

## FY 2020-21 Information Technology Capital Budget Requests

*Total recommended by OSPB for funding: \$9,436,675 CCF / \$3,125,620 CF*

OSPB Priority	CCHE Priority	Agency/Institution	Project Title	CCF Request	CF Request	FF Request	Total
<b>Projects Recommended for Funding by OSPB</b>							
CF	N/A	Department of Natural Resources	Parks and Wildlife Website Redesign and Platform Migration	\$0	\$924,000	\$0	<b>\$924,000</b>
CF	N/A	Department of Public Safety	Colorado Crime Information Center (CCIC) Migration to Cloud	0	2,110,795	0	<b>\$2,110,795</b>
3	N/A	Office of eHealth Innovation	Health IT Roadmap Initiatives (Phase 3 of 3)	445,000	0	4,005,000	<b>\$4,450,000</b>
4	2	Adams State, Fort Lewis, Western Colorado	Digital Transformation Initiative	8,991,675	90,825	0	<b>\$9,082,500</b>
<b>Projects Not Recommended for Funding by OSPB</b>							
5	1	CSU-Ft. Collins	Upgrade Network Hardware	545,000	200,000	0	<b>\$745,000</b>
6	2	University of Northern Colorado	Next Generation Cyber Secure Network	1,373,988	13,879	0	<b>\$1,387,867</b>
7	4	Colorado Mesa University	Network Security and Resiliency	2,249,898	222,519	0	<b>\$2,472,417</b>
8	4	Community College of Denver	Classroom and Conference Room Technology	2,259,014	144,192	0	<b>\$2,403,206</b>
9	6	Metropolitan State University of Denver	IT Infrastructure Modernization	3,305,000	370,000	0	<b>\$3,675,000</b>
10	7	Otero Junior College	Technology and Equipment Upgrades (Phase 2)	597,750	125,000	0	<b>\$722,750</b>
11	8	Community College of Aurora	Improving Student Access to Technology	475,061	52,784	0	<b>\$527,845</b>
12	9	Trinidad State Junior College	Technology Infrastructure	636,846	0	0	<b>\$636,846</b>
13	10	Colorado Northwestern Community College	Computer/Network Upgrades	812,172	0	0	<b>\$812,172</b>
14	11	CSU-Pueblo	Communications System Upgrade	2,132,807	0	0	<b>\$2,132,807</b>

OSPB: Governor's Office of State Planning and Budgeting

CCHE: Colorado Commission on Higher Education

CCF: Capital Construction Fund (state funds)

CF: Cash Fund

FF: Federal Funds

# Fiscal Year 2020-21 Information Technology Request

## Natural Resources

CPW Website Redesign

### PRIORITY NUMBERS

2021016

<u>Prioritized By</u>	<u>Priority</u>
DeptInst	1 of 1
OSPB	NP of 14

Recommended for funding.

### PRIOR APPROPRIATION AND REQUEST INFORMATION

<u>Fund Source</u>	<u>Prior Approp.</u>	<u>FY 2020-21</u>	<u>FY 2021-22</u>	<u>Future Requests</u>	<u>Total Cost</u>
CF	\$0	\$924,000	\$0	\$0	\$924,000
<b>Total</b>	<b>\$0</b>	<b>\$924,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$924,000</b>

### PROJECT STATUS

This is the first time the Department of Natural Resources has requested funding for this project.

### PROJECT DESCRIPTION

The Colorado Department of Natural Resources (DNR) is requesting cash funds spending authority to redesign the Colorado Parks and Wildlife (CPW) website and migrate it onto a new platform. The requested funding is planned to be spread across three project phases, which are:

- Phase 1, estimated cost \$180,000: stakeholder research, content evaluation, findings summaries, and reporting;
- Phase 2, estimated cost \$320,000: design, concept creation, prototype development, and test validation; and
- Phase 3, estimated cost \$380,000: website development, updates to online tools, and website launch.

### PROJECT JUSTIFICATION

According to CPW, this project will benefit the division for the following reasons:

**Replace obsolete technology.** CPW explains that Microsoft will no longer support the version of SharePoint that the CPW website is on. As a result, this project will mitigate future security risks associated with using an unsupported technology which will not get security patches from the vendor.

**Improve interface and content.** CPW states that the existing site is poorly organized, has inadequate navigation, and has low accessibility. This project will allow CPW to redesign the website to improve content and decrease the complexity of the web pages.

**Improve functionality for mobile devices.** In 2017, CPW estimated that 48 percent of the online traffic to the website was from mobile devices. CPW explains that the existing website was designed to be viewed in a web browser and not on smaller mobile devices. As a result, staff must develop and maintain two types of web pages: one type for a web browser and one type for a mobile device. The website also cannot automatically adjust frame size and pixilation causing website functionality to be lost if connecting from a mobile device. This project plans to design the new website so that it changes the displayed content to fit a device screen.

**ADA compliance.** The division states that the current site does not meet federal guidelines under the Americans with Disabilities Act (ADA). CPW plans to ensure that the new website meets ADA compliance requirements.

The current website was built and designed in 2011 when the Colorado Parks and Outdoor Recreation Division and the Division of Wildlife merged within DNR, which resulted in consolidating the content from two prior websites. The division states that the demands on the website have changed since its creation, but the platform technology has

# Fiscal Year 2020-21 Information Technology Request

## Natural Resources

### *CPW Website Redesign*

stayed stagnant. The division explains that web pages cannot be easily changed and if CPW wants to make any design changes, they must contact OIT staff.

#### PROJECT COST INFORMATION

**Cash funds.** The department is requesting to fund this project with cash funds from two DNR fund sources: the Parks and Outdoor Recreation Cash Fund (Section 33-10-111, C.R.S) and the Wildlife Cash Fund (Section 33-1-112(1)(a), C.R.S.). The Parks and Outdoor Recreation Cash fund revenues are generated from wildlife hunting and fishing license fees and 60 percent of the project funding will come from this source. The Wildlife Cash Fund revenues are generated from the sale of park passes and 40 percent of the project funding will come from this source.

The department estimated the cost of this project to be \$600,000 to \$900,000 based on a three-phased development process and with the assumption that the new website will be hosted on an open-source platform. CPW anticipates that the annual maintenance and support costs will require \$150,000 in annual cash funds spending authority beginning in FY 2021-22.

#### PROJECT RESEARCH

CPW states that it will first conduct a RFI process to get a clearer view of the desired project outcome, followed by a request for proposal (RFP) process to choose a new vendor to host the website. CPW worked with DNR procurement to publish the RFI associated with this budget request. The division published the RFI in early November and anticipates responses by early December and can provide any updates as needed in January 2020. CPW states that it may also engage with the Colorado Statewide Internet Portal Authority (SIPA) in the RFI process if the Governor's Office of Information Technology (OIT) determines that it makes sense for SIPA to respond.

**Project alternatives considered.** CPW states that since it is currently in the RFI process, if the website is migrated onto a commercial platform instead of an open-source platform, the costs could increase significantly. CPW is willing to consider hosting the system at the state data center if it is determined to be the best solution for the division's needs. The division will consider the cost of hosting, vendor ability to access data, experience with hosting e-commerce platforms, and other technical factors when deciding where to host its system and backups during the RFI process.

#### ADDITIONAL PROJECT INFORMATION

The new website will be built while the current website is operational to mitigate any impacts to business operations. The new website will replace the legacy website when it is completely operational. To establish governance, CPW will establish a Website Development Board, whose goal will be to manage expectations and to ensure the new website meets the needs of both DNR and OIT. The division expects representation from both agencies such as a: CPW web team member, an OIT project manager, a CPW park manager, and a CPW customer service representative. CPW states that it will engage with OIT over the course of the project.

**Change management.** CPW will require all potential vendors to include a change management plan as a part of the RFP process. CPW states that an internal change management plan has been created based on a preliminary scoping of the project with OIT, which includes training and testing.

# Fiscal Year 2020-21 Information Technology Request

## Natural Resources

*CPW Website Redesign*

### PROJECT SCHEDULE

	Start Date	Completion Date
Planning	July 2020	March 2021
Implementation	April 2021	June 2022
Testing	July 2022	March 2023
Closing	April 2023	June 2023

# Fiscal Year 2020-21 Information Technology Request

## Public Safety

*CCIC Migration to Cloud*

### PRIORITY NUMBERS

2021015

Prioritized By	Priority
DeptInst	1 of 1
OSPB	NP of 14

Recommended for funding.

### PRIOR APPROPRIATION AND REQUEST INFORMATION

Fund Source	Prior Approp.	FY 2020-21	FY 2021-22	Future Requests	Total Cost
CF	\$0	\$2,110,795	\$0	\$0	\$2,110,795
<b>Total</b>	<b>\$0</b>	<b>\$2,110,795</b>	<b>\$0</b>	<b>\$0</b>	<b>\$2,110,795</b>

### PROJECT STATUS

This is the first time the Department of Public Safety has requested funding for this project.

### PROJECT DESCRIPTION

The Colorado Department of Public Safety is requesting cash funds spending authority to migrate the Colorado Crime Information Center (CCIC) Criminal Justice Information Services system to a cloud-based solution. The system provides law enforcement agencies access to criminal justice information from a variety of state departments and national systems, including:

- Federal Bureau of Investigation (FBI) National Crime Information Center;
- FBI Next-Generation Identification;
- International Justice and Public Safety Network information systems;
- All 50 states' Criminal Justice Information Systems; and
- The Colorado Departments of Corrections, Judicial, Public Health and Environment (medical marijuana registry information), Revenue (motor vehicle information), and Human Services.

