

Fiscal Year 2019-20 Information Technology Request

Colorado State University

Network Refresh and Upgrade

PRIORITY NUMBERS

<u>Prioritized By</u>	<u>Priority</u>	
DeptInst	1 of 1	
CCHE	39 of 40	
OSPB	59 of 62	Not recommended for funding.

PRIOR APPROPRIATION AND REQUEST INFORMATION

<u>Fund Source</u>	<u>Prior Approp.</u>	<u>FY 2019-20</u>	<u>FY 2020-21</u>	<u>Future Requests</u>	<u>Total Cost</u>
CCF	\$0	\$724,590	\$2,096,377	\$507,213	\$3,328,180
CF	\$0	\$0	\$200,000	\$0	\$200,000
Total	\$0	\$724,590	\$2,296,377	\$507,213	\$3,528,180

ITEMIZED COST INFORMATION

<u>Cost Item</u>	<u>Prior Approp.</u>	<u>FY 2019-20</u>	<u>FY 2020-21</u>	<u>Future Requests</u>	<u>Total Cost</u>
Land Acquisition	\$0	\$0	\$0	\$0	\$0
Professional Services	\$0	\$0	\$0	\$0	\$0
Construction	\$0	\$0	\$0	\$0	\$0
Equipment	\$0	\$724,590	\$2,296,377	\$507,213	\$3,528,180
Miscellaneous	\$0	\$0	\$0	\$0	\$0
Contingency	\$0	\$0	\$0	\$0	\$0
Software Acquisition	\$0	\$0	\$0	\$0	\$0
Total	\$0	\$724,590	\$2,296,377	\$507,213	\$3,528,180

PROJECT STATUS

This is a new, never-before-requested project.

PROJECT DESCRIPTION / SCOPE OF WORK

Colorado State University (CSU) is requesting a combination of state funds and cash funds spending authority for the first phase of a three-phase project to upgrade its network infrastructure. The project replaces or upgrades 331 edge switches, upgrades core backbone routers and switches, and upgrades core backbone firewalls. According to the university, the new core backbone devices will increase network capacity by a factor of 10 in order to meet expanding demand resulting from research, instructional education, and IT capacity.

Cash funds. The source of cash funds is a proposed student technology fee increase, network chargeback fees, and institution funds. CSU states that it was able upgrade core devices in the past with grant funding from the National Science Foundation; however, the university does not expect this funding to continue.

PROJECT JUSTIFICATION

CSU states that the project will allow the university to meet minimum standards of network connectivity expected for higher education institutions. According to the university, the project will address several various critical needs, including supporting general capacity, life and safety devices, emerging applications, big data, wireless, basic

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Colorado State University

Network Refresh and Upgrade

functionality, and IT security. In addition, CSU states that most of the network equipment is nearing end-of-life and needs upgrading to meet best practice standards.

Core networking devices. According to CSU, due to increasing demands, single 10 gigabyte core access points cause bottlenecks and need to be upgraded to 100 gigabyte. CSU states that because the backbone infrastructure works together, they need to be upgraded at the same time. CSU notes that upgraded core networking devices are needed to accommodate both internal and external capacity needs.

PROGRAM INFORMATION AND IMPLEMENTATION PLAN

CSU plans to implement the project over three fiscal years. The plan includes:

- replacement of approximately a third of the 331 edge switches each year;
- replacement of core backbone routers and switches in Phase II; and
- replacement of core backbone firewalls in Phase III.

CSU plans to purchase edge switches through a formal bid process. In addition, CSU plans to make bulk purchases to maximize available discounts.

COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES

According to CSU, the university expects minimal cost savings as a result of the project. CSU states the project may avoid future costs by meeting the university's network requirements and reducing security risks.

SECURITY AND BACKUP / DISASTER RECOVERY

CSU plans to meet ever evolving IT security needs, along with creating backup and redundant systems. According to CSU, the projects redundant design incorporates automated failover and meets disaster recovery needs.

BUSINESS PROCESS ANALYSIS

The university plans to address both internal and external users' needs by increasing capacity, meeting big data and emerging applications needs, and increasing IT security.

PROJECT SCHEDULE

	Start Date	Completion Date
Planning	June 2018	September 2018
Implementation	June 2019	June 2022
Equipment	June 2019	June 2022
Completion		June 2022

OPERATING BUDGET

Operating expenses are paid from institutional sources. CSU estimates a one-time institutional cost of \$182,050 will be required to implement the project.

Colorado State University
Network Refresh and Upgrade

Joint Technology Committee Staff Questions

New Reduced Request: \$2,878,180

1. Does CSU collect student fees for technology? If so, could these fees be used to pay for this project?

CSU does collect fees for technology, for both central technology and college-specific technology. There is currently insufficient revenue in the student technology fees budget to fund this specific activity, so tech fees would need to be increased to fund this activity. We have had conversations with the student technology committees and student government leadership for the past one and one-half years specifically about raising tech fees toward network refresh. The message we received back was that due to other rising costs in tuition and other new or increasing fees, there was no appetite to raise those fees for network refresh. However, it is our plan over the three years of the project implementation to develop a base budgeting technique to include network refresh, including partial funding through raising tech fees. Our plan is to approach the students for increased technology fees and for the University to match those fees, beginning in FY 20-21. We anticipate a very substantial ask for an increase in Student Fees in FY 19-20, so we are deferring our ask for a ramp-up increase in Student Technology Fees beginning in FY 20-21, at which time we plan to match them with a combination of Network Chargeback fees, and central University budget. The ramp-up plan is illustrated in Table 1. In accordance with those numbers, we will reduce our request for capital IT Funding by \$650,000 shown as \$200,000 for FY 20-21 and \$450,000 for FY 21-22 of Table 1. The final adjusted, reduced request is shown in table 4 below. The FY 22-23 column shown in Table 1 below are steady-state costs, so the numbers in that column are base budget (annually recurring) numbers, while the contributions shown in the FY 20-21 and FY 21-22 columns are onetime funds.

Table 1 Proposed Technology Fee and Other Funding				
	FY 19-20	FY 20-21	FY 21-22	FY 22-23
Student Funding	\$0	\$66,666	\$150,000	\$200,000
Central Funding	\$0	\$66,666	\$150,000	\$200,000
Chargeback	\$0	\$66,667	\$150,000	\$265,800
Total Funding	\$0	\$200,000	\$450,000	\$665,800

The annual need for network refresh costs is shown in Table 2 below by category of device. These are the same categories of devices we had identified in our original proposal, and indeed, the network refresh represents our most important, riskiest aspect of our technical debt, as discussed below. Also, in reviewing our original proposal, we feel we did not include sufficient detail of the current IT security risk because our network equipment is not up to date. Thus, we have included Appendix A to this document, providing additional, specific detail as to the scope and magnitude of IT Security risks engendered by out-of-date network equipment.

Table 2 Annual Recurring Costs for Network Refresh by Device Type		
Item	Refresh Cycle (yrs.)	Annual Steady-state Refresh Cost (\$/yr.)
1. Edge switches	7	\$250,000/yr.
2. Building switches	6	\$131,000/yr.
3. Core routers, firewalls, and switches	5	\$415,800/yr.
4. Subtotal	Var.	\$796,800/yr.
5. Currently funded, building switches	6	\$131,000/yr.
6. Total Unfunded		\$665,800/yr.

