project. Recommend deferring major expenses to 2018-2019 with re-evaluation in 2016	\$0, defer maintenance
Data Center	Servers to support virtual desktop technology for approximately 225-300 PCs older than 6 years old (see strategy 6 above)	\$75,000
User Devices	Approx. 176 replacement staff notebooks, 44 replacement staff desktops <u>for schools</u>	\$200,000
	Upgrade RAM in 210 PCs 4-6 years old	\$25,000
	Begin the upgrade process for all PCs 6 years or newer to Windows 7	\$0, included in existing Microsoft CAMSA agreement

	Repurpose viable replaced staff PCs to other functions , surplus oldest equipment	\$0, + indirect internal labor cost
Total		\$300,000

Device Replacement & Conversion Schedule, 2014-15

Site	Convert to Virtual Desktop		Replace			Total
	11 years	12 years	12 years	13 years	14 years	
Model(s)	D5xx 5000	Pentium 4	Pentium 4	Pentium 3	Pentium 3	
Antelope Creek		18	18	1		37
Breen		15	15			30
Cobblestone	1	15	15	3		34
Granite Oaks		5	5			10
Parker Whitney	5	2	2			9
Rocklin Alt. Ed.						0
Rock Creek	20	103				123
Rocklin Elem.	1	32	24			57
Rocklin High	9	18	17	4		48
Ruhkala						0
Sierra Elem.	7	3	3	4	5	22
Sunset Ranch						0
Spring View	2		1			3
Twin Oaks		10	10	10	2	32
Valley View	5			4	57	66
Whitney High						0
Total	153	118	110	26	64	471

Year 2, 2015-16 (ongoing) - \$300,000 assumption

Recommendations below would be re-evaluated annually during budget development.

Category	Recommended actions:	Budget:
Data Network Infrastructure	Defer Network infrastructure to 2018-2019 due to recent CCCSS one –time monies	\$0, defer maintenance

Data Center	Servers to support virtual desktop technology for an additional approximate 75-100 PCs older than 6 years old	\$25,000
	Replacement equipment	\$75,000
User Devices	Approx. 160 replacement staff notebooks,40 replacement staff desktops <u>for schools</u>	\$180,000
	Complete upgrade process for all PCs 6 years or newer to Windows 7	\$0, included in existing Microsoft CAMSA agreement
	Repurpose viable replaced staff PCs to other functions , surplus oldest equipment	\$0, + indirect internal labor cost
	Printer and Digital Classroom projector replacement and repair budget*	\$20,000
Total		\$300,000

*This establishes a printer and digital classroom replacement (failure) and repair budget. Work will be addressed on a first in basis.

Device Replacement & Conversion Schedule, 2015-16

Site	Convert to Virtual Desktop	Replace		Total
	10-11 years	11 years	12 years	
Model(s)	D530 5100	D5xx 5000	Pentium 4	
Antelope Creek	10		18	28
Breen			15	15
Cobblestone		1	15	16
Granite Oaks			5	5
Parker Whitney		5	2	7
Rocklin Alt. Ed.				0
Rock Creek	71		52	123
Rocklin Elem.		1	32	33
Rocklin High	59	9	18	86
Ruhkala	40			40
Sierra Elem.		7	3	10
Sunset Ranch				0
Spring View		2		2
Twin Oaks			10	10
Valley View		5		5
Whitney High	120			120
Total	300	82	118	500

13. Recommended Acceleration Plan

Until a fully funded scheduled replacement program can be realized, or as a needed effort to accelerate the District into a sustainable model, **it is recommended that available one-time monies be used to replace a larger percentage of district outdated equipment at a faster pace. The phases identified below are in addition to the currently allocated \$300,000/year.** These efforts will accelerate district efforts to get caught up and help establish an equipment replacement schedule that closer matches the actual or recommended lifecycles.