The system also allows non-criminal justice agencies in Colorado to perform criminal background checks for professional licensing purposes.

### PROJECT JUSTIFICATION

The current system hardware was purchased during a modernization project, initially planned in 2007. That hardware, now 11 years old, has reached the end of its useful life and is no longer supported by the manufacturer, leading to component replacements becoming more expensive and creating longer delays. There are also no basic input/output system (BIOS) or firmware updates occurring for the hardware, which violates FBI policy and requires routine patching of all systems supporting CJIS data.

As the hardware ages, there is increased risk for system outages or outright failure, which creates a public safety risk if law enforcement is unable to access vital criminal justice information in a timely manner.

### PROJECT COST INFORMATION

**Cash funds.** The department is requesting to fund this project with cash funds from the Colorado Bureau of Investigation Identification Unit Fraud Cash Fund (Section 24-33.5-426, C.R.S.). Money collected by the department for fingerprint criminal history record checks and name criminal history record checks are deposited into this fund.

# Fiscal Year 2020-21 Information Technology Request

## Public Safety

### CCIC Migration to Cloud

#### PROJECT RESEARCH

The department worked with the vendor who currently manages the system software, Computer Projects of Illinois (CPI), to estimate the project costs. It is assumed that the production system will move to CPI's private cloud, while the disaster recovery system will remain hosted in the department's private cloud-virtualized environment.

As part of this request, the department considered several alternatives. First, the department considered fully replacing the system hardware and software. However, the department determined that any changes to the state's CCIC system software should wait until after the FBI has completed its work modernizing the National Crime Information Center. This work is currently underway and could require future changes to the state's CCIC system software. Second, the department estimated costs for purchasing new hardware within the current on-premises environment. The department determined that the cost differences were immaterial between this alternative and the proposed project, but the department expected to experience increased support costs with this alternative.

#### PROJECT SCHEDULE

	Start Date	Completion Date
Planning	July 2020	December 2020
Implementation	October 2020	December 2021
Testing	July 2021	November 2021
Closing	December 2021	June 2022

# Fiscal Year 2020-21 Information Technology Request

## Governor

### Health IT Roadmap Initiatives

#### PRIORITY NUMBERS

2019149

Prioritized By	Priority	
DeptInst	1 of 1	
OSPB	3 of 14	Recommended for funding.

#### PRIOR APPROPRIATION AND REQUEST INFORMATION

Fund Source	Prior Approp.	FY 2020-21	FY 2021-22	Future Requests	Total Cost
CCF	\$3,016,333	\$445,000	\$0	\$0	\$3,461,333
FF	\$14,997,000	\$4,005,000	\$0	\$0	\$19,002,000
<b>Total</b>	<b>\$18,013,333</b>	<b>\$4,450,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$22,463,333</b>

#### PROJECT STATUS

This is the third phase of a three-phase project. Funding was appropriated for the first two phases in FY 2018-19 and FY 2019-20. The Governor's Office of eHealth Innovation (OeHI) reports that this project has secured the FY 2018-19 and FY 2019-20 federal funding match. The office also explained the work completed in the two prior phases of this project, which includes:

- documenting the current architecture of the statewide Health Information Exchanges (HIEs);
- initiating state and county privacy discussions to support care coordination data sharing;
- initiating sustainability planning for all initiatives;
- establishing the OeHI Project Management Office; and
- aligning the Health IT Roadmap with other state IT efforts, such as the Joint Agency Interoperability project, to ensure the Governor's Office of Information Technology (OIT) coordinates its efforts and leverages existing technology infrastructure for this project.

#### PROJECT DESCRIPTION

OeHI and the Colorado Department of Health Care Policy and Financing (HCPF) are requesting a combination of Capital Construction Funds (CCF) and federal funds spending authority for the third phase of a three-phase project to implement nine initiatives in the Colorado Health IT Roadmap to support health delivery reform, payment reform, improve care coordination, reduce costs, and ultimately improve health care value. The nine initiatives in the Health IT Roadmap project are:

- 1. Reporting tools and registry for clinical quality measures (eCQMs tools).** According to OeHI, clinical quality measures help measure and track the quality of health care services that providers report in order to participate in incentive programs. The eCQM Tools initiative will expand health IT infrastructure for health providers improving the capture, aggregation, and creation of multiple eCQM reporting data.
- 2. Master data management.** This initiative will improve coordination of health care services by identifying Coloradans across multiple health care provider systems.
- 3. Automated and integrated consent.** The two Colorado HIEs, Colorado Regional Health Information Organization (CORHIO) and Quality Health Network (QHN), have completed pilot projects through the Office of National Coordinator's Advanced Interoperability Initiative grant to share behavioral health and substance use clinical data using automated patient consents between providers. This initiative will expand the pilots to a statewide consent framework.
- 4. Colorado Consumer Portal for Health (Consumer Portal).** OeHI explains that this initiative will provide

# Fiscal Year 2020-21 Information Technology Request

## Governor

### Health IT Roadmap Initiatives

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Coloradans with accurate health plan and health provider costs and quality information through a new online consumer portal.

**5. Advancing Colorado's state HIE infrastructure.** This initiative supports value-based payment models, produces population-level analytics, and provides centralized clearinghouse functions for Colorado's HIEs. OeHI also states that this initiative includes broadband plans to develop telehealth technology in rural areas across the state.

**6. Technology infrastructure for care coordination.** OeHI explains that by improving and aligning the health care technical infrastructure for care coordination, case managers can communicate, educate, and share information more efficiently.

**7. Health IT Portfolio and Program Management Office (PMO).** Colorado has more than 90 health IT or HIE projects. OeHI and the Colorado State Innovation Model (SIM) are working with OIT to create a Health IT PMO to focus on the roadmap and ensure the state's health IT projects are following best practices.

**8. Data governance tools and processes.** OeHI says the goals of this initiative include: (1) reducing operational costs; (2) mitigating data privacy and security risks; and (3) improving consumer confidence.

**9. Systems integrator.** OeHI says the systems integrator is a subject matter expert and consultant who will provide guidance on infrastructure, architecture, and data integration between health care systems in this project.

## PROJECT JUSTIFICATION

The Health IT Roadmap was finalized in November 2017. In October 2015, OeHI was established through an executive order. The same executive order established the eHealth Commission to provide advice and guidance to OeHI to increase health data sharing across the state.

According to the department, 50 percent of Colorado physician practices are connected to a HIE and opportunities exist to connect more physicians to HIEs and improve pertinent health care data sharing, but most options have high up-front costs. OeHi states that currently many health providers have trouble with receiving too much information or not enough relevant information, and HIEs are a resource that provides physicians access to timely, applicable data.

OeHI explains that federal funding to build and improve Colorado's health IT and HIE infrastructure is available through September 30, 2021. The department says that without state funding, federal funds cannot be accessed and Colorado could fall behind in the necessary infrastructure needed to improve health-care delivery. OeHI says that leveraging and improving HIE infrastructure will reduce costs and improve quality of care by minimizing medical errors, readmission rates, and redundant tests. OeHI further explains that better use of the information from HIEs will lessen some current data issues and support regional health care efforts.

Finally, OeHi states that phase three of the Colorado's Health IT Roadmap is focused on the implementation of health IT and HIE infrastructure, tools, and governance to support health in Colorado's communities. If this phase of the project is not funded, it will interrupt the implementation efforts for the care coordination, data governance, and consent initiatives in the Health IT Road map, and all these components are critical in addressing the needs of Coloradans today and in the future. OeHi states that current HIE infrastructure in the state will be utilized for this project, rather than building new infrastructure, which will save time and money.

**Cost savings.** OeHI says that this project will first focus on the Colorado Medicaid populations and then expand the roadmap's initiatives statewide. OeHI explains that it is partnering with the Department of Health Care and Policy (HCPF) to further refine how HIEs are leveraged by Medicaid administrators and health providers to offer better care at a lower cost.

**Federal match.** The Consumer Portal initiative is 100 percent state funded. For the remaining eight initiatives, OeHI expects a 90 percent federal match as set forth in the Medicaid administrative funding. OeHI reports that while the federal funding match has been secured for the first two phases of this project, it has not been rewarded to the department due to the Center for Medicare and Medicaid Services (CMS) approval process. The department states that other states are facing similar challenges with federal funding being rewarded. OeHI plans to get a response from CMS about the status of this funding in November 2019. See Staff Questions and Issues for more information.

# Fiscal Year 2020-21 Information Technology Request

## Governor

### Health IT Roadmap Initiatives

#### PROJECT COST INFORMATION

This budget request to fund phase three will focus on the following areas according to the department:

- planning and implementing all nine initiatives;
- funding the data governance initiative;
- completing the final phase of care coordination and advance HIE initiatives; and
- executing all the planned sustainability efforts for continued operations of this project.