Thus, the strategy is to use this project to head toward a sustainable base budget for network refresh in FY 22-23, with student technology fees, central budget, and network chargeback each contributing a portion of the base budget, recurring costs of \$665,800/yr. Due to a very large expected fee increase expected for FY 19-20, we are staging our fee request for ramping up beginning in FY 20-21.

2. Senate Bill 17-304 requires that budget requests submitted to the JTC include:
 - a. information from a request for information (RFI) or other formal market research regarding the information technology budget request; and
 - b. any other available and relevant information obtained from the market research related to the information technology budget request.

What market research was conducted for the core/backbone devices and edge switches segments costs? The narrative indicated that project costs were based on a formal higher education contract obtained by request for proposal (RFP). When was the RFP issued? How similar is this project to the project for which the RFP was issued?

We exclusively use very high quality, enterprise HP/Aruba switches at the edge, as the only cost for such switches is the capital cost of the switch. In fact, the capital cost of HP/Aruba switches is commensurate with the capital costs of switches from other vendors. The difference is that HP/Aruba switches come with no annual maintenance and support fees, whereas other vendors charge such fees, typically at about 20% per year of the capital cost of the switch. Thus, over a seven-year lifetime, other switches have a total cost 2.4 times that of HP/Aruba switches. We estimate we have saved over \$5 million by using HP/Aruba switches which are equal in functionality and performance to switches from other vendors. Thus, our Purchasing process is simple, get the best possible pricing for HP/Aruba edge switches.

We have been buying networking edge switches off of an award to a formal bid under a consortial arrangement, that has much higher volume than we have alone by ourselves. Here is a description from our Purchasing Agent:

“ACNS currently buys switches through GovConnection (now called “Connections”) via an HP/Aruba Big Deal consortial Purchasing Agreement. We have been told by HP/Aruba and Connections that we are already getting the best deal but we are more than happy to chat with the State about this.”

To get the greatest possible discount, we could purchase all switches in year one, as we would expect the maximum discount at the highest volume of purchases. However, we note that we are very opposed to approach the purchase in this manner by aggregating purchases over all three years of the project, as this will prohibit us from “riding the technology curve upward, and the cost curve downward” in years two and three. So, instead, we plan to conduct an RFI for each of the three years so we can obtain both of these advantages. We have checked with several of our vendors to see if we can obtain better pricing from an RFI for each of the three years of the project, and been led to believe we can get an additional 3% discount on edge network switches. We show the lower costs due to this additional discount in Table 3 below.

Table 3 New Reduced Costs for Network Edge Switches	
Item	Amount
Original Cost of Edge Switches	\$1,494,000
3% Additional Discount	(\$44,820)
New, reduced cost	\$1,449,180

So, with the reduced costs for edge networking switches shown in Table 3, and the institutional contributions shown in Table 1, we provide a revised request in the amount of \$2,878,180. The details are provided in Table 4 below.

Table 4 New Reduced, Revised Request	
Item	Amount
Original Amount	\$3,573,000
Institutional Contribution (Table 1)	(\$650,000)
3% Additional Discount (Table 3)	(\$44,820)
New, reduced request	\$2,878,180

3. Does CSU include information technology end-of-life costs in its long-term budget planning? Or in a five- or ten-year IT plan? If so, were these end-of-life costs anticipated? Are there plans for future refresh cycles? How is the university planning to fund future refresh cycles?

To date, central IT has been responsible only for refresh of the core and building point-of-presence networking hardware (see Table 1 above). We were able to accomplish the previous core device upgrade with NSF funding. We do not expect the NSF to continue this program, and thus we have base budgeted for core device upgrades as indicated in item 3 of Table 2. Several years ago, the Provost allocated base, annual, recurring budget to upgrade and replace point-of-presence networking hardware for building switches at \$131,000/yr. – thus, building switches are and have been budgeted. However, it has been the responsibility of departments which occupy buildings to upgrade the edge/user switches, and the responsibility of central IT to upgrade core network hardware – these are two areas where we have been unable to meet networking refresh targets. Our plan going forward is, over the three years of the grant, to develop a base budget for network hardware refresh as detailed in Table 2 above, from a combination of institutional funding and student tech fee funding. Seven years is at the extreme limit of lifetime for an edge networking device and five years is at the extreme limit of lifetime for a core device, so there is little or in fact zero salvage value for the equipment, that we dispose of through our standard surplus property department.

Finally, the plan that funding from this request will allow is to get CSU up to date over three years of funding, to allow CSU the ability to ramp up to base budgeting for network core device and switch replacement. The annual unmet needs are identified in Table 2 above. Please note that after the end of the grant, in the fourth year of FY 22-23, base budget is planned to be in place to cover annual recurring costs for our critical networking infrastructure.

4. According to the narrative, the project plans to replace 30 percent of CSU's edge switches. Does CSU anticipate submitting a future IT capital budget request for the replacement of the remaining 70 percent of the edge switches?

No, it is our plan to include those costs in a base budget request encompassing increasing technology fees and additional, new base budget from the Institution for the ongoing costs after this true-up over three years.

5. The project is expected to last three years. Does CSU foresee the technology being deployed becoming obsolete or outdated by the time it is fully deployed? Will the technology deployed be able to handle the university's needs and IT security rules for the foreseeable future?

It is our expectation that the edge switches will have a seven-year lifetime, and the core devices will have a five-year lifetime, and together should be able to meet all of our needs, including IT Security, for the period of time we need to get a base budgeting model in place.

6. What is CSU's technical debt and how is it managed?

The need to catch up and get onto a regular refresh cycle, embodied in this proposal, is the most significant element of our technical debt. Simply, we are at risk in being unable to secure our networking infrastructure, unless and until we upgrade our beyond-end-of-life network devices. Our proposal to deal with this is to obtain funding via this request that will provide the time to enable us to ramp up to base budgeting for network device and switch replacement. We have no technical debt in our hardware system or software environments, and anticipate no technical debt there. The only remaining elements

of possible technical debt are 1) need to replace our building wiring, and 2) need for electrical and cooling upgrades in some of our telecommunications rooms. Specifically, for these items:

- 1) Some of our in-building wiring for networking is approaching end of warranty. We anticipate that some of our in-building cabling will approach end of life within the next five to ten years. We need to do a detailed analysis of this infrastructure, as we have done on our networking switches for this proposal. We plan on starting this analysis as soon as we deal with the much more urgent problem of replacing our aged network switches under this proposal.
- 2) Some of our telecommunication rooms are being stressed in terms of insufficient power distribution and cooling for the racks housing our networking switches. This problem is arising as the standard for Power Over Ethernet has been elevated to 60 Watts per port, causing a need for 208 Volts of power distribution, causing more heating, and requiring more cooling. We will also need to analyze this over time, but this is also a much less urgent problem than switch upgrades. Also, this problem may be isolated to certain switches in specific telecommunication rooms, and may not be comprehensive over time. A detailed inventory and analysis is required. However, we note this is primarily a facilities issue, but necessary for central IT infrastructure.

To address this slowly emerging technical debt, we will perform analyses of these two environments, and build budget requests to address the issues. We have no other areas of technical debt that we can discern at this time.