Completing efforts through Phase 3 below will:

- **Eliminate the now outdated Windows XP operating system across the entire district** through a combination of equipment replacement and converting computers older than 6 years to run virtual desktop technology
- Remove all PCs 10 years or older from the District operating environment
- Replace all staff PCs with new notebooks or desktops
- Leave the District with approximately 645 computers between the ages of 7-9 years old
- **Cost approximately \$1,395,000**

Completing efforts through Phase 5 below will:

- Remove all PCs older than 6 years
- Position the District to achieve the recommended computer lifecycle schedule
- **Cost an additional \$562,000; for a total of \$1,957,000**

Phase 1

Category	Recommended actions:	Budget:
Data Network Infrastructure	Defer Network infrastructure to 2018-2019 due to recent CCCSS one –time monies	\$0, defer maintenance
Data Center	Servers to support virtual desktop technology for an additional 600 PCs older than 9 years old	\$200,000
User Devices	Approx. 230 replacement staff notebooks, 57 replacement staff desktops <u>at schools</u> (effectively replacing all PCs 11 years and older)	\$226,000
	Replace 1 (one) of 6 high end labs of 36 PC'(high school campus)	\$54,000
	Repurpose viable replaced PCs to other functions , surplus oldest equipment	\$0, indirect labor cost
Total		\$480,000

Phase 2

Category	Recommended actions:	Budget:
Data Network Infrastructure	Defer Network infrastructure to 2018-2019 due to recent CCCSS one –time monies	\$0, defer maintenance
Data Center	Servers to support virtual desktop technology for an additional 600 PCs older than 9 years old	\$200,000
User Devices	Approx. 192 replacement staff notebooks, 48 replacement staff desktops <u>at schools</u>	\$216,000
	Replace 1 (one) of 6 high end labs of 36 PC'(high school campus)	\$54,000
	Repurpose viable replaced staff PCs to other functions , surplus oldest equipment	\$0, indirect labor cost
Total		\$470,000

Phase 3

Category	Recommended actions:	Budget:
Data Network Infrastructure	Defer Network infrastructure to 2018-2019 due to recent CCCSS one –time monies	\$0, defer maintenance
Data Center	Servers to support virtual desktop technology for an additional 525 PCs older than 9 years old	\$175,000
User Devices	Approx. 240 replacement computers <u>at schools</u>	\$216,000
	Replace 1 (one) of 6 high end labs of 36 PC'(high school campus)	\$54,000
	Repurpose viable replaced staff PCs to other functions , surplus oldest equipment	\$0, indirect labor cost
Total		\$445,000

Note: during the Accelerated replacement phases, **replacing more than 470 units in a single year would create a “replacement bubble”** in out years generating a “balloon” sustainability payment needed to maintain a 6 year replacement cycle for all PCs.

Phase 4

Category	Recommended actions:	Budget:
Data Network Infrastructure	Defer Network infrastructure to 2018-2019 due to recent CCCSS one –time monies	\$0, defer maintenance
Data Center	Move to equipment replacement schedule	\$0
User Devices	Approx. 240 replacement computers <u>at schools</u>	\$216,000
	Replace 2 (two) of 6 high end labs of 36 PC'(high school campus)	\$108,000
	Repurpose viable replaced staff PCs to other functions , surplus oldest equipment	\$0, indirect labor cost
Total		\$324,000

Phase 5

Category	Recommended actions:	Budget:
Data Network Infrastructure	Defer Network infrastructure to 2018-2019 due to recent CCCSS one –time monies	\$0, defer maintenance
Data Center	Move to equipment replacement schedule	\$0
User Devices	Approx. 204 replacement computers <u>at schools</u>	\$184,000
	Replace 1 (one) of 6 high end labs of 36 PC'(high school campus)	\$54,000
	Repurpose viable replaced staff PCs to other functions , surplus oldest equipment	\$0, indirect labor cost
Total		\$238,000

14. Recommended Growth

Accessibility by students to technology is critical to implementation of California Common Core State Standards and providing a relevant 21st century education; additional devices are needed to better achieve this. As one-time monies become available, consideration to increase the number of computing devices and improve accessibility to digital tools for students is recommended. Increased accessibility and time with digital tools and devices will further embed technology into curriculum and learning; better meeting the requirements and intent of Common Core. Additional technology will also help further enhance and accelerate the transformational learning process by giving teachers more opportunities to: use devices in new and engaging ways, longer or larger digital projects, and provide opportunities to further explore and develop instructional best practices that meet the needs of 21st century learners.

Emerging best practices are being established with Netbooks (Chromebooks) and tablets (iPads):

Item	Unit Cost	Qty. (Schools)	Cost
One additional 36 unit Chromebook Cart	\$13,500	17	\$230,000
One additional 36 unit iPad Cart	\$16,000	17	\$272,000

Note: Additional equipment will require additional staffing and evaluation of current roles/jobs. A staffing ratio will have to be developed with the addition of more devices, regardless of funding source.