OeHI says its corresponding FY 2019-20 operating budget request for this project was approved and it will continue to receive this funding through this budget request cycle. OeHI does not anticipate requesting additional CCF for this project. OeHI was appropriated \$1.8 million of CCF and \$4.7 million of federal funding spending authority in FY 2018-19 for phase one of this project, and \$1.1 million of CCF and \$10.3 million of federal funding spending authority in FY 2019-20 for phase two.

#### PROJECT RESEARCH

In 2017, OeHI conducted market research to examine how other states have pursued the same health care goals, and concluded that other states have realized significant cost returns with projects similar to the Health IT Roadmap. OeHI summarizes the successes other states have found with similar projects, as follows:

- Improved data quality creates efficiencies to public and private health care entities. Poor data quality may create additional costs for many organizations, providers, payers, and consumers.
- Improved consumer engagement and health literacy helps improve outcomes and lower health care costs.
- Improved coordination of projects, data, and systems increases access to information, thereby reducing duplication, costs, and improving coordination.
- Improved care coordination reduces costs, and improves outcomes, patient experiences, and the value stakeholders receive from participation in the broader health care ecosystem.

#### ADDITIONAL PROJECT INFORMATION

Many of the initiatives in the Health IT Roadmap streamline and provide access to protected health information (PHI) and other confidential data. Some of the initiatives will provide data access for users such as clinicians and health providers that have offices in more than one state thereby, requiring that systems not only comply with federal laws, but also multiple state laws. OeHI explains that privacy and security requirements are included in the roadmap. Additionally, OeHI says it plans to work closely with OIT 's Chief Information Security Office and the security professionals employed at most major health organizations and hospitals to ensure PHI data is secure.

#### PROJECT SCHEDULE

	Start Date	Completion Date
Planning	July 2018	June 2020
Implementation	November 2019	June 2021
Testing	November 2020	September 2021
Closing	September 2021	September 2021

# Fiscal Year 2020-21 Information Technology Request

## Governor

*Health IT Roadmap Initiatives*

### STAFF QUESTIONS AND ISSUES

**Please provide the status of the anticipated federal fund match from the FY 2018-19 appropriation. Are you aware of any other states that are experiencing similar federal funding delays? If so, please describe.**

The federal fund match for FY 2018-19, submitted in March of 2018, was approved December 2018. OeHI, in partnership with their fiscal agent Health Care Policy and Financing, submitted a multi-year request in March of 2019 for FY 19-20 and FY20-21 for the planning and implementation of Colorado's Health IT support urging for the timely review and approval of the funds. The approval for the multi-year request was received on July 15, 2019. The support of the Lieutenant Governor helped reduce the review and approval time of CMS from nine months to four months. There is no Federal Rule to require a timely review for these particular funding match requests. CMS typically reviews requests within 60 days of receipt. Other states are facing similar challenges as the HITECH program is coming closer to its program end date-September 30, 2021. CMS has also undergone some organizational changes that have impacted the process.

**Has the department hired the system integrator? If not, please provide the estimated hire date.**

The department and OeHI have released a RFI to inform requirements. The RFI is set to close on November 18, 2019. Timeline estimates that include review and approval of contracts estimates having a systems integrator hired by July 2020. In the meantime, OeHI intends to contract for this work through the Office of Information Technology in FY 2019-20. Here is a link to the initial announcement: <https://myemail.constantcontact.com/Service-Systems-Integration---Available-for-Public-Comment.html?soid=1125638198686&aid=fLUB6xAcU5o>. The RFI period has been extended a few weeks since this announcement was released.

# Fiscal Year 2020-21 Information Technology Request

## Higher Education

*Digital Transformation Initiative*

### PRIORITY NUMBERS

2021017

<u>Prioritized By</u>	<u>Priority</u>	
DeptInst	1 of 1	
CCHE	2 of 11	
OSPB	4 of 14	Recommended for funding.

### PRIOR APPROPRIATION AND REQUEST INFORMATION

<u>Fund Source</u>	<u>Prior Approp.</u>	<u>FY 2020-21</u>	<u>FY 2021-22</u>	<u>Future Requests</u>	<u>Total Cost</u>
CCF	\$0	\$8,991,675	\$11,694,375	\$0	\$20,686,050
CF	\$0	\$90,825	\$118,125	\$0	\$208,950
<b>Total</b>	<b>\$0</b>	<b>\$9,082,500</b>	<b>\$11,812,500</b>	<b>\$0</b>	<b>\$20,895,000</b>

### PROJECT STATUS

This is the first time Adams State University, Fort Lewis College, and Western Colorado University have requested funding for this project.

### PROJECT DESCRIPTION

Adams State University, Fort Lewis College, and Western Colorado University are requesting Capital Construction Funds (CCF) and cash funds spending authority for phase one of a two-phase project to modernize the institutions' Enterprise Resource Planning (ERP) systems, which manage human resources and finance components, and student information systems (SIS), and move to a cloud-based ERP/SIS solution.

Phase one of this project will entail implementing the human resources (e.g., benefits, timekeeping, etc.) and finance (e.g., budgeting, payroll, etc.) modules of the system. Phase two, which the institutions anticipate requesting funding for next fiscal year, will involve modernizing the student information system module. The SIS is used to manage tasks related to the matriculation, education, graduation, and ongoing relationship with students and alumni, including tasks related to admissions, registration, degree planning, transcripts, financial aid, and others. Phase two will also involve moving the SIS to the same cloud-based solution used for phase one.

### PROJECT JUSTIFICATION

Each of the three institutions are currently using individual ERP/SIS systems that are provided by Ellucian Banner and were acquired almost 30 years ago. The basic structure of the current systems involves a traditional database backend, an administrative mid-layer, and a web-based front end for students, faculty, and staff. The current systems do not meet users' needs and a multitude of "shadow" systems, including excel spreadsheets, access databases, and manual reports, have been created, which this new system would aim to eliminate. For example, Western Colorado University estimates that a new system could reduce the time to manage the institution's expense reimbursement process by 90 percent. According to the institutions, they expect to realize efficiency gains of approximately 5 percent, equating to over 100,000 work hours per year across all three campuses.

By undertaking this project as a collaborative effort between the three institutions, the institutions are able to act as an entity of more than 11,000 students, faculty, and staff, which will result in estimated savings of 30 to 40 percent, or \$4.5 to \$5.5 million, for implementation costs and 20 to 25 percent for annual operating costs. The institutions believe that they can take advantage of their similarly unique positions as small, rural, geographically remote, comprehensive four-year institutions, and develop one system that supports all three institutions. Implementing this project through a collaborative approach will also enable the institutions to standardize business practices and implement sharing of best practices and processes, leading to additional cost savings in the future.

# Fiscal Year 2020-21 Information Technology Request

## Higher Education

### *Digital Transformation Initiative*

#### PROJECT COST INFORMATION

**Cash funds.** Each of the institutions will be contributing cash funds from institutional cash reserves for the funding of this project. Each institution charges a student technology fee, however, the revenue from these fees will not be used to pay for this project.

#### PROJECT RESEARCH

The costs estimates for this project are based on information received from a request for information conducted by the institutions in spring of 2019.

As part of the research for this project, the institutions analyzed three different alternatives: staying with the current systems and vendor, moving to a cloud-based solution with the current vendor, or moving to a cloud-based solution with a new vendor. The institutions determined that the third option of moving to a cloud-based solution with a new vendor offered the most advantages, while remaining with the current system was the least desirable option.

#### PROJECT SCHEDULE

	Start Date	Completion Date
Planning	April 2019	June 2020
Implementation	July 2020	March 2021
Testing	April 2021	May 2021
Closing	June 2021	June 2021

# Fiscal Year 2020-21 Information Technology Request

## Colorado State University

*Network Refresh and Upgrade*

### PRIORITY NUMBERS

2020027

Prioritized By	Priority	
DeptInst	1 of 1	
CCHE	1 of 11	
OSPB	5 of 14	Not recommended for funding.

### PRIOR APPROPRIATION AND REQUEST INFORMATION

Fund Source	Prior Approp.	FY 2020-21	FY 2021-22	Future Requests	Total Cost
CCF	\$0	\$545,000	\$632,000	\$2,009,000	\$3,186,000
CF	\$0	\$200,000	\$450,000	\$650,000	\$1,300,000
<b>Total</b>	<b>\$0</b>	<b>\$745,000</b>	<b>\$1,082,000</b>	<b>\$2,659,000</b>	<b>\$4,486,000</b>

### PROJECT STATUS

This is a previously requested project from FY 2019-20, which did not receive funding.

### PROJECT DESCRIPTION

Colorado State University (CSU) is requesting Capital Construction Funds (CCF) and cash funds spending authority for phase one of a three-phase project to upgrade out-of-date networking hardware. As part of phase one of this project, it is anticipated that at least 165 edge switches will be replaced.

Phases two and three, which CSU anticipates requesting funding for in future fiscal years, will involve replacing additional edge switches, two core switches, two border routers, and two firewalls.

### PROJECT JUSTIFICATION

According to CSU, the new edge switches will provide a significant increase in capacity, from 100 megabyte to 1 gigabyte; provide Power over Ethernet (PoE) capability necessary for various life and safety devices; improve the IT security of users through the replacement of approximately 260 edge switches that are beyond end-of-life and no longer receiving necessary patches and upgrades; and accommodate two-factor authentication. Additionally, the new edge switches will integrate with the university's central switch management software. This central system will enable all edge switches to be upgraded to the latest software and firmware configurations, maintain the latest IT security protections, and monitor patterns to search for potential IT security issues.