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

We foresee no cost savings, other than those which may be realized in a special RFI purchase, for this project. Network edge switches must be upgraded over a specific life cycle, and we are maximizing our choice for a seven-year life cycle. Network core devices must be upgraded over a specific life cycle, and we are maximizing our choice for a five-year life cycle. The costs are what they are, under this model. A possible cost avoidance is to avoid an IT security incident, by keeping our IT Security environment in the network up to date – these cost savings are impossible to quantify, unfortunately.

Appendix A

IT Security Needs Not Being Met by Outdated Networking Equipment

Here, we provide the original explanation of IT Security needs met by newer switches, and also provide additional detail as to IT Security needs as an update.

Current statement in proposal:

“IT Security – Newer switches have enhanced IT security features that interact seamlessly and automatically with routers, firewalls, intrusion detection systems, etc. This is a dire need as we continue to elevate and enhance our IT security posture. Older switches run past end of life (as defined by the manufacturer) are no longer supplied with IT security patches. The older switches are not able to support our implementation of stronger login credentials. As such they are more vulnerable to compromise. We are currently operating in a locus of much higher IT security risk, as 331 of our switches need to be upgraded to maintain an acceptable IT security posture.”

Additional IT Security ideas you requested to support the questionnaire:

As part of our “Defense in Depth” approach to IT Security, managing access to network switches is the frontline of defense against network compromise and overall campus integrity. As such, we need switches that are capable of supporting dual-factor authentication requiring not only a username and password pair but the entry of a one-time code. This code, even if captured, cannot be re-used to gain access to the campus network infrastructure. In addition, older equipment is managed via weak encryption methods. Newer switches support strong encryption methods.

Fiscal Year 2019-20 Information Technology Request

Colorado State University — Pueblo

Communications System Upgrade

PRIORITY NUMBERS

<u>Prioritized By</u>	<u>Priority</u>	
DeptInst	1 of 1	
CCHE	38 of 40	
OSPB	58 of 62	Not recommended for funding.

PRIOR APPROPRIATION AND REQUEST INFORMATION

<u>Fund Source</u>	<u>Prior Approp.</u>	<u>FY 2019-20</u>	<u>FY 2020-21</u>	<u>Future Requests</u>	<u>Total Cost</u>
CCF	\$0	\$4,290,130	\$0	\$0	\$4,290,130
Total	\$0	\$4,290,130	\$0	\$0	\$4,290,130

ITEMIZED COST INFORMATION

<u>Cost Item</u>	<u>Prior Approp.</u>	<u>FY 2019-20</u>	<u>FY 2020-21</u>	<u>Future Requests</u>	<u>Total Cost</u>
Land Acquisition	\$0	\$0	\$0	\$0	\$0
Professional Services	\$0	\$0	\$0	\$0	\$0
Construction	\$0	\$0	\$0	\$0	\$0
Equipment	\$0	\$2,550,119	\$0	\$0	\$2,550,119
Miscellaneous	\$0	\$0	\$0	\$0	\$0
Contingency	\$0	\$390,011	\$0	\$0	\$390,011
Software Acquisition	\$0	\$1,350,000	\$0	\$0	\$1,350,000
Total	\$0	\$4,290,130	\$0	\$0	\$4,290,130

PROJECT STATUS

This is a new, never-before-requested project.

PROJECT DESCRIPTION / SCOPE OF WORK

Colorado State University-Pueblo (CSU-Pueblo) is requesting state funds to:

- install a new, 1,000-license, voice over internet protocol (VOIP) phone system;
- install 20 new campus emergency telephones;
- install 39 additional edge switches for IT data closets;
- upgrade from 5/5E cabling to 6A network cabling in 5 campus buildings;
- enlarge five IT data closets in two campus buildings;
- add HVAC to four IT data closes in two campus buildings; and
- install two diesel backup generators in two campus buildings.

PROJECT JUSTIFICATION

According to the university, the project modernizes campus phone communication, creates a safer environment on campus, augments the cabling infrastructure in several priority campus buildings, and installs and ventilates several IT data closets.

Fiscal Year 2019-20 Information Technology Request

Colorado State University — Pueblo

Communications System Upgrade

VOIP phone system. CSU-Pueblo states that its outdated phone system has reached the end of its useful life. In addition, the emergency "blue" campus telephones are unreliable. In order to handle the new VOIP system power and display functions, the university will update 39 power-over-Ethernet (POE) edge switches. According to the university, new VOIP phones will improve campus communication and increase campus safety through hard-wired campus emergency phones.

IT data closets. According to the university, IT data closets in two buildings are insufficient for the buildings' needs and have no solution for heat dissipation. CSU-Pueblo states it needs to update five IT data closets in two buildings and add HVAC protection to four IT data closets in order to protect IT infrastructure and add space for additional POE edge switches.

6A network cabling. According to the university, several campus buildings use category 6A cabling due to new construction or remodeling. In order to streamline and meet standards for all buildings, the university states it needs to upgrade to 6A cabling in additional buildings.

Generators. CSU-Pueblo states that due to power reliability issues, the university typically installs backup generators when buildings are newly constructed or remodeled. According to CSU-Pueblo, two buildings on campus, the Buell and Chemistry Buildings are vulnerable to power outages. The Buell building houses the campus radio station and Rocky Mountain Public Broadcasting and vulnerable to interrupted service during a power outage. The Chemistry building houses expensive and intricate test equipment with IT-driven data collection. CSU-Pueblo states that the generators are used primarily for IT infrastructure, but not solely.

PROGRAM INFORMATION AND IMPLEMENTATION PLAN

CSU-Pueblo states that many of the project's components will be concurrently completed. However, before installing the new VOIP phone system, additional edge switches will be installed, along with adding HVAC and enlarging IT data closets. After other elements of the communication system are installed, it will take three months to install the VOIP system. Finally, the upgrade of cabling and the installation of generators is expected to take six months to one year.

COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES

The university did not quantify cost savings as required by House Bill 15-1266 pending final specifications and requirements for the project. However, the university notes that the new VOIP system will result in greater efficiencies and savings in purchased services, such as long distance calling. According to the university, the new VOIP system, cabling, and generators will result in cost savings due to upgraded equipment.

SECURITY AND BACKUP / DISASTER RECOVERY

CSU-Pueblo states that the new VOIP phone system will integrate with the existing security and backup systems. In addition, the university plans to install the VOIP system in two separate locations for disaster recovery purposes.

BUSINESS PROCESS ANALYSIS

CSU-Pueblo states that the current phone system does not meet best practices and has a single point of failure. CSU-Pueblo determined that VOIP phone systems offer the best solution of improved communications and simplified operations.

Fiscal Year 2019-20 Information Technology Request

Colorado State University — Pueblo

Communications System Upgrade

PROJECT SCHEDULE

	Start Date	Completion Date
Planning	July 2019	August 2019
Implementation	September 2019	December 2019
Equipment	September 2019	June 2020
Completion		June 2020

OPERATING BUDGET

Operating expenses are paid from institutional sources. CSU-Pueblo does not anticipate any operating budget increases as a result of the project.

Colorado State University-Pueblo
Communications System Upgrade

Joint Technology Committee Staff Questions

1. Senate Bill 17-304 requires that budget requests submitted to the JTC include:
 - a. information from a request for information (RFI) or other formal market research regarding the information technology budget request; and
 - b. any other available and relevant information obtained from the market research related to the information technology budget request.

