FY 2017-18 Information Technology Capital Budget Requests

Listed in OSPB Priority Order

OSPB Priority	Agency	Project Title	Project Type	Request Amount -- CCF	Request Amount -- CF	Outyear?
1	Corrections	Offender Management Information System	Continuation	$12,610,083	$0	No
2	Human Services	Child Welfare Case Management System Upgrade	Continuation	3,374,809	3,374,808	No
3	Human Services	IT Systems Interoperability	Continuation	1,061,188	9,550,692	Yes
CF	Public Health and Environment	Customer Interface for a Lean Environment Online Permitting System	New	0	996,588	Yes
CF	Labor and Employment	Unemployment Insurance Mainframe Migration and Modernization	Continuation	0	26,213,480	No
		Subtotal, Projects Recommended for FY 2017-18 Funding by OSPB		***$17,046,080***	***$40,135,568***	
NP	Human Services	Regional Center Electronic Health Record System	New	1,500,000	0	Yes
NP	Public Health and Environment	Electronic Birth Registration System Replacement	New	1,000,000	500,000	No
NP	Transportation	US 24 Fiber Optic Telecommunications Cable	New	3,674,330	0	No
27 of 47*	Western State Colorado University	Redundant Network Connection	New	13,410,051	225,000	No
32 of 47*	Pikes Peak Community College	Campus Emergency Notification and Power	New	1,653,360	0	No
33 of 47*	Colorado State University - Pueblo	Campus IT Upgrades	New	817,823	0	No
36 of 47*	Pueblo Community College	Wireless Networking	New	1,280,550	426,850	No
46 of 47*	Otero Junior College	Telecommunications Upgrade	New	507,375	0	No
47 of 47*	Lamar Community College	Technology Infrastructure	New	651,704	0	No
			Totals	***$41,541,273***	***$41,287,418***	

CF = Recommended for funding from cash sources.

*Prioritized along with Capital Development Committee projects.

Fiscal Year 2017-18 Information Technology Request

Corrections

Offender Management Information System

PROGRAM PLAN STATUS and OIT BEST PRACTICES

2015-110

Approved Program Plan? Yes **Date Approved:** July 8, 2014

The project was approved by the Governor's Office of Information Technology (OIT) gating process. The project's alignment with OIT's best practices are discussed in detail in the Program Information section.

PRIORITY NUMBERS

Prioritized By	Priority	
DeptInst	1 of 1	
OSPB	1 of 8	Prioritized and recommended for funding

PRIOR APPROPRIATION AND REQUEST INFORMATION

Fund Source	Prior Approp.	FY 2017-18	FY 2018-19	Future Requests	Total Cost
CCF	$16,845,761	$12,610,083	$0	$0	$29,455,844
Total	$16,845,761	**$12,610,083**	$0	$0	$29,455,844

ITEMIZED COST INFORMATION

Cost Item	Prior Approp.	FY 2017-18	FY 2018-19	Future Requests	Total Cost
Land Acquisition	$0	$0	$0	$0	$0
Professional Services	$2,575,100	$665,587	$0	$0	$3,240,687
Construction	$0	$0	$0	$0	$0
Equipment	$2,137,140	$826,305	$0	$0	$2,963,445
Miscellaneous	$1,531,342	$2,953,574	$0	$0	$4,484,916
Contingency	$802,179	$600,481	$0	$0	$1,402,660
Software Acquisition	$9,800,000	$7,564,136	$0	$0	$17,364,136
Total	$16,845,761	**$12,610,083**	$0	$0	$29,455,844

PROJECT STATUS

This is a continuation project. The Department of Corrections (DOC) is requesting state funds for the third phase of a three-phase project. Phase I was funded in FY 2014-15, and Phase II was in funded FY 2015-16. No funding was requested in FY 2016-17.

PROJECT DESCRIPTION / SCOPE OF WORK

DOC, in cooperation with OIT, is requesting state funds for the third phase of a three-phase project to replace a legacy computer system with a new electronic information management system to track and record offender data from admission until an offender is released from parole. The project replaces the department's current legacy system, which is the Department of Corrections Information Management System (DCIS). The department says the project will address the three key areas of offender management; electronic health records; and post-incarceration. The department says a ten-year contract was signed with Marquis Software Development, Inc., to implement a commercial off-the-shelf (COTS) electronic offender management system. The first five years of the contract are for the full implementation of the DeCORuM system by Marquis. The last five years of the contract are for maintenance.

Phase I included a new database management system and an electronic health records (EHR) system, with a

completion date of November 2016. Phase II migrates the data of incarcerated offenders to the new integrated offender management system. Phase III will replace the parole and community Colorado Web-based Integrated Support Environment (C-WISE) system, the parole electronic system, and the required enhancements to approximately 16 modules to complete a fully integrated offender information management system.

The request for Phase III funding includes:

- parole intake process;
- parole plans and hearings;
- offender tracking and release;
- program participation and tracking;
- offender appointment scheduling;
- offender contact tracking;
- case management;
- treatment referrals and progress;
- violations; and
- drug test results.

Existing system. The department says that in 2012, IBM was contracted by OIT to develop the "Operational Risk Assessment" of 133 state information technology systems. As part of this assessment, IBM identified the ten systems that pose the greatest risk to the state, of which DCIS is one.

PROJECT JUSTIFICATION

DCIS poses a significant risk to the state due to its age, size, limited availability of technical staff to maintain its antiquated technology, and limited availability of resources in the marketplace. DCIS consists of 1,800 application programs with at least 68 various processes, 2.7 million lines of code, and over 1,000 database tables. DCIS contains information about inmates in all state prison facilities statewide, including parole and community corrections offices, and access to several other databases, including the Colorado Crime Information Center (CCIC), the National Crime Information Center (NCIC), and the General Government Computer Center (GGCC).

According to DOC, DCIS is 20 years old, obsolete, and difficult to maintain. DOC says its staff must open multiple applications with different interfaces in order to input and view offender data because each application accesses only part of an individual profile. Although most of the data is recorded electronically, it is not all entered into or viewable in DCIS. The department says that the proposed new system will track, record, and integrate more data than the existing system. It will also improve data integrity, decrease system response time, and streamline user training.

The department says the existing Offender Release of Information Law Enforcement (ORILE) system, which serves as a portal for county jails to log-in and access offender information, including health records, is a "one-way" exchange that is not designed to receive data. Furthermore, the department's need for improved offender information management pertains to post-incarceration as well. The existing application used for parole information management is C-WISE. C-WISE provides 24-hour assistance to DOC, contract providers, law enforcement, offenders and the public. Officers can access C-WISE online, by telephone, or personal digital assistant (PDA) device. The department says that it is necessary to replace C-WISE with an integrated system that would be capable of housing all necessary offender data under the management of parole and community services. This integration is needed because DCIS is still used for maintaining some post-incarceration data on offenders, such as parole plans and parole hearings.