CSU was unable to quantify cost savings as required by House Bill 15-1266, but states that by receiving state funding for the first three phases of this project, CSU will then be able to achieve self-sufficiency in supporting its seven-year upgrade cycle for its network equipment, including edge switches, beginning in year four.

### PROJECT COST INFORMATION

**Cash funds.** The cash funds that CSU is proposing to use for this project are comprised about equally of student technology fees, Provost funding, and departmental funding. CSU currently has two types of student technology fees, ones that are college specific and range from \$40 per semester to \$170 per semester, with most being about \$100 per semester, and the other being the central University Technology Fee, which is currently \$25 per semester. The University Technology Fee is expected to increase to \$30 per semester to help fund part of the future phases of this project.

The edge switches that will be replaced during phase one of this project are estimated to cost approximately \$4,500

# Fiscal Year 2020-21 Information Technology Request

## Colorado State University

### Network Refresh and Upgrade

each.

#### PROJECT SCHEDULE

	Start Date	Completion Date
Planning	June 2020	August 2021
Implementation	August 2020	June 2023
Testing	August 2020	June 2022
Closing	August 2020	June 2023

#### STAFF QUESTIONS AND ISSUES

**Please provide an explanation as to why this funding request meets the statutory requirements in Section 2-3-1701 (2)(b), C.R.S., which provides that the definition of “information technology” for the purposes of budget requests to be considered by the Joint Technology Committee “does not mean post-implementation support, hardware life-cycle replacement, or routine maintenance.”**

Please excuse our imprecise language where we referred to “replacement,” and instead we should have cited “upgrades” in all cases. Indeed, this request is not for life-cycle replacement. Rather, it is for a holistic upgrade of our network to the next generation of technology, supporting higher speeds (a factor of 10X in speed), as well as implementing smart technology in the core, especially supporting real-time IT security upgrades in the core devices’ configurations that will be fed from the global internet’s IT security infrastructure in near real time. Thus, this request is for needed new technology that will displace extant technology, and is not just a “life-cycle replacement” of existing hardware. In fact, we believe this request falls under the following portion of the statute: “(2.5)(a) “Information technology budget request” means a budget request from a state agency or state institution of higher education for the installation, development, or upgrade of information technology”. The specific upgrades are:

Core infrastructure:

Upgrade needed to 10X current capacity – Our existing core infrastructure is 10 gig (ten gigabits per second, or ten billion bits per second). We have over four hundred buildings on our main, south, and foothills campuses, and we currently connect dozens of buildings at 10 gig; thus the core infrastructure is a severe point of congestion, needing a 10X upgrade in speed/capacity to 100 gig in the core devices.

Current IT security capability – We need to upgrade the core infrastructure to smart, adaptive, real-time IT security configuration changes that will derive from the global internet’s IT security infrastructure. Our current IT security configurations in our current core devices are static – we can change the IT security configurations only manually, and thus cannot react fast enough to catch the dramatically increasing number of threats in the global internet environment. This new capability is needed to react in real time to IT Security threats and vulnerabilities that will provide much greater needed protection for our network and our users.

Edge switch upgrades:

Capacity upgrade – Upgrade is needed to 10X the current capacity – our existing edge switches provide 100 meg (megabits per second or one million bits per second) to users, whereas our current standard for edge switches is 1 gig to the user. Simply put, users need a 1 gig interface to exchange existing and increasing number and size of files required for education and research. We have observed that files used for research of size one terabyte (1012 bytes) take more than a week to transmit. Files much larger than this cannot be transmitted at all, and smaller files transmitted through a slow 1 meg interface impede the quality and quantity of research and education that must be conducted in today’s environment. We have fallen behind in the upgrade of our network, and this funding request will allow us to catch up, achieve steady-state upgrades, and meet today’s and tomorrow’s increasing needs.

Power over Ethernet (PoE) upgrades – The existing switches are not capable of providing PoE that is required for

## Fiscal Year 2020-21 Information Technology Request

### Colorado State University

#### *Network Refresh and Upgrade*

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connection of life and safety devices. The most critical need here is a backlog of about almost one hundred video surveillance systems that have been approved by the Public Safety Team, and need new switches that provide PoE interfaces. Other life and safety devices needing PoE are also in the queue waiting for switch upgrades.

IT Security upgrades – Existing switches that are beyond end of life no longer receive patches and upgrades required to keep up with current IT security needs, presenting vulnerabilities to users connected to them.

Two-factor authentication (2FA) – Existing switches that need upgrading do not accommodate two-factor authentication. It is critical for us to implement and sustain 2FA in the edge switches in front of our critical systems, including our Human Resources Management System, our Financial Management System, our Student Information System, our Research Management Systems, and other systems as may emerge over time needing this capability. We have already implemented the *Duo* 2FA system for our off-campus access. We need to implement 2FA in front of all of our critical systems, as observations from other higher education institutions which have implemented 2FA comprehensively indicate that this has provided almost perfect protection of their systems against phishing, malware, and ransomware, our greatest IT security risk today.

Central management, administration, and IT security configurations of edge switches – Older switches are not capable of being fully integrated into our central, automated edge switch management, control, administration and IT security configuration environment. This central control system provides the capability to upgrade all edge switches to the latest software and firmware configurations, maintaining the latest IT security protections, including Network Access Control and Software Defined Networking. The central systems also allows monitoring of edge switches and traffic patterns that may indicate an IT security issue on user devices (computers, printers, FAX machines, etc.). We must upgrade old switches to fit into this environment.

# Fiscal Year 2020-21 Information Technology Request

## University of Northern Colorado

*Secure Cyber Network*

### PRIORITY NUMBERS

2020029

<u>Prioritized By</u>	<u>Priority</u>	
DeptInst	1 of 1	
CCHE	2 of 11	
OSPB	6 of 14	Not recommended for funding.

### PRIOR APPROPRIATION AND REQUEST INFORMATION

<u>Fund Source</u>	<u>Prior Approp.</u>	<u>FY 2020-21</u>	<u>FY 2021-22</u>	<u>Future Requests</u>	<u>Total Cost</u>
CCF	\$0	\$1,373,988	\$0	\$0	\$1,373,988
CF	\$0	\$13,879	\$0	\$0	\$13,879
<b>Total</b>	<b>\$0</b>	<b>\$1,387,867</b>	<b>\$0</b>	<b>\$0</b>	<b>\$1,387,867</b>

### PROJECT STATUS

This is a previously requested project from FY 2019-20, which did not receive funding.

### PROJECT DESCRIPTION

The University of Northern Colorado (UNC) is requesting Capital Construction Funds (CCF) and cash funds spending authority to implement a new core network architecture. UNC states that a new network architecture will increase network security, enhance user experience, and provide more visibility into the network to improve network security and monitoring. This project will include a more adaptable environment that will trigger security events based on user behaviors and will allow applications within the network to communicate independently without staff intervention.

The FY 2019-20 request would have replaced failing hardware and software components to increase security. UNC explains the equipment that would have been replaced if funding was appropriated reached end of support from the vendor in August 2019 and the university had to split the original request into two phases. UNC is currently in a request for proposal process for the first phase of this project to choose a vendor to replace the end-of-life hardware in order to prevent any hardware failures. It will pay for phase one costs from cash sources. The second phase of the project, which constitutes this budget request, includes purchasing software licensing that will build upon the infrastructure purchased in phase one to add additional security features and functionality.

### PROJECT JUSTIFICATION

According to UNC, the legacy core network is over seven years old and has reached the end of support from the vendor. Additionally, UNC states that without this funding, it will not be able to shift from this aging architecture, which is resource intensive, inefficient, and insecure.

UNC was unable to quantify cost savings as required by House Bill 15-1266, but states the project will provide operational efficiency and increase the network capacity to match the increasing number of internet of things (IoT) devices on campus, which are devices that can connect to the network, such as thermostats, vehicles, security systems, and speaker systems.

**Project alternatives.** The university considered several project alternatives including hiring multiple vendors. UNC chose the option to procure CISCO products because of existing staff's expertise and past successes with this product.

# Fiscal Year 2020-21 Information Technology Request

## University of Northern Colorado

Secure Cyber Network

### PROJECT COST INFORMATION

**Cash funds.** The cash funds that UNC is proposing to use for this project are comprised of the student technology fee the university charges, which is \$11 dollars per credit hour. In FY 2018-19, UNC collected \$2,777,034 from the student technology fee and will allocate \$250,000 of the student tech fee per year for ongoing maintenance of network and storage infrastructure for this project after FY 2020-21.

UNC anticipates that this project will allow the university to consolidate separate devices from different vendors, including the current firewall, into one solution with one vendor. UNC anticipates eliminating expenditures as a result of this project, including \$34,000 a year for a current vendor product that will be phased out as a result of the project.

### PROJECT RESEARCH

UNC states that a third party vendor was consulted for the initial strategy and plan development for this project. It also states that CISCO engineers reviewed the accuracy of the project budget. Additionally, the university plans to ensure device compatibility and will benefit from bulk discounts by purchasing the equipment in high quantities.

