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Senator Tim Neville, Chair
Joint Technology Committee
Colorado General Assembly
Room 029, Colorado State Capital
Denver, CO 80203

September 1, 2015

Dear Honorable Senator Neville:

This transmittal letter accompanies the electronic submission of the six information technology requests and appropriate documents submitted by the state institutions of higher education as related to the FY 2016-17 capital and technology budget requests. The documents include the required financial forms, appropriate narrative forms, and program plan waiver requests.

Technology Requests Review Process

On July 24, state institutions of higher education submitted to the Colorado Department of Higher Education six information technology requests. The Colorado Commission on Higher Education's (CCHE) Fiscal Affairs and Audit Standing Committee (FAA) and Department of Higher Education (DHE) staff will review all requests for the FY 2016-17 budget cycle. For prioritization, staff will apply a uniform set of criteria to all capital submissions including technology requests, which were ranked and prioritized along side capital requests.

The FAA will hold public meetings to review the projects, and make changes to the draft priority list following a period of public comment. On September 22, the FAA will finalize and vote to forward the final priority list to CCHE for consideration and commission approval at the October 29, 2015 meeting.

If you have any questions or need additional information, please call me, and thank you for your consideration.

Sincerely,

Andrew J. Rauch
Lead Finance Analyst
Colorado Department of Higher Education



cc: Representative Max Tyler, Vice-Chair, Joint Technology Committee
Senator Linda Newell, Joint Technology Committee
Senator Beth Martinez Humenik, Joint Technology Committee
Representative Jonathan Singer, Joint Technology Committee
Representative Jack Tate, Joint Technology Committee
Jessika Shipley, Joint Technology Committee Staff
Matt Kiszka, Joint Technology Committee Staff
Matt Becker, Joint Technology Committee Staff
Gary Lucas, Joint Technology Committee Staff
Erick Scheminske, Office of State Planning and Budget
Alexis Senger, Office of State Planning and Budget
Kachina Weaver, Chief Legislative and Strategic Policy Officer, Department of Higher Education
Diane Duffy, Chief Financial Officer, Department of Higher Education



College	Priority Ranking	Non-Prioritized Continuation Project Description	FY 2016-2017 Total Request	FY 2016-2017 CCFE Request	Total Project Request
PCC	NP	Davis Academic Building	\$5,807,143	\$5,807,143	\$9,376,762

College	Priority Ranking	Capital Construction Project Description	FY 2016-2017 Total Request	FY 2016-2017 CCFE Request	Total Project Request
FRCC	1	Larimer Campus Allied Health and Nursing Building	\$26,563,971	\$19,657,338	\$26,563,971
PPCC	2	Student Learning Commons and Black Box	\$6,550,995	\$4,847,735	\$6,550,995
OJC	3	Agriculture Science Remodel	\$1,793,800	\$1,393,800	\$1,793,800
ACC	4	Learning Commons	\$2,362,387	\$1,748,166	\$5,388,296
LCC	5	Vocational Trades Building	\$1,996,733	\$1,996,733	\$1,996,733
		TOTAL	\$39,267,886	\$29,643,772	\$42,293,795

College	Priority Ranking	Information Technology Project Description	FY 2016-2017 Total Request	FY 2016-2017 CCFE Request	Total Project Request
CCD	1	Technology Infrastructure	\$1,342,134	\$993,179	\$1,342,134
LCC	2	Technology Infrastructure	\$644,400	\$644,400	\$644,400
PCC	3	Critical Core Technology	\$1,490,050	\$1,490,050	\$1,490,050
OJC	4	Technology Infrastructure	\$637,500	\$637,500	\$637,500
		TOTAL	\$4,114,084	\$3,765,129	\$4,114,084

Form CC-P

Five-Year Capital Construction Program FY 2016-17 to FY 2020-21

Prepared By: Duane E. Risse

Phone: 303-352-3356

E-Mail: duane.risse@ccd.edu

Agency or Institution: Community College of Denver

Project Title:	Funding	Source	Total Project Cost	Prior Appropriation	Budget Year Request Yr 1 FY 2016-17	Year Two Request	Year Three Request	Year Four Request	Year Five Request
Technology Infrastructure	Capital Construction	CCF	\$993,179	\$0	\$993,179	\$0	\$0	\$0	\$0
	1 Cash Funds	CF	\$348,955	\$0	\$348,955	\$0	\$0	\$0	\$0
Purpose Code:	F4	Reappropriated Funds	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Gross Square Ft:	N/A	Federal Funds	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Project Type	Total Funds	TF	\$1,342,134	\$0	\$1,342,134	\$0	\$0	\$0	\$0

CC-IT: CAPITAL CONSTRUCTION INFORMATION TECHNOLOGY REQUEST FOR FY 2016-17

Agency or Institution:	Community College of Denver	Signature Department or Institution Approval:	 Date: 8/13/15
Project Title:	Technology Infrastructure	Signature CCHE Approval:	Andrew J. Rauch 8/13/15 Date
Project Year(s):	FY 2016 - 17	Signature OIT Approval:	Date
Agency or Institution Priority Number:	1	Signature OSPB Approval:	Date
Program Plan:	N/A	Name and e-mail address of preparer:	Duane Risse Duane.Risse@ccd.edu

Revision? <input type="checkbox"/> No <input checked="" type="checkbox"/> X If yes, last submission date: _____	Total Project Costs	Total Prior Year Appropriations	Current Request FY 2016-17	Year 2 Request	Year 3 Request	Year 4 Request	Year 5 Request
A. Land Acquisition							
(1) Land /Building Acquisition	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
B. Contract Professional Services							
(1) Consultants/Contractors	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(2) Quality Assurance	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(3) Independent Verification and Validation (IV&V)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(4) Training	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(5) Leased Space (Temporary)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(6) Feasibility Study	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(7a) Inflation for Professional Services	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(7b) Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(8) Other Services/Costs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(9) Total Professional Services	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
C. Associated Building Construction							
(1) (a) New (G5F): New \$ _____ /GSF	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(b) Renovate GSF: Renovate \$ _____ /GSF	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(2) Site Work/Landscaping							
(4) Other (Specify)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(5a) Inflation for Construction	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(5b) Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(6) Total Construction Costs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
D. Software Acquisition							
(1) Software COTS	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(2) Software Built	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(4a) Inflation on Software	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(4b) Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(5) Total Software	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
E. Equipment							
(1) Servers	\$ 20,000	\$ -	\$ 20,000	\$ -	\$ -	\$ -	\$ -
(2) PCs, Laptops, Terminals, PDAs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(3) Printers, Scanners, Peripherals	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(4) Network Equipment/Cabling	\$ 1,258,223	\$ -	\$ 1,258,223	\$ -	\$ -	\$ -	\$ -
(5) Other (Specify) Switches	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(6) Miscellaneous	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(7) Total Equipment and Miscellaneous Costs	\$ 1,278,223	\$ -	\$ 1,278,223	\$ -	\$ -	\$ -	\$ -
F. Operating Cost							
(1) Maintenance Costs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(2) Repair Costs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(3) Staffing/Employee Costs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(4) Other	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(5) Total Operating Costs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
G Total Project Costs	\$ 1,278,223	\$ -	\$ 1,278,223	\$ -	\$ -	\$ -	\$ -
H. Project Contingency							
(1) 5% for New	\$ 63,911	\$ -	\$ 63,911	\$ -	\$ -	\$ -	\$ -
(2) 10% for Renovation	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(3) Total Contingency	\$ 63,911	\$ -	\$ 63,911	\$ -	\$ -	\$ -	\$ -
I. Total Budget Request [F+G(3)]	\$ 1,342,134	\$ -	\$ 1,342,134	\$ -	\$ -	\$ -	\$ -
J. Source of Funds							
GF	\$ 993,179	\$ -	\$ 993,179	\$ -	\$ -	\$ -	\$ -
CF	\$ 348,955	\$ -	\$ 348,955	\$ -	\$ -	\$ -	\$ -
RF	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
FF	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

check (should = H) \$ 1,342,134 \$0 \$ 1,342,134 \$0 \$0 \$0 \$0 \$0



**DEPARTMENT OF HIGHER EDUCATION
COMMUNITY COLLEGE OF DENVER**

John W. Hickenlooper
Governor

James T. Rizzuto
Executive Director

*FY 2016-17 IT Capital Budget Request
July 3, 2015*

[Signature]
Signature

[Date]
Date

***Department or CCHE Capital Construction Priority: 1
Technology Infrastructure***

Summary of Capital Construction Request	Total Funds	GF	Cash Funds*	Federal Funds
FY 2016-17	\$1,342,134	\$993,179	\$348,955	0
FY 2017-18	0	0	0	0
FY 2018-19	0	0	0	0

**For Higher Education institutions, please make a notation here if the institution is participating in the Intercept Program.*

Request Summary:

Community College of Denver (CCD) is requesting \$1,342,134 to update and improve our technology infrastructure and telephony equipment. It has been 11-12 years since our last major network upgrade and the phone system that we share with the Auraria campus requires a major upgrade in order to remain under support.

Project Description:

The Technology Infrastructure Project will involve replacement and/or upgrade of the majority of the network infrastructure including upgrades to our wireless and security systems that support mobile connectivity for students, staff and faculty on Campus. The telephony project will involve moving to the Colorado Community College System (CCCS) managed Cisco VoIP phone system and replacing all handsets.

Background and Justification:

A significant amount of our network infrastructure equipment on the CCD campus is outdated and we run the risk of network outages or performance issues that greatly impact our ability to support the growing network traffic on our wired and wireless networks. Performance of the existing network is not sufficient to support the deployment of workstations, virtual desktops and a growing use of multimedia and electronic technology for education. Security systems are also outdated and are not sufficient to monitor unauthorized usage on our network. There is more pressure to provide digital alternatives for securely storing sensitive data. Data backups are also impacted because of network performance. Our current data backups are often still running during business hours because of the volume of data and limitations of our ability to move it efficiently on our existing network infrastructure.

The phone system CCD currently uses is a shared system on the Auraria campus that is managed by the Auraria Higher Education Center (AHEC). The system is out dated and requires upgrades. Several schools sharing the use of this system have announced intentions to deploy their own systems which will leave a greater percentage of phone system expenses to CCD. The CCCS phone system will also allow CCD to take full advantage of newer VoIP technologies which integrate services with other desktop, messaging and conferencing technologies.

Project Alternatives:

The alternative to completing the network infrastructure project will be to make smaller equipment replacements over time, but this approach would impact the overall goal of re-designing the infrastructure in order to better support the growing network load. A significant portion of the core network is nearing end of life currently. Remaining on current network equipment will risk failures that could shut down overall business operations for students, faculty and staff. It will also cause an issue with compatibility across network segments that would reduce our ability to monitor and respond to network performance issues. Not upgrading WiFi and security systems will impact our ability to improve data security and prevent the addition of digital alternatives for secure storage in the future.

The alternative to moving to the CCCS managed phone system would be to continue to utilize the Auraria campus shared Avaya phone system. This option would avoid an initial Capital outlay for handsets, but would have impacts to overall ongoing expenses and capabilities moving forward. In addition to ongoing expenses, the shared Avaya phone system requires upgrades that have been estimated at \$358,000. These upgrades will need to be completed in order to maintain support for the system that has been identified as close to end of life.

Implementation Plan:

The responsibility for implementation of the Technology Infrastructure Project will be the Information Technology Services (ITS) department at CCD in conjunction with the CCCS IT department. Support for the systems will also be shared by CCD ITS and CCCS IT departments. We anticipate vendors from whom we will purchase equipment will be available for consultation and installation support. The majority of the improvements and upgrades will be “behind the scenes” so end users will continue to operate the technology they use with very little interruption and training and enjoy faster, more reliable service. The general plan is to initially replace/upgrade support equipment and then replace end user phone handsets.

Alignment with OIT Best Practices:

The Information Technology Director at CCD has been with the College for over 2 years and has close ties to personnel at IT departments at the System Office and other community colleges with the System. We adhere to System IT policies and procedures to ensure compatibility with System wide connectivity and performance.

Cost Benefit and Improved Performance Outcomes:

We anticipate immediate cost savings upon installation of the phone system. Moving to the CCCS managed phone system will allow CCD to take advantage of an estimated annual expense reduction of approximately \$150,000. Network enhancements will immediately impact performance for student, staff and faculty in classrooms, offices and mobile devices on campus. It will also allow opportunities to take better advantage of virtual technologies that will reduce efforts needed to deploy and support workstations on campus. The technology improvements that will come with completion of this project will improve the speed, accuracy, and efficiency of data flow which, in turn, should improve the efficiency and work performance of students, faculty and staff.

Security and Backup/Disaster Recovery:

This Project has as one of its priorities the replacement/upgrade of equipment and software relative to preservation of data. Currently our network is not fast enough to complete data backups during off hours. Often backups are still running during the day which impacts user network performance and our ability to complete successful backups. File contention can cause the failure to backup certain files which has an impact on our ability to recover those files in the event of failure.

Business Process Analysis:

The Project is designed to improve equipment performance due to technological advances in the area of data storage, processing, and accessibility. We believe our operational design is effective and efficient and we are looking to improve our business process via improved tools enabling our IT staff to become even more effective and efficient. Increased reliability, ease of access to data, and availability to access information will improve the efficiency and work product of students and staff.

Systems Integration Opportunities:

See “Alignment with OIT Best Practices” section.

Program Plan:

Request for waiver submitted with this request – Project total under \$2,000,000

Life Cycle Cost (LCC) Analysis and Project Alternatives:

Not Applicable

Consequences if not Funded:

See “Background and Justification” and “Project Alternatives” section

Operating Budget Impact:

Community College of Denver currently has budget line items for ongoing costs such as maintenance agreements, software licenses, and general recurring expenditures such as virus prevention software. We do not expect a material increase in these types of costs over and above normal inflationary increases that would occur as a result of completion of this project.

Assumptions for Calculations:

Please see accompanying detail list of Project proposed expenditures.