Project alternatives. This request will appropriate Phase III of the project. The department says that many of the modules to be implemented during Phase III are required by Colorado Revised Statutes and legal precedent. Project alternatives for Phase III would include not implementing the Marquis parole and community module, which is included in the Marquis contract. Therefore, the alternative may require acquiring another COTS solution.

PROGRAM INFORMATION AND IMPLEMENTATION PLAN

The department says they are implementing governance by complying with Colorado House Bill 12-1288, which was

enacted by the Colorado General Assembly. HB 12-1288 requires that all major projects include a project manager, a comprehensive risk assessment plan, funding strategy for maintenance and support, and documented project policies and procedures, business case, business requirements, information security plan, disaster recovery plan, and independent verification & validation (IV&V). The department is also following OIT's Executive Governance gating methodology.

The department says OIT will establish and maintain sustainable applications and database management system. This includes the EHR application, OMS, C-WISE, a mobile workforce, and sharing information with the department's partners, local law enforcement agencies, and county jails. The department says they will also implement the ITIL (Information Technology Infrastructure Library) framework, which is internationally recognized as best practices for IT service management.

COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES

The department says that previous funding received on behalf of the project in FY 2014-15 could be offset by the receipt of federal Medicaid incentives, estimated at $3 million, if DOC's providers can meet EHR meaningful use guidelines by 2016.

The department also says the new OMS will facilitate information sharing with external constituents such as law enforcement, community service providers, and the courts. It will also support a mobile workforce, including parole officers. The new OMS replaces obsolete IT systems, which have overly complicated user interfaces, lack of real-time data exchanges, and other security issues. OMS will streamline staff time and increase productivity by increasing staff efficiencies and decreasing the time spent using multiple applications. An estimated 343,720 total hours per year will be reduced from the existing hours needed for case management; custody and control staff; education, library, and transitional services; clinical services; and parole.

SECURITY AND BACKUP / DISASTER RECOVERY

The department says that an OIT security analyst is assigned to the project and a risk management framework will be followed. The department says that OIT will follow the first five of the top 20 critical IT security controls of the National Institute of Standards and Technology (NIST) listed below:

- inventory of authorized and unauthorized devices;
- inventory of authorized and unauthorized software;
- secure configurations for hardware and software on mobile devices, laptops, workstations, and servers;
- continuous vulnerability assessment and remediation; and
- malware defenses.

OIT will establish and follow a data encryption plan for critical and sensitive data and personally identifiable information. Additionally, the department's contract with the vendor includes provisions for handling sensitive data during the duration of the contract.

The department says that critical DOC systems are redundant. If the primary hardware fails, redundant systems are on-site with asynchronous data transfer to an offsite disaster recovery site and system. An updated firewall appliance and a failover system have been purchased. According to the department, to handle 24x7 availability and access, the new DeCORuM eOMIS system has been architected for high availability and disaster recovery. The system is split between two separate data centers that are at least 50 miles apart. Both data centers have generators in case of power failure. Prior to go-live, disaster recovery testing is planned.

BUSINESS PROCESS ANALYSIS

The IBM Operational Risk Report identified DCIS, which serves as the backbone of DOC's prison operations, as one of the greatest operational risks to the state. The department says the integrated new OMS will benefit the department, offenders, and ultimately, the public. The requested system will be implemented in all 20 state-operated correctional facilities, the Division of Parole, private contract facilities, community corrections, and the headquarters office. The department also says there is potential for integration with third-party criminal justice vendor solutions,

including: Victim Information Notification Everyday (VINE) system for the notification of parole hearings and release dates for victims; Justice Exchange for booking records nationwide; and graphical mapping for offenders under intensive supervision.

PROJECT SCHEDULE

	Start Date	Completion Date
Phase I: Electronic Health Record	July 2015	November 2016
Phase II: Offender Management System	November 2016	July 2018
Phase III: Division of Adult Parole	July 2018	June 2020

OPERATING BUDGET

The department is requesting $2,953,574 for FY 2017-18 for 13 term-limited OIT FTE for writing business requirements and testing and updating business processes. The department says that after project completion, the cost for ongoing system development will be met either by continued funding through an operating request or through OIT common policy. The maintenance costs of $2,149,788 will not begin until FY 2019-20. Beginning in FY 2020-21, the annual costs will be $1,283,940, plus licensing and maintenance for infrastructure. This includes a recurring cost for the statewide EHR data exchange and vendor licensing fees. The department says that a future operating request will be submitted based on the new system operating requirements.

STAFF QUESTIONS AND ISSUES

Project Schedule and Resources.

1. According to the FY 2015-16 budget request, $10,487,960 was anticipated for Phase III of funding. However, the request for the third year of funding in FY 2017-18 is for $12,610,083, a $2,122,123 increase. Please explain the increase.

The FY 2015-16 Phase II request was completed prior to a vendor being selected through the request for proposal (RFP) process. Now that the terms of the contract, vendor, and development of the system architecture have been determined, the department can more accurately estimate the costs of the system for Phase III implementation. Comparing the previous projected expenses for the project compared to the current request, approximately $1.4 million is required for the contract with Marquis (the project vendor) for FY 2017-18 through FY 2019-20. There is also an increase of approximately $800 thousand for Office Information Technology (OIT) term-limited staffing for the same time frame.

2. According to the FY 2017-18 budget request, "*term-limited OIT support of 13.0 FTE (full-time employee) for FY 2017-18 (staffing will be reduced to 8.0 FTE for FY 2018-19 and FY 2019-20) is estimated at $2,918,774 for the three years of the funding*". Please provide the hourly rates used to calculate each FTE required for the Offender Management System (OMS) term-limited OIT support (page 18-20).

The Phase II request used a combination of contract employees and state employees, so an hourly rate was used when long term contracts were utilized by OIT. As these positions are now OIT term-limited employees and not contract, the current monthly salary of pay was used for each position consistent with state compensation. The monthly salary for each position is provided below.

Position Title:	***Monthly Salary:***
One Project Manager I	*$8,025*
Two Project Manager I/Portfolio	*$7,617*
Three Business & Quality Analyst	*$5,457*

One Database Administrator	*$7,084*
One Firewall/Security	*$7,084*
One Communication Specialist	*$5,417*
Three Developers	*$5,457*
One Access Control	*$4,136*

3. According to the FY 2017-18 budget request, the department signed a ten-year contract with Marquis Software Development, Inc. At this time, does the department anticipate needing a contract amendment or a new contract to increase products or services? If so, why?