What market research was conducted for the VOIP phone system upgrades? Was a RFI issued?

CSU-Pueblo has consulted with vendors and researched the benefits of upgrading from CSU-Pueblo's current PBX system to a new VOIP system and have determined the 5 following advantages:

- 1.) *CSU-Pueblo has the bandwidth to install VOIP on our current the current infrastructure. Hosting the phone system on the infrastructure will provide one less system to maintain and upgrade.*
- 2.) *Maintaining and relocating existing number is much easier and more efficient.*
- 3.) *Expandability and the ability to add new numbers is much simpler. If the University needs more lines, a toll free number, an out of state number or any other added service, adding them is as easy as a click of the mouse.*
- 4.) *IP phones are affordable. IP phones used with a VoIP service incorporate an excellent feature set, have good LED displays, and come at prices that will keep you in your budget.*
- 5.) *Finally, and most important, VOIP system can be integrated to with Campus Security to provide quicker response during emergencies with the use of VOIP phones and other systems designed to work with VOIP systems including intercoms, cameras, and other functions.*

2. Does CSU-Pueblo collect student fees for technology? If so, could these fees be used to pay for this project?

Yes. CSU-Pueblo does collect student fees for technology. However, the fees are used to support Wifi in the residence halls, computers laboratories across campus, and student oriented technology upgrades. The student technology fees are obligated and it is not possible to use them for this project.

3. Does CSU-Pueblo include information technology end-of-life costs in its long-term budget planning? Or in a five- or ten-year IT plan? If so, were these end-of-life costs anticipated?

Yes. CSU-Pueblo does include information technology end-of-life costs in its long-term budget planning for the current CSU-Pueblo PBX system. By replacing the CSU-Pueblo's existing PBX system with a new VOIP system, existing and future operating costs will be reduced.

4. Has any part of this request also been requested for funding through the Office of the State Architect's five year controlled maintenance process? Has CSU-Pueblo requested funding or received approval for generators or cabling through the Capital Development Committee or the Joint Budget Committee in a prior fiscal year?

No. The cabling and generators being requested have not been requested through the Capital Development Committee or the Joint Budget Committee in any fiscal year. As Capital Construction requests for facility renovations are prepared and submitted to the Office of the State Architect, generators and building cabling are included in those requests. The generators and cabling included in this IT request are for facilities with no current Capital Construction or Controlled Maintenance request.

5. If possible, please prioritize the components within the request.

Prioritization of CSU-Pueblo request:

Priority #1 – Install New Voice over IP (VoIP)

Priority #2 – Install New Campus Emergency Phones

Priority #3 – Install New Network Power-Over-Ethernet (POE) Switches

Priority #4 – Install Category 6A Network Cabling Across Campus

Priority #5 – Renovations & HVAC Upgrades To IT Data Closets On-Campus

Priority #6 – Install Generators at Buell Communication Center and Chemistry Building

Fiscal Year 2019-20 Information Technology Request

Community College of Aurora

Improving Student Access to Technology

PRIORITY NUMBERS

<u>Prioritized By</u>	<u>Priority</u>	
DeptInst	1 of 1	
CCHE	32 of 40	
OSPB	52 of 62	Not recommended for funding.

PRIOR APPROPRIATION AND REQUEST INFORMATION

<u>Fund Source</u>	<u>Prior Approp.</u>	<u>FY 2019-20</u>	<u>FY 2020-21</u>	<u>Future Requests</u>	<u>Total Cost</u>
CCF	\$0	\$475,061	\$0	\$0	\$475,061
CF	\$0	\$52,784	\$0	\$0	\$52,784
Total	\$0	\$527,845	\$0	\$0	\$527,845

ITEMIZED COST INFORMATION

<u>Cost Item</u>	<u>Prior Approp.</u>	<u>FY 2019-20</u>	<u>FY 2020-21</u>	<u>Future Requests</u>	<u>Total Cost</u>
Land Acquisition	\$0	\$0	\$0	\$0	\$0
Professional Services	\$0	\$32,870	\$0	\$0	\$32,870
Construction	\$0	\$0	\$0	\$0	\$0
Equipment	\$0	\$469,739	\$0	\$0	\$469,739
Miscellaneous	\$0	\$0	\$0	\$0	\$0
Contingency	\$0	\$25,236	\$0	\$0	\$25,236
Software Acquisition	\$0	\$0	\$0	\$0	\$0
Total	\$0	\$527,845	\$0	\$0	\$527,845

PROJECT STATUS

This is a new, never-before-requested project.

PROJECT DESCRIPTION / SCOPE OF WORK

Community College of Aurora (CCA) is requesting a combination of state funds and cash funds spending authority to upgrade its technology infrastructure. Areas of improvement include:

- upgrades to server hardware;
- firewall enterprise hardware; and
- wireless infrastructure.

Student technology fee. CCA charges a \$25 per student fee for all on-campus students for technology, which generates between \$200,000 to \$250,000 in revenue each year. CCA uses student technology fee funds to upgrade classroom technology.

Cash funds. According to CCA, the cash funds included in the request represent cost avoidance related to the efficiencies created by the project upgrades.

Fiscal Year 2019-20 Information Technology Request

Community College of Aurora

Improving Student Access to Technology

PROJECT JUSTIFICATION

In recent years, CCA switched to a thin client environment in which most of the computing happens in a remote server-based environment. CCA states that its aging equipment and inability to upgrade to the most recent version of software hinders students' ability to access the software and graphics-intensive applications needed for their studies. According to CCA, upgraded server hardware and wireless infrastructure will allow it to increase its thin client environment and provide better bandwidth and traffic management on the wireless network.

PROGRAM INFORMATION AND IMPLEMENTATION PLAN

CCA IT staff will be responsible for the implementation of the project.

COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES

CCA was unable to quantify the cost savings or return-on-investment calculations, as required by House Bill 15-1266, but states that the project will create significant performance improvements.

SECURITY AND BACKUP / DISASTER RECOVERY

CCCS provides IT security and backup services for CCA.

BUSINESS PROCESS ANALYSIS

CCA states that the project allows the college to better serve faculty and students, maintain security, and ensure operational efficiency.

PROJECT SCHEDULE

	Start Date	Completion Date
Planning	February 2018	June 2018
Implementation	February 2018	June 2018
Equipment	July 2019	October 2019
Completion		November 2019

OPERATING BUDGET

Operating expenses are paid from institutional sources. CCA expects no impact on operating costs as a result of the project.

Community College of Aurora
Improving Student Access to Technology

Joint Technology Committee Staff Questions

1. Please provide the details of the requested competitive quotes used for the assumptions of calculations discussed in the narrative.

The equipment we are planning on purchasing come from state price agreement vendors. All of the quotes have fallen into the state purchasing agreement.

2. Please submit a detailed list of proposed expenditures.

HP Synergy 12000 Chassis, and associated hardware and support – \$310,046

Fortinet Fortigate 300E appliances and associated training and support (1 per campus) - \$18,984

Cisco AP3802I Wireless Access Points with associated support (183) – \$198,815

3. If possible, please prioritize the components within the request.

CCA's first priority is to purchase the HP Synergy 12000 Chassis and associated hardware and support. Second would be the Fortinet FortiGate 300E appliances with the Cisco Access Points coming last.