Supplemental Justification:

Not Applicable

ADDITIONAL REQUEST INFORMATION	
Please indicate if three-year roll forward spending authority is required.	X Yes <input type="checkbox"/> No
Date of project’s most recent Business Process Analysis:	N/A
Please provide the link to the Business Process Analysis or attached the first page of the analysis to this document:	N/A

Request 6-month encumbrance waiver?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
New construction or modification?	<input type="checkbox"/> New	<input type="checkbox"/> Renovation
	<input type="checkbox"/> Expansion	<input type="checkbox"/> Capital Renewal
Total Estimated Square Footage	_____ ASF	_____ GSF
Is this a continuation of a project appropriated in a prior year?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
If this is a continuation project, what is the State Controller Project Number?	N/A	

ESTIMATED PROJECT TIME TABLE		
Steps to be completed	Start Date	Completion Date
Network Upgrade / Replacement	August 2016	November 2016
WiFi controller and security Upgrade / Replacement	October 2016	November 2016
Telephone System Upgrade / Replacement	January 2017	March 2017

Form CC-P

Five-Year Capital Construction Program FY 2016-17 to FY 2020-21		Prepared By: Chad DeBono	
	Phone:	719-336-1517	E-Mail: chad.debono@lamarcc.edu

Agency or Institution:	Lamar Community College
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Project Title:	Funding	Source	Total Project Cost	Prior Appropriation	Budget Year Request Yr 1 FY 2016-17	Year Two Request	Year Three Request	Year Four Request	Year Five Request
Technology Infrastructure Priority: 1 Purpose Code: F4 Gross Square Ft: NA Project Type	Capital Construction Funds	CCF	\$644,400	\$0	\$644,400	\$0	\$0	\$0	\$0
	Cash Funds	CF	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Reappropriated Funds	RF	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Federal Funds	FF	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Total Funds	TF	\$644,400	\$0	\$0	\$0	\$0	\$0	\$0



DEPARTMENT OF HIGHER EDUCATION LAMAR COMMUNITY COLLEGE

John W. Hickenlooper
Governor

*FY 2016-17 Capital Construction Request
October 1, 2015*

[Name]
Executive Director



Signature



Date

**Department or CCHE Capital Construction Priority: 1
Technology Infrastructure LCC**

Summary of Capital Construction Request	Total Funds	GF	Cash Funds*	Federal Funds
FY 2016-17	\$644,400	\$644,400	0	0
FY 2017-18	0	0	0	0
FY 2018-19	0	0	0	0

**For Higher Education institutions, please make a notation here if the institution is participating in the Intercept Program.*

Request Summary:

Lamar Community College requests \$644,400 to upgrade our technology infrastructure. Areas that will be improved include our wired and wireless networks, servers, IP telephony devices, and instructional technology, as well as, office and classroom computer equipment. These upgrades will improve service availability, security, performance, efficiency, and student/staff productivity.

Background and Justification:

Many of our systems are outdated (6+ years old) and/or do not support current technologies that improve service availability, security, performance, efficiency, and student learning. Most of our network switches have reached end of vendor software support, and do not support current networking technologies. No new security enhancements or fixes are available for them should a vulnerability be found. Furthermore, our network core is not fault tolerant. The failure of a critical hardware component in our core network switch would result in a complete loss of access to all network, data, internet and phone services for, best case, 5 hours. For students, this could result in losing a day of learning. Our wireless network is unable to take advantage of current advances in wireless technology that provides for more reliable and robust communications, critical for the increasing role it plays in our academic environment. It too, is not fault tolerant. A hardware failure in our wireless network controller would result in a service outage for, best case, 1 day. Data stored on servers is not highly available with failure of a server resulting in loss of data access requiring manual intervention to restore with outages lasting possibly a day or more. All these potential failures would have a substantial negative impact on daily operations, to include instruction. All of our IP phone systems are outdated and no longer vendor supported. They do not receive product updates or security fixes. They are unable to support current technologies that improve user experience. Many of our classrooms have outdated and inadequate instructional technology which makes displaying and viewing content extremely difficult. Many of our office and classroom computers perform poorly due to antiquated technologies that are unable to deliver a highly responsive and capable platform for work and instruction.

Project Description:

This project will involve replacing and/or upgrading our network switches, wireless system, servers, and IP telephony devices. Fault tolerance will be added for critical devices through redundancy and automation, reducing the impact of potential critical system failures to seconds, or at most, minutes. Inadequate computer equipment and computer tables will be replaced in offices and classrooms. Multimedia equipment will be added/improved in rooms where current technologies hamper staff and student productivity. The Project, through the introduction of modern, secure, high performing, highly available technology systems, will enable Lamar Community College to more effectively and efficiently deliver on its mission to “Enrich Lives through Learning”.

Implementation Plan

Responsibility for implementation of the project will be with Lamar Community College Computer Center staff. All systems will be installed with an emphasis on minimizing impact to daily operations. Classroom will upgrades completed throughout the year during times of non-use (breaks between and during terms). Servers and core switches will be installed during July 2016, remaining switches will be phased in with completion by the end of December 2016. Office computers upgrades/replacements will be phased in from July 2016 through June 2017. Core wireless system component upgrades will take place in July 2017 with complete system implementation by the end of December 2016. Where professional services are to be used, Computer Center staff will work closely with vendors\contractors to ensure a satisfactory installation. Where appropriate, Computer Center staff will provide training and additional support resources to staff and students ensuring they are able to maximize use of new technologies.

Alignment with OIT Best Practices

Lamar Community College, as part of the Colorado Community College System, adheres to System IT policies and procedures.

Cost Savings and Improved Performance Outcomes

Cost savings will be realized by eliminating or minimizing lost productivity and learning opportunities due to inadequate technologies. Improved performance outcomes in these same areas will be realized as a result of the technologies deployed under this project. The new technologies will provide a modern, secure, high performing, highly capable, and highly available technology infrastructure that will create vastly improved work and learning environments that will enhance productivity and learning.

Security and Backup/Disaster Recovery

This project seeks to decrease our security risk through the replacement of outdated systems that no longer receive security fixes or enhancements with current systems/technologies using current security technologies that will continue to be improved.

Business Process Analysis

This project is designed to improve the work/learning experience of staff and students by providing a technology infrastructure that will enable increased productivity and maximize learning potential through technological advances in servers, network, client computing, and instructional technologies, that provide a secure, highly accessible, high performing, and efficient environment. IT staff will realize greater efficiencies and effectiveness of existing operational processes through the introduction of tools that allow for increased automation and availability of data/network access, management, and recovery.

Systems Integration Opportunities

See “Alignment with OIT Best Practices” section.

Program Plan

Request for waiver submitted with this request due to project below \$2,000,000

Life Cycle Cost (LCC) Analysis and Project Alternatives:

The overall benefit of this project is the opportunities made available, through technology, for increased productivity and learning for staff and students. Lamar Community College does not anticipate a monetary increase in energy consumption (if any) that would outweigh the gains in productivity and learning enhancements provided by this project. Much of the technology to be implemented will have greater energy efficiency than the technology to be replaced and will offer energy cost savings under comparable usage conditions. New computer systems will be able to remain in production longer do advances in hardware. We do not anticipate incurring additional year over year costs, such as maintenance, support and disposal, which would cause an increase over current allotted budget dollars.

As a project alternative we will continue to implement planned technology improvements as budgeting allows. Unfortunately, due to persistent funding challenges, it has become impossible for us to introduce many of these types of technology improvements in a timely fashion, if at all. For example, based on current budget allocations and assuming stationary annual funding percentage decrease, it will take over 20 years to complete the switch upgrade component of this project alone. It has become necessary to take a “replace when it breaks” replacement strategy for much of our outdated equipment. Another alternative is the continuance of our search for and utilization of external funding sources. This is however, a highly unpredictable area making planning difficult with no guarantee of additional funding.

Consequences if not Funded:

See “Background and Justification” and “Life Cycle Cost (LCC) Analysis and Project Alternatives”

Operating Budget Impact:

Lamar Community College has budget line items for recurring costs such as maintenance agreements and Software licensing. No overall increase in operating budget is expected as a result of this project.

Assumptions for Calculations:

Please see included detail list of proposed expenditures.

Supplemental Justification (if necessary):

N/A

ADDITIONAL REQUEST INFORMATION	
Date of project's most recent program plan:	
Request 6-month encumbrance waiver?	<input type="checkbox"/> Yes <input type="checkbox"/> No
New construction or modification?	<input type="checkbox"/> New <input type="checkbox"/> Renovation <input type="checkbox"/> Expansion <input type="checkbox"/> Capital Renewal
Total Estimated Square Footage	_____ ASF _____ GSF
Is this a continuation of a project appropriated in a prior year?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
If this is a continuation project, what is the State Controller Project Number?	

ESTIMATED PROJECT TIME TABLE		
Steps to be completed	Start Date	Completion Date
Classroom hardware upgrades/replacements – computers, multimedia equipment, computer tables	July 2016	June 2017
Server-Switch upgrades/replacements	July 2016	December 2016
Wireless upgrades/replacements	June 2016	December 2016
Office hardware upgrades/replacements – computers	July 2016	June 2017



July 1, 2015

Colorado Department of Higher Education
1380 Lawrence, Suite 1200
Denver, CO 80204

To Whom It May Concern:

Pursuant to CCHE program plan instructions, we are requesting a program plan waiver for the Technology Infrastructure Project. The estimated cost of the project is 644,400.00, which is below the \$2,000,000 threshold for program plans. The project is fairly straight forward and cost estimates were derived from analysis of the current technology market. We have handled projects similar in nature to this request and feel that we have the knowledge and background to fulfill program needs. There will be minimal increase in the operation and maintenance cost of this project.

I appreciate your consideration of the request. Feel free to give me a call if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Chad Debono", written over a horizontal line.

Chad Debono
Vice President of Administrative Services/
Institutional Effectiveness
719-336-1517
Chad.debono@lamarcc.edu

Form CC-P

Five-Year Capital Construction Program FY 2016-17 to FY 2020-21				Prepared By:	Patrick Malott - Vice President of Administrative Services		
				Phone:	719-384-6823	E-Mail:	pat.malott@ojc.edu

Agency or Institution:	Otero Junior College					
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Project Title:	Funding	Source	Total Project Cost	Prior Appropriation	Budget Year Request Yr 1 FY 2016-17	Year Two Request	Year Three Request	Year Four Request	Year Five Request
Technology Infrastructure	Capital Construction Funds	CCF	\$637,500	\$0	\$637,500	\$0	\$0	\$0	\$0
	1	Cash Funds	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Purpose Code:	F4	Reappropriated Funds	\$0	\$0	\$0	\$0	\$0	\$0
	Gross Square Ft:	n/a	Federal Funds	\$0	\$0	\$0	\$0	\$0	\$0
	Project Type	Total Funds	TF	\$637,500	\$0	\$637,500	\$0	\$0	\$0
Renovation and Expansion									

Project Title:	Funding	Source	Total Project Cost	Prior Appropriation	Budget Year Request Yr 1 FY 2016-17	Year Two Request	Year Three Request	Year Four Request	Year Five Request
Technology Infrastructure	Capital Construction Funds	CCF	\$550,000	\$0	\$0	\$550,000	\$0	\$0	\$0
	1	Cash Funds	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Purpose Code:	F4	Reappropriated Funds	\$0	\$0	\$0	\$0	\$0	\$0
	Gross Square Ft:	n/a	Federal Funds	\$0	\$0	\$0	\$0	\$0	\$0
	Project Type	Total Funds	TF	\$550,000	\$0	\$0	\$550,000	\$0	\$0
New Construction									

Project Title:	Funding	Source	Total Project Cost	Prior Appropriation	Budget Year Request Yr 1 FY 2016-17	Year Two Request	Year Three Request	Year Four Request	Year Five Request
Technology Infrastructure	Capital Construction Funds	CCF	\$600,000	\$0	\$0	\$0	\$600,000	\$0	\$0
	1	Cash Funds	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Purpose Code:	F4	Reappropriated Funds	\$0	\$0	\$0	\$0	\$0	\$0
	Gross Square Ft:	n/a	Federal Funds	\$0	\$0	\$0	\$0	\$0	\$0
	Project Type	Total Funds	TF	\$600,000	\$0	\$0	\$0	\$600,000	\$0
New Construction									

Project Title:	Funding	Source	Total Project Cost	Prior Appropriation	Budget Year Request Yr 1 FY 2016-17	Year Two Request	Year Three Request	Year Four Request	Year Five Request
Technology Infrastructure	Capital Construction Funds	CCF	\$650,000	\$0	\$0	\$0	\$0	\$650,000	\$0
	1	Cash Funds	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Purpose Code:	F4	Reappropriated Funds	\$0	\$0	\$0	\$0	\$0	\$0
	Gross Square Ft:	n/a	Federal Funds	\$0	\$0	\$0	\$0	\$0	\$0
	Project Type	Total Funds	TF	\$650,000	\$0	\$0	\$0	\$0	\$650,000

Project Title:	Funding	Source	Total Project Cost	Prior Appropriation	Budget Year Request Yr 1 FY 2016-17	Year Two Request	Year Three Request	Year Four Request	Year Five Request
Technology Infrastructure	Capital Construction Funds	CCF	\$700,000	\$0	\$0	\$0	\$0	\$0	\$700,000
	1	Cash Funds	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Purpose Code:	F4	Reappropriated Funds	\$0	\$0	\$0	\$0	\$0	\$0
	Gross Square Ft:	n/a	Federal Funds	\$0	\$0	\$0	\$0	\$0	\$0
	Project Type	Total Funds	TF	\$700,000	\$0	\$0	\$0	\$0	\$0



**DEPARTMENT OF HIGHER EDUCATION
OTERO JUNIOR COLLEGE**

John W. Hickenlooper
Governor

*FY 2016-17 IT Capital Budget Request
October 1, 2015*

James T. Rizzuto
Executive Director

J. Patrick Malachuk
Signature

7/7/2015
Date

**Department or CCHE Capital Construction Priority: 1
Technology Infrastructure II OJC**

Summary of Capital Construction Request	Total Funds	GF	Cash Funds*	Federal Funds
FY 2016-17	\$637,500	\$637,500	0	0
FY 2017-18	0	0	0	0
FY 2018-19	0	0	0	0

**For Higher Education institutions, please make a notation here if the institution is participating in the Intercept Program.*

Request Summary:

Otero Junior College is requesting \$637,500 to update and improve our technology infrastructure. We were fortunate during the 2015-2016 budget period the Legislative Joint Technology Committee recommended funding our request for \$818,950 for technology upgrades. The State Legislature approved the funding for this project and Otero Junior College thanks the Committee for their support. This budget period's request is primarily for upgrades to our storage area network (SAN), replacement of the core switch, and replacement of tele-presence units as improvements in technology provide the College additional quality in delivering distance education in our service area.

Project Description:

The Technology Infrastructure II Project will involve replacement of our storage area network (SAN). Otero Junior College's SAN is approximately 10 years old and, for the most part, performs well in storage and retrieval of a large amount of data generated by College students and staff. As with most technology, improvements in equipment and access to data constantly occur and it is necessary for the College to maintain our technology infrastructure to keep up with current developments. Software developments, effective access to internet capabilities, teaching delivery methods as well as student use of technology require the College to have the latest in equipment and infrastructure for us to provide outstanding instruction and educational opportunities for our students. We believe it is imperative we replace/upgrade our SAN in order to maintain a high level of performance in our data storage and retrieval system.

The core switch we currently are utilizing is also approximately 10 years old. This element of our technology infrastructure is the hub of our network system and basically "directs the traffic" as data flies around our network. Our concern is the age of this equipment and its ability to effectively continue to "manage" our network considering the additional demands we continually add to the network system in the

form of new software programs, newer technological devices requiring access, and the general significant increase in data that must be managed efficiently and effectively.