At this time, the department does not need a contract amendment or new contract.

System Clarifications.

4. The FY 2017-18 budget request explains that the "*DOC's EHR system will have features tailored to the correctional environment*". Has the department consulted with or coordinated with other state agencies' EHR efforts? If so, how?

Yes, the department was in contact with other departments. Prior to the Department of Corrections (DOC) publishing the RFP (request for proposal), the Department of Human Services (DHS) requested the department include a provision in its RFP to enable DHS to contract for the same electronic health record (EHR) solution as DOC, if it were deemed to meet DHS' needs. Regardless of what EHR solution DHS selected, one could expect additional licensing, integration, and training costs for implementing an EHR at a second agency. DHS is a hospital licensed by the Joint Commission and has regulations they are required to follow. DOC is not required to follow these same regulations.

5. Are there any instances where the new DOC OMS (offender management system) or EHR system will not be able to exchange data with other required IT systems? Will the new DOC EHR system and the new Colorado Division of Youth Corrections EHR system, managed by DHS, be able to exchange data? If data integration is limited, please explain why and potential impacts.

At this point in time, there are no known instances where the new OMS/HER systems will not be able to exchange data with other required information technology systems.

6. Please list the legacy applications being replaced by Marquis Software, the planned project phase (I, II, or III) in which each system will be decommission, existing technical platform / version, and a short description of the decommission strategy (e.g., running in parallel for 6 months).

The majority of the system was written over 24 years ago with obsolete technology. It is comprised of over 1,100 individual programs containing 2.7 million lines of code. Most of the current programs are written under the current Department of Corrections Information System (DCIS) program ~ 4th Generation Language, but there are other programs and systems written under PowerBuilder or are web-based.

The Phase III request for the Division of Adult Parole system/programs are through an outside vendor Protocol Marketing and the Parole Board application is written under a web-based program. Since there are a magnitude of programs, the department has included a portion of the Marquis contract (Exhibit A, pages 24 to 60) as an additional attachment outlining the programs that are included in the OMS system.

Legacy applications that are being replaced by Marquis Offender Management System (eOMIS) modules are being decommissioned at the time of implementation.

The strategy for decommissioning: At go-live, DOC staff will cease to have access to legacy applications replaced by Marquis eOMIS modules. The legacy applications cannot be run in parallel because the data can only be entered through the new Department of Corrections Records Management System (DeCORuM) application which becomes the data owner.

7. Please describe the applications that are not being replaced by the Marquis Suite by listing each:

a. legacy application and a short description of the decommission strategy (e.g., running in parallel for 6 months), or "NEW";
b. existing technical platform / version of legacy application, if applicable;
c. planned project phase (I, II, or III); and
d. new technical platform / version.

There are several applications that are not being replaced by the Marquis system, and are not included in the DeCORuM project. They include such major applications as DOC's Human Resources Management E-System (HRMES). There are also smaller applications that do not deal with offender tracking, such as Special Teams and the Inspector General's Professional Standards Case Tracking System (IGOR). The Inspector General's Office also utilizes an application (known as IDoc) that handles tracking of offender-related investigations; this application is not currently expected to be replaced with DeCORuM.

Those applications do not have a decommission plan; however, there will be an effort to move them from the existing Informix database to Oracle.

The HRMES system is not included nor is it necessary to be integrated with the DeCORuM system. It is anticipated that if a statewide Human Resources Information System (HRIS) system is implemented, HRMES would then be decommissioned at implementation of HRIS.

The legacy applications that are included in the DeCORuM project and not being decommissioned will be moved off of the existing legacy platforms (Informix 4GL and PowerBuilder) to the web-based technology (PHP) and Oracle platforms. The applications are split between the phases based on their functional support of Phase I - EHR, Phase II - Offender Management, and Phase III - Parole & Community. As part of the planning for each phase, a mapping exercise is performed to determine whether an application will be replaced by an eOMIS module and thus decommissioned, or will instead need to be updated or rewritten to run on the new platform.

The applications that are replaced by eOMIS are decommissioned during the golive cut-over. The systems cannot run in parallel due to "data ownership". During the mapping exercises, a determination is made as to whether eOMIS is the data owner or the legacy application is the data owner. The data can only be entered through the application that owns the data to ensure that corruption does not occur.

8. In the FY 2017-18 budget request on page 19, the department describes three, term-limited OIT developers that are "primarily focused on development activities on system interfacing with DeCORuM and / or rewriting applications". Besides system interfacing tasks and customizing the Marquis suite, will specific applications be queued for "rewriting"? If so, please indicate which applications listed above may require a rewrite and a brief reason for the possible rewrite.

Marquis owns the eOMIS application and provides the configuration and customization for the new application. OIT developers will not have access to or modify the Marquis eOMIS software. The term-limited OIT developers will be involved in:

- *modifying applications to access and work both in the legacy Informix database and the new Oracle database until the phase they are in is decommissioned;*
- *modifying applications that are not replaced by eOMIS, but need to move off of the legacy Informix to the Oracle database environment, and;*
- *moving applications that still need to exist along with eOMIS to the newer web technology and off of the obsolete 4GL and PowerBuilder technologies.*

There were no applications that required rewriting in Phase I; however, several legacy applications require some degree of modification in response to the changes eOMIS introduced to the DOC data.

Security, Disaster Recovery and Business Continuity.

9. According to the FY 2017-18 budget request:

Phase I establishes the foundation by installing a new database management system. This phase will implement the EHR system. Phase I has been funded and implementation is expected on November 2016 (page 3).

OIT will establish and follow a data encryption plan for critical and sensitive data (e.g. Health Insurance Portability and Accountability Act of 1996 - HIPAA, personally identifiable information – PII) (page 6).

a. Data in transit is data moving from one location to another, such as across the internet. Data at rest is data that is stored and is not moving from device to device, or network to network, such as a database or flash drive. Will the data encryption requirements specify if PII, PHI (personal health information), and sensitive data will be encrypted at rest and in transit? If not, please explain.

Yes.

b. For the planned November 2016 release, has the department received permission from OIT CISO to release it for agency use? If not, please provide a status update. Also, please describe any exemptions CISO has granted.

The System Security Plan has been reviewed and approved by the Colorado Information Security Office (CISO) security architects. The Vulnerability and Center for Internet Security (CIS) hardening scan requests have been submitted and are waiting for the scans to be performed. Once the scan and CIS hardening results are back, they will be reviewed with the security architects and state compliance manager for Gate 4 and Authorization to Operate (ATO). Vulnerability scan assessments are performed by using an off-the-shelf software package, Nessus, to scan an Internet Protocol (IP) address or range of IP addresses for known vulnerabilities (security holes) in the system configuration and application. The CIS hardening assessment is being performed to compare the system against the CIS benchmark to identify and mitigate known security vulnerabilities.

c. Please briefly describe the controls implemented to ensure that CISO's policies and procedures will be in place and maintained for the life of the system?