### ADDITIONAL PROJECT INFORMATION

UNC states that it employs several IT specific project managers in its Project Management Office. The project manager within the university's PMO will be assigned after funding is authorized and will monitor the project's timeline and budget. UNC also uses a defined maintenance window, typically Thursday, Saturday, and Sunday for equipment installation to minimize installation impacts.

The university says that this project will use IT best practices leveraging innovations in network design and technology, including software defined networking, next generation firewall, and network segmentation to reduce network complexity.

### PROJECT SCHEDULE

	Start Date	Completion Date
Planning	June 2020	August 2020
Implementation	August 2020	January 2021
Testing	January 2021	March 2021
Closing	March 2021	June 2021

### STAFF QUESTIONS AND ISSUES

**Please provide an explanation as to why this funding request meets the statutory requirements in Section 2-3-1701 (2)(b), C.R.S., which provides that the definition of "information technology" for the purposes of budget requests to be considered by the Joint Technology Committee "does not mean post-implementation support, hardware life-cycle replacement, or routine maintenance."**

UNC is requesting funding in order to roll out new security architecture. We have operational funding allocated to support the new network environment, but we do not have a mechanism for one-time funding to procure this architecture. Existing staff will support the implementation and ongoing maintenance. We will add this security architecture to our long-term fiscal planning process to ensure funding is allocated for replacement in future years.

# Fiscal Year 2020-21 Information Technology Request

## Colorado Mesa University

*Network Security and Resiliency*

### PRIORITY NUMBERS

2021018

<u>Prioritized By</u>	<u>Priority</u>	
DeptInst	1 of 1	
CCHE	4 of 11	
OSPB	7 of 14	Not recommended for funding.

### PRIOR APPROPRIATION AND REQUEST INFORMATION

<u>Fund Source</u>	<u>Prior Approp.</u>	<u>FY 2020-21</u>	<u>FY 2021-22</u>	<u>Future Requests</u>	<u>Total Cost</u>
CCF	\$0	\$2,249,898	\$0	\$0	\$2,249,898
CF	\$0	\$222,519	\$0	\$0	\$222,519
<b>Total</b>	<b>\$0</b>	<b>\$2,472,417</b>	<b>\$0</b>	<b>\$0</b>	<b>\$2,472,417</b>

### PROJECT STATUS

This is the first time Colorado Mesa University has requested funding for this project.

### PROJECT DESCRIPTION

Colorado Mesa University (CMU) is requesting a combination of Capital Construction Funds (CCF) and cash funds spending authority to modernize the university's network hardware. CMU will use this budget request funding to:

- upgrade the university's core network switch and network backbone; and
- upgrade edge switches in the data center and residence halls.

Currently the university funds a single core network in its primary data center. This project will add a redundant core network switch in a secondary data center and install redundant cable switches in each data center. The university will also add redundant backbone network links to campus buildings. CMU states that this project will improve network security, improve network uptime, improve network performance, and improve user experience. CMU anticipates increasing wireless network speeds from 4 gigabytes (Gb) to 10Gb with this project. This project will also eliminate most single points of network failure. These benefits will impact all users on campus, including faculty, staff, students, and visitors.

### PROJECT JUSTIFICATION

According to CMU, the current single core network switch on campus was impacted by a water leak which caused several buildings to go offline for a day. Through this incident, the university identified the need for higher network redundancy to mitigate possible future equipment failures. CMU also states that the university needs to increase network capacity and network bandwidth to provide more reliable internet access to support the increasing number of network-attached devices and internet-based services.

CMU was unable to quantify cost savings as required by House Bill 15-1266, but states the project will reduce costs associated with technology replacement programs the university currently utilizes, enhance the overall experience of the user base with improved network speeds, and enhance the university's data protection efforts.

### PROJECT COST INFORMATION

**Cash funds.** CMU states that it will contribute the cash funds from the university's reserves. CMU does not charge students a technology fee.

# Fiscal Year 2020-21 Information Technology Request

## Colorado Mesa University

### Network Security and Resiliency

The university provided the cost of this project using the following phases:

#### Phase 1 (\$1,774,830 of total funds):

- upgrade the core network switch and add redundant top-of-rack 40 Gigabit Ethernet (GbE) switches to increase connectivity to virtualized server environments; and
- upgrade the main campus local area network backbone to 10GbE with redundant links to most buildings.

#### Phase 2 (\$697,587 of total funds):

- upgrade edge switches in residence halls to upgrade all device ports to 1GbE with advanced features to support dynamic port segmentation for increased personal device security.

### PROJECT RESEARCH

CMU estimated the cost of this project using the existing HPE/Aruba network environment to leverage the negotiated discounts on any new equipment. Other network hardware manufacturers were reviewed to determine the future direction of the campus network infrastructure, but CMU decided that using the existing network infrastructure will reduce costs. CMU also states that it expects to receive additional discounts if the project is funded through contacting authorized resellers of certain equipment.

### ADDITIONAL PROJECT INFORMATION

CMU states that this project will increase network resiliency, security, and performance through improving network redundancy. It also states that this project will increase network security by creating a homogenous network through edge switch upgrades.

### PROJECT SCHEDULE

	Start Date	Completion Date
Planning	February 2020	June 2020
Implementation	July 2020	August 2022
Testing	August 2022	August 2022
Closing	May 2022	September 2022

### STAFF QUESTIONS AND ISSUES

**Please provide an explanation as to why this funding request meets the statutory requirements in Section 2-3-1701 (2)(b), C.R.S., which provides that the definition of “information technology” for the purposes of budget requests to be considered by the Joint Technology Committee “does not mean post-implementation support, hardware life-cycle replacement, or routine maintenance.”**

The requested funds for the scope of CMU’s Network Security and Resiliency Project is above general hardware replacement and will result in a substantial upgrade to the university’s core and edge network switches that comprises the university’s Local Area Network (LAN) and supports 40Gb server connections in the data center, 10Gb inter-building connectivity, and enhancements in network security and redundancy. The upgrades eliminate most single point of network failures and will help the university meet student and faculty network security and online application performance expectations.

CMU has a technology hardware replacement plan and budgets for refreshing network switches. A decade ago, the university found the cost of network switches to be on the decline as features and performance of network solutions advanced. During this period, the university successfully funded network hardware upgrades without significant increases in funding. However, more recently the university has realized a significant increase in the cost of network

## **Fiscal Year 2020-21 Information Technology Request**

### **Colorado Mesa University**

#### *Network Security and Resiliency*

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equipment, requiring upgrade funds beyond network replacement costs to advance the security and performance of its LAN.

In FY 2017-18, CMU re-evaluated its replacement strategies and equipment lifecycles for its technology sustainability plan. This resulted in many of the university's hardware replacement schedules to be extended to help curtail the rising costs of its technology replacement programs. Also considered at that time was a) the additional expense to upgrade the core network switch with 10G connectivity in the data center and b) the increasing number of Power-over-Ethernet (PoE) devices connecting across campus. PoE devices connecting to network switch ports include Internet Protocol (IP) security cameras, wireless access points, and classroom A/V equipment among other Internet of Things (IoT) devices brought by students living in the residence halls. Network requirements are quickly moving past 10Gb connectivity in the datacenter and 1Gb between buildings.

# Fiscal Year 2020-21 Information Technology Request

## Community College of Denver

### *Classroom and Conference Room Technology*

#### PRIORITY NUMBERS

2021019

<u>Prioritized By</u>	<u>Priority</u>	
DeptInst	1 of 1	
CCHE	4 of 11	
OSPB	8 of 14	Not recommended for funding.

#### PRIOR APPROPRIATION AND REQUEST INFORMATION

<u>Fund Source</u>	<u>Prior Approp.</u>	<u>FY 2020-21</u>	<u>FY 2021-22</u>	<u>Future Requests</u>	<u>Total Cost</u>
CCF	\$0	\$2,259,014	\$2,283,353	\$2,426,062	\$6,968,429
CF	\$0	\$144,192	\$145,746	\$154,855	\$444,793
<b>Total</b>	<b>\$0</b>	<b>\$2,403,206</b>	<b>\$2,429,099</b>	<b>\$2,580,917</b>	<b>\$7,413,222</b>

#### PROJECT STATUS

This is the first time the Community College of Denver has requested funding for this project.

#### PROJECT DESCRIPTION

The Community College of Denver (CCD) is requesting Capital Construction Funds (CCF) and cash funds spending authority for phase one of a three-phase project to replace, update, and standardize the college's classroom and conference room technology. The technology that will be replaced and updated throughout the college's classrooms and conference room includes conferencing and telecom equipment, screen sharing equipment, projection and video display equipment, connecting and switching equipment, and conference phones. This project will allow for distance learning technology, wireless projection, instruction capture, digital whiteboards, and "bring your own device" connectivity.

Phase one of the project will involve replacing and updating the technology in the college's health sciences campus classrooms, the science building classrooms, and the conference rooms on the Auraria campus. Phases two and three will involve replacing and updating the technology in the college's 64 classrooms in the Cherry Creek building and other classrooms throughout the college.

#### PROJECT JUSTIFICATION

This project will enable CCD to purchase new equipment for use in the college's classrooms and conference rooms in order to provide new capabilities, enable innovation in teaching, and enhance student learning. By standardizing the equipment used in the college's classrooms, college faculty will be able to spend less time setting up and figuring out how to use or fix the technology in various parts of the college and spend more time on instruction.