Over the last 5 years, Otero Junior College has put into operation a two-way, interactive audio/video course delivery system known as tele-presence. This system enables instructors to teach courses to those students physically present in the classroom as well as remote delivery to locations that have a tele-presence unit on site. The College presently has 3 tele-presence units on our Campus and we have placed units in High Schools in our service area that includes La Junta, Swink, Fowler, Ordway, Las Animas, Cheraw, Rocky Ford, and Manzanola. This network allows the Colleges to teach up to three courses at one time here on our Campus and simultaneously broadcast these courses to one or all of the locations that have a tele-presence unit. The units accommodate two-way audio so the instructor's comments are broadcast out and those students at each location can interactively ask questions with immediate feedback. Likewise, two-way video allows the remote students to view the instructor and any demonstrations that may take place in the classroom and the instructor can view the students at the remote sites. This method of course delivery enhances the opportunities for post-secondary education options and concurrent courses. Improvements in the tele-presence units are continually being made that improve the quality of audio, video, and overall performance. We anticipate the necessity to replace these units as technology advances so a part of this project request is to fund the purchase of new units.

Background and Justification:

Our current storage area network (SAN) has been in service for approximately 10 years. It is important that we upgrade/replace this system in order to maintain reliability and provide timely, reliable, and accurate data storage and retrieval service to users of data devices associated with Otero Junior College.

Our core switch is aging out and its capacity to manage the network data becomes suspect as advances in hardware and software continue to pressure the College to provide the latest in technology in order to satisfy the needs of our students and staff.

Technological advances in the area of tele-presence have improved the quality of audio and video broadcasts as well as reliability of connections to remote units. These advances in technology will require the College to upgrade/replace units in the near future in order to maintain an optimum level of performance to deliver quality products to our students.

Implementation Plan

The responsibility for implementation of the Technology Infrastructure II Project will be the Computer Center Staff at Otero Junior College and they will be supported by Colorado Community College System Information Technology staff as well as IT staff at individual Colleges within the Community College System. We anticipate vendors from whom we will purchase equipment will be available for consultation and installation support. The majority of the improvements and upgrades will be "behind the scenes" so end users will continue to operate the technology they use with very little interruption and training and enjoy faster, more reliable service.

Alignment with OIT Best Practices

The Computer Center Director at Otero Junior College has been with us for 26 years and has close ties to the Colorado Community College System IT department as well as with other Colleges' IT staff throughout the System. We adhere to System IT policies and procedures to ensure compatibility with System wide connectivity and performance.

Cost Savings and Improved Performance Outcomes

We anticipate immediate cost savings upon installation of certain equipment simply because we will have reliable back up data that is easily accessible and reliable. Power fluctuations/outages have resulted in the necessity to recover data and restore to memory via a process that has proven to be very labor intensive, time consuming, and, in some cases, loss of data has occurred. The cost associated with data loss is difficult to measure in dollars, however, it can be significant and cause undue hardship. The technology improvements that will come with completion of this project will improve the speed, accuracy, and efficiency of data flow which, in turn, should improve the efficiency and work performance of students and staff.

Security and Backup/Disaster Recovery

This Project has as one of its priorities the replacement/upgrade of equipment and software relative to preservation of data under any circumstances.

Business Process Analysis

The Project is designed to improve equipment performance due to technological advances in the area of data storage, processing, and accessibility. We believe our operational design is effective and efficient and we are looking to improve our business process via improved tools enabling our IT staff to become even more effective and efficient. Increased reliability, ease of access to data, and availability to access information will improve the efficiency and work product of students and staff.

Systems Integration Opportunities

See “Alignment with OIT Best Practices” section.

Program Plan

Request for waiver submitted with this request – Project total under \$2,000,000

Life Cycle Cost (LCC) Analysis and Project Alternatives

Not Applicable

Consequences if not Funded:

See “Background and Justification” section

Operating Budget Impact:

Otero Junior College currently has budget line items for ongoing costs such as maintenance agreements, software licenses, and general recurring expenditures such as virus prevention software. We do not expect a material increase in these types of costs over and above normal inflationary increases that would occur as a result of completion of this project.

Assumptions for Calculations:

Please see accompanying detail list of Project proposed expenditures.

Supplemental Justification : N/A

ADDITIONAL REQUEST INFORMATION	
Please indicate if three-year roll forward spending authority is required.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Date of project's most recent Business Process Analysis:	N/A
Please provide the link to the Business Process Analysis or attached the first page of the analysis to this document:	N/A
Request 6-month encumbrance waiver?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
New construction or modification?	<input type="checkbox"/> New <input type="checkbox"/> Renovation <input type="checkbox"/> Expansion <input type="checkbox"/> Capital Renewal
Total Estimated Square Footage	_____ ASF _____ GSF
Is this a continuation of a project appropriated in a prior year?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
If this is a continuation project, what is the State Controller Project Number?	N/A

ESTIMATED PROJECT TIME TABLE		
Steps to be completed	Start Date	Completion Date
Storage Area Network Upgrade / Replacement	October 2016	March 2017
Tele-presence Unit Replacement / Upgrades	October 2016	June 2018



July 8, 2015

Colorado Department of Higher Education
1380 Lawrence, Suite 1200
Denver, CO 80204

To Whom It May Concern:

Pursuant to CCHE program plan instructions, we are requesting a program plan waiver for the Technology Infrastructure Project II. The estimated cost of the project is \$637,500.00, which is below the \$2,000,000.00 threshold for program plans. The project is pretty basic and cost estimates were derived from analysis of the current technology market. We have handled projects of this size and nature in the past and feel we have adequate knowledge to fulfill program needs without a program plan. We anticipate a slight increase to the operation and maintenance costs, but primarily due to normal inflationary adjustments.

I appreciate your consideration of the request. Feel free to give me a call if you have questions.

Sincerely,

A handwritten signature in black ink that reads 'L. Patrick Malott'.

L. Patrick Malott, CPA
Vice President of Administrative Services

OTERO JUNIOR COLLEGE
 CAPITAL CONSTRUCTION - INFORMATION TECHNOLOGY FUNDING REQUEST
 FY 2016-2017

DESCRIPTION	QUANTITY	ESTIMATE UNIT COST	TOTAL ESTIMATED COST
STORAGE AREA NETWORK SYSTEM SAN MANUFACTURED BY "NUTANIX" REPLACE OUTDATED SYSTEM		\$	125,000
CORE SWITCH REPLACEMENT NEW CORE SWITCH - HEART OF NETWORK OPERATIONS		\$	250,000
DIGITAL SIGNAGE - DIRECTORY SYSTEM MONITOR & CONTROL SYSTEM UPGRADE CAMPUS SIGNAGE & DIRECTORIES		\$	17,500
TELEPRESENCE UNITS DISTANCE EDUCATION	15	\$ 15,000	\$ 225,000
CLASSROOM PROJECTORS Troxell E-Beam UPGRADE CLASSROOM TECHNOLOGY	20	\$ 1,000	<u>\$ 20,000</u>
 TOTAL FUNDING REQUEST			 <u><u>\$ 637,500</u></u>

Form CC-P

Five-Year Capital Construction Program FY 2016-17 to FY 2021	Prepared By: Clifford Kitchen		
	Phone: 719-549-3291	E-Mail:	clifford.kitchen@pueblocc.edu

Agency or Institution:	Pueblo Community College	
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		Funding	Source	Total Project Cost	Prior Appropriation	Budget Year Request Yr 1 FY 2016-17	Year Two Request	Year Three Request	Year Four Request	Year Five Request
Critical Core Technology Infrascture Priority: 1 Purpose Code: F4 Gross Square Ft: Project Type		Capital Construction Funds	CCF	\$1,490,050	\$0	\$1,490,050	\$0	\$0	\$0	\$0
		Cash Funds	CF	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		Reappropriated Funds	RF	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		Federal Funds	FF	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		Total Funds	TF	\$1,490,050	\$0	\$1,490,050	\$0	\$0	\$0	\$0



**DEPARTMENT OF HIGHER EDUCATION
PUEBLO COMMUNITY COLLEGE**

John W. Hickenlooper
Governor

*FY 2016-17 IT Capital Budget Request
June 26, 2015*

[Name]
Executive Director

Signature

6/16/15

Date

**Department or CCHE Capital Construction Priority: 1
Critical Core Technology Infrastructure Project**

Summary of Capital Construction Request	Total Funds	GF	Cash Funds*	Federal Funds
FY 2016-17	\$1,490,050	\$1,490,050	\$0	\$0
FY 2017-18	\$0	\$0	\$0	\$0
FY 2018-19	\$0	\$0	\$0	\$0

**For Higher Education institutions, please make a notation here if the institution is participating in the Intercept Program.*

Request Summary:

Pueblo Community College is requesting \$1,490,050 to replace and upgrade components of the core technology infrastructure serving the college. Critical infrastructure systems include both physical and virtual systems deemed vital to the operation of the college, the loss of which would have a debilitating impact on the ability of the college to continue to function. The continued and constantly increasing reliance due to disruptive innovation of ever changing technologies which are required to provide effective education for our students makes it imperative that PCC maintains and advances its technology base.

Project Description:

The Core Infrastructure Technology Project will involve the replacement of existing systems that are at end of life with limited to no support and to upgrade systems that are at maximum capacity. Additionally, the need to be a borderless campus; supplying and supporting increased collaborative and online learning environments driven by the need to meet the continually changing demands of training for industry is driving our need to upgrade / replace systems (both physical and virtual). These upgrades / replacements are essential to meet the needs of students, faculty, and staff across all college departments effecting all four campus locations. With the continuous advent of aggressive changes in technology and educational need in the world, PCC needs to evolve and stay competitive to effectively educate our students. Core technologies to be replaced / upgraded include PCC's data storage and disaster recovery (data backup and recovery) technology, primary network switches, media delivery hardware, collaborative conferencing solutions, and network wireless technology.

Upon implementation the obsolete system components will be removed from service and be disposed of through the surplus property disposal / transfer process. The new technologies will be covered with appropriate licensing and maintenance agreements and all agreements will be updated to reflect changes in required technology to be covered.

This project is not part of any project appropriated in a previous year.

Background and Justification:

Every year PCC has diligently worked to utilize general and grant funds for the renewal and replacement of technology. With the vast advancement and changes in educational needs that have taken place in recent years, the use of technology of all types has become a required part of every curriculum at PCC. Due to the huge changes in educational and world culture requiring the need to significantly add to existing technologies and to incorporate new and additional technologies; our abilities to replace aging technology has been limited. Although we continue to replace a significant amount of technology each year from general and grant funds, a significant amount of the infrastructure technology that PCC requires for our base operations is at end of life / support. This means that these technologies can no longer be upgraded or maintained by support contract. In case of failure; PCC could see excessive downtime for part or all of the college.

The network switch technology that controls networking and communications systems in some of our buildings is reaching end of life and would be considered catastrophic should it fail, in that student and administrative systems would have the potential of being down for days or weeks if failure were to occur. Much of the technology that we will be replacing with this funding has a 10 to 15 year usable life and we are at the end of these spans. We are approaching the state of being at risk of permanently losing data due to antiquated backups using tape drive equipment and disk storage equipment that is at or approaching end of supportable life.

Many of our campus locations utilize various forms of video conferencing and collaborative learning technologies to instruct and to support remote students. The ability to have our faculty / staff reach out to them with collaborative learning techniques are key to their success and to our mission. By 2016 our current systems will be unable to accommodate this style of learning. Based on trends in the educational industry in accordance with our strategic plan we should be increasing the uses of this type of technology and at this time we are unable to move forward.

Implementation Plan

The responsibility for sizing, quoting, ordering, and implementation of the Core Technology Project will be the Information Technology Services staff at Pueblo Community College. They will be supported by technology vendor consultation and pre-sales engineers from vendors where products are purchased working in conjunction with PCC IT Staff. The majority of the improvements and upgrades will be performed behind the scenes of the PCC students and staff. Products will be installed as part of upgrade / replacement windows with minimal to no downtime for the college. End-users will continue to operate with little to no downtime. In most cases they will start to see immediate improvements in performance and usability.

Planning will take place and will be communicated with management to avoid and eliminate unexpected outage or downtime. Upgraded and / or installation of equipment in the server room will typically be performed afterhours normal business hours and then schedules will be communicated for the rollout of any equipment that has direct impact on the end user.

Alignment with OIT Best Practices

The Information Technology Department employees have many years of experience in the deployment and implementation of all the types of technology that will be purchased. The department also has close ties with all associated hardware vendors and with the Colorado Community College System IT Department and with other Colleges' IT staff throughout the system. PCC adheres to System IT policies and procedures to ensure compatibility with system wide upgrades, connectivity, and performance needs. These compatibility needs will be continued as part of this project.

Cost Savings and Improved Performance Outcomes

We anticipate immediate soft cost savings upon installation of certain equipment because of significant performance increases due to faster and more reliable technology. Although hard to measure, the performance increases combined with efficiencies will improve the performance and educational capabilities for our students and staff. The major cost savings will be the ability to withstand and eliminate the huge costs associated with unplanned outages that will arise if we don't move forward with the replacement of these technologies. The costs and issues associated with having individual buildings or the entire campus down from hours to weeks due to not having parts could be monumental. We need to avoid this potential.

Security and Backup/Disaster Recovery

All implementations that are part of this plan will be carefully planned moving forward in a systematic nature. If critical problems arise, in most cases the old technology can be temporarily placed back on line in a worst case scenario. All data related systems will be backed up and be proved capable of restoration prior to changing out systems. Support personal / contracts will be in place on all systems prior to moving forward with replacement. Training and knowledge will be in place for PCC's IT staff on all new systems prior to placing them in production.

Business Process Analysis

Months of analysis and planning has been performed to identify and track systems that are to be replaced by this project. The project is designed to improve equipment performance due to technological advances in the area of storage, server processing, analytics, and security. Our staff as well as technical staff and engineers from various vendors have reviewed the technologies and associated plans. We fully believe we will be improving performance and reliability of all systems affected by this upgrade and that the updated

systems will provide a significantly increased level of reliability and performance thereby increasing productivity of students, faculty, and staff.

Systems Integration Opportunities

PCC adheres to System IT policies and procedures to ensure compatibility with system wide upgrades, connectivity, and performance needs. All systems that are installed are designed in such a way as to ensure interoperability with the technologies throughout the system due to stands based design and implementation.

Program Plan

Request for waiver submitted with this request – Project total under \$2,000,000

Life Cycle Cost (LCC) Analysis and Project Alternatives

Not applicable with this request. The project is being submitted because the components to be upgraded / replaced are at end of usable lifecycle.

Consequences if not Funded:

As discussed in the “Background and justification” section, if this project is not funded we will be at risk of not being able to replace critical core technologies in a timely fashion which could result in extended downtime. This would cause major disruptions in our abilities to hold effective classes for our students. Downtime could also cause major disruptions in our ability to perform administrative functions across all functional areas of the collage such as enrolling students, managing finances and general college administration, and etc.