Colorado Information Security Policies (CISP) policies specify that all devices connected to the network be managed by the McAfee ePolicy Orchestrator (ePO) server.

All servers and PCs in the DeCORuM system have McAfee installed and are connected to the ePO server.

Fiscal Year 2017-18 Information Technology Request

Human Services

Modernizing the Child Welfare Case Management System

2016-012

PROGRAM PLAN STATUS and OIT BEST PRACTICES

Approved Program Plan? N/A **Date Approved:**

According to the Department of Human Services (DHS), it has worked with the Office of Information Technology (OIT) to develop costs and plans for the system upgrade. OIT staff has been in consultation with the department throughout the development of the request. DHS says all processes are in conformity with OIT best practices. The implementation will also align with OIT's enterprise health IT architecture model and will allow DHS and OIT to connect with the data systems of other agencies and health information partners. DHS says the project will create a single, comprehensive view of clients, allowing for a more efficient and cost effective program delivery.

PRIORITY NUMBERS

Prioritized By	Priority	
DeptInst	1 of 3	
OSPB	2 of 8	Prioritized and recommended for funding

PRIOR APPROPRIATION AND REQUEST INFORMATION

Fund Source	Prior Approp.	FY 2017-18	FY 2018-19	Future Requests	Total Cost
CCF	$8,023,516	$3,374,809	$0	$0	$11,398,325
FF	$5,550,668	$3,374,808	$0	$0	$8,925,476
Total	$13,574,184	**$6,749,617**	$0	$0	$20,323,801

ITEMIZED COST INFORMATION

Cost Item	Prior Approp.	FY 2017-18	FY 2018-19	Future Requests	Total Cost
Land Acquisition	$0	$0	$0	$0	$0
Professional Services	$6,527,600	$0	$0	$0	$6,527,600
Construction	$0	$264,500	$0	$0	$264,500
Equipment	$5,600,000	$2,800,000	$0	$0	$8,400,000
Miscellaneous	$0	$0	$0	$0	$0
Contingency	$631,084	$306,105	$0	$0	$937,189
Software Acquisition	$815,500	$3,379,012	$0	$0	$4,194,512
Total	$13,574,184	**$6,749,617**	$0	$0	$20,323,801

PROJECT STATUS

This is a continuation project. DHS is requesting state funds for the third phase of a three-phase project. Phase I was funded in FY 2015-16, and Phase II was funded in FY 2016-17.

PROJECT DESCRIPTION / SCOPE OF WORK

DHS is requesting a combination of state funds and federal funds spending authority to enhance and modernize the Trails case management system, which is the state's Statewide Automated Child Welfare Information System (SACWIS), and its associated infrastructure.

The department says that federal funds for the project are a match from the Administration of Children and Families (ACF), and require ACF approval of the project's Implementation Advanced Planning Document (I-APD) to be eligible

for federal matching funds. After the department submits its I-APD, ACF has 60 days to review and respond with an approval or disapproval. The department anticipates this process should be completed by July 2017.

According to the department, the project will modernize the existing system so that modifications are faster, giving the department the ability to accommodate changes to child welfare practices. The department explained that the benefit of augmenting the existing system as opposed to developing a new system is the ability to leverage previous investments, workforce familiarity, and existing OIT resources. Critical requirements identified by DHS include:

- mobile device compatibility;
- secure systems that meet industry standards;
- data integration to help promote the effective use and availability of data across multiple systems, including handling unstructured or external data;
- profile-driven capabilities for data administration; and
- intuitive user interfaces (e.g., agency-specific and/or job function related).

PROJECT JUSTIFICATION

According to the department, Trails is a critical component of the county child protection practices. The system is used by the Divisions of Child Welfare and Youth Corrections, the Office of Early Childhood, the Divisino of Administrative Review, the Office of Colorado's Child Protection Ombudsman, 64 counties, and certain contracted providers. The system integrates with 11 other systems using 87 unique system interfaces, and is the reporting tool for several sets of federal requirements. Also, the system has been SACWIS compliant since 2011.

The existing system has been in use for over 15 years. Over the years, the system has become comprehensive but complex. As a result, internal and external stakeholders have identified limitations with the current system. Some limitations are:

- outdated system architecture;
- limited mobile system access;
- redundant data entry;
- missing data interfaces;
- poor data integrity;
- inability to augment case data with attachments;
- no ad hoc reporting capabilities;
- the need for duplicate data entry;
- difficulty navigating a complex system; and
- slow response time.

The department says it hired a consultant in FY 2013-14 to conduct an independent analysis of the Trails system. The appropriated FY 2015-16 budget request was based on the recommendations from this analysis. The consultant recommended modernizing the system. The department says this will be achieved through technical upgrades and enhanced data interfaces. Benefits include: (1) a modern, effective solution that is easy to navigate and supports common data views; (2) improved reporting capabilities; and (3) system interoperability to facilitate data sharing and overall case management outcomes. Furthermore, the department says Trails is critical to implementing the Governor's Child Welfare Plan "Keeping Kids Safe and Families Healthy 2.0".

Project alternatives. According to the department, if Trails is not upgraded, the current system issues may not be corrected. Federal funding for the first two years of the three-year project were approved, providing the first two of five modules of the project. The department says that the federal funding approval for the third and final year is pending action on this FY 2017-18 request. Without this funding, the fourth module, which is the largest module and the foundation of the system, will be stopped mid-construction. The fifth and final module will not start. The fifth module will handle services provided to children, youth and families within the youth correction and child welfare system.

Fiscal Year 2017-18 Information Technology Request

Human Services

Modernizing the Child Welfare Case Management System

PROGRAM INFORMATION AND IMPLEMENTATION PLAN

Program information. DHS consists of eight offices, including the Office of Children, Youth, and Families (OCYF). The OCYF office includes the Colorado Juvenile Parole Board, and three divisional focus areas: (1) the Division of Child Welfare; (2) the Division of Youth Corrections; and (3) the Domestic Violence Program. The department explains that Colorado is a state supervised, county administered child welfare system in which the primary users of Trails are located within the counties. The Trails system consists of approximately 6,000 users, including state child welfare staff, Division of Youth Corrections staff, county child welfare staff, Office of Early Childhood staff, Administrative Review Division staff, Ombudsmen staff, and staff from 22 judicial districts.