4. Does CCA include information technology costs in its long-term budget planning?

Historically, CCA has not asked for funding from the state for our information technology projects so we are and have been including information technology in our budgeting process. This has caused CCA to fall behind our peers as funding has fluctuated over the years. The opportunity to request technology funding from the state will allow CCA to catch up from an information technology perspective and help us continue to provide outstanding information technology experiences to our students, faculty, and staff.

Fiscal Year 2019-20 Information Technology Request

Lamar Community College

Technology Infrastructure

PRIORITY NUMBERS

Prioritized By	Priority	
DeptInst	1 of 1	
CCHE	33 of 40	
OSPB	53 of 62	Not recommended for funding.

PRIOR APPROPRIATION AND REQUEST INFORMATION

<u>Fund Source</u>	<u>Prior Approp.</u>	<u>FY 2019-20</u>	<u>FY 2020-21</u>	<u>Future Requests</u>	<u>Total Cost</u>
CCF	\$0	\$570,422	\$0	\$0	\$570,422
CF	\$0	\$15,000	\$0	\$0	\$15,000
Total	\$0	\$585,422	\$0	\$0	\$585,422

ITEMIZED COST INFORMATION

<u>Cost Item</u>	<u>Prior Approp.</u>	<u>FY 2019-20</u>	<u>FY 2020-21</u>	<u>Future Requests</u>	<u>Total Cost</u>
Land Acquisition	\$0	\$0	\$0	\$0	\$0
Professional Services	\$0	\$0	\$0	\$0	\$0
Construction	\$0	\$0	\$0	\$0	\$0
Equipment	\$0	\$585,422	\$0	\$0	\$585,422
Miscellaneous	\$0	\$0	\$0	\$0	\$0
Contingency	\$0	\$0	\$0	\$0	\$0
Software Acquisition	\$0	\$0	\$0	\$0	\$0
Total	\$0	\$585,422	\$0	\$0	\$585,422

PROJECT STATUS

This is the third request for funding. Funding was also requested for FY 2017-18 and FY 2018-19.

PROJECT DESCRIPTION / SCOPE OF WORK

Lamar Community College (LCC) is requesting a combination of state funds and cash funds spending authority to upgrade its technology infrastructure. Areas of improvement include:

- instructional technology;
- office and classroom computer systems;
- servers;
- internet protocol (IP) telephony devices; and
- digital signage.

The project replaces or adds multimedia and computer equipment in classrooms, along with updated telephones and digital signage. In addition, the project will replace servers and provide battery backup power.

Cash funds. The source of cash funds is LCC's general fund. LCC does not currently charge a student technology fee, but is in discussions with student government regarding a \$2.50 per credit hour technology fee.

Fiscal Year 2019-20 Information Technology Request

Lamar Community College

Technology Infrastructure

PROJECT JUSTIFICATION

According to LCC, many of its IT systems are eight or more years old and do not support current technologies that improve productivity, high data availability, or robust campus communications. LCC states that many of its computer systems are obsolete and do not meet modern instructional needs. LCC's IP telephony devices are unable to support current technologies and are not installed in all classrooms. LCC reports that existing digital signage is limited and requires manual loading, which makes it hard for the college to disseminate critical information and campus messages during emergencies

PROGRAM INFORMATION AND IMPLEMENTATION PLAN

LCC IT staff will be responsible for the implementation of the project. System installation will be on a schedule that minimizes impact to daily operations. Staff will work closely with vendors and/or contractors to ensure satisfactory installation.

COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES

LCC was unable to quantify the cost savings or return-on-investment calculations, as required by House Bill 15-1266, but states that the project will increase productivity because staff would spend less time troubleshooting and repairing obsolete equipment.

SECURITY AND BACKUP / DISASTER RECOVERY

CCCS provides IT security and backup services for LCC.

BUSINESS PROCESS ANALYSIS

LCC states that this project will help IT staff and the college as a whole realize greater efficiencies and more effectively manage existing operational processes through tools that allow for increased automation and data access, management, and recovery.

PROJECT SCHEDULE

	Start Date	Completion Date
Planning	June 2019	July 2019
Implementation	August 2019	August 2019
Equipment	August 2019	May 2020
Completion		June 2020

OPERATING BUDGET

Operating expenses are paid from institutional sources. LCC expects a minimal increase in operating costs as a result of the project.

Lamar Community College
Technology Infrastructure

Joint Technology Committee Staff Questions

1. Has LCC considered other emergency notification systems (text alerts, etc.) besides digital signage?

Yes, LCC is working with CCCS to implement a text/phone call/email emergency notification system. However, that system will only be able to alert those that are part of the system and would not include the many individuals on our campus who would not be part of that notification system.

2. If possible, please prioritize the components within the request.

- *Priority Number 1: Instructional Technology,*
- *Priority Number 2: Office and classroom computer systems,*
- *Priority Number 3: Servers,*
- *Priority number 4: IP telephone environment, and digital signage.*

3. Does LCC include information technology costs in its long-term budget planning?

Yes, LCC does include information technology costs in its long-term budget planning. However, the amount LCC is able to budget for information technology costs can only fund the general information technology operating costs and small information technology upgrades. This request would allow the college to make more significant information technology upgrades and replace items that are well past their 6-year replacement cycle.

Fiscal Year 2019-20 Information Technology Request

Otero Junior College

Technology and Communications Upgrades

PRIORITY NUMBERS

<u>Prioritized By</u>	<u>Priority</u>	
DeptInst	1 of 1	
CCHE	29 of 40	
OSPB	49 of 62	Not recommended for funding.

PRIOR APPROPRIATION AND REQUEST INFORMATION

<u>Fund Source</u>	<u>Prior Approp.</u>	<u>FY 2019-20</u>	<u>FY 2020-21</u>	<u>Future Requests</u>	<u>Total Cost</u>
CCF	\$0	\$475,000	\$520,000	\$1,785,000	\$2,780,000
CF	\$0	\$75,000	\$80,000	\$315,000	\$470,000
Total	\$0	\$550,000	\$600,000	\$2,100,000	\$3,250,000

ITEMIZED COST INFORMATION

<u>Cost Item</u>	<u>Prior Approp.</u>	<u>FY 2019-20</u>	<u>FY 2020-21</u>	<u>Future Requests</u>	<u>Total Cost</u>
Land Acquisition	\$0	\$0	\$0	\$0	\$0
Professional Services	\$0	\$0	\$0	\$0	\$0
Construction	\$0	\$0	\$0	\$0	\$0
Equipment	\$0	\$550,000	\$600,000	\$2,100,000	\$3,250,000
Miscellaneous	\$0	\$0	\$0	\$0	\$0
Contingency	\$0	\$0	\$0	\$0	\$0
Software Acquisition	\$0	\$0	\$0	\$0	\$0
Total	\$0	\$550,000	\$600,000	\$2,100,000	\$3,250,000

PROJECT STATUS

This is the third request for funding. Components of this project were requested for FY 2017-18 and FY 2018-19.

PROJECT DESCRIPTION / SCOPE OF WORK

Otero Junior College (OJC) is requesting state funds to upgrade its technology communication infrastructure. The project updates computers in computer laboratories, the library, and classrooms. OJC states that these upgrades will help provide effective campus instruction and communication. According to OJC, the request includes items that were not previously funded, including computers and an audio emergency notification system.