According to CCD, the current classroom and conference room technology has a high rate of failure. There are currently 72 failures reported each month in the 194 rooms that are proposed to be included in this project. It is becoming more common for the support contractor to have to completely replace equipment as it is less able to repair equipment to a viable operating state.

CCD was unable to quantify cost savings as required by House Bill 15-1266, but states the project will reduce staff time spent setting up technology, which will increase the amount of time spent on instruction and therefore improve student retention and completion.

# Fiscal Year 2020-21 Information Technology Request

## Community College of Denver

*Classroom and Conference Room Technology*

### PROJECT COST INFORMATION

**Cash funds.** CCD plans to use cash reserves to fund the cash fund portion of the project. The college does not currently charge a student technology fee. According to CCD, this is because the college's fees are among the highest in the state for community colleges due to mandatory Auraria campus fees.

### PROJECT RESEARCH

Cost estimates for this project are based on vendor quotes for a standard technology solution.

### PROJECT SCHEDULE

	Start Date	Completion Date
Planning	February 2020	July 2020
Implementation	August 2020	March 2021
Testing	September 2020	April 2021
Closing	May 2021	May 2021

### STAFF QUESTIONS AND ISSUES

**Please provide an explanation as to why this funding request meets the statutory requirements in Section 2-3-1701 (2)(b), C.R.S., which provides that the definition of "information technology" for the purposes of budget requests to be considered by the Joint Technology Committee "does not mean post-implementation support, hardware life-cycle replacement, or routine maintenance."**

This project meets the definition of "information technology" because it does not include support, maintenance, or disposal for the existing equipment. The purpose of this project is to purchase new equipment and to provide new capabilities that will enable innovation in teaching and enhance student learning.

# Fiscal Year 2020-21 Information Technology Request

## Metropolitan State University of Denver

IT Infrastructure

### PRIORITY NUMBERS

2021020

<u>Prioritized By</u>	<u>Priority</u>	
DeptInst	1 of 1	
CCHE	6 of 11	
OSPB	9 of 14	Not recommended for funding.

### PRIOR APPROPRIATION AND REQUEST INFORMATION

<u>Fund Source</u>	<u>Prior Approp.</u>	<u>FY 2020-21</u>	<u>FY 2021-22</u>	<u>Future Requests</u>	<u>Total Cost</u>
CCF	\$0	\$3,305,000	\$586,250	\$0	\$3,891,250
CF	\$0	\$370,000	\$70,000	\$0	\$440,000
<b>Total</b>	<b>\$0</b>	<b>\$3,675,000</b>	<b>\$656,250</b>	<b>\$0</b>	<b>\$4,331,250</b>

### PROJECT STATUS

This is the first time Metropolitan State University of Denver has requested funding for this project.

### PROJECT DESCRIPTION

Metropolitan State University of Denver (MSU-Denver) is requesting Capital Construction Funds (CCF) and cash funds spending authority for the first phase of a two-phase project to modernize its network infrastructure and address deferred maintenance on current IT infrastructure. Phase one of this project includes:

- installing fiber optic infrastructure to complete the campus network loop;
- replacing 25 distribution and layer switches; and
- replacing 375 edge switches.

Phase two of this project, which MSU-Denver anticipates requesting funding for in FY 2021-22, would involve the replacement of approximately 450 wireless access points on campus.

### PROJECT JUSTIFICATION

MSU-Denver's Information Technology Services (ITS) conducted stakeholder outreach and consulted with several external, independent vendors to assess the state of the current network infrastructure on campus. According to ITS, 80 percent of the network switches on campus exceeded 5 years in service, 42 percent exceeded 7 years, and 10 devices are 10 years or older. ITS also states that devices purchased prior to 2008 use an outdated system software that has not been updated since 2013. MSU-Denver explains its network infrastructure is aging and needs to be updated in order to avoid system failure due to the increased use of wireless devices on campus. The university states that it has experienced numerous network failures resulting from its aged infrastructure, including:

- 26 incidents in 2016;
- 59 incidents in 2017;
- 53 incidents in 2018; and
- 34 incidents in 2019, as of October 2019.

As an example of the impact of these events, on October 23, 2019, the science building on campus experienced a complete wireless outage for over 14 hours due to a network switch hardware failure. During this time, the university states that courses and business operations for multiple academic departments were significantly disrupted. Additionally, the university says that the funding requested will address single points of failure and increase network

# Fiscal Year 2020-21 Information Technology Request

## Metropolitan State University of Denver

### IT Infrastructure

security through the installation of redundant fiber connections between buildings. MSU-Denver explains that funding only phase one of this project would not deliver a noticeable improvement in wireless networking performance to students, faculty, and staff. The university states while the core networking infrastructure will drastically improve wireless signal strength, coverage and services would remain substandard. Without phase two funding, the roughly 606 wireless access points deployed at MSU-Denver will continue to experience issues and will remain difficult to troubleshoot despite the investment in infrastructure.

MSU-Denver was unable to quantify cost savings as required by House Bill 15-1266, but states the project will prevent network failures and increase network security.

### PROJECT COST INFORMATION

**Cash funds.** A percentage of the cash funds that MSU-Denver is proposing to use for both phases of this project is from the student technology fee the university charges, which is \$8 dollars per credit hour.

### PROJECT RESEARCH

The costs of this budget request were estimated using the number of devices and the average cost per device as well as the length and number of existing conduit paths.

### PROJECT SCHEDULE

	Start Date	Completion Date
Planning	May 2020	July 2020
Implementation	August 2020	February 2021
Testing	February 2021	March 2021
Closing	April 2021	April 2021

### STAFF QUESTIONS AND ISSUES

**Please provide an explanation as to why this funding request meets the statutory requirements in Section 2-3-1701 (2)(b), C.R.S., which provides that the definition of “information technology” for the purposes of budget requests to be considered by the Joint Technology Committee “does not mean post-implementation support, hardware life-cycle replacement, or routine maintenance.”**

The primary focus of the initiative is a wholesale transformation of the networking ecosystem at Metropolitan State University of Denver. By supporting this one-time modernization effort, the Joint Technology Committee will be investing in the future success of MSU-Denver, enabling enhanced performance, availability, reliability, information security and system analytics. Looking ahead, following the implementation of a robust, modernized architecture, MSU-Denver will allocate funds on an ongoing annual basis to sustain a life-cycle replacement program for network infrastructure.

# Fiscal Year 2020-21 Information Technology Request

## Otero Junior College

*Technology and Communications Upgrades*

### PRIORITY NUMBERS

2019153

<u>Prioritized By</u>	<u>Priority</u>	
DeptInst	1 of 1	
CCHE	7 of 11	
OSPB	10 of 14	Not recommended for funding.

### PRIOR APPROPRIATION AND REQUEST INFORMATION

<u>Fund Source</u>	<u>Prior Approp.</u>	<u>FY 2020-21</u>	<u>FY 2021-22</u>	<u>Future Requests</u>	<u>Total Cost</u>
CCF	\$475,000	\$597,750	\$560,000	\$1,900,000	\$3,532,750
CF	\$75,000	\$125,000	\$90,000	\$375,000	\$665,000
<b>Total</b>	<b>\$550,000</b>	<b>\$722,750</b>	<b>\$650,000</b>	<b>\$2,275,000</b>	<b>\$4,197,750</b>

### PROJECT STATUS

This is phase two of a continuation project. Funding for phase one was appropriated for FY 2019-20.

### PROJECT DESCRIPTION

Otero Junior College (OJC) is requesting Capital Construction Funds (CCF) for phase two of a project to replace and upgrade equipment in the college's library, computer labs, and classrooms. The project will also enhance an improved emergency notification system on campus. With the funding received from phase one of this project, OJC ordered 15 Lenovo Series Tiny personal computers and monitors and plans to add additional MacBook laptops and iPads throughout the academic year.

As part of phase two of this project, OJC anticipates purchasing:

- 225 laptops for staff;
- 150 iPads for the library;
- 50 laptops for the student learning commons; and
- 40 computers for student computer labs.

Additionally, OJC anticipates purchasing surveillance equipment and equipment to assist in the dissemination of concurrent enrollment courses and materials from OJC to the nine school districts in the college's service area.

### PROJECT JUSTIFICATION

The current number of laptops and desktops that OJC has is not enough to keep up with student and staff demand due to an increased reliance on technology across departments. By funding this request, OJC will be able to ensure that students and staff have access to state-of-the-art technology equipment to assist with the successful completion of coursework and instruction. Additionally, OJC will be able to provide enhancements to the campus emergency alert system to ensure the safety of everyone on campus.

OJC was unable to quantify cost savings as required by House Bill 15-1266, but states that this project will improve student learning opportunities and success.

### PROJECT COST INFORMATION

**Cash funds.** OJC is requesting to partially fund this project with \$125,000 in cash funds from student technology

# Fiscal Year 2020-21 Information Technology Request

## Otero Junior College

### *Technology and Communications Upgrades*

fees. The current student technology fee is \$4.25 per credit hour, which generates almost \$100,000 annually.