Implementation plan. The department says new development activities for Trails will be defined by a dedicated team of internal employees and contractors using an agile methodology. For example, while the Intake module is implemented, the next module will be developed and converted. According to the department, the project requires contract staff to assist with design and build activities. A contract development team will be located at OIT, consisting of one project manager, one technical architect, one half-time engagement/integration manager, eight application developers, four business analysts, and four technical analysts. DHS states that these employees will be involved with the project for three years beginning in FY 2015-16.

COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES

According to the department, the completed project will achieve cost savings with the: (1) reduction in development and maintenance costs; and (2) improved efficiencies for caseworkers. The existing system is over 15 years old, and the technical platform's maintenance requires experienced PowerBuilder programing resources at approximately $100 per hour. In comparison, the new technical platform will require programming resources that are 30 percent less expensive. The department says that currently 12 programmers and an average of three additional OIT contractors are needed each year for maintenance. A 30 percent reduction in salary for 15 developers at current compensation levels could equate to a savings of $936,000 annually.

The enterprise service bus (ESB) will also reduce maintenance costs. An ESB provides a single, unified technical platform that manages access to different applications using a consistent communication mechanism. The department says that the implementation of the ESB will reduce costs related to maintaining separate software and hardware licenses, and maintaining different technical resources when disparate systems need to communicate

The department says that a recent Office of State Auditor (OSA) workload study reported that 35 percent of a caseworker work week consists of documentation and administration, including required Trails documentation. Additionally, an October 2014 group of state and county members stated that the existing Trails system is outdated and cumbersome for caseworkers. The group recommended modernizing the system to create efficiencies and simplify reporting. According to the department, efficiencies will be gained with easier access to information using system dashboards, improving system navigation, reducing duplicate data, and expanding mobile access.

According to the department, since data integrity will improve, timely data collection will also improve the quality of service provided to the children, youth, and families of Colorado. The department explained that the improved use and accurate data will reduce caseworker daily tasks. For example, if the time needed for a caseworker to search for information in Trails is reduced five minutes per day per user for over 1,100 caseworkers, over 90 hours will be gained per day in productivity.

SECURITY AND BACKUP / DISASTER RECOVERY

According to the department, the modernized Trails system is housed in the state's environment and is compliant with SACWIS requirements, and also compliant with the future federal Comprehensive Child Welfare Information System requirements. The department says that the system will be moved to a secured cloud environment after obtaining federal approval for the 50 percent match and when OIT is prepared. When Trails is moved to a cloud environment, the department plans to work with the vendor to ensure security and disaster recovery requirements are met.

Furthermore, the department says that the security, disaster recovery, and business continuity provisions are being addressed by following the state security governance policy and OIT's project gating methodology. Also, OIT and the

ACF have reviewed the vendor contract to ensure compliance. According to the department, the vendor contract includes the security, disaster recovery and business continuity requirements, and the vendor has met the requirements.

BUSINESS PROCESS ANALYSIS

The department says that the independent review of Trails produced a thorough and comprehensive view of the system and identified potential replacement options, including:

- developing questionnaires for stakeholder interviews and vendor responses;
- conducting stakeholder and state interviews;
- soliciting vendor information;
- establishing a repository of reference materials;
- analyzing relevant information; and
- developing evaluation tools.

PROJECT SCHEDULE

	Start Date	Completion Date
Planning	July 2015	June 2018
Infrastructure	July 2015	March 2018
Design	January 2015	March 2018
Development, Configuration	March 2016	January 2018
Completion, Implementation	July 2016	June 2018

OPERATING BUDGET

The department requested and received funding through an associated operating budget request in FY 2015-16 for $156,857 and 2.7 FTE, and for $158,293 and 3.0 FTE in FY 2016-17. The department's associated operating budget request for the project is the same for FY 2017-18 as FY 2016-17.

STAFF QUESTIONS AND ISSUES

See Attachment A.

COLORADO
Department of Human Services

Document: Capital IT-1 Modification of the Child Welfare Case Management System (Trails)
Due Date: November 4, 2016
To JTC Staff: Jean Billingsley
Budget Contact: Cathy Trujillo

Project Schedule and Resources

1. **Regarding the previous appropriations, please provide the amounts spent or encumbered and a brief description of the expenditure.**

   Department Response

Year Funded	Capital Construction Appropriation	FY 2015-16 Encumbered	FY 2016-17 Encumbered	Unencumbered Capital Construction Appropriation
FY 2015-16	$6,824,567	$2,909,749	$3,914,818	-
FY 2016-17	$6,428,206	-	$5,891,868	$536,338
TOTALS	$13,252,773	$2,909,749	$9,806,686	$536,338

   The funds encumbered in FY 2015-16 paid for contracted services to help obtain the necessary federal approval and to contract a vendor to build the first two modules of the Trails Modernization project. The first two modules of the five module project are Intake and Resource.

   An information technology build of this size is required by statute to have an Independent Verification and Validation position to monitor the project and a Project Manager. In FY 2016-17, funds are paying for these two positions and to contract a vendor to start building the Case and the Assessment/Commitment modules.

   The remaining unencumbered funds are budgeted for unforeseen expenses in FY 2016-17 and FY 2017-18.

2. **According to the FY 2017-18 budget request, construction of the first two of the five modules will begin July 2016. At a high-level, please list the dates for any completed system and infrastructure changes in the test or production environment. Please include any high severity or high priority bugs or issues that still need to be resolved regarding these changes and the mitigation.**

Department Response
Construction of the Intake and Resource modules began in July 2016. This project is being developed using an "Agile" methodology and every three weeks, a system change is completed. These system changes are known as sprints. During the sprint, the system changes are tested in the non-productive environment. The Governor's Office of Information Technology (OIT) has been unable to set up the non-production test environment for the first five completed system builds. These system builds were tested on the vendor's servers using mock data. The non-production test and development environment remains incomplete and the Department is monitoring the risk for overruns, added costs and production delays. OIT is working on a resolution and anticipates this issue to be resolved by the end of November 2016.

While the Trails Modernization is at the early stages of completion, all development bugs have been resolved within each of the sprints. The Department is unaware of any high severity or high priority development bugs at this early stage of development.

The first initial deployment of Intake and Resource modules to production is planned for January/February 2017.

3. **According to the FY 2017-18 budget request, "*federal funding approval for the third and final year is pending the action on this proposed request*". Please describe the next steps and planned dates for the federal Administration for Children and Families (ACF) Phase 3 funding review if the FY 2017-18 appropriations is approved.**

Department Response
When the Department receives approval that the FY 2017-18 Capital IT request has been appropriated funding for the project, the Department will submit an Implementation Advanced Planning Document (IAPD) to obtain approval from the Administration for Children & Families (ACF). ACF has 60 days to review and approve or disapprove the request. The Department anticipates this process should be completed in July 2017.