Operating Budget Impact:

Pueblo Community College currently has budget line items for ongoing costs for the technologies discussed. These costs primarily include recurring maintenance agreements and support agreements. The technologies discussed do not necessarily include any significant additions that would increase our currently budgeted costs for ongoing maintenance and services. Based on review, PCC expects minimal increases above normal inflationary rates as a result of this project.

Assumptions for Calculations:

The following table provides estimation of costs based on price quotes, broken out by the type / classification of technology. .

ID	Technology	Qty	Estimated Total Cost
1	Core Network Switches / Associated Backup Power Various Models based on Building	1	\$741,700
2	Disk Storage Solutions	1	\$217,600
3	Network Wireless Solutions	125	\$165,000
4	Collaborative Conferencing Solutions	1	\$191,000
5	Servers (virtual / physical components)	7	\$174,750
Totals			\$1,490,050

1. Core Network Switches - Detailed as a single line item. The cost is comprised of multiple switches and associated components to include replacements / upgrades of various models of enterprise level switches to replace those that are going end of life. Switches are located in multiple campus / building locations across PCC along with associated power backup technologies. The switches comprising the line item cost are sized by the number of access points, computers, projectors, printers, telephones, and other devices that are connected to them.
2. Disk Storage - This solution is comprises the category of hardware used to store the electronic data for PCC, including storage for data for students, faculty, and staff. The electronic storage includes fault tolerant disk arrays and technologies to meet the needs of centralized data center storage.
3. Network Wireless Solutions – The predominate method of connectivity for PCC’s mobile technology brought on campus by our students and used for instruction is through wireless networks. Approximately 40% of our technology that provides wireless coverage needs replaced and / or upgraded in order to continue to provide comprehensive and adequate wireless access for our students and staff.
4. Collaborative Conferencing Solutions - One of the major initiatives and uses of classrooms for the future is the implementation and deployment of collaborative distance learning in the use of collaborative video and audio conferencing technologies to enable the connectivity to students between campus locations and from off the campus. The current bridge technology that controls the connectivity and provides the ability to connect multiple rooms and off campus locations into a single conference and associated technologies will be unsupported in the next year. The upgrades / replacement of this technology in order to provide for and increase our collaborative distance learning courses.
5. Servers (Virtual and Physical Components) – PCC manages and maintains multiple servers supporting the Instructional and Administrative networks. These servers support file and print, Internet Web sites, Security Systems, Video, Telephony, Learning Repositories and etc. Several of the server blade components for as well as physical servers will be unsupported and / or will not meet required performance specifications.

Supplemental Justification (if necessary):

Not Applicable

ADDITIONAL REQUEST INFORMATION	
Please indicate if three-year roll forward spending authority is required.	Yes XX No
Date of project’s most recent Business Process Analysis:	N/A
Please provide the link to the Business Process Analysis or attached the first page of the analysis to this document:	N/A
Request 6-month encumbrance waiver?	<input type="checkbox"/> Yes XX No
New construction or modification?	<input type="checkbox"/> New <input type="checkbox"/> Renovation

	<input type="checkbox"/> Expansion	<input type="checkbox"/> Capital Renewal
Total Estimated Square Footage	_____ ASF	_____ GSF
Is this a continuation of a project appropriated in a prior year?	<input type="checkbox"/> Yes	XX No
If this is a continuation project, what is the State Controller Project Number?	N/A	

ESTIMATED PROJECT TIME TABLE		
Steps to be completed	Start Date	Completion Date
Core Network Switches	August 2016	April 2017
Disk Storage	November 2016	December 2016
Student Wireless Solutions	November 2016	May 2017
Collaborative Conferencing Solutions	July 2016	June 2017
Servers (Virtual and Physical Components)	July 2016	June 2017



June 26, 2015

Colorado Department of Higher Education
1380 Lawrence, Suite 1200
Denver, CO 80204

To Whom It May Concern:

Pursuant to CDHE program plan instructions, we are requesting a program plan waiver for the Core Technology Infrastructure Project. The disruptive innovation of a continually changing technological environment has created shortfalls in the technology needs of our college. The college has been required to continually invest in improved technology while we have continuing demands and needs to update our technology infrastructure. Our students come to our campuses with the expectation to have a borderless access to technology using various types of devices utilizing a vast array of programs and software.

The estimated cost of the project is \$1,490,050 which is below the \$2,000,000 threshold for program plans. The cost estimates were derived from analysis and quote projects from the current technology market. The college has handled many projects of this size, scope, and nature but cannot keep pace with costs. We anticipate a slight increase to operation and maintenance costs, but this is primarily due to normal inflationary adjustments.

I appreciate your consideration of the request. Please feel free to give me a call if you have any questions equating this request.

Sincerely,

Jon Brude
Chief Business Officer

Pueblo Campus
900 W. Orman Ave.
Pueblo, CO 81004
719.549.3200

Southwest Colorado Community College
701 Camino del Rio | Durango, CO 81301
970.247.2929
33057 Hwy. 160 | Mancos, CO 81328
970.565.7496

Fremont Campus
51320 W. Hwy. 50
Cañon City, CO 81212
719.296.6100

The Board of Governors of the
Colorado State University System
Meeting Date: August 7, 2015
Action Item

MATTER FOR ACTION:

Approval of the Colorado State University - Pueblo Program Plan for Phase II of
Information Technology Campus Access and Classroom Enhancements

RECOMMENDED ACTION:

MOVED, that the Board of Governors of the Colorado State University System approve
Colorado State University – Pueblo’s Program Plan for Phase II of the Information
Technology Campus Access and Classroom Enhancements.

EXPLANATION:

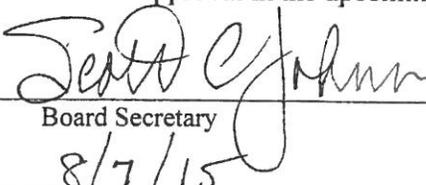
Presented by Karl Spiecker, Vice President for Finance and Administration.

The University needs one-time assistance in the completion of upgrading antiquated voice and data networks by bringing on board sustainable cutting-edge technologies which will transform the institution with enhanced use of the Internet. This request if approved will enhance improvements funded in the FY 2015 legislative session. The additional bandwidth and access speed will allow modern workflow and on-line processes to be put into place. Additionally, the back-up Containerized Data Center will complement the Primary Containerized Data Center that was funded last year. Our plan would be to start work and ordering of necessary equipment and professional services immediately upon receiving these one-time funds. The goal would be the encumbrance of all state funds within six months of project approval, and completion of all aspects of project within three years. The total cost of the request is for \$3,944,430. The request for funding of the project was included in the Board Approved FY 2017 CSU System Capital Construction funding request to be considered for approval in the upcoming legislative session.

✓

Approved

Denied



Board Secretary
8/7/15

Date

Form CC-P

Five-Year Capital Construction Program FY 2016-17 to FY 2020-21	Prepared By: Craig Cason	Phone: (719) 549-2211	E-Mail: craig.cason@colostate-pueblo.edu
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Agency or Institution:	Colorado State University - Pueblo
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Project Title:	Funding	Source	Total Project Cost	Prior Appropriation	Budget Year Request Yr 1 FY 2016-17	Year Two Request	Year Three Request	Year Four Request	Year Five Request
IT Campus Access and Classroom Enhancements	Capital Construction Funds	CCF	\$3,944,430	\$0	\$3,944,430	\$0	\$0	\$0	\$0
	Cash Funds	CF	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Purpose Code:	Reappropriated Funds	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Gross Square Ft:	Federal Funds	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Project Type	Total Funds	\$3,944,430	\$0	\$3,944,430	\$0	\$0	\$0	\$0

Project Title:	Funding	Source	Total Project Cost	Prior Appropriation	Budget Year Request Yr 1 FY 2016-17	Year Two Request	Year Three Request	Year Four Request	Year Five Request
Priority:	Capital Construction Funds	CCF	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Cash Funds	CF	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Purpose Code:	Reappropriated Funds	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Gross Square Ft:	Federal Funds	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Project Type	Total Funds	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Project Title:	Funding	Source	Total Project Cost	Prior Appropriation	Budget Year Request Yr 1 FY 2016-17	Year Two Request	Year Three Request	Year Four Request	Year Five Request
Purpose Code:	Capital Construction Funds	CCF	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Cash Funds	CF	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Purpose Code:	Reappropriated Funds	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Gross Square Ft:	Federal Funds	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Project Type	Total Funds	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Project Title:	Funding	Source	Total Project Cost	Prior Appropriation	Budget Year Request Yr 1 FY 2016-17	Year Two Request	Year Three Request	Year Four Request	Year Five Request
Priority:	Capital Construction Funds	CCF	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Cash Funds	CF	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Purpose Code:	Reappropriated Funds	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Gross Square Ft:	Federal Funds	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Project Type	Total Funds	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Project Title:	Funding	Source	Total Project Cost	Prior Appropriation	Budget Year Request Yr 1 FY 2016-17	Year Two Request	Year Three Request	Year Four Request	Year Five Request
Priority:	Capital Construction Funds	CCF	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Cash Funds	CF	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Purpose Code:	Reappropriated Funds	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Gross Square Ft:	Federal Funds	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Project Type	Total Funds	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Project Title:	Funding	Source	Total Project Cost	Prior Appropriation	Budget Year Request Yr 1 FY 2016-17	Year Two Request	Year Three Request	Year Four Request	Year Five Request
Priority:	Capital Construction Funds	CCF	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Cash Funds	CF	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Purpose Code:	Reappropriated Funds	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Gross Square Ft:	Federal Funds	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Project Type	Total Funds	\$0	\$0	\$0	\$0	\$0	\$0	\$0

CC-IT: CAPITAL CONSTRUCTION INFORMATION TECHNOLOGY REQUEST FOR FY 2016-17

Signature: *Paul J. Spang* Date: 8/7/2015
 Signature: *Andrew J. Rauch* Date: 8/10/15
 CCHE Approval: _____ Date: _____
 OIT Approval: _____ Date: _____
 OSPB Approval: _____ Date: _____

Agency or Institution:	CSU - Pueblo	Department or Institution Approval:							
Project Title:	Campus IT Upgrades and Security	Signature:							
Project Year(s):	FY 2016 - 2017	CHE Approval:							
Agency or Institution Priority Number:		OIT Approval:							
Program Plan:	Yes	OSPB Approval:							
Name and e-mail address of preparer:		Mark Welte - mark.welte@csupueblo.edu							
Revision? Yes No		Total Project Costs	Total Prior Year Appropriations	Current Request FY 2016-17	Year 2 Request	Year 3 Request	Year 4 Request	Year 5 Request	
A. Land Acquisition									
(1) Land/Building Acquisition	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
B. Contract Professional Services									
(1) Consultants/Contractors	\$ 140,000	\$ -	\$ 140,000	\$ -	\$ -	\$ -	\$ -	\$ -	
(2) Quality Assurance	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
(3) Independent Verification and Validation (IV&V)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
(4) Training	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
(5) Leased Space (Temporary)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
(6) Feasibility Study	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
(7a) Inflation for Professional Services	\$ 10,000	\$ -	\$ 10,000	\$ -	\$ -	\$ -	\$ -	\$ -	
(7b) Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
(8) Other Services/Costs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
(9) Total Professional Services	\$ 150,000	\$ -	\$ 150,000	\$ -	\$ -	\$ -	\$ -	\$ -	
C. Associated Building Construction									
(1) (a) New (GSF):	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
New \$ /GSF									
(2) (b) Renovate GSF:	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Renovate \$ /GSF									
(3) Site Work/Landscaping	\$ 300,000	\$ -	\$ 300,000	\$ -	\$ -	\$ -	\$ -	\$ -	
(4) Other (Specify)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
(5a) Inflation for Construction	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
(5b) Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
(6) Total Construction Costs	\$ 300,000	\$ -	\$ 300,000	\$ -	\$ -	\$ -	\$ -	\$ -	
D. Software Acquisition									
(1) Software COTS	\$ 583,600	\$ -	\$ 583,600	\$ -	\$ -	\$ -	\$ -	\$ -	
(2) Software Built	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
(4a) Inflation on Software	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
(4b) Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
(5) Total Software	\$ 583,600	\$ -	\$ 583,600	\$ -	\$ -	\$ -	\$ -	\$ -	
E. Equipment									
(1) Servers	\$ 287,500	\$ -	\$ 287,500	\$ -	\$ -	\$ -	\$ -	\$ -	
(2) PCs, Laptops, Terminals, PDAs	\$ 499,000	\$ -	\$ 499,000	\$ -	\$ -	\$ -	\$ -	\$ -	
(3) Printers, Scanners, Peripherals	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
(4) Network Equipment/Cabling	\$ 1,806,500	\$ -	\$ 1,806,500	\$ -	\$ -	\$ -	\$ -	\$ -	
(5) Other (Specify)	\$ 130,000	\$ -	\$ 130,000	\$ -	\$ -	\$ -	\$ -	\$ -	
(6) Miscellaneous	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
(7) Total Equipment and Miscellaneous Costs	\$ 2,723,000	\$ -	\$ 2,723,000	\$ -	\$ -	\$ -	\$ -	\$ -	
F. Operating Cost									
(1) Maintenance Costs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
(2) Repair Costs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
(3) Staffing/Employee Costs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
(4) Other	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
(5) Total Operating Costs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
G Total Project Costs	\$ 3,756,600	\$ -	\$ 3,756,600	\$ -	\$ -	\$ -	\$ -	\$ -	
H. Project Contingency									
(1) 5% for New	\$ 187,830	\$ -	\$ 187,830	\$ -	\$ -	\$ -	\$ -	\$ -	
(2) 10% for Renovation	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
(3) Total Contingency	\$ 187,830	\$ -	\$ 187,830	\$ -	\$ -	\$ -	\$ -	\$ -	
I. Total Budget Request (F+G(3))	\$ 3,944,430	\$ -	\$ 3,944,430	\$ -	\$ -	\$ -	\$ -	\$ -	
J. Source of Funds									
GF	\$ 3,944,430	\$ -	\$ 3,944,430	\$ -	\$ -	\$ -	\$ -	\$ -	
CF	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
RF	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
FF	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	

check (should = H)

\$3,944,430

\$0

\$3,944,430

\$0

\$0

\$0

\$0



COLORADO

John W. Hickenlooper
Governor

Erich Matola
Chief Information Officer

FY 2016-17 Capital IT Request | July 24, 2015

Signature

Date

Department or CCHE Capital Construction Priority: xx
Colorado State University - Pueblo Campus Information Technology Upgrades and Security

Summary of Capital Construction Request	Total Funds	CCFE	Cash Funds*	Federal Funds
FY 2016-17	\$3,944,430	\$3,944,430	\$0	\$0

Request Summary

The project request is to upgrade critical technological systems at CSU-Pueblo's campus. This is in order to address the increasing technology demands, alignment with OIT and DHE best practices, and the requirements of teaching in the quickly changing technological world. This includes providing an additional redundant datacenter, security technology to protect the campus, upgrading classrooms from analog to digital "smart" technology, integrating a new unified messaging system throughout campus, and a fiber truck to repair the infrastructure. The total request is for \$3,944,430.