#### PROJECT COST INFORMATION, CONT.

Item	Quantity	Estimated Total Cost
Staff laptops	225	\$222,750
iPads	150	\$187,500
Student laptops	50	\$70,000
Student computer lab computers	40	\$40,000
Surveillance equipment	6	\$15,000
Audio/video upgrades	4	\$120,000
Computer equipment	9	\$67,500
<b>Total</b>		<b>\$722,750</b>

#### PROJECT SCHEDULE

	Start Date	Completion Date
<b>Planning</b>	April 2019	August 2020
<b>Implementation</b>	July 2020	June 2023
<b>Testing</b>	October 2020	June 2023
<b>Closing</b>	June 2023	July 2023

#### STAFF QUESTIONS AND ISSUES

**Please provide an explanation as to why this funding request meets the statutory requirements in Section 2-3-1701 (2)(b), C.R.S., which provides that the definition of “information technology” for the purposes of budget requests to be considered by the Joint Technology Committee “does not mean post-implementation support, hardware life-cycle replacement, or routine maintenance.”**

A goal of Otero Junior College is to make certain we have adequate numbers of technological devices that are of the latest technology available for our students to utilize in the classroom as well as completion of homework and other study assignments. Our current number of computers (Laptops, Desktops, and MacBook devices) available for students to utilize total approximately 490 units located in computer laboratories, the learning commons library study area, and in some classrooms as well as small labs in our dormitory facilities. Our total unduplicated headcount of students for Fall Semester, 2019 is just over 1,250 students. With the almost daily increase in reliance on technology devices to enable students to perform successfully at their pinnacle of individual achievement, the College believes we need to have available sufficient numbers of these devices to be able to serve all students as well as allow staff access to the same technology. There is continual added reliance on computer devices use to instruct and learn using programs such as Desire to Learn (D2L), Office 365, and OneDrive. All of these processes plus access to classroom learning materials require use of technological devices so it is imperative to have these items available to all students. Most students have personal telephones and computers, however, these devices are, often times, not compatible with software selections or other peripheral devices such as printers that the College has available and/or required for successful completion of coursework. We anticipate with the current technology funding program along with the request for the FY2020-21 academic year, Otero Junior College will have established a technology base of approximately 1,210 units that can subsequently be maintained, upgraded, and replaced as needed via the use of the technology fee we currently charge our students on a per credit hour basis. (490 current units, 445 units from FY2019-20 funding, plus 275 units from FY 2020-21 funding totals 1,210 units available)

## **Fiscal Year 2020-21 Information Technology Request**

### **Otero Junior College**

#### *Technology and Communications Upgrades*

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This funding request will also allow the College to add the latest teaching technology to 4 of our classrooms and enable us to more effectively serve students in our service area with reliable distance education options.

# Fiscal Year 2020-21 Information Technology Request

## Community College of Aurora

*Improving Student Access to Technology*

### PRIORITY NUMBERS

2020026

<u>Prioritized By</u>	<u>Priority</u>	
DeptInst	1 of 1	
CCHE	8 of 11	
OSPB	11 of 14	Not recommended for funding.

### PRIOR APPROPRIATION AND REQUEST INFORMATION

<u>Fund Source</u>	<u>Prior Approp.</u>	<u>FY 2020-21</u>	<u>FY 2021-22</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
<b>Total</b>	<b>\$0</b>	<b>\$527,845</b>	<b>\$0</b>	<b>\$0</b>	<b>\$527,845</b>

### PROJECT STATUS

This is a previously requested project from FY 2019-20, which did not receive funding.

### PROJECT DESCRIPTION

The Community College of Aurora (CCA) is requesting a combination of Capital Construction Funds (CCF) and cash funds spending authority to upgrade server hardware and wireless infrastructure. CCA states that this project will benefit all student programs by increasing classroom computing and allowing more students to access the college's software off-campus.

### PROJECT JUSTIFICATION

In recent years, CCA states that its educational software has required more server-based computing and some of CCA's applications are graphic intensive. As a result, CCA states that its aging equipment and inability to upgrade to the most recent version of software limits students' ability to access educational software both on and off campus. According to CCA, upgraded server hardware and wireless infrastructure will allow it to improve its technical environment by providing increased bandwidth and enhanced network traffic management for wireless connections. The college also states that the project will allow CCA to better serve faculty and students, maintain security, and ensure operational efficiency.

CCA was unable to quantify cost savings as required by House Bill 15-1266, but states that the project will significantly increase wireless performance.

### PROJECT COST INFORMATION

**Cash funds.** The college will partially fund this project with cash funds from the CCA student technology fee of \$26 dollars per student.

This project will upgrade the equipment that CCA already maintains using existing maintenance agreements, which CCA states will result in cost savings.

### PROJECT RESEARCH

CCA worked with their current vendor HP to properly size and cost the requested hardware to allow for future growth and expansion of the college. CCA states that using HP equipment in this budget request allows the college to utilize the pricing available in the current HP state pricing agreement.

# Fiscal Year 2020-21 Information Technology Request

## Community College of Aurora

*Improving Student Access to Technology*

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### ADDITIONAL PROJECT INFORMATION

The Colorado Community College System (CCCS) provides IT security and backup services for CCA. CCA states that this budget request does not impact current security or disaster recovery environments for CCCS.

### PROJECT SCHEDULE

	Start Date	Completion Date
Planning	February 2018	June 2018
Implementation	July 2020	November 2020
Testing	November 2020	November 2020
Closing	December 2020	December 2020

### STAFF QUESTIONS AND ISSUES

**Please provide an explanation as to why this funding request meets the statutory requirements in Section 2-3-1701 (2)(b), C.R.S., which provides that the definition of “information technology” for the purposes of budget requests to be considered by the Joint Technology Committee “does not mean post-implementation support, hardware life-cycle replacement, or routine maintenance.”**

The requested items for CCA are intended to significantly enhance our ability to provide the IT resources required for our students to succeed in their coursework. The proposed items help secure our student devices, increase our wireless coverage on both campuses, as well as provide the ability to deliver high-end graphics to our students through our Citrix environment. These changes will allow even our online students to take advantage of the software required to complete their coursework.

# Fiscal Year 2020-21 Information Technology Request

## Trinidad State Junior College

*Technology Infrastructure*

### PRIORITY NUMBERS

2019156

<u>Prioritized By</u>	<u>Priority</u>	
DeptInst	1 of 1	
CCHE	9 of 11	
OSPB	12 of 14	Not recommended for funding.

### PRIOR APPROPRIATION AND REQUEST INFORMATION

<u>Fund Source</u>	<u>Prior Approp.</u>	<u>FY 2020-21</u>	<u>FY 2021-22</u>	<u>Future Requests</u>	<u>Total Cost</u>
CCF	\$0	\$636,846	\$532,918	\$0	\$1,169,764
<b>Total</b>	<b>\$0</b>	<b>\$636,846</b>	<b>\$532,918</b>	<b>\$0</b>	<b>\$1,169,764</b>

### PROJECT STATUS

This is a previously requested project from FY 2018-19 and FY 2019-20, which did not receive funding.

### PROJECT DESCRIPTION

Trinidad State Junior College (TSJC) is requesting Capital Construction Funds (CCF) for phase one of a two-phase project to improve its instructional and academic support activities, increase campus safety and security, and to upgrade its core infrastructure. The college plans to use the appropriated funding to:

- update the video surveillance system;
- update the backup recovery system; and
- replace network infrastructure equipment.

### PROJECT JUSTIFICATION

According to TSJC, a significant portion of the college's IT infrastructure is outdated or at risk of failure, which impacts the day-to-day operations of the college. TSJC states that the current surveillance system needs to be replaced because it is unable to interface with the door lock system and is no longer supported by the manufacturer. TSJC also notes that the current surveillance system only monitors building entrance doors, which does not provide adequate security for students, and it only stores video for 20 days compared to newer versions that have a 45 day retention.

According to TSJC, the backup system the college currently uses is a tape backup system, which is difficult to manage and time consuming to restore if disaster recovery is needed. The current backup recovery system is also not fast enough to complete data backups during the college's off hours, which causes backups to continue running through the day impacting user network performance and TSJC's ability to fully complete data backups. This project will allow TSJC to improve data security and the current disaster recovery backup system.

Additionally, the college states that this project will improve the college's online business processes like enrollment and financial aid by replacing campus servers to support an enhanced network infrastructure. TSJC anticipates that this project will reduce staff time and resources currently needed to support campus IT infrastructure. TSJC was unable to quantify cost savings as required by House Bill 15-1266, but states the project will increase network reliability, ease of access to data, and improve the efficiency of backup recovery.

# Fiscal Year 2020-21 Information Technology Request

## Trinidad State Junior College

*Technology Infrastructure*

### PROJECT COST INFORMATION, CONT.

Item	Estimated Total Cost
Servers	\$128,340
PCs, laptops, terminals, PDAs	\$93,150
Printers, scanners, and peripherals	\$31,050
Network equipment cabling	\$65,412
Other	\$134,550
Miscellaneous	\$129,375
5 percent contingency	\$29,094

### PROJECT RESEARCH

TSJC states that information and costs estimates have been solicited from vendors.

TSJC IT staff, along with Community College System IT staff, will implement the project. TSJC will require the chosen vendor to provide consultation and installation services. TSJC also states that the project will be conducted with minimal disruption to end users.