Cash funds. The source of the cash funds is OJC's student technology fee. The current fee is \$4.15 per credit hour. According to OJC, the fee generates approximately \$100,000 in revenue per year, with about \$25,000 currently being spent on internet bandwidth for students. The remaining \$75,000 will be used for this project.

PROJECT JUSTIFICATION

According to OJC, improved technology infrastructure will help all aspects of student learning through increases in data speed, reliability, and accuracy. OJC states that the investment is needed in order to attract students and remain a viable educational institution. OJC also notes that the improvements will enhance OJC's ability to inform the campus with fast and accurate information during an emergency.

Fiscal Year 2019-20 Information Technology Request

Otero Junior College

Technology and Communications Upgrades

PROGRAM INFORMATION AND IMPLEMENTATION PLAN

OJC IT staff, along with CCCS IT staff, will be responsible for the implementation of this project. OJC states that staff will work closely with vendors for ongoing support. In addition, OJC will educate staff and students on the new technology upgrades.

COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES

OJC states that there will be no cost savings associated with this project. OJC notes that the project is an important part of creating a safe environment for the entire campus population during an emergency with the installation of the audio emergency notification system.

SECURITY AND BACKUP / DISASTER RECOVERY

OJC states that FY 2015-16 and FY 2016-17 allowed OJC to purchase state of the art security and backup equipment. CCCS does provide some backup, security, and disaster recovery for OJC, with the college hosting backup systems.

BUSINESS PROCESS ANALYSIS

OJC states that this project will help mitigate adverse consequences through tools that allow for increased communication and classroom instruction.

PROJECT SCHEDULE

	Start Date	Completion Date
Planning	July 2019	July 2019
Implementation	August 2019	September 2019
Equipment	October 2019	June 2022
Completion		June 2022

OPERATING BUDGET

Operating expenses are paid from institutional sources. OJC expects a minimal increase in operating costs as a result of the project, which can be paid from existing resources.

Otero Junior College
Computer Laboratory, Library, and Emergency Notification Upgrades

Joint Technology Committee Staff Questions

1. Does OJC include information technology costs in its long-term budget planning?

The Otero Junior College's Computer Operations Center budgets to replace the majority of computers and related items every 5 to 7 years as these types of technology approach end of life. Unfortunately, general fund revenues from tuition, fees, and State support do not provide adequate surpluses after required operating expenses to fully fund controlled maintenance, capital construction, capital renewal, and technology replacement as needed. Therefore, the College relies on additional State appropriation for support in these areas.

2. Currently, how does OJC communicate with students, staff, and visitors during an emergency or adverse event? Has OJC considered other emergency notification systems (text alerts, etc.) besides digital signage?

Yes, OJC is working with CCCS to implement a text/phone call/email emergency notification system. This request for Audio Emergency Notification System funding will allow us to purchase and install equipment capable of broadcasting audio messages via public announcing systems both indoors and outdoors throughout our campus.

3. If possible, please prioritize the components within the request.

Request Prioritization:

1. *LENOVO Computers*
2. *Audio Emergency Notification System*
3. *Apple MacBook Laptop Computer*
4. *Apple I-Pad Computer*

Fiscal Year 2019-20 Information Technology Request

Pikes Peak Community College *Campus Emergency Notification and Power*

PRIORITY NUMBERS

<u>Prioritized By</u>	<u>Priority</u>	
DeptInst	1 of 1	
CCHE	37 of 40	
OSPB	57 of 62	Not recommended for funding.

PRIOR APPROPRIATION AND REQUEST INFORMATION

<u>Fund Source</u>	<u>Prior Approp.</u>	<u>FY 2019-20</u>	<u>FY 2020-21</u>	<u>Future Requests</u>	<u>Total Cost</u>
CCF	\$0	\$524,865	\$0	\$0	\$524,865
Total	\$0	\$524,865	\$0	\$0	\$524,865

ITEMIZED COST INFORMATION

<u>Cost Item</u>	<u>Prior Approp.</u>	<u>FY 2019-20</u>	<u>FY 2020-21</u>	<u>Future Requests</u>	<u>Total Cost</u>
Land Acquisition	\$0	\$0	\$0	\$0	\$0
Professional Services	\$0	\$38,220	\$0	\$0	\$38,220
Construction	\$0	\$65,900	\$0	\$0	\$65,900
Equipment	\$0	\$373,030	\$0	\$0	\$373,030
Miscellaneous	\$0	\$0	\$0	\$0	\$0
Contingency	\$0	\$47,715	\$0	\$0	\$47,715
Software Acquisition	\$0	\$0	\$0	\$0	\$0
Total	\$0	\$524,865	\$0	\$0	\$524,865

PROJECT STATUS

This is the third request for funding. Funding was also requested for FY 2017-18 and FY 2018-19.

PROJECT DESCRIPTION / SCOPE OF WORK

Pikes Peak Community College (PPCC) is requesting state funds to purchase and install campus emergency notification and power systems. Areas of improvement include:

- 34 battery backups (all campuses) for IT closets;
- 136 indoor and outdoor speakers/marquees; and
- redundant power for IT closets at the Centennial and Rampart campuses.

PPCC plans to install emergency notification alert speakers, scrolling marquees, and flashers for the hearing impaired in open spaces and common areas near buildings and parking lots on its three campuses: Rampart Range, Downtown Studio, and Centennial. PPCC states that it already alerts personnel and students via voice and text, but wants to ensure the system is available during power outages and expand the reach to areas without phones or desktops. In addition, PPCC states speakers and marquees are necessary to alert students who are hearing-impaired and visitors.

Technology fee. PPCC does not collect a student technology fee.

Fiscal Year 2019-20 Information Technology Request

Pikes Peak Community College

Campus Emergency Notification and Power

Controlled maintenance. PPCC received controlled maintenance funding for a new generator for the Centennial Campus in FY 2018-19 through the Capital Development Committee's controlled maintenance process. PPCC is requesting new generators for its other campuses through controlled maintenance.

PROJECT JUSTIFICATION

PPCC states that an independent review of its Emergency Operation plan in Spring 2016 found a critical gap in the college's emergency notification system, including the ability to display and broadcast alerts in common areas. Additionally, in June 2017, based on a recommendation from the Office of the State Architect, PPCC conducted an emergency power system analysis. This analysis noted a need for battery backup and redundant power for network closets. According to PPCC, this project will help the college further its goals by providing a safe and optimum learning environment for its students, including students with hearing or vision impairments.

PROGRAM INFORMATION AND IMPLEMENTATION PLAN

PPCC's IT staff will work with PPCC's Facilities staff to provide project support. According to PPCC, an electrical engineer and contractor will provide project design, construction documents, project improvements, equipment installation, and the implementation of required systems.

COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES

PPCC was unable to quantify cost savings calculations as required by House Bill 15-1266, but states that the project will create a safer environment for students.

SECURITY AND BACKUP / DISASTER RECOVERY

CCCS provides security functions for PPCC. PPCC states that the project includes requests for backup battery power and power redundancy.

BUSINESS PROCESS ANALYSIS

According to PPCC, this project addresses a security gap identified by a CCCS-sponsored independent emergency review.