Project Description

In order to adequately support the increasing and changing technological needs on the campus, Colorado State University – Pueblo is requesting the following upgrades:

New Redundant Containerized Datacenter

The request includes installing one (1) new containerized datacenter to provide a redundant site for failover and disaster recovery. A containerized datacenter is a purpose-engineered module designed to provide a self-contained environment for housing servers and other critical computer hardware. The unit includes lighting, fire suppression, monitoring, power distribution, and critical cooling. It is a standalone unit and does not need to be contained within an existing building. CSU-Pueblo is currently installing the primary containerized unit on campus.

Campus Network and System Security

The network and system security is a collection of tools and monitoring systems that proactively monitor and log data entering into and out of the campus network. The campus security systems are directed by The Critical Security Controls for Effective Cyber Defense set forth by the Council on CyberSecurity which is the security program that the OIT follows. The security system looks for patterns of suspicions or malicious activity and records machine data for analysis and logging. The systems provide secure connections to vital

resources such as DNS and encrypted traffic while at the same time inspecting the traffic for hackers attempting to steal data or phish personal information.

Provide Digital Technology to all Classrooms

Digital Classrooms are technology enhanced classrooms that provide opportunities in the classroom by integrating learning technology, such as computers, specialized software, audience response technology, assistive listening devices, networking, and audio/visual capabilities. The Digital classrooms are equipped with ceiling mounted projectors and projection screen, laptop / desktop connectivity, enhanced sound system, touchscreen control system, telecommunications, and video recording capabilities.

Integrate Unified Messaging Throughout Campus

A Unified Messaging system integrates traditional telephone systems with communications media (e-mail, fax, video messaging, etc.) technologies into a single interface, accessible from a variety of different devices. Unified messaging solutions enhance and improve business productivity while decreasing communication issues. It also reduces the need to travel for communication and extends the campus out to other geographic areas not limited to Pueblo.

Purchase New Fiber Truck

CSU-Pueblo is responsible for maintaining the CDOT fiber in southern Colorado as part of an MOU for using the fiber. The current splicing truck is over 20 years old, and is in need of replacement with a new and more reliable unit. The truck and equipment it contains is constantly in demand for campus telecommunications and fiber optic splicing needs for both emergency and non-emergency situations. The truck is required as higher education is allowed to use the fiber owned by the Colorado Department of Transportation in exchange for maintenance and repair of that fiber.

No part of this project request is a continuation project from any other request.

Background and Justification

New Redundant Containerized Datacenter

The CSU-Pueblo datacenter was constructed when mainframes were the primary computing system used on the campus. The campus suffered from an extended outage in 2012 during the Spring finals as there was no provision for disaster failover when an equipment failure happened in the primary datacenter. This resulted in the complete loss of campus computing for seven (7) days and caused significant disruptions to the campus operations.

The campus is in the process of installing a new primary containerized datacenter to replace the aging datacenter facilities. There is not an adequate secondary datacenter that allows for a complete failover for maintenance or disaster recovery. Audits conducted by both CSU- Ft Collins and by outside IT specialists following the 2012 outage concluded that the CSU-Pueblo campus did not have adequate computing infrastructure to provide continuous computing service in case of an issue in the primary datacenter.

This project would provide a mirror image of the primary containerized datacenter in a geographically different location on campus to provide failover and disaster recovery in case of an issue in the primary datacenter. Existing equipment would be split between the primary and redundant datacenters to provide a 1+1 system for operation. No new networking or server systems would need to be purchased as the current systems were designed with this configuration as the intended configuration.

Campus Network and System Security

Students, staff and faculty are connected to more systems outside of CSU-Pueblo than ever before. But with this connectivity comes the increased threat of data breaches and the loss of personal information as the systems that are required to conduct day to day operations are also connected to the outside world. The ever increasing threats from hackers and cybercriminals are requiring robust information security programs and tools to combat the threats. The OIT's Office of Information Security has provided guidance and leadership in combating these threats and CSU-Pueblo is striving to model their information security plan after the OIT's Office of Information Security security plans.

The campus network and system security upgrade is to install systems and tools that follow The Critical Security Controls for Effective Cyber Defense set forth by the Council on CyberSecurity (Otherwise known as the CSC 20 rules). This is the security framework that the OIT's Office of Information Security has been successful in implementing to minimize the threats present in today's information technology landscape.

The first upgrade would be software and systems that allow the Critical Security Control Rule 11: Limitation and Control of Network Ports, Protocols, and Services to be implemented. This is the limiting of ports, protocols, and services with validated business needs and host-based firewalls or port filtering tools on end systems. The main tool in this area would be secure DNS servers to prevent man in the middle attacks and network analysis tools to inspect traffic in real time for malicious activity and port spoofing.

The next area would be to cover Critical Security Control Rule 14: Maintenance, Monitoring, and Analysis of Audit Logs. This would be software to aggregate machine data and analyze and identify anomalies in logs. This software is known as Security Incident and Event Management software (SEIM) or log analytic tools for log aggregation and consolidation from multiple machines and for log correlation and analysis.

The final area that would be covered in this upgrade would be to tools and software to cover CSC Rule 3: Secure Configurations for Hardware and Software on Mobile Devices, Laptops, Workstations, and Servers and CSC 4: Continuous Vulnerability Assessment and Remediation. At present the CSU-Pueblo campus does not have any way to quickly and effectively audit the security position of the campus and these tools would allow the requirements of the above rules to be met.

Provide Digital Technology to all Classrooms

CSU-Pueblo has 130 classrooms that are outfitted with a desktop computer, an analog controller, and at least 1 projector. The initiative would be to upgrade the teaching podiums to a standard digital system that would allow the use of devices independent of the manufacture and thus allow, faculty, students, and guest speakers to present and interact with students in the classroom. Additionally select classrooms would be upgraded to video telepresence enabled classrooms that would allow content to be streamed into or out of the classroom for distance learning and collaboration.

At present time the systems are connected via analog connections and do not support new technology such as iPads, Apple computers, or other digital inputs. Presentations and teaching must either be conducted via whiteboards in the classroom or via the computer in slides and presentations. This initiative would upgrade all of the classrooms to digital media connections that would allow the faculty and staff to connect to the classroom audio and video equipment via multiple digital sources. Requests are ever increasing from both faculty and students that new teaching methods such as hybrid classes or experiential teaching and thus this is difficult to accomplish as the current classrooms do not support the technology required to teach the classes.

Unified Messaging Implementation across Campus

The unified messaging initiative is to replace separate and end of life equipment with a single communication system that allows end users the ability to interact via voice, video, and instant messaging from a common system that is available on a variety of devices. The current communication systems at CSU-Pueblo is a traditional PBX phone system, Microsoft Exchange for email, and various standalone implementations on video teleconferencing. The Fujitsu XL 9600 PBX phone system is 15 years old and is not VoIP capable. In, addition, it has not been supported by the manufacturer for over five years. Parts and spares are difficult to obtain and reliable operation of the system is at risk if critical components need to be replaced. The implementation of a unified communication system will reduce long distance costs by its use of the campus WAN connection to the outside world. It will also improve video teleconferencing capability on campus via the use of the University's LAN.

Purchase New Fiber Truck

This initiative it to purchase a truck to replace that aging truck used for fiber optic repairs and splices which connects the CSU-Pueblo campus to the rest of the state. Currently there are only two (2) fiber optic repair vehicles in the state of Colorado and they are located at the CSU-Pueblo campus and the CSU-Ft Collins campus. CSU-Pueblo has a memorandum of understanding with CDOT that we are allowed to use the CDOT fiber for our internet traffic in exchange for splice and repair work for CDOT on the lines. The CSU-Pueblo splice truck provides fiber repair and new connections for UC-Colorado Springs, CSU-Pueblo, Colorado School of Mines, CDOT, UCAR and the FRGP.

Implementation Plan

New Redundant Containerized Datacenter

The implementation plan is to hire an architect to work with a datacenter design firm to create the project drawings and scope. The project will include a concrete floor slab to house the datacenter as well as electrical connections to the existing power supply and generator currently on campus. The datacenter will be custom built off-campus and delivered to campus upon completion.

The project timeline to complete the datacenter project is nine (9) months. This will include three (3) months to hire an architect and design the project, and six (6) months to have the data center constructed and installed.

Campus Network and System Security

The implementation plan is to work with the OIT Office on Information Security to make sure that the policies and tools that CSU-Pueblo is installing work in conjunction and do not disrupt any services provided by the OIT.

The project timeline to complete the security project is twenty four (24) months. This will include three (3) months to work with the OIT and vendors on a project design, and eighteen (18) months to training, deployment, and documentation of the software and procedures.

Provide Digital Technology to all Classrooms

The project timeline to complete the digital upgrade project is twelve (12) months. This will include three (3) months to work with vendors on a project specifications and procurement, and nine (9) months for installation, deployment, documentation and training.

The timing will be done so to minimize disruptions to class and to upgrade the classrooms that have the largest impact with regards to instruction.

Unified Messaging Implementation across Campus

The implementation plan is to engage with a unified messaging specialist to determine the project requirements, implementation time and scope. The implementation will be staged as to not disrupt the business operations or communications on the campus

The project timeline to complete the datacenter project is twelve (12) months. This will include three (3) months to hire a project specialist and design the project, and nine (9) months for installation, deployment, documentation and training.

Purchase New Fiber Truck

The project implementation time is three (3) months for the purchase and outfitting of a new fiber splice truck. This includes procurement, configuration, and delivery

Alignment with OIT Best Practices

The information technology and security upgrades requested in this document align with the strategies and policies of the OIT. The requests are to better align CSU-Pueblo with the guidelines set forth in the OIT's FY2016 Playbook which outlines the OIT's strategic plan as well as the OIT Office of Information Security's Secure Colorado strategic plan. CSU-Pueblo is intent on working with the OIT to make sure that the IT polices of the campus follow the IT policies of the OIT. The OIT follows the by The Critical Security Controls for Effective Cyber Defense and CSU-Pueblo will follow that same security guidelines for all new technology projects

Security and Backup/Disaster Recovery

New Redundant Containerized Datacenter

Security and backup/disaster recovery capabilities will be enhanced by the installation of the new redundant containerized datacenter. It will provide the necessary cooling for the equipment as well as electrical connectivity to the emergency generator in case of power outages and/or surges. The container will be monitored by closed circuit cameras and will have environmental and security monitors to indicate when conditions are outside of the specified requirements. This will provide a second fully operational datacenter to the campus that will be able to take over the entire campus operations of computing in case of a failure of the primary containerized datacenter.

Campus Network and System Security

The campus network and system security upgrade is to install systems and tools that follow The Critical Security Controls for Effective Cyber Defense set forth by the Council on CyberSecurity. This is the security framework that the OIT's Office of Information Security has been successful in implementing to minimize the threats present in today's information technology landscape.

Provide Digital Technology to all Classrooms

Security and disaster recovery would be provided by existing IT systems.

Unified Messaging Implementation across Campus

Security and disaster recovery would be provided by existing IT systems. As this is a new system the implementation and configuration would be done to closely follow the security guidelines set forth in The Critical Security Controls for Effective Cyber Defense.

Purchase New Fiber Truck

Truck will be stored on campus in a secure area.

Business Process Analysis

CSU-Pueblo recognized the previous work with the Joint Technology Committee and the importance of the JTC to the success of the campus. The JTC provided the campus the ability to correct serious technological problems and thus continue to move the campus forward with its strategies.

For the FY 2016-2017 project request CSU-Pueblo started with evaluating the systems that had the greatest impact on the technological infrastructure and could potentially cause:

1. prolonged business outages or loss of system use
2. monetary losses due to failure, data breach, or other factor
3. strategic goals set forth by the state, campus, the CSU-System, the OIT, or the CHDE

The systems determined to be critical were evaluated against these factors and a list was compiled based upon the need, the cost of the need, and the alignment with strategies of the stakeholders of the systems. Campus leadership and stakeholders within information technology then developed this request to either correct these deficiencies or to upgrade equipment to allow the university to meet the needs expected from the various stakeholders that CSU-Pueblo is responsible to. The report was then developed to submit to the JTC for consideration in the FY2016-2017.

Systems Integration Opportunities

CSU-Pueblo is working with the OIT to identify areas that may be system integration opportunities with regards to network security and auditing.

Program Plan

The program plan has been created and verified by an independent third party for accuracy. The program plan was submitted to the CSU Board of Governors for review and prioritization.

Cost Savings and Improved Performance Outcomes

New Redundant Containerized Datacenter

The redundant containerized datacenter will decrease network downtime, prolong equipment life, and provide real time backup and disaster recovery. The redundant containerized datacenter will provide redundant cooling, redundant power, and a significant reduction to hazards such as flooding as it is not housed within a building envelope.

Cost calculations in prioritizing the redundant data center were made using the campus operating budget with a 24/7 operating time. The campus has an operating budget of approximately \$45 million and therefore each minute of downtime on the campus has the theoretical cost \$85.60. This equates to \$5136.98 per hour or \$123,287.52 per day. The cost justification for the redundant datacenter is based on cost avoidance due to lost productivity and the loss of instructional time.

Campus Network and System Security

The network and security system is based completely on cost avoidance. A security industry report determined that a security breach is three (3) times more expensive than the security controls that would have prevented it. Recent high profile breaches such a Target, Anthem and the multitude of others has shifted the focus of the campus to protect the information of its customers, employees, and stakeholders.

This project is to align with the OIT Office of Information Security's goal to have all new systems evaluated and monitored in real time.

Provide Digital Technology to all Classrooms

This project is based on improved performance outcomes. Changes in technology have altered the delivery of information to students as they no longer have to be in the classroom to receive instruction and more and more of the instructional delivery is by video or other digital content. The upgrade of the classrooms to digital technology is so that CSU-Pueblo can produce students the experience and qualifications required by employers in the state of Colorado. This will allow the classrooms at CSU-Pueblo be used for hybrid teaching, distance learning, and device independent content delivery.

Unified Messaging Implementation across Campus

The unified messaging system implementation is to reduce the need for travel, increase the availability of messaging to multiple devices, and provide a single system to aggregate that various forms of communication that are present in the operation of the campus. Current voice systems are limited to be accessed from one device and are not mobile ready. The unified messaging system would allow messaging to be received from a number of devices as well as extend the messaging delivery to geographic areas outside of the CSU-Pueblo campus.

Purchase New Fiber Truck

The current fiber truck is a 20 year old converted ambulance and is not part of the state fleet program. The truck is not set up for winter use and can be difficult to operate in cold weather. The new fiber truck would be specified and built for fiber optic repair as well as be configured for working safely in the areas containing high volumes of traffic and environmental issues.