### PROJECT SCHEDULE

	Start Date	Completion Date
Planning	January 2020	June 2020
Implementation	July 2020	July 2020
Testing	July 2020	August 2020
Closing	August 2020	December 2020

### STAFF QUESTIONS AND ISSUES

**Please provide an explanation as to why this funding request meets the statutory requirements in Section 2-3-1701 (2)(b), C.R.S., which provides that the definition of “information technology” for the purposes of budget requests to be considered by the Joint Technology Committee “does not mean post-implementation support, hardware life-cycle replacement, or routine maintenance.”**

Most of the equipment has surpassed its life cycle replacement, therefore, TSJC is not replacing but acquiring innovative network enhancements that will enable the institution to immediately impact performance for all instructional and academic support systems including classrooms, mobile devices and other related technology to serve its students 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 instructional and academic support services.

# Fiscal Year 2020-21 Information Technology Request

## Colorado Northwestern Community College

Computer and Network Upgrades

### PRIORITY NUMBERS

2021021

<u>Prioritized By</u>	<u>Priority</u>	
DeptInst	1 of 1	
CCHE	10 of 11	
OSPB	13 of 14	Not recommended for funding.

### PRIOR APPROPRIATION AND REQUEST INFORMATION

<u>Fund Source</u>	<u>Prior Approp.</u>	<u>FY 2020-21</u>	<u>FY 2021-22</u>	<u>Future Requests</u>	<u>Total Cost</u>
CCF	\$0	\$812,172	\$0	\$812,172	\$1,624,344
<b>Total</b>	<b>\$0</b>	<b>\$812,172</b>	<b>\$0</b>	<b>\$812,172</b>	<b>\$1,624,344</b>

### PROJECT STATUS

This is the first time Colorado Northwestern Community College has requested funding for this project.

### PROJECT DESCRIPTION

Colorado Northwestern Community College (CNCC) is requesting Capital Construction Funds (CCF) to upgrade the existing bandwidth for all of the college's classrooms, labs, and administration buildings by phasing out the current Cisco switches in each of the network closets and replacing them with passive optical fiber.

Phase one of the project will involve installing new passive optical fiber in CNCC's main administration building, which houses the college's data center. A passive optical fiber may reduce network costs by providing more connections than a point-to-point network architecture and it may handle high-bandwidth connections. Phase one also includes upgrading and replacing critical equipment to prepare for the subsequent phases. CNCC plans to procure the following equipment as part of phase one:

- a software-defined network (SDN) server and optical line terminal (OLT): The SDN is a network architecture that improves control and efficiencies in responding to network changes. The OLT is an endpoint hardware device in a passive optical network which converts standard signals used by a service provider. Implementation of the SDN server and SDN OLT require purchases such as an aggregation switch, top-of-rack switch, and software-defined OLT;
- platform as a service software (PaaS), which is a cloud solution that provides the operating system, virtualization, servers, storage, and networking for client-managed applications and data; and
- direct current (DC) power, the implementation of which includes procuring a power supply unit, power supply module, a 2-pair dual/Y cross connect assembly, and a 1-pair power cross connect assembly.

Future phases will bring passive optical fiber to CNCC's other buildings. CNCC will also be replacing older computers throughout the project.

### PROJECT JUSTIFICATION

CNCC's existing equipment is over eight years old and most are at end-of-life. This aging equipment and lack of adequate bandwidth causes network bottlenecks, which results in network performance degradation and user complaints. According to CNCC, its uninterruptible power supply (UPS) battery, which provides electrical backup in case of a power outage, and the existing switches, are not stable, thereby causing unplanned power losses and power bumps. The college explains that, on average, it needs to replace one switch per quarter, and sometimes

# Fiscal Year 2020-21 Information Technology Request

## Colorado Northwestern Community College

### Computer and Network Upgrades

multiple switches that fail during an electrical power event.

Due to more frequent student and faculty access to online learning and services, there has been an increased need for faster and more stable online access. CNCC was unable to quantify cost savings as required by House Bill 15-1266, but states that this project will allow the college to reduce downtimes caused by equipment failures, slow computers, and slow or disconnected networks.

#### PROJECT COST INFORMATION

**Student technology fees.** CNCC currently charges a student technology fee of \$3.76 per credit hour. However, the revenue from this fee is dedicated to the student wireless and resident internet services, and any upgrades or repairs of student network infrastructure in the resident halls.

According to CNCC, the college would have difficulty in contributing cash funds for this project.

#### PROJECT RESEARCH

The college used historical data provided by the Colorado Community College System to estimate costs for this project.

#### PROJECT SCHEDULE

	Start Date	Completion Date
Planning	November 2019	June 2020
Implementation	July 2020	May 2021
Testing	May 2021	June 2021
Closing	June 2021	June 2021

#### STAFF QUESTIONS AND ISSUES

**Please provide an explanation as to why this funding request meets the statutory requirements in Section 2-3-1701 (2)(b), C.R.S., which provides that the definition of “information technology” for the purposes of budget requests to be considered by the Joint Technology Committee “does not mean post-implementation support, hardware life-cycle replacement, or routine maintenance.”**

This project meets the requirement because this is not a hardware lifecycle replacement and is not being used for yearly operational budgetary reasons. The equipment and network being replaced are also between 8 and 25 years old. This equipment is not included in a normal life cycle refresh.

# Fiscal Year 2020-21 Information Technology Request

## Colorado State University — Pueblo

### *Communications System Upgrade*

#### PRIORITY NUMBERS

2020028

Prioritized By	Priority	
DeptInst	1 of 1	
CCHE	11 of 11	
OSPB	14 of 14	Not recommended for funding.

#### PRIOR APPROPRIATION AND REQUEST INFORMATION

Fund Source	Prior Approp.	FY 2020-21	FY 2021-22	Future Requests	Total Cost
CCF	\$0	\$2,132,807	\$0	\$0	\$2,132,807
<b>Total</b>	<b>\$0</b>	<b>\$2,132,807</b>	<b>\$0</b>	<b>\$0</b>	<b>\$2,132,807</b>

#### PROJECT STATUS

This is a previously requested project from FY 2019-20, which did not receive funding.

#### PROJECT DESCRIPTION

Colorado State University-Pueblo (CSU-Pueblo) is requesting Capital Construction Funds (CCF) to replace the campus telephone system. The university will use funding to:

- install a new, 1,000-license, voice over internal protocol (VoIP) phone system;
- install 20 new campus emergency telephones; and
- install 34 additional edge switches for IT data closets.

#### PROJECT JUSTIFICATION

CSU-Pueblo states that a VoIP phone system, emergency telephones, and edges switches are needed to modernize communications on campus to increase system capacity and to improve campus safety. CSU-Pueblo explains that its outdated phone system has reached the end of its useful life and replacement parts are no longer made, which makes the system vulnerable to failure. In addition, the emergency campus telephones have had reliability issues in the past and are not able to receive reverse 911 calls. In order to handle the power and display functions of a new VoIP system, the university will also install 34 additional power-over-Ethernet (POE) edge switches.

CSU-Pueblo states that this budget request will improve telephone calling, voicemail, email, and video conferencing on campus. Additionally, the university explains that the VoIP system project will improve campus safety because of the installation of emergency telephones in new locations and the ability to send emergency text messages to students and staff. CSU-Pueblo also says it is one of the only institutions in the state that continues to use a legacy PBX telephone system. A traditional PBX is a private telephone network that is not connected to the data network. The university says that a new VoIP system is needed to modernize campus communication.

CSU-Pueblo explains that the most quantifiable benefits of a new system are associated with long-distance telephone charges. It spends between \$35,000 and \$40,000 per year in long-distance charges. With the completion of this project, long-distance costs should be substantially reduced. Furthermore, the university says that VoIP may reduce operational costs since replacing and fixing parts in the legacy PBX telephone system is more expensive.

# Fiscal Year 2020-21 Information Technology Request

## Colorado State University — Pueblo

### *Communications System Upgrade*

#### PROJECT COST INFORMATION, CONT.

Item	Quantity	Estimated Total Cost
Zultys VoIP telephone system	1,000 Licenses	\$1,350,000
Extreme POE network switches and infrastructure	34	\$159,114
Emergency "blue" VoIP phones, directional boring cabling		\$429,801
Contingency		\$193,892
<b>Total</b>		<b>\$2,132,807</b>

#### ADDITIONAL PROJECT INFORMATION

The university explains that its disaster recovery plan includes installing its VoIP system in separate locations on campus. Additionally, the new VoIP system will support analog technologies used on campus; therefore, minimizing the need to replace existing analog technology as part of the new system upgrade.

#### PROJECT SCHEDULE

	Start Date	Completion Date
Planning	July 2020	September 2020
Implementation	October 2020	September 2021
Testing	October 2021	December 2021
Closing	January 2022	March 2022

#### STAFF QUESTIONS AND ISSUES

**Please provide an explanation as to why this funding request meets the statutory requirements in Section 2-3-1701 (2)(b), C.R.S., which provides that the definition of "information technology" for the purposes of budget requests to be considered by the Joint Technology Committee "does not mean post-implementation support, hardware life-cycle replacement, or routine maintenance."**

The legacy system that we use at CSU-Pueblo is beyond end of life. This request will fund technological advancements that have evolved over the past two decades. The request is not routine, nor is it hardware life-cycle replacement. Rather, it is a migration to a new technology not currently or previously used at CSU-Pueblo.