

Fiscal Year 2016-17 Information Technology Request

Pueblo Community College *Critical Core Technology Infrastructure*

PROGRAM PLAN STATUS and OIT BEST PRACTICES

2017-018

Approved Program Plan? Date Approved:

PRIORITY NUMBERS

Prioritized By	Priority	
DeptInst	1 of 1	CCCS priority 3 of 4.
CCHE	25 of 31	
OSPB	42 of 46	Not recommended for funding.

PRIOR APPROPRIATION AND REQUEST INFORMATION

Fund Source	Prior Approp.	FY 2016-17	FY 2017-18	Future Requests	Total Cost
GF	\$0	\$1,490,050	\$0	\$0	\$1,490,050
Total	\$0	\$1,490,050	\$0	\$0	\$1,490,050

ITEMIZED COST INFORMATION

Cost Item	Prior Approp.	FY 2016-17	FY 2017-18	Future Requests	Total Cost
Land Acquisition	\$0	\$0	\$0	\$0	\$0
Professional Services	\$0	\$0	\$0	\$0	\$0
Construction	\$0	\$0	\$0	\$0	\$0
Equipment	\$0	\$1,490,050	\$0	\$0	\$1,490,050
Miscellaneous	\$0	\$0	\$0	\$0	\$0
Contingency	\$0	\$0	\$0	\$0	\$0
Software Acquisition	\$0	\$0	\$0	\$0	\$0
Total	\$0	\$1,490,050	\$0	\$0	\$1,490,050

PROJECT STATUS

This is a new, never-before requested project.

PROJECT DESCRIPTION / SCOPE OF WORK

Pueblo Community College (PCC) is requesting state funds to replace and upgrade components of the core technology infrastructure serving the college's students, faculty, and staff. According to the college, the project will allow it to provide effective education to its students, remain competitive, replace technology that is at the end of its useful life, improve network performance, and support increased collaborative and online learning environments. The scope of the project includes improvements to physical and virtual infrastructure systems, such as:

- core network switches, which will be located in multiple campus and building locations along with associated power backup technologies;
- disk storage, including fault tolerant disk arrays and technologies to provide centralized data storage;
- network wireless solutions, which provide the predominant method of connectivity for students and staff;
- collaborative conferencing solutions, including video and audio conferencing technologies to enable distance learning; and

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- servers, which support instructional and administrative networks, file and print, internet web sites, security systems, video, telephony, and learning repositories.

PROJECT JUSTIFICATION

According to the college, advancements in technology and changes in educational needs have led to the use of technologies of all types being a required part of every curriculum at PCC. The college says that the recent proliferation of iPads, tablets, and smart phones means that most students now carry multiple devices, all connecting independently or concurrently to the campus network, which must be capable of managing all these devices in an efficient and secure manner to enable students to effectively complete course assignments. Limited funding has meant that the college is unable to keep up with these growing demands. PCC says that its existing technology infrastructure systems are either at end of life with limited to no support, or are at maximum capacity. The college states that these physical and virtual systems are vital to the operation of the college, the loss of which would have a significant impact on its ability to continue to function.

PCC says that much of the college's technology infrastructure can no longer be upgraded or maintained by support contract as the various systems are at or near their 10- to 15-year usable life. In the case of a system failure, PCC says it could see excessive downtime for part or all of the college. Examples of risk include:

- network switch technology that controls networking and communications systems in some of the college's buildings could fail and result in administrative systems being down for days or weeks;
- antiquated data backups that use tape drive and disk storage equipment create a risk of permanently losing data; and
- remote student needs for video conferencing and collaborative learning technologies will be unsupported with current campus technologies by 2016.

PROGRAM INFORMATION AND IMPLEMENTATION PLAN

PCC says its Information Technology (IT) Services staff will have responsibility for sizing, quoting, ordering, and installing the project, with consultation support from the technology vendors it contracts with. IT staff plans to complete the majority of replacements and upgrades behind the scenes, across all four campus locations, with users being able to continue to operate the technology they use with little interruption and training. IT staff will also be responsible for day-to-day support of the new infrastructure.

PCC states that it adheres to Colorado Community College System (CCCS) IT policies and procedures to ensure compatibility with system-wide upgrades, connectivity, and performance needs, and works closely with CCCS IT department staff.

COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES

The college believes that cost savings will be realized through gained efficiencies and system performance, and the cost avoidance of prevented interruption to business due to failure of technology systems. Through the use of a standardized disaster recovery calculator to analyze potential costs for down time due to outages, PCC estimates the cost for productivity and data loss at a minimum of \$1.2 million if it has 2 major outages in a single year.

PCC also provides a theoretical cost of loss based on employee salaries that would be incurred from a major disruption in service, as seen in more detail in question #4 in the Staff Questions and Issues section, and Attachment A.

SECURITY AND BACKUP / DISASTER RECOVERY

The college says that updated backup technologies are needed to ensure that a critical loss of data does not occur from its current use of outdated tape drive and disk storage equipment.