PROJECT SCHEDULE

	Start Date	Completion Date
Planning	July 2019	November 2019
Implementation	December 2019	March 2020
Equipment	April 2020	December 2020
Completion		January 2021

OPERATING BUDGET

Operating expenses are paid from institutional sources. According to PPCC, the college currently has a budget line item for ongoing costs for IT systems and technologies. PPCC expects a minimal increase in operating expenses as a result of this project.

Pikes Peak Community College
Campus Emergency Notification and Power

Joint Technology Committee Staff Questions

1. Currently how does PPCC communicate with students, staff, and visitors during an emergency or adverse event? Has PPCC considered other emergency notification systems (text alerts, etc.) besides digital signage?

Our current system requires a number of different systems to provide an emergency alert, which is inefficient, creates delay, and is not full scale. Telephones with voice and text messages provide notice where these devices are located, but do not provide alert in common areas, immediate perimeter of the campuses, nor parking lots. The Public Address (PA) system can provide emergency alert notice; however, the on-duty Officer must first be able to get to a specific office location at each campus to activate the system. It is important to note that the PA system at the Downtown Studio Campus is a stand-alone system, however, at both the Rampart Range Campus and the Centennial Campus the PA system is directly tied to the fire alarm system. Permission by the respective fire department must be granted to override the fire alarm system and use the PA system for emergency alerts. Both of these alert systems are only audible alerts, consequently, PPCC has no way of alerting hearing-impaired students, staff and visitors. The proposed system would consolidate all the different systems in a single one, capable of alerting simultaneously all PPCC on-campus constituents both audibly and visually.

2. Do the proposed battery backups for IT closets and redundant power requested support only emergency life systems? Or will the battery backups support IT infrastructure exclusively?

The request for battery backups and redundant power is to energize network-powered telephones and speakers used for emergency notification in offices, classrooms, hallways, and outdoor spaces in the event of a power outage.

3. Does PPCC include information technology costs in its long-term budget planning?

Yes. PPCC has dedicated funds to upgrade or replace its existing technology when necessary.

4. The request narrative lists three separate components. Are these components in prioritized order?

Yes. These are listed according to our priorities:

1. *Battery backups at all sites for IT closets and project design;*
2. *Indoor and outdoor speakers/marquees; and*
3. *Redundant power for IT closets at Centennial and Rampart campuses.*

Fiscal Year 2019-20 Information Technology Request

Trinidad State Junior College

Technology Infrastructure

PRIORITY NUMBERS

<u>Prioritized By</u>	<u>Priority</u>	
DeptInst	1 of 1	
CCHE	36 of 40	
OSPB	56 of 62	Not recommended for funding.

PRIOR APPROPRIATION AND REQUEST INFORMATION

<u>Fund Source</u>	<u>Prior Approp.</u>	<u>FY 2019-20</u>	<u>FY 2020-21</u>	<u>Future Requests</u>	<u>Total Cost</u>
CCF	\$0	\$636,846	\$0	\$0	\$636,846
Total	\$0	\$636,846	\$0	\$0	\$636,846

ITEMIZED COST INFORMATION

<u>Cost Item</u>	<u>Prior Approp.</u>	<u>FY 2019-20</u>	<u>FY 2020-21</u>	<u>Future Requests</u>	<u>Total Cost</u>
Land Acquisition	\$0	\$0	\$0	\$0	\$0
Professional Services	\$0	\$25,875	\$0	\$0	\$25,875
Construction	\$0	\$0	\$0	\$0	\$0
Equipment	\$0	\$581,877	\$0	\$0	\$581,877
Miscellaneous	\$0	\$0	\$0	\$0	\$0
Contingency	\$0	\$29,094	\$0	\$0	\$29,094
Software Acquisition	\$0	\$0	\$0	\$0	\$0
Total	\$0	\$636,846	\$0	\$0	\$636,846

PROJECT STATUS

This project was requested for FY 2018-19 and not funded.

PROJECT DESCRIPTION / SCOPE OF WORK

Trinidad State Junior College (TSJC) is requesting state funds to improve its instructional and academic technology infrastructure. The project updates current surveillance and backup recovery systems, replaces parts of the network infrastructure, and installs instructional technology. Additionally, the project upgrades network infrastructure, including wireless and disaster recovery systems. Finally, the project:

- updates the current video surveillance system;
- migrates computers to Windows 10; and
- replaces network infrastructure equipment.

Technology fee. TSJC collects a \$2.07 per credit hour student technology fee. According to TSJC, most of the approximately \$60,000 in revenue generated per year from the fee is dedicated to other IT costs.

PROJECT JUSTIFICATION

According to TSJC, a significant portion of the college's IT infrastructure is outdated or at risk of failure. TSJC states

Fiscal Year 2019-20 Information Technology Request

Trinidad State Junior College

Technology Infrastructure

that the current surveillance system is unable to interface with the door lock system and is no longer supported by the manufacturer. TSJC also notes that most of the campus computers are unable to run the newest software updates. In addition, data backups need to be run during the day which impacts performance and leads to a time consuming file restoration process. According to TSJC, this leads to performance and network issues that slow network traffic for students and staff and sometimes lead to shut downs.

PROGRAM INFORMATION AND IMPLEMENTATION PLAN

TSJC IT staff, along with CCCS IT staff, will implement the project. TSJC plans on consulting vendors for support. TSJC states that the project will be conducted with minimal disruption to end users.

COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES

TSJC was unable to quantify the cost savings as required by House Bill 15-1266, but states that enhancements from the project will result in greater performance for all persons on campus. TSJC notes the project would increase productivity, improve the user experience, and staff would spend time troubleshooting and supporting obsolete equipment.

SECURITY AND BACKUP / DISASTER RECOVERY

TSJC states that one of the goals of the project is to replace or upgrade systems related to the preservation and security of data. CCCS provides some IT security services for TSJC.

BUSINESS PROCESS ANALYSIS

Because TSJC's technology infrastructure is nearing end-of-life, TSJC states that this project will lead to increased data reliability and access, which in turn will improve instructional learning and business processes for students and staff.

PROJECT SCHEDULE

	Start Date	Completion Date
Planning	January 2019	June 2019
Implementation	July 2019	June 2020
Equipment	July 2019	June 2020
Completion		June 2020

OPERATING BUDGET

Operating expenses are paid from institutional sources. TSJC expects no impact on operating costs as a result of the project.

Trinidad State Junior College
Technology Infrastructure

Joint Technology Committee Staff Questions

1. Does TSJC include information technology costs in its long-term budget planning?

Yes, TSJC does include information technology costs in its long-term budget planning. However, this funding generally supports ongoing operating needs and is not enough to support an infrastructure project such as this one.

2. If possible, please prioritize the components within the request.

The priority is always the safety and expanding learning opportunities for our students. With that in mind, the priority of the project would be as follows:

- *Software and memory upgrade to interface video surveillance cameras with door locks and expand memory capacity for safety and reporting purposes - \$130,000*
- *Instructional technology support, training and electronic learning resources for high cost programs such as Nursing, Robotics, etc. - \$125,000*
- *Servers - \$124,000 (Increased pressure to provide digital alternatives for securely storing sensitive data have impacted data backups due to network performance. Our current data backups have not been updated for over a decade. If the system was to become corrupt it would have an effect on our student learning environment.)*
- *Network Equipment, Cabling - \$63,200*
- *PCs, Laptops, Terminals and PDAs - \$90,000*
- *Printers, Scanners, Peripherals - \$30,000*
- *Professional Services - \$25,000 (includes cost of IT staff training and contractual services)*
- *5% Contingency - \$28,110*

Fiscal Year 2019-20 Information Technology Request

University of Northern Colorado

Secure Cyber Network

PRIORITY NUMBERS

<u>Prioritized By</u>	<u>Priority</u>	
DeptInst	1 of 1	
CCHE	30 of 40	
OSPB	50 of 62	Not recommended for funding.