Timeline for Phase 3 Funding

- February/March 2017
  - Draft IAPD report with assumption that Trails Modernization receives full funding
- May 2017
  - Modify report for any funding changes in budget signed by Governor
  - Submit report to ACF
- July 2017
  - Receive approval from ACF

4. **According to the FY 2017-18 budget request, the department will be using an agile / iterative approach for the project. Is an OIT project manager who has experience with agile assigned to the project? If not, please provide information regarding the project manager assigned and the project approach.**

   Department Response

   The Governor's Office of Information Technology (OIT)'s Project Manager has 10 years of private industry Agile development experience. The Project Manager has been integral in transforming the project from a Waterfall development project, in which the Trails system will not be updated nor any modifications placed into service for three years, to an Agile development project in which system updates and modifications will go into production throughout the three years.

   Overall, the Trails Modernization project has a strong team of people with Agile development experience.

5. **On page 5 of the FY 2017-18 budget request, "*a vendor for the first two modules has been selected. The contract and statement of work are near completion. Construction began on the first two modules, intake and resource on July 1, 2016, with a completion date of June 30, 2017*."**

   On page 8 of the FY 2017-18 budget request, "*the team underwent a request for proposal process with vendors and selected a vendor in September 2015*."

   Is this the same vendor? If so, please provide the number of months from the date the vendor was selected and the date the contract was executed, along with an explanation. Please describe each vendor's involvement in this project.

   Department Response

   There has only been one vendor selected for the Intake and Resource modules. Due to the original RFP being rejected by ACF, the vendor selection was delayed to April 2016 and the September 2015 date given on page 8 was erroneously not updated to April 2016. The vendor was selected on April 2016 and the contract was executed in June 2016.

System Clarifications

6. **According to the FY 2017-18 budget request:**

   "*Caseworkers in county / human social services offices will continue to experience difficulty moving within the system, and data input will remain time consuming. As the department is implementing workforce tools and mobile technology to counties, modernizing TRAILS will improve flexibility in how caseworkers can conduct business in the field to better serve vulnerable Colorado children and families*."

If available, please provide an estimated percentage of the state workforce that would regularly use the new mobile features, and the percentage of children that TRAILS services that would benefit from these features. Please provide the same percentages for the new data integration features. If needed, provide a contingency based on the confidence of the data used to calculate these percentages (e.g., +/- 5% confidence level). If this information is not available, please explain why.

Department Response

Colorado is a state supervised, county administered child welfare system in which the primary users of Trails are located within the counties. The Department does not have an estimated percentage of the workforce that would regularly use the new mobile feature. However, the Department can provide the following information about the system.

There are approximately 6,000 Trails end users including state child welfare staff, Division of Youth Corrections staff, county child welfare staff, Office of Early Childhood staff, Administrative Review Division staff, Ombudsmen staff, and staff from 22 judicial districts. Information is provided for user participation by subproject/module obtained from a Trails OIT active user profile report.

Users can have profiles across multiple modules. Therefore, participation percentages cannot be calculated. User participation by subproject/module is as follows:

- Intake/Resource – 4,500 users
- Assessment/Commitment/Case – 5,500 users
- Fiscal - Less than 1,000 users

Benefits to users are as follows:

- Modernized Trails will allow better capturing of the various needs and services provided to all children, youth and families that receive child welfare and youth correction services in Colorado, including in home based services and out of home placements services. For FY 2015-16, approximately 22,000 children benefited from the Trails system. (A percentage is not available.)
- Mobile features will span all modules and use of the mobile application will be dependent upon the worker rather than the application. This will save caseworker data input time since they will no longer need to write down the information and then travel to the office to input case data.
- Mobile application availability will align with modernized Trails application availability resulting in the caseworkers being able to enter data off site.

7. **According to the FY 2017-18 budget request, the existing TRAILS is a system purchased from New Hampshire and tailored to fit Colorado needs since 2001. Does the department know what system New Hampshire uses now? Is it still similar to Colorado? Please explain.**

Department Response
The Department is not familiar with the current New Hampshire system or its upgrades and features.

8. **According to the FY 2017-18 budget request, TRAILS is the reporting system for several sets of federal requirements and has been Statewide Automated Child Welfare Information System (SACWIS) compliant since 2011. Will the FY 2017-18 appropriation have an impact on SACWIS compliance? If so, please provide details.**

   Department Response
   SACWIS compliance is changing to Comprehensive Child Welfare Information System (CCWIS) certification based on ACF rule changes. Colorado has two years to determine if pursuing CCWIS certification is appropriate and beneficial.

   It is the intent of the Department to pursue CCWIS certification. Technology decisions are being made during Trails Modernization with the intent of Colorado being CCWIS certified. If the Department does not receive the FY 2017-18 appropriation to finish Trails Modernization then Colorado will not be in a position to pursue CCWIS certification.

   If CCWIS certification is not pursued, Colorado will lose its current 50% federal match on all on-going Trails operating and maintenance system expenses that it currently receives based on its SACWIS compliance status. In FY 2016-17 this amounts to approximately $4,096,518 dollars in federal funds.

9. **According to the FY 2017-18 budget request, TRAILS is "*operating on an antiquated technology platform*" using client-server technology, and has "*limited mobile system access*".**

   a. **Please provide the PowerBuilder and Oracle versions of the existing TRAILS technical platform. Please describe the planned technical changes to the platform and versions (e.g., ASP.NET, C#, SQL Server).**

      Department Response
      Trails Modernization is moving from PowerBuilder: Version 12 to C# .NET framework: Version 4.0.2.

      The Oracle database is currently operating on version 10G with plans to upgrade to version 12C. This upgrade aligns with OIT's plan to upgrade all Oracle databases as this old technology is becoming difficult and costly to maintain.

   b. **Is TRAILS going to be web-enabled with the previous appropriations? If so, how? Are there any online limitations, and if so, will the previous appropriations fix these limitations? Please provide details.**

Department Response
No, Trails will not be web-enabled with the FY 2015-16 and FY 2016-17 appropriations. The system will remain limited to state secured portal access for the Trails users.

The .NET Web application will not be functioning for some of the Case module or any of the Fiscal module if the Department does not receive the FY 2017-18 appropriation. The portion of the system not upgraded will remain in PowerBuilder.

c. Please describe the existing TRAILS "*limited mobile system access*". Include in the description the limitations from a business and technical perceptive.

Department Response
Currently, Trails does not have a mobile application. Trails end users using Trails outside the office environment are dependent upon the State Portal and internet access connectivity from the location where they are attempting to use it. The mobile application technology being developed through the Trails Modernization project will have both offline storage and a mobile application available to all Trail users. This featured upgrade is scheduled to be completed by June 30, 2018 using FY 2017-18 funding.

From a business perspective, staff are limited by not having off site data entry capability resulting in redundant work.