PCC says that it adheres to CCCS IT policies and procedures, and works closely with personnel in the system IT

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office, to ensure compatibility with system-wide connectivity and performance.

BUSINESS PROCESS ANALYSIS

According to the college, this project is designed to improve equipment performance with technological advances in the areas of storage, server processing, analytics, and security. PCC IT staff and technical and engineering staff from various vendors have reviewed the technologies and associated plans over a period of months to identify and track systems that are to be replaced.

PROJECT SCHEDULE

	Start Date	Completion Date
Core Network Switches	August 2016	April 2017
Disk Storage	November 2016	December 2016
Wireless Networks	November 2016	May 2017
Collaborative Conferencing Solutions	July 2016	June 2017
Servers	July 2016	June 2017

OPERATING BUDGET

Operating expenses are paid from institutional sources. According to the college, there will be no impact on the operating budget.

STAFF QUESTIONS AND ISSUES

1. Has the current "core network" failed during the 2014-15 academic year? If so, how many times or what percentage of time has it been down?

We have had component failure on the core network. Without hardware support being in place, the failures would have been critical. We have had three component failures in the past academic year. If we would not have had support on the technology we could have sustained significant downtime for the all network systems within a building / campus. With current support / parts replacement in place no downtime was incurred this past year.

2. What percentage of the student population uses remote instruction as their primary means of attending class?

Sometimes Online FY15: 50.4%

50.4% of students were enrolled in at least one online course (students whose online course enrollment constituted between 1%-100% of their overall course enrollment):

*-12.5% of students enrolled in **only** online courses (students whose online course enrollment constituted 100% of their overall course enrollment)*

-37.9% of students enrolled in some combination of online and physical campus courses (students whose online course enrollment constituted 1% - 99% of their overall course enrollment)

Always Online FY15: 12.5%

3. Please explain the "required performance specifications" for the blade servers and physical servers that are not currently being met.

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While these servers are currently meeting specifications needed by hardware and software vendors. By June 2017, these servers will be termed "End of Life" by the manufacturer. We will then not be able to upgrade to the latest versions of operating systems to protect them from security vulnerabilities, viruses, and malware. We will not be able to add in newly manufactured devices and hardware, thus restricting program improvements. If we have a hardware failure we would not be able to get in replacement parts. This could lead to extensive down time and the inability to provide instruction to students.

4. House Bill 15-1266 requires all information technology budget requests to identify and quantify anticipated administrative and operating efficiencies or program enhancements and service expansion through cost-benefit analyses and return-on-investment calculations. Has PCC quantified the cost savings as part of the cost-benefit analysis? If so, please provide the quantification or if not, please make a quantification about the assumptions stated in the cost-benefit analysis section of the CC-C narrative.

The cost savings for PCC's requests will be realized by cost avoidance for interruption of business due to failure of technology systems. When PCC is no longer able to have manufacturer support to provide parts and software support for major hardware, major outages / downtime is inevitable.

Use of standardized disaster recovery calculators to analyze potential costs for down time due to outages, provides estimates of the cost for productivity and data loss at a minimum of 1.2 million if PCC had 2 major outages in a single year.

Taking a more analytical approach, the following chart provides a theoretical cost of loss based on employee salaries that would be incurred for major disruption in service (see Attachment A).

It is extremely important to note that the projected revenue loss due to system outages for returning students or for not enrolling new students is difficult to measure. If a major outage for technology were to occur during critical times of the semester including enrollment, finals week and etc., the potential to jeopardize our students education is enormous. The inability to serve the majority of our students for a sustained period of time could lead to extensive make-up time and / or jeopardized graduation / completion rates and ruin the health of the college.

5. PCC did not include contingency costs in the request. Please explain why.

The rationale from PCC is the IT costs are much more stable and known than a capital construction project and thus they didn't add a contingency. Also, they don't want to ask for more money than they actually need.

Attachment A. Pueblo Community College Disaster Recovery Cost Projections

Disaster Recovery Costs Projections for PCC							
Funding	Employee Type	FTE	Avg Annual Salary with Benefits	Average Weekly with Benefits		Average Weekly with Benefits	
Employee	Faculty	103.5	\$7,833,359	\$148,359		\$3,709	
	APT	144.97	\$10,451,998	\$197,954		\$4,949	
	Classified	80.3	\$4,335,961	\$82,120		\$2,053	
	Total	328.77	\$22,621,318	\$428,433		\$10,711	
Estimated Costs for Outage Period							
	Loss of Core switch	Estimated % of Employees Effected by Outage	Cost Per Hour	Minor Outage with Estimated Number of Hours for Recovery With Estimated Costs		Major Outage with Estimated Number of Hours for Recovery With Estimated Costs	
				Hrs	Cost	Hrs	Cost
	Network Switch Classrooms / Admin	0.3	\$3,213.25	4	\$12,852.99	80	\$257,059.80
	Network Switch Campus	0.8	\$8,568.66	4	\$34,274.64	80	\$685,492.80
	Network Switch College	0.95	\$10,175.28	4	\$40,701.14	80	\$814,022.70

Source: Pueblo Community College.