Cost-Benefit Analysis and Project Alternatives

New Redundant Containerized Datacenter

One alternative to the proposed redundant datacenter would be to reuse the current out of date datacenter in the Administration Building, The Heating, Ventilation, and Air Conditioning System (HVAC) to handle the necessary loads has been quoted at \$400,000 to only upgrade the existing cooling system. Reuse of the existing datacenter would be expensive as the datacenter would still need additional work to the electrical system, the raised floor system, and flood mitigation work to protect the existing datacenter from internal plumbing. This was deemed to be not an efficient option as the building is not configured to handle the new equipment and would be more expensive to retrofit when compared to a modular system.

Movement to the cloud of campus systems was also researched. The campus is moving non-essential computing activities to the cloud but the redundant datacenter would still be needed to house the networking, firewalls, and servers that would be needed to connect to the cloud systems.

Not funding the redundant modular datacenter would significantly increase the probability of another major outage on campus. The lack of a redundant datacenter has been determined to be an issue in previous audits and this would provide a mirror to the primary datacenter.

Campus Network and System Security

There were no alternatives to this project other than to continue on with the current systems which are known to be inadequate. This program is a cost avoidance issue and also contains the intangibles of damage to the credibility of CSU-Pueblo.

Provide Digital Technology to all Classrooms

One of the alternatives reviewed was to not offer the enhanced learning experience of smart classrooms, and using more traditional non-internet and technology based teaching. Over the past couple of years there has been an increase in the number of instructors wanting to teach hybrid classes and those that did had difficulties in doing so as the classrooms are not equipped to support that type of instruction. Other alternatives such as complete online learning have been explored but research by Rutgers and other universities have shown that a mixture of digital delivery and face to face interaction has been shown to be preferred by both faculty and staff.

Unified Messaging Implementation across Campus

The options that were reviewed were to continue to use the existing systems and attempt to obtain replacement parts or look to using a third party or hosted solution for VoIP telephone service. Typical hosted messaging solutions cost approximately \$10 per subscriber line and the system is subject to the availability of the internet as that is how it is delivered. CSU-Pueblo looked at what other state agencies have done such as the Colorado Department of Transportation and the savings that they have reported in travel costs and messaging costs determined that the unified messaging was the best choice.

Purchase New Fiber Truck

The alternative to purchasing a new fiber truck was to contract out to have the work performed. The average cost for a vendor to perform a splice or repair is \$2500. On average the fiber truck is used four (4) times per month. Performing the calculations of having a vendor perform the splice and repair work shows that the campus could expect to pay about \$120,000 per year for fiber repair. This would increase the cost to the university as this would have to be paid for with operating budgets. Based on the amount the truck would be used the ROI on the truck would be two (2) years.

Consequences if not Funded

New Redundant Containerized Datacenter

This would leave the campus with one datacenter and thus it would still be susceptible to a failure like the one that occurred in 2012. As stated before in this document the existing datacenter is not able to handle what is currently in it and using it as a backup would require a significant amount of expenditure. The other significant issue facing the campus is that the IT resources are expected to behave as a utility and should be available 24/7. This is not currently possible with the existing systems.

Campus Network and System Security

The consequences of not placing resources into security are the loss of confidence in the customers and the cost of remediating the damage from a breach. Unfortunately there are significant financial gains for the hackers and cybercriminals so this threat will be persistent and only get more complex as the resources of the hackers get better.

Provide Digital Technology to all Classrooms

Not funding the digital equipment upgrades will prevent the university from taking advantage of 21st century technology. Faculty, staff, and students all have an increased reliance on technology in terms of availability, confidentiality, and integrity. Upgrading these components will allow all university constituents to work more efficiently and also help attract and retain students to campus. Higher education has become a very competitive market and any decreases in enrollment will have a significant impact on the financial stability of the campus.

Unified Messaging Implementation across Campus

The campus is already behind many other state institutions with regards to messaging and technology and this would put the campus further behind. CSU-Pueblo is one of the last campuses to still use a PBX phone system and thus is not able to take advantage of many of the features and efficiencies that unified communications provides.

Purchase New Fiber Truck

The ability to repair the fiber for CDOT in the southern part of the state is part of an agreement between higher education and the CDOT for the use of the fiber optic lines to connect campuses across the state. The inability to repair the fiber would require CSU-Pueblo to contract out the work at a much higher expense and with a longer time to repair.

Operating Budget Impact

New Redundant Containerized Datacenter

The redundant containerized datacenter is not expected to impact the campus IT operating budget for the first five (5) years of operations as maintenance and support have been included in the purchase price of the equipment and will be for a 5 year period. The other main area that would be impacted on campus would be to the electrical expenses of the campus and this has been calculated to be less than what the current datacenter uses as the systems are designed to be scalable. The electrical load and cooling load only use the resources that are in need at the given computing load. This has been shown to have as much as a 20% saving in electrical usage over the current datacenter in use on campus.

Campus Network and System Security

There is expected to be an increase in the operating budget for security but this has been determined to be independent of this project. The increase in threats to the campus requires an increase in security spending.

Provide Digital Technology to all Classrooms

This project will not impact the current operating budget of the campus for the first five (5) years and all maintenance and support will be included in the purchase of the equipment. There is not expected to be an increase in FTE due to this project.

Unified Messaging Implementation across Campus

This project will not impact the current operating budget of the campus for the first five (5) years and all maintenance and support will be included in the purchase of the equipment. There is not expected to be an increase in FTE due to this project.

Purchase New Fiber Truck

This project will not impact the current operating budget as it will replace an ageing piece of equipment.

Assumptions for Calculations:

All purchases will include five (5) years of maintenance and support.

<u>New Redundant Containerized Datacenter</u>	
Containerized Datacenter	\$625,000
Datacenter Architectural & Engineering	\$50,000
Structural Concrete Pad	\$75,000
Electrical / Network Datacenter Connectivity	\$150,000
Campus Exterior Improvements	\$75,000
Training	\$10,000
Project Cost	\$985,000
<u>Campus Network and System Security</u>	
Security Software	\$305,000
Training and Implementation	\$50,000
Project Cost	\$355,000
<u>Provide Digital Technology to all Classrooms</u>	
130 classrooms to upgrade	
Digital cabling 130 rooms	\$195,000
Digital equipment, media, audio video 130 rooms	\$1,189,500
Project Cost	\$1,384,500
<u>Unified Messaging Implementation across Campus</u>	
Software and licensing	\$288,600
Servers, storage, peripherals	\$427,500
Life safety power backup	\$96,000
Implementation	\$90,000
Project Cost	\$902,100
<u>Purchase New Fiber Truck</u>	
Fiber splice truck	\$130,000
Total All Project Costs	\$3,756,600
Contingency = 5% x \$3,756,600	\$187,830
Total CC-IT Request	\$3,944,430

ADDITIONAL REQUEST INFORMATION		
Please indicate if three-year roll forward spending authority is required.	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Date of project's most recent program plan:	8-1-2015	
Please provide the link to the program plan or attached the first page of the analysis to this document:		
Request 6-month encumbrance waiver?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
New construction or modification?	<input type="checkbox"/> New	<input type="checkbox"/> Renovation
	<input type="checkbox"/> Expansion	<input type="checkbox"/> Capital Renewal
Total Estimated Square Footage	_____ ASF	_____ GSF
Is this a continuation of a project appropriated in a prior year?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
If this is a continuation project, what is the State Controller Project Number?		

ESTIMATED PROJECT TIME TABLE		
Steps to be completed	Start Date	Completion Date

Program Plan Colorado State University – Pueblo Information Technology Campus Access and Classroom Enhancements

FY 2016-2017 Capital Budget Request – August 1, 2015



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Summary

PREFACE

Higher education decision makers are eyeing ways to better understand, plan for, and execute around the technology trends that will impact their organizations both today and in the future. IT is the strategic vehicle in which many of these business or educational needs are satisfied. The increasing use of computer technology in the classroom and for distance learning has gained broad acceptance at Colorado State University – Pueblo. Multimedia access over the network has become an instructional need as the use of the Internet has grown to provide important educational resources. New academic uses of technology are putting demands on campus infrastructures that those systems were not designed to support. Our administrators, faculty, staff, and students expect the University’s IT systems to be like other utilities...always available. This level of service requires our systems to be built using high reliability and redundant techniques. Colorado State University - Pueblo is committed to providing such “always on” services.

This plan strives to support the CSU-Pueblo Strategic Plan and its many goals. Additionally, Colorado Department of Higher Education and State goals have been taken into consideration and are addressed by this program plan. Fulfilling needs such as full access to network resources specifically for Southern Colorado is an ongoing goal as well the enhancement of classrooms and the learning experience. As a Hispanic Serving Institution (HSI), CSU-P’s role as a means to promote opportunities for our students in Colorado is vital. New infrastructure addresses digital library requirements, electronic student services, security, as well as the support of larger outreach and distance learning needs all urgently required by our workforce.

PROBLEM STATEMENT

Colorado State University – Pueblo has an aging data and voice infrastructure and increasing demands from its constituents to provide “always on” access to the internet and to internal and external data sources. The students, faculty and staff at CSU-P are challenged to thrive in a digital world with tools and systems that are often 10, 15 or even 20 years old. In many instances this antiquated technology has impacted enrollment, administrative efficiencies and even the ability to compete. The University is tasked with feeding qualified future employees and professionals into Colorado’s dynamic and technologically savvy workforce. Satisfying the needs outlined in detail in this Program Plan fully addresses the requirements for student access to the internet, modern computers and software, network and system security, technology enhanced classrooms, electronic student services, and digital library resources. Additionally, the increased bandwidth and throughput capabilities will allow for community outreach and distance learning, ultimately supporting and adapting to the quickly changing workforce needs of Colorado. For this purpose we have the following initiatives.

Initiative #1 – New Redundant Containerized Datacenter

Initiative #2 – Campus Network and System Security

Initiative #3 – Provide Digital Technology to all Classrooms

Initiative #4 – Integrate Unified Messaging Throughout Campus

Initiative #5 – Purchase New Fiber Truck

The University needs one-time assistance in the completion of upgrading these antiquated voice and data networks by bringing on board sustainable cutting-edge technologies which will transform the institution with enhanced use of the Internet. This request if approved will enhance improvements funded in the FY 2015 legislative session. The additional bandwidth and access speed will allow modern workflow and on-line processes to be put into place. Additionally, the back-up Containerized Data Center will complement the Primary Containerized Data Center that was funded last year. Our plan would be to start work and ordering of necessary equipment and professional services immediately upon receiving these one-time funds. The goal would be the encumbrance of all state funds within six months of project approval, and completion of all aspects of project within three years.

PROJECT DETAIL

Initiative #1 – Install New Containerized Datacenter

Project Description

The request includes installing one (1) new containerized datacenter to provide a redundant site for failover and disaster recovery. A containerized datacenter is a purpose-engineered module designed to provide a self-contained environment for housing servers and other critical computer hardware. The unit includes lighting, fire suppression, monitoring, power distribution, and critical cooling. It is a standalone unit and does not need to be contained within an existing building. CSU-Pueblo is currently installing the primary containerized unit on campus.

Background and Justification

The CSU-Pueblo datacenter was constructed when mainframes were the primary computing system used on the campus. The campus suffered from an extended outage in 2012 during the Spring finals as there was no provision for disaster failover when an equipment failure happened in the primary datacenter. This resulted in the complete loss of campus computing for seven (7) days and caused significant disruptions to the campus operations.

The campus is in the process of installing a new primary containerized datacenter to replace the aging datacenter facilities. There is not an adequate secondary datacenter that allows for a complete failover for maintenance or disaster recovery. Audits conducted by both CSU- Ft Collins and by outside IT specialists following the 2012 outage concluded that the CSU-Pueblo campus did not have adequate computing infrastructure to provide continuous computing service in case of an issue in the primary datacenter.

This project would provide a mirror image of the primary containerized datacenter in a geographically different location on campus to provide failover and disaster recovery in case of an issue in the primary datacenter. Existing equipment would be split between the primary and redundant datacenters to provide a 1+1 system for operation. No new networking or server systems would need to be purchased as the current systems were designed with this configuration as the intended configuration.

Cost-Benefit Analysis and Project Alternatives

One alternative to the proposed redundant datacenter would be to reuse the current out of date datacenter in the Administration Building, The Heating, Ventilation, and Air Conditioning System (HVAC) to handle the necessary loads has been quoted at \$400,000 to only upgrade the existing cooling system.

Reuse of the existing datacenter would be expensive as the datacenter would still need additional work to the electrical system, the raised floor system, and flood mitigation work to protect the existing datacenter from internal plumbing. This was deemed to be not an efficient option as the building is not configured to handle the new equipment and would be more expensive to retrofit when compared to a modular system.

Movement to the cloud of campus systems was also researched. The campus is moving non-essential computing activities to the cloud but the redundant datacenter would still be needed to house the networking, firewalls, and servers that would be need to connect to the cloud systems.

Not funding the redundant modular datacenter would significantly increase the probability of another major outage on campus. The lack of a redundant datacenter has been determined to be an issue in previous audit and this would provide a mirror to the primary datacenter.

Consequences if not Funded

This would leave the campus with one datacenter and thus it would still be susceptible to a failure like the one that occurred in 2012. As stated before in this document the existing datacenter is not able to handle what is currently in it and using is a backup would require a significant amount of expenditure. The other significant issue facing the campus is that the IT resources are expected to behave as a utility and should be available 24/7. This is not currently possible with the existing systems.

Assumptions for Calculations

Containerized Datacenter	\$625,000
Datacenter Architectural & Engineering	\$50,000
Structural Concrete Pad	\$75,000
Electrical / Network Datacenter Connectivity	\$150,000
Campus Exterior Improvements	\$75,000
Training	\$10,000
Project Cost	\$985,000

Timeline

Design – 3 months

Construction - 6 months

Implementation – 3 months

Total – 12 months

Initiative #2 – Campus Network and System Security

Project Description

The network and system security is a collection of tools and monitoring systems that proactively monitor and log data entering into and out of the campus network. The campus security systems are directed by The Critical Security Controls for Effective Cyber Defense set forth by the Council on CyberSecurity which is the security program that the OIT follows. The security system looks for patterns of suspicions or malicious activity and records machine data for analysis and logging. The systems provide secure connections to vital resources such as DNS and encrypted traffic while at the same time inspecting the traffic for hackers attempting to steal data or phish personal information.

Background and Justification

Students, staff and faculty are connected to more systems outside of CSU-Pueblo than ever before. But with this connectivity comes the increased threat of data breaches and the loss of personal information as the systems that are required to conduct day to day operations are also connected to the outside world. The ever increasing threats from hackers and cybercriminals are requiring robust information security programs and tools to combat the threats. The OIT's Office of Information Security has provided guidance and leadership in combating these threats and CSU-Pueblo is striving to model their information security plan after the OIT's Office of Information Security security plans.

The campus network and system security upgrade is to install systems and tools that follow The Critical Security Controls for Effective Cyber Defense set forth by the Council on CyberSecurity (Otherwise known as the CSC 20 rules). This is the security framework that the OIT's Office of Information Security has been successful in implementing to minimize the threats present in today's information technology landscape.