10. Will the FY 2017-18 appropriation fix the following issues: (1) difficulty navigating a complex system; (2) slow response time, and; (3) redundant user data entry? If so, please explain the technical changes needed for each issue. If spending authority to fix these issues were already provided in previous appropriations, please provide the fiscal year.

Department Response
Previous appropriations will not fix the issues identified as an unfinished upgraded system will continue to operate slowly and cause the Trail end users difficulty in navigating from one technical platform to another technical platform. If the Department receives the third and final FY 2017-18 appropriation, the identified issues with Trails will be fixed.

1) Navigation is moving to a tree-structure, left-hand navigation sidebar which will simplify the complexity of navigating the system.
2) Technology upgrades will enhance performance requirements and improve response time.
3) Reduction of redundant data entry is a focus of the system upgrade and a requirement to CCWIS certification.

11. According to the FY 2017-18 budget request on page 1Y-0 1-8:

Without funding for the third year, the fourth and largest module, the case portion of TRAILS, which is the foundation for the entire TRAILS system, will be stopped mid-construction. The fifth and final modules, the TRAILS system will not achieve the efficient and effectiveness deemed necessary to make the new web-based platform functional and Colorado's Child Welfare Statewide Automated Case Management Information System will be incomplete.

a. Please list each phase with its corresponding module, brief module description and fiscal year budget request.

Department Response

Phase and Module	Brief Description	Expected Completion Date
Phase 1 (FY 2015-16): Module 1 – Intake and Module 2 - Resource	These modules include framework design, System Administration and Staff Organization and security access. Hotline application will be fully integrated into the Trails system and will no longer be a separate application.	July 31, 2017
Phase 2 (FY 2016-17): Module 3 - Assessment /Commitment	This module includes the processes once a county department has determined it is necessary to respond to a family and assess alleged maltreatment, and the processes to determine the necessity for juvenile commitment.	September 30, 2017
Phase 2 (FY 2016-17) and Phase 3 (FY 2017-18): Module 4 - Case	The Case module incorporates processes after a county department determines that ongoing services are needed for a child, youth, or family after the assessment phase. This module includes in home, out of home, youth services, and youth correction involvements.	June 30, 2018
Phase 3 (FY 2017-18): Module 5 - Fiscal	This module records services provided to children, youth and families within the youth correction and child welfare system. These services interface with County Fiscal Management System for payment.	June 30, 2018

b. Please provide the percentage of the FY 2017-18 budget request that will be used for the fourth module, along with a brief description.

Department Response
27.65% of the FY2017-18 appropriation will fund the Case module and 72.35% of the FY2017-18 appropriation will fund the Fiscal module.

FY 2017-18 appropriation will fund the software upgrade from PowerBuilder to .NET for both the Case and Fiscal modules. In addition, the FY 2017-18 appropriation will fund the mobile application technology. This technology will allow Trails users to have both offline storage and off site mobile accessibility.

12. **According to the FY 2017-18 budget request, TRAILS will align with OIT's enterprise health IT architecture model (e.g., enterprise service bus). Please describe this model and provide any supporting documentation.**

Department Response
It is the intent to use an enterprise service bus model which aligns with Interoperability. More detail and supporting documentation cannot be provided as the vendor or platform has not been determined.

Security, Disaster Recovery and Business Continuity

13. **Please describe any security, disaster recovery and business continuity provisions in the vendor contract. If the contract has not been executed yet, please provide the status of requested provisions.**

Department Response
Security, disaster recovery and business continuity provisions are being addressed in the project management documents, the State Security Governance policy and onboarding project gating process. Vendors are aligning with all applicable requirements and management of these requirements. The executed vendor contract that includes all these provisions has been reviewed by the Governor's Office of Information Technology (OIT) and the Administration for Children and Families (ACF) for compliance.

14. **Regarding the hosted environment at CenturyLink's Federated Cloud, what type of backup and recovery amendments does the department plan per the requirements of the SACWIS application? Please describe any concerns related to the amendments.**

Department Response
The modernized Trails system is not housed in the CenturyLink Federated Cloud. The modernized Trails system is housed on the State's secured, hosted environment to be in compliance with SACWIS and future CCWIS requirements. At this time, backup and recovery align with a secured, hosted environment application. Each module will have a system security plan covering the application and mobile application.

When OIT is ready to move the system to a secured cloud environment, the Department will obtain the needed federal approval to maintain its SACWIS or CCWIS certification and 50% federal match.

15. Does CenturyLink Federated Cloud provide fail-over testing and the results? Contractually, who is responsible should a security breech occur?

Department Response

As previously stated, the modernized Trails system is not in the CenturyLink Federated Cloud. Vendors are working solely in a non-production environment. Once the new system build goes into production, the State will be responsible should a security breech occur.

Contractually, vendors have project and breach liability. To further protect the State's data and mitigate risk, non-production environments have had data obfuscation scripts run to remove sensitive data.

Fiscal Year 2017-18 Information Technology Request

Human Services

Interoperability

PROGRAM PLAN STATUS and OIT BEST PRACTICES

2016-013

Approved Program Plan? N/A **Date Approved:**

The Governor's Office of Information Technology (OIT) was an active participant in writing the planning grant. The implementation of interoperability will be accomplished in cooperation with OIT and will align with their enterprise health IT architecture model.

PRIORITY NUMBERS

Prioritized By	Priority	
DeptInst	2 of 3	
OSPB	3 of 8	Prioritized and recommended for funding

PRIOR APPROPRIATION AND REQUEST INFORMATION

Fund Source	Prior Approp.	FY 2017-18	FY 2018-19	Future Requests	Total Cost
CCF	$2,210,446	$928,852	$928,852	$928,852	$4,997,002
FF	$19,894,014	$8,359,668	$8,359,668	$8,359,668	$44,973,018
Total	$22,104,460	**$9,288,520**	$9,288,520	$9,288,520	$49,970,020

ITEMIZED COST INFORMATION

Cost Item	Prior Approp.	FY 2017-18	FY 2018-19	Future Requests	Total Cost
Land Acquisition	$0	$0	$0	$0	$0
Professional Services	$7,718,960	$3,703,520	$3,703,520	$3,703,520	$18,829,520
Construction	$0	$0	$0	$0	$0
Equipment	$9,300,000	$3,300,000	$3,300,000	$3,300,000	$19,200,000
Miscellaneous	$0	$0	$0	$0	$0
Contingency	$0	$0	$0	$0	$0
Software Acquisition	$5,085,500	$2,285,000	$2,285,000	$2,285,000	$11,940,500
Total	$22,104,460	**$9,288,520**	$9,288,520	$9,288,520	$49,970,020

PROJECT STATUS

This is a continuation project. The department is requesting 10 percent in state funds for a 90/10 federal funds match for the third phase of a five-phase project. Phase I was funded in FY 2015-16, and Phase II was funded FY 2016-17. On February 2016, the department received Centers for Medicare and Medicaid Services approval for $2,522,899 federal funds. Current encumbered funds total $2,262,401, $2,036,161 in federal funds and $226,240 in state funds.