PRIOR APPROPRIATION AND REQUEST INFORMATION

<u>Fund Source</u>	<u>Prior Approp.</u>	<u>FY 2019-20</u>	<u>FY 2020-21</u>	<u>Future Requests</u>	<u>Total Cost</u>
CCF	\$0	\$1,488,706	\$0	\$0	\$1,488,706
Total	\$0	\$1,488,706	\$0	\$0	\$1,488,706

ITEMIZED COST INFORMATION

<u>Cost Item</u>	<u>Prior Approp.</u>	<u>FY 2019-20</u>	<u>FY 2020-21</u>	<u>Future Requests</u>	<u>Total Cost</u>
Land Acquisition	\$0	\$0	\$0	\$0	\$0
Professional Services	\$0	\$100,000	\$0	\$0	\$100,000
Construction	\$0	\$0	\$0	\$0	\$0
Equipment	\$0	\$690,123	\$0	\$0	\$690,123
Miscellaneous	\$0	\$0	\$0	\$0	\$0
Contingency	\$0	\$70,891	\$0	\$0	\$70,891
Software Acquisition	\$0	\$627,693	\$0	\$0	\$627,693
Total	\$0	\$1,488,707	\$0	\$0	\$1,488,707

PROJECT STATUS

This is new, never-before-requested project.

PROJECT DESCRIPTION / SCOPE OF WORK

University of Northern Colorado (UNC) is requesting state funds to improved its network infrastructure. According to the university, the new network will have increased security and monitoring capability and adhere to advanced cybersecurity standards. UNC states the project will:

- replace aging and failing equipment;
- provide operational efficiency through automation;
- provide greater functionality and visibility into network activities;
- integrate security into the network; and
- enable UNC to meet growing infrastructure needs.

According the university, the project will allow UNC to adopt a new architecture for their network. The university plans to use CISCO equipment.

Previous funding. UNC received \$3.1 million in state funds in FY 2016-17 for wireless and network infrastructure upgrades. According the university, the previous funding paid for upfront costs associated with purchasing network switches, wireless controllers, and wireless access points.

Fiscal Year 2019-20 Information Technology Request

University of Northern Colorado

Secure Cyber Network

Technology fee. UNC assesses a student technology fee (\$11 per credit hour) for student support positions, software, bandwidth, labs, and classrooms. According to the university, the revenue has already been allocated to other IT priorities.

PROJECT JUSTIFICATION

UNC states that its existing network hardware is at capacity and past its useful life. Also, the university states that replacing equipment one piece at a time leads to emergency purchases of equipment and does not allow UNC to take advantage of bulk purchasing discounts. In addition, UNC notes that it does not have the financial ability to procure a new network and security infrastructure without an upfront investment from the state. According to the university, the project will create a scalable and efficient network that reduces costs.

Project alternatives. UNC considered several project alternatives including hiring multiple vendors. After reviewing all of the alternatives, UNC states the CISCO option was chosen due to the compatibility of CISCO equipment with staff's expertise, staff training and expertise, and past successes.

PROGRAM INFORMATION AND IMPLEMENTATION PLAN

UNC states a UNC IT project manager will be assigned to the project and stakeholders and staff will review policies and procedures, including change management plans. UNC uses a defined maintenance window, typically Saturday and Sunday, for equipment installation. In addition, the project will be phased over 12 to 16 months.

COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES

UNC was unable to quantify cost savings as required by House Bill 15-1266, but states the project will provide operation efficiency, improve network security, and address future IT challenges.

SECURITY AND BACKUP / DISASTER RECOVERY

According to UNC, the project will not impact the university's current disaster recovery functionality. However, UNC states the project will provide additional data protection features and greater security.

BUSINESS PROCESS ANALYSIS

UNC states that the university contacted a third-party vendor to review possible project options to determine the best option for the university's business.

PROJECT SCHEDULE

	Start Date	Completion Date
Planning	April 2019	July 2019
Implementation	October 2019	June 2020
Equipment	June 2019	October 2019
Completion		August 2020

Fiscal Year 2019-20 Information Technology Request

University of Northern Colorado

Secure Cyber Network

OPERATING BUDGET

Operating expenses are paid from institutional sources. UNC expects expenses to increase by approximately \$40,000 per year. In addition, UNC states that it will eliminate approximately \$100,000 in current operating budget expenses with this project.

University of Northern Colorado
Secure Cyber Network

Joint Technology Committee Staff Questions

1. Senate Bill 17-304 requires that budget requests submitted to the JTC include:

- information from a request for information (RFI) or other formal market research regarding the information technology budget request; and
- any other available and relevant information obtained from the market research related to the information technology budget request.

What market research was conducted for next generation core network project besides working with Cisco? Was a RFI issued?

Cisco was selected for the preliminary design due to several factors. We have invested in Cisco training and have several certified Cisco engineers. Our network is built with primarily Cisco equipment. We are planning to dive deeper into automation, telemetry and driving intelligence into the network. With this proposal, only portions of the network are being replaced, not a wholesale initiative to replace the entire network. Certain sections of the network could be replaced with other vendors. Using a multivendor approach reduces the functionality of the network to what is common among its components - also known as the lowest common denominator. We worked with a 3rd party vendor who was product agnostic to develop the best fit for our environment. If the funding is provided, we will do a full RFP to ensure lowest costs and will entertain other options if they are compelling.

2. Does UNC include information technology end-of-life costs in its long-term budget planning? Or in a five- or ten-year IT plan? If so, were these costs anticipated?

UNC has a five-year technology plan that identifies end-of-life costs. However, UNC budget priorities in the next two years are to reduce operating costs and UNC's ability to invest in capital, including technology, is limited in this timeframe. By consolidating technologies and replacing maintenance contracts, UNC has budgeted for the ongoing maintenance and support for this equipment.

We were anticipating the cost to replace the equipment that had reached end of life. This included Core Routers, FirePower(IPS and Firewall) and SAN Fiber Switches at a total cost of roughly \$758,301. We will be forced to lean on a lease in order to fund this equipment. We would have a small offset of \$68,624 in year 2 when we could repurpose existing smart net license and terminate our Fortigate IPS contract.

3. UNC received funding for wireless and network infrastructure upgrades in FY 2016-17. Please explain how this current project differs from the previous request.

The previous project was submitted to fund the upgrade and replace the aging wireless and network infrastructure on campus. The wireless project was necessary due to aging hardware and an increase in demand for wireless coverage and bandwidth. UNC also provided the funding for the additional bandwidth, border network devices, intrusion prevention, power upgrades, and staffing. The major investment from the state paid for the upfront costs associated with purchasing network switches, wireless controllers and wireless access points. The purchase was strategic because it allowed UNC to purchase in bulk and purchase compatible equipment.

4. What is UNC's technical debt and how is it managed?

UNC currently has one lease for technical equipment that was approved by our Board, March of 2018 in the amount of \$397,494.