The first upgrade would be software and systems that allow the Critical Security Control Rule 11: Limitation and Control of Network Ports, Protocols, and Services to be implemented. This is the limiting of ports, protocols, and services with validated business needs and host-based firewalls or port filtering tools on end systems. The main tool in this area would be secure DNS

servers to prevent man in the middle attacks and network analysis tools to inspect traffic in real time for malicious activity and port spoofing.

The next area would be to cover Critical Security Control Rule 14: Maintenance, Monitoring, and Analysis of Audit Logs. This would be software to aggregate machine data and analyze and identify anomalies in logs. This software is known as Security Incident and Event Management software (SEIM) or log analytic tools for log aggregation and consolidation from multiple machines and for log correlation and analysis.

The final area that would be covered in this upgrade would be to tools and software to cover CSC Rule 3: Secure Configurations for Hardware and Software on Mobile Devices, Laptops, Workstations, and Servers and CSC 4: Continuous Vulnerability Assessment and Remediation. At present the CSU-Pueblo campus does not have any way to quickly and effectively audit the security position of the campus and these tools would allow the requirements of the above rules to be met.

Cost-Benefit Analysis and Project Alternatives

The network and security system is based completely on cost avoidance. A security industry report determined that a security breach is three (3) times more expensive than the security controls that would have prevented it. Recent high profile breaches such a Target, Anthem and the multitude of others has shifted the focus of the campus to protect the information of its customers, employees, and stakeholders.

This project is to align with the OIT Office of Information Security's goal to have all new systems evaluated and monitored in real time.

There were no alternatives to this project other than to continue on with the current systems which are known to be inadequate. This program is a cost avoidance issue and also contains the intangibles of damage to the credibility of CSU-Pueblo.

Consequences if not Funded

The consequences of not placing resources into security are the loss of confidence in the customers and the cost of remediating the damage from a breach. Unfortunately there are significant financial gains for the hackers and cybercriminals so this threat will be persistent and only get more complex as the resources of the hackers get better.

Assumptions for Calculations

Security Software	\$305,000
Training and Implementation	\$50,000
Project Cost	\$355,000

Timeline

- Design with OIT – 3 months
- Implementation, Training, Documentation – 18 months
- Total – 24 months

Initiative #3 – Provide Digital Technology to all Classrooms

Project Description

Digital Classrooms are technology enhanced classrooms that provide opportunities in the classroom by integrating learning technology, such as computers, specialized software, audience response technology, assistive listening devices, networking, and audio/visual capabilities. The Digital classrooms are equipped with ceiling mounted projectors and projection screen, laptop / desktop connectivity, enhanced sound system, touchscreen control system, telecommunications, and video recording capabilities.

Background and Justification

CSU-Pueblo has 130 classrooms that are outfitted with a desktop computer, an analog controller, and at least 1 projector. The initiative would be to upgrade the teaching podiums to a standard digital system that would allow the use of devices independent of the manufacture and thus allow, faculty, students, and guest speakers to present and interact with students in the classroom. Additionally select classrooms would be upgraded to video telepresence enabled classrooms that would allow content to be streamed into or out of the classroom for distance learning and collaboration.

At present time the systems are connected via analog connections and do not support new technology such as iPads, Apple computers, or other digital inputs. Presentations and teaching must either be conducted via whiteboards in the classroom or via the computer in slides and presentations. This initiative would upgrade all of the classrooms to digital media connections that would allow the faculty and staff to connect to the classroom audio and video equipment

via multiple digital sources. Requests are ever increasing from both faculty and students that new teaching methods such as hybrid classes or experiential teaching and thus this is difficult to accomplish as the current classrooms do not support the technology required to teach the classes.

Cost-Benefit Analysis and Project Alternatives

One of the alternatives reviewed was to not offer the enhanced learning experience of smart classrooms, and using more traditional non-internet and technology based teaching. Over the past couple of years there has been an increase in the number of instructors wanting to teach hybrid classes and those that did had difficulties in doing so as the classrooms are not equipped to support that type of instruction. Other alternatives such as complete online learning have been explored but research by Rutgers and other universities have shown that a mixture of digital delivery and face to face interaction has been shown to be preferred by both faculty and staff.

Consequences if not Funded

Not funding the digital equipment upgrades will prevent the university from taking advantage of 21st century technology. Faculty, staff, and students all have an increased reliance on technology in terms of availability, confidentiality, and integrity. Upgrading these components will allow all university constituents to work more efficiently and also help attract and retain students to campus. Higher education has become a very competitive market and any decreases in enrollment will have a significant impact on the financial stability of the campus.

Assumptions for Calculations

130 classrooms to upgrade

Digital cabling 130 rooms	\$195,000
Digital equipment, media, audio video 130 rooms	\$1,189,500
Project Cost	\$1,384,500

Timeline

Design – 3 months

Implementation, Training, Documentation – 9 months

Total – 12 months

Initiative #4 – Unified Messaging Implementation Across Campus

Project Description

A Unified Messaging system integrates traditional telephone systems with communications media (e-mail, fax, video messaging, etc.) technologies into a single interface, accessible from a variety of different devices. Unified messaging solutions enhance and improve business productivity while decreasing communication issues. It also reduces the need to travel for communication and extends the campus out to other geographic areas not limited to Pueblo.

Background and Justification

The unified messaging initiative is to replace separate and end of life equipment with a single communication system that allows end users the ability to interact via voice, video, and instant messaging from a common system that is available on a variety of devices. The current communication systems at CSU-Pueblo is a traditional PBX phone system, Microsoft Exchange for email, and various standalone implementations on video teleconferencing. The Fujitsu XL 9600 PBX phone system is 15 years old and is not VoIP capable. In, addition, it has not been supported by the manufacturer for over five years. Parts and spares are difficult to obtain and reliable operation of the system is at risk if critical components need to be replaced. The implementation of a unified communication system will reduce long distance costs by its use of the campus WAN connection to the outside world. It will also improve video teleconferencing capability on campus via the use of the University's LAN.

Cost-Benefit Analysis and Project Alternatives

The options that were reviewed were to continue to use the existing systems and attempt to obtain replacement parts or look to using a third party or hosted solution for VoIP telephone service. Typical hosted messaging solutions cost approximately \$10 per subscriber line and the system is subject to the availability of the internet as that is how it is delivered. CSU-Pueblo looked at what other state agencies have done such as the Colorado Department of Transportation and the savings that they have reported in travel costs and messaging costs determined that the unified messaging was the best choice.

Consequences if not Funded

The campus is already behind many other state institutions with regards to messaging and technology and this would put the campus further behind. CSU-Pueblo is one of the last campuses to still use a PBX phone system and thus is not able to take advantage of many of the features and efficiencies that unified communications provides.

Assumptions for Calculations

System would replace about 1000 PBX handsets

Software and licensing	\$288,600
Servers, storage, peripherals	\$427,500
Life safety power backup	\$96,000
Implementation	\$90,000
Project Cost	\$902,100

Timeline

Design – 3 months

Implementation, Training, Documentation – 9 months

Total – 12 months

Initiative #5 – Purchase New Fiber Optic Truck

Project Description

CSU-Pueblo is responsible for maintaining the CDOT fiber in southern Colorado as part of an MOU for using the fiber. The current splicing truck is over 20 years old, and is in need of replacement with a new and more reliable unit. The truck and equipment it contains is constantly in demand for campus telecommunications and fiber optic splicing needs for both emergency and non-emergency situations. The truck is required as higher education is allowed to use the fiber owned by the Colorado Department of Transportation in exchange for maintenance and repair of that fiber.

Background and Justification

This initiative is to purchase a truck to replace that aging truck used for fiber optic repairs and splices which connects the CSU-Pueblo campus to the rest of the state. Currently there are only two (2) fiber optic repair vehicles in the state of Colorado and they are located at the CSU-

Pueblo campus and the CSU-Ft Collins campus. CSU-Pueblo has a memorandum of understanding with CDOT that we are allowed to use the CDOT fiber for our internet traffic in exchange for splice and repair work for CDOT on the lines. The CSU-Pueblo splice truck provides fiber repair and new connections for UC-Colorado Springs, CSU-Pueblo, Colorado School of Mines, CDOT, UCAR and the FRGP.

Cost-Benefit Analysis and Project Alternatives

The alternative to purchasing a new fiber truck was to contract out to have the work performed. The average cost for a vendor to perform a splice or repair is \$2500. On average the fiber truck is used four (4) times per month. Performing the calculations of having a vendor perform the splice and repair work shows that the campus could expect to pay about \$120,000 per year for fiber repair. This would increase the cost to the university as this would have to be paid for with operating budgets. Based on the amount the truck would be used the ROI on the truck would be two (2) years.

Consequences if not Funded

The ability to repair the fiber for CDOT in the southern part of the state is part of an agreement between higher education and the CDOT for the use of the fiber optic lines to connect campuses across the state. The inability to repair the fiber would require CSU-Pueblo to contract out the work at a much higher expense and with a longer time to repair.

Assumptions for Calculations

Fiber splice truck	\$130,000
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Timeline

Procurement, configuration, and delivery – 3 months

Total – 3 months

Summary of Infrastructure Improvement Costs

Description	Total Cost
Initiative #1 – New Redundant Containerized Datacenter	\$985,000
Initiative #2 – Campus Network and System Security	\$355,000
Initiative #3 – Provide Digital Technology to all Classrooms	\$1,384,500
Initiative #4 – Unified Messaging Throughout Campus	\$902,100
Initiative #5 – Purchase New Fiber Truck	\$130,000
Contingency at 5%	\$187,830
TOTAL	\$3,944,430

CDHE and State of Colorado Technology Goals

This Program Plan purposefully takes into account all Department of Higher Education and State Technology goals, which are also listed below. The Information Technology Campus Connectivity and Classroom Enhancements speak directly to improved access, more modern computers and technology, electronic services and workflow, and most important an enhanced learning experience that will positively impact student employability and support demands of Colorado employers.

DHE

- a) Provides full access to campus networks
- b) Provides access to modern computers and software
- c) Ensures minimum Internet access to faculty, students, and administration
- d) Provides network support to accommodate demand
- e) Provides for technology-enhanced classrooms and labs
- f) Provides for training and development to ensure proficient use of information technology
- g) Provides for electronic student services
- h) Supports efficient use of information for administrative workflow processing, decision-making, and reporting both within the institution and with DHE
- i) Provides digital library resources
- j) Provides systems to support outreach
- k) Supports distance learning to increase student access to instruction
- l) Promotes the coordination of distance learning development within governing board system and within institution
- m) Supports the workforce needs of Colorado employers
- n) Other

STATE

- a) Makes use of the Multi-use Network
- b) Makes use of the Beanpole Fund – Not Applicable
- c) Streamlines service to the beneficiaries
- d) Implements cutting-edge technologies
- e) Transforms the institution by implementing uses of the Internet for e-commerce and new management efficiencies
- f) Replaces costly, cumbersome procedures with paperless, on-line methods
- g) Builds on Colorado's world-recognized leadership in the development of telecommunications technology
- h) Other

University Mission Statement and Strategic Plan

The University's name, mission and role were changed by the Colorado Legislature effective July 1, 2003. House Bill 02-1324 (Section 23-55-101) of May 2002, establishes Colorado State University – Pueblo University's Mission Statement as:

Section 23-55-101. University established – role and mission.

There is hereby established a University at Pueblo, to be known as Colorado State University – Pueblo, which shall be a regional, comprehensive university, with moderately selective admissions standards. The University shall offer a broad array of baccalaureate programs with a strong professional focus and firm grounding in the liberal arts and sciences. The University shall also offer selected Masters-level graduate programs.

The University's Strategic Plan 2015-2020 contains technology and technology-related goals that guide the work of Information Technology Services (ITS) and technology decisions across campus. The plan identifies four major goals of the University, each of which requires development and support of campus technology. Goal 4 directly addresses technology needs:

Goal Four: Supportive Student Life

We will provide our students a supportive student life experience that addresses their academic, social, physical, and technological needs.

Objectives:

- 1. Enhance/increase co- and extra-curricular opportunities for involvement and engagement for students.***
- 2. Provide opportunities for networking, leadership, and mentoring opportunities for students both on and off-campus.***
- 3. Provide modern and relevant campus facilities and technology.***
- 4. Create Sophomore Experience Program.***
- 5. Improve campus residential life.***

Objective Three - Provide modern, comfortable, and safe campus facilities and technology to support student learning

Modern, comfortable, safe facilities play an important role in attracting new students as well as improving the quality of life for all students, faculty, and staff. Reliable and current technology is crucial to providing an academic environment that supports teaching, learning, and research and creative activity.

1. Measure: *Provide a totally wired/wireless campus by 2020.*

A. Strategy: *Promote an environment for academic success by increasing connectivity campus wide.*

B. Strategy: *Maintain and update computer labs across campus as necessary.*

The mission of Information Technology Services at Colorado State University-Pueblo is to provide a broad spectrum of support for the planning, development, deployment, and integration of state-of-the-art facilities, infrastructure, and services to support the information technology needs of the academic, research, and administrative functions of Colorado State University-Pueblo. This unit provides oversight, management, coordination, integration, and staffing of Technology Support Services, Network and Systems Support Services, Information Support Services, Instructional Development and Educational Technology Support Services, and Telephone and Network Services.

SUMMARY

In this digitally dynamic 21st century, technology will play an ever increasing critical role in higher education. Institutions will need to adopt technologies that will change the way students learn, communicate, produce, collaborate, and study, as well as improve interactions between faculty, staff, and students. Creating innovative services from these technologies requires a powerful, reliable, expandable, and secure IT infrastructure that has adequate bandwidth, quality of service (QoS), and storage. Many colleges and universities have already developed short and long term plans to ensure success in meeting their current and future needs. Colorado State University – Pueblo is no different in this regard and we have our own short and long term approaches to these challenges, which we are currently addressing or planning to implement.

This specific state funds request for a campus network infrastructure upgrade with key technology needs such as a back-up containerized data center, network and system security, digitally connected classrooms, a modern unified messaging system. Additionally, it will give the platform with the new infrastructure needed for any future change of major administrative and academic support applications, such as a Student Information System (SIS) or Enterprise Reporting Platform (ERP).

In order to keep pace with our peer institutions and the demands of higher education, as well as satisfy Colorado Department of Higher Education and State goals, we need to complete the required infrastructure and business continuity for the CSU-P campus. This will make the university a respected credible partner of choice in delivering Colorado's needs in fueling a premier workforce and showcasing Colorado's world recognized leadership in telecommunications.

Form CC-P IT

Five-Year Capital Construction Program FY 2016-17 to FY 2020-21		Prepared By:	Bret Naber	
		Phone:	970-351-1887	E-Mail: bret.naber@unco.edu

Agency or Institution:	University of Northern Colorado			
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Project Title:	Funding	Source	Total Project Cost	Prior Appropriation	Budget Year Request Yr 1 FY 2015-16	Year Two Request	Year Three Request	Year Four Request	Year Five Request
Wireless and Network Upgrade	Capital Construction Funds	CCF	\$3,123,300	\$0	\$3,123,300	\$0	\$0	\$0	\$0
	Cash Funds	CF	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Purpose Code: F4	Reappropriated Funds	RF	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Gross Square Ft:	Federal Funds	FF	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Project Type	Total Funds	TF	\$3,123,300	\$0	\$3,123,300	\$0	\$0	\$0	\$0
Renovation									

Project Title:	Funding	Source	Total Project Cost	Prior Appropriation	Budget Year Request Yr 1 FY 2015-16	Year Two Request	Year Three Request	Year Four Request	Year Five Request
DataCenter Hardware Upgrade	Capital Construction Funds	CCF	\$2,500,000	\$0	\$0	\$2,500,000	\$0	\$0	\$0
	Cash Funds	CF	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Priority: IT 2	Reappropriated Funds	RF	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Purpose Code: F4	Federal Funds	FF	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Gross Square Ft:	Total Funds	TF	\$2,500,000	\$0	\$0	\$2,500,000	\$0	\$0	\$0
Project Type									
Renovation and Expansion									

Project Title:	Funding	Source	Total Project Cost	Prior Appropriation	Budget Year Request Yr 1 FY 2015-16	Year Two Request	Year Three Request	Year Four Request	Year Five Request
Voice and Storage Upgrades	Capital Construction Funds	CCF	\$900,000	\$0	\$0	\$0	\$900,000	\$0	\$0
	Cash Funds	CF	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Priority: IT 3	Reappropriated Funds	RF	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Purpose Code: F4	Federal Funds	FF	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Gross Square Ft:	Total Funds	TF	\$900,000	\$0	\$0	\$0	\$900,000	\$0	\$0
Project Type									
Renovation									

Project Title:	Funding	Source	Total Project Cost	Prior Appropriation	Budget Year Request Yr 1 FY 2015-16	Year Two Request	Year Three Request	Year Four Request	Year Five Request
Backup and Recovery Systems	Capital Construction Funds	CCF	\$600,000	\$0	\$0	\$0	\$0	\$600,000	\$0
	Cash Funds	CF	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Priority: IT 4	Reappropriated Funds	RF	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Purpose Code: F4	Federal Funds	FF	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Gross Square Ft:	Total Funds	TF	\$600,000	\$0	\$0	\$0	\$0	\$600,000	\$0
Project Type									
Renovation									

Project Title:	Funding	Source	Total Project Cost	Prior Appropriation	Budget Year Request Yr 1 FY 2015-16	Year Two Request	Year Three Request	Year Four Request	Year Five Request
	Capital Construction Funds	CCF	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Cash Funds	CF	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Priority:	Reappropriated Funds	RF	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Purpose Code:	Federal Funds	FF	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Gross Square Ft:	Total Funds	TF	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Project Type									

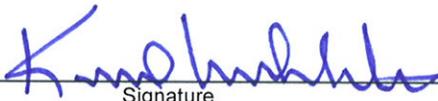


COLORADO

John W. Hickenlooper
Governor

Kay Norton
Executive Director

University of Northern Colorado
FY 2016-17 Capital IT Request | 7/24/15


Signature

8.3.15
Date

Department or CCHE Capital Construction Priority: IT #1
Wireless and Network Infrastructure Upgrade

Summary of Capital Construction Request	Total Funds	CCFE
FY 2016-17	\$3,123,300	\$3,123,300

Request Summary:

Replace UNC's aging wireless and network infrastructure. This project would replace failing network components, upgrade bandwidth capabilities, upgrade wireless coverage and increase functionality of network. The upgrade will cost approximately \$3,123,300.

Project Description:

This project will allow UNC to upgrade major network components in order to support modern wireless controllers and access points, take advantage of increased bandwidth, and increase the ability to interface with other devices. The upgrade will allow for more Power over Ethernet (PoE) connections enabling better capability for other campus infrastructure such as building automation and security cameras. The current wireless and network infrastructure is operating on 7 to 8 year old technology. The technology was purchased during a large VoIP implementation. If this proposal is funded, UNC would not renew maintenance and licensing on legacy hardware. The legacy hardware is of little to no value. UNC would evaluate the condition and determine if it could be sent to surplus, bought back by the vendor or liquidated. During the project, we will transition building by building in a rapid forklift implementation. We will work within well-established maintenance windows to impact the campus as little as possible. UNC has recently upgraded bandwidth and established a recurring budget for UPS battery backup systems. In addition, UNC has upgraded and implemented generators on campus. Power issues are a major concern for network devices. The planning effort of UNC facilities ensures that network devices experience fewer surges, brownouts, and power losses. Requests for wireless upgrades have been collected from UNC students, faculty staff through our campus project request process. This upgrade will give UNC the necessary funding to bring the technology up to current needs and standards and futureproof us for the next 5-7 years. Completing this project over several years with small purchases does not allow for opportunities for bulk purchasing discounts and creates compatibility issues with network devices as they change annually. This request is not a continuation of any other project that has been requested.

Background and Justification:

This project is needed because the existing wireless technology is failing and has reached the end of its useful life. There is also an increase in wireless needs from the modern student who relies on multiple devices and requires more bandwidth for high definition media. In addition to the student and faculty needs, more campus infrastructure relies on wireless technology. Building automation and life safety equipment take advantage of the wireless infrastructure. Current network devices have become obsolete and new standards have moved technology forward significantly. The new network hardware will be able to provide Power over Ethernet (PoE) and provide greater bandwidth for students and faculty. Existing equipment does not have the power capacity needed for modern wireless access points and other facilities equipment. The funding is needed in order to upgrade the technology at one time saving upwards of a million dollars over several years. Equipment is failing and has to be purchased as needed. We are not able to take advantage of strategic purchases and increase functionality of new devices.

Implementation Plan

The University of Northern Colorado employs several IT specific project managers. A project manager will be assigned and the original scope will be reviewed. Stakeholders and technical staff will attend a kickoff meeting where project policies and procedures will be reviewed. One of the main procedures reviewed will be the change management policy that includes communication plans to students, faculty and staff. UNC has a well-defined maintenance window (Thurs, Sat and Sun 5am-7am) that will be used to install equipment. This project will use a forklift type implementation. Network closets will be built in parallel and switched over during maintenance windows. Access point installations will be scheduled with building coordinators and communicated through our change management process. Training will be provided through online sessions with Cisco. The project will take 9-10 months to complete. We will work with and communicate with our IT governance group that includes Academic, Student and Administrative units.

	Start Date	End Date
Procurement and Contracting	May 2016	July 2016
Planning	May 2016	August 2016
Training	June 2016	August 2016
Execute/Implement	September 2017	January 2017
Project Closure	January 2017	February 2017

Alignment with OIT Best Practices

This project and network design aligns with industry best practices for network operation. Specifically Cisco and SANs recommended best practices. This includes end user policies, authenticated access, and encryption.

The project will follow the Project Management Institutes project implementation strategies.

Security and Backup/Disaster Recovery

This project will allow UNC to build a redundant and robust network infrastructure. The network is relied upon for life safety and security devices. The increased capabilities will also allow for cameras and other devices to be installed where power may not have been previously available. The increased wireless capabilities include higher levels of encryption and security features. Current devices are on terminal version releases which are more vulnerable to hacking and data loss.

Business Process Analysis

The inadequacies of the wireless and network infrastructure were identified through our campus project process and discussions with key leadership. Students have signed a petition asking for more bandwidth and better wireless coverage. After the concern was identified we started a study to identify technology requirements and equipment that had reached end of life. Current network devices are becoming obsolete. We brought in several vendors and looked at several designs. We settled on two vendors. Due to the recent purchase of Aruba by HP we decided that we would continue to invest in Cisco. We have internal expertise in Cisco and we have had success in the past. We also used a 3rd party vendor to review pricing from Cisco. We had engineers at Cisco complete a site survey. The cost of the implementation was more than UNC could fund at one time. We looked at possibilities to break the project up into phases that would continue to move UNC forward and attempt to catch up with campus expectations. We have increased bandwidth, border router capabilities, and reliability of power. In order to make the next upgrade, we need significant funding to install switches with Power over Ethernet (PoE) in order to power wireless access units. These items need to be completed together. During our analysis we have talked to several public and private institutions about alternatives. We have done extensive research through Educause and other research groups. The need for bandwidth through wireless is increasing at a 5 to 1 ratio. In order to catchup with our Institutions needs we need one time funding to upgrade our network.

Systems Integration Opportunities

UNC wireless design and procuring strategies will be shared with other Colorado Higher Education institutions. We meet with other Colorado Higher Education institutions on a monthly basis through the Colorado Higher Education Computing Organization (CHECO).

Program Plan

The program plan provided describes the project, the project budget, the benefits, alternatives considered, the reasons for choosing this approach.

Cost Savings and Improved Performance Outcomes

We have looked at several alternatives for hardware. We believe very strongly that the best choice for UNC is Cisco equipment. We are heavily invested in Cisco from a staffing perspective and in compatibility of equipment. If we were to select another competitor there is a slight cost reduction in cost of roughly \$100k. This savings is out weighed in ongoing maintenance, training, and compatibility. We have used senior Cisco technicians to evaluate campus needs. UNC employs network engineers with Cisco industry certifications. We completed several coverage and saturation studies to determine where coverage is needed. We also used a third party, Info-Tech Research Group, to determine if our quote was as low as possible. We have decided that we can use refurbished Cisco certified pre-owned equipment that can save us up to \$300k depending on availability of equipment.

Cost-Benefit Analysis and Project Alternatives

Project Alternatives	
No Action - Weakness	Bulk purchasing will save roughly 20%. Uncontrolled variable expenses will be incurred in the operation budget as equipment fails.
No Action – Weakness	Students, staff, and faculty will not be able to take advantage of increased bandwidth.
No Action – Weakness	System failures will occur impacting education activities, life safety and building automation.
Multiple Vendors - Weakness	Purchasing equipment (Wireless Controllers, Access Points, and Switches) together from the same vendor increases compatibility and reliability. Staffing administration time will increase significantly if several vendors supply equipment.
Alternative Vendor – Weakness	UNC infrastructure is built on Cisco equipment. Staff are trained and certified on Cisco equipment. Cisco training resources are readily available. Cisco TAC customer support has been very reliable and a single vendor for support ensures accountability and problem ownership when troubleshooting issues. Resources can be acquired very quickly for outsourcing and staff backfilling if needed.
Alternative Vendor – Strength	Total cost of ownership for Cisco equipment tends to more expensive than competitors.
Slow Rollout – Weakness	Technology purchase over several years will create compatibility issues. Equipment will increase in cost year after year. Bulk purchasing discounts will less substantial.
Slow Rollout – Strength	New technologies will emerge.

Consequences if not Funded:

Current hardware is at capacity and is past a typical lifecycle for this type of equipment. As this equipment fails we be challenged to find support. We would also be required to make emergency hardware purchases to replace failed equipment, which is end of life and has no manufacture warranty. Purchasing this equipment as needed or as it fails is far more expensive than replacing it at one point in time. We would lose major purchasing power that comes with a large bulk buy.

Operating Budget Impact:

We currently have the appropriate staffing to support this project and ongoing maintenance. The upgrade would represent an additional \$40k in maintenance annually for new networking gear. UNC can fund this maintenance moving forward.

Assumptions for Calculations:

Item	Estimated Upfront
Controllers	\$ 250,000.00
Wireless Access Point Investment	\$ 674,300.00
Switch Investments	\$ 2,046,500.00
Cabling Cost	\$ 50,000.00
Contingency / Availability of Refurb	\$ 100,000.00
TOTAL	\$ 3,120,800.00

Cisco Simplified BOM	
Item	Qty
8510 Controllers	2
48 port 3850, full POE	365
24 port 3850, full POE	80
4500X switches	18
10G LR	110
10G SR	10
3702i APs	675
702W APs	55
1572E APs	55
3702P APs	32
1002X router	1

ADDITIONAL REQUEST INFORMATION	
Please indicate if three-year roll forward spending authority is required.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Date of project's most recent program plan:	7/1/2015
Please provide the link to the program plan or attached the first page of the analysis to this document:	Attached
Request 6-month encumbrance waiver?	<input type="checkbox"/> Yes <input type="checkbox"/> No
New construction or modification?	<input type="checkbox"/> New <input type="checkbox"/> Renovation <input type="checkbox"/> Expansion <input type="checkbox"/> Capital Renewal
Total Estimated Square Footage	_____ ASF _____ GSF
Is this a continuation of a project appropriated in a prior year?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
If this is a continuation project, what is the State Controller Project Number?	

ESTIMATED PROJECT TIME TABLE		
Steps to be completed	Start Date	Completion Date
Procurement and Contracting	May 2016	July 2016
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COLORADO

John W. Hickenlooper
Governor

University of Northern Colorado

Wireless and Network Upgrade Program Plan | 7/24/15

Kay Norton
Executive Director

Signature

Date

Wireless and Network Infrastructure Upgrade

Summary of Capital Construction Request	Total Funds	CCFE
FY 2016-17	\$3,123,300	\$3,123,300

The University of Northern Colorado is seeking funding to help upgrade and replace the aging wireless and network infrastructure on campus. This project has become necessary due to aging hardware and an increase in demand for wireless coverage and bandwidth. UNC has prepared for the upgrade with investments in bandwidth, border network devices, intrusion prevention, power upgrades, and staffing. To continue the upgrade a major investment must be made for network switches, wireless controllers and wireless access points. The purchase needs to be made at one point in time in order to save significant amounts of money and ensure compatibility of devices. Extensive research has been completed by internal staff and by external resources. Several other state institutions have assisted with research and planning efforts. This project plan can be used to assist other state agencies with similar needs.

Project Benefits

Replace Aging and Failing equipment.	Current network switches are 7 to 8 years old and are no longer under warranty. Replacing switches as needed is costly and outages are increasing.
Increase wireless coverage	Increase coverage and bandwidth in academic and residential buildings.
Meet Student and Faculty Expectations - Bandwidth	Allow wireless infrastructure to take advantage of increased bandwidth. Take advantage of 802.11AC technology.
Provide Power over Ethernet(PoE)	Power can be provided from new network switches. This will be necessary to power new wireless access points and other network devices.
Sustainability	New network capabilities will allow for greater integration with building automation and life safety systems. Examples – Wireless thermostats, wireless locks, WiFi calling in location where cell service is not available, and cameras)
Increased Security	The increased wireless capabilities include higher levels of encryption and security features. Current devices are on terminal version releases which are more vulnerable to hacking and data loss.

Success Factors

Preparation

The University of Northern Colorado has recently upgraded bandwidth and established a recurring budget for UPS battery backup systems. In addition, UNC has upgraded and implemented generators on campus. Power issues are a major concern for network devices. The planning effort of UNC facilities ensures that network devices experience fewer surges, brownouts, and power losses.

Selection Criteria

Business Process Analysis

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