PROJECT DESCRIPTION / SCOPE OF WORK

The Department of Human Services (DHS) is requesting a combination of state funds and federal funds spending authority for the third year of a five-year project to create a new system for implementing and maintaining an interoperable environment. Interoperability is defined as the ability of two or more systems or applications to exchange information. The department says this shared information environment will provide better coordinated services to improve the lives of children, youth, and families in Colorado.

According to the department, this project will add the interoperability standards and framework that provide access to data contained within various systems without removing the data from these systems. These standards and framework include the necessary technical components, security, and governance for interoperability. Specifically, this does not remove or eliminate current data, but does reduce the need to build and maintain custom data interfaces between systems.

Federal match. The department expects a continuation of spending in the out years on a 90/10 percent match funding model under a time-limited, specific exemption to the cost allocation requirements set forth in the federal Office of Management and Budget Circular A-87. The federal program requires state programs pay their share of the costs associated with building state-based information technology systems. This funding model allows federally-funded human services programs to benefit from investments in the design and development of state eligibility determination systems for state-operated exchanges, Medicaid, and the Children's Health Insurance Program (CHIP). DHS says that this funding model will apply to implementing and maintaining an interoperability environment. The federal funds will be secured through submission to the Centers for Medicare and Medicaid Services (CMS). A requirement for federal approval is demonstrating that the state has committed to the 10 percent funding.

PROJECT JUSTIFICATION

According to the department, its systems are diverse, requiring hundreds of unique interfaces that manage data about the programs, services, clients and finances for 95 different federal, state, and county IT systems. Without this project, the department says that the systems will remain disconnected or continue to transfer data using disparate legacy technical interfaces.

This project will implement a service-oriented architecture (SOA) using a connected enterprise service bus (ESB). SOA provides the ability for applications to leverage technical services for reuse using a standard protocol. An ESB provides a single, unified technical platform that manages access to different applications using a consistent communication mechanism. The department explains that the interoperability strategy provides a roadmap for improved business processes and program performance throughout the entire organization.

Project alternatives. The department says that if funding from the state for 10 percent of the project is not received FY 2017-18, the 90 percent federal match will terminate. The department says it will continue to support disparate, legacy technical interfaces, which impedes the integration of services and reduction of costs. Also, the department's security risk for handling sensitive personal, health, and financial data increases by continuing with the existing 500 different code interfaces.

PROGRAM INFORMATION AND IMPLEMENTATION PLAN

Program Information. The department collaborates with partners in state and county governments, nonprofits, and other organizations to design and deliver high-quality human and health services that improve the safety, independence, and well-being of Colorado citizens. The department shares information, seeks input, and promotes accountability and transparency. Specifically, the department assists children and risk of abuse or neglect and Colorado families who need food, cash, and energy assistance and safe and affordable childcare. The department also provides care and services to: (1) individuals with intellectual and developmental disabilities; (2) youth who have violated the law and need guidance; (3) citizens who need mental illness or substance abuse treatment; (4) elderly citizens, and; (5) veterans.

Implementation Plan. The department says that the interoperability roadmap will use a phased approach consisting of multiple work streams. The department explains that the submission for the federal approval process requires an Advance Planning Document (APD) to the CMS. CMS asked Colorado to split the request into two documents for federal approval: (1) Planning Advance Planning Document (P-APD), and; (2) Implementation Advance Planning Document (I-APD). The P-APD was approved February 2016, providing $2,522,899 in federal funds. The department plans to obtain approval for the I-APD by June 2017.

Supporting documents submitted to CMS include Colorado interagency agreements, request for proposals, contracts, and other financial documents. After submission, CMS has 60 days to respond. If CMS responds with additional questions, the 60-day period resets after the department submits answers. One of the most important criteria CMS

uses is the department's demonstration of Medicare and Medicaid interoperability.

COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES

According to the department, the return on investment is predominately in cost avoidance by aligning services, reducing fraud, reducing program administrative burdens, and creating an IT environment that is easier to support and maintain. Additional return on investment will be achieved by replacing some of the 500 existing interfaces with a standardized ESB distributed technical environment for integrating IT systems. For example, the cost of maintaining existing, custom technical interfaces is estimated to be $15,000 per year, per interface. By eliminating 80 of these interfaces, the savings is potentially $1,200,000. The department says it is not funded to maintain its existing custom interfaces at this level.

SECURITY AND BACKUP / DISASTER RECOVERY

According to the department, the interoperability system will have redundant IT components and is designed to meet federal and state IT architecture, security, and business continuity requirements. Interoperability and the associated systems will follow the state cybersecurity policies set forth by OIT's security department. Interoperability will follow the National Institute of Standards and Technology (NIST) 800-53 requirements that focus on access management and identity management for implementing electronic authentication. The interoperability roadmap will follow established security protocols, including:

- centralized provisioning for user authentication;
- centralized, local or remote authentication of users; and
- a federated single sign-on that provides user authentication across multiple systems.

BUSINESS PROCESS ANALYSIS

The department's Office of Children, Youth, and Families was the recipient of a planning grant from the federal Administration for Children and Families. The Office of Child Support Enforcement used the grant to implement a sustainable, strategic pathway to connect all DHS internal systems to make data and human services records available without removing the data from the source systems.

The department says that project stakeholders were extensively engaged in the interoperability planning and will also be involved in interoperability implementation. Stakeholders include the Governor's Health IT Coordinator and representatives from the Department of Health Care Policy and Financing, OIT, and the Department of Public Health and Environment. This group meets regularly as the Health Information Technology workgroup. Other stakeholders include the Department of Education through ongoing data sharing efforts, and the Department of Public Safety.

The department will use the interoperability roadmap in a phased approach using the following multiple work streams:

Governance work stream. This stream will build a governing council, data stewards and develop processes. Some deliverables and activities include creating: (1) the initial Interoperability Advisory Council (IAC) / Data Governance Councils (DGC) governance structure; (2) business data architects to engage all divisions of the agency and formalize data stewardship activities and processes, and; (3) proof of concept, communications, and change management planning documents.

Metadata repository work stream. Metadata is the information about the data in a system. This work stream will be used as a utility source for information and knowledge management, development, and data discovery. Some deliverables and activities include creating: (1) documentation of existing systems, data inventory, and system cross-reference; (2) a baseline for interoperability and data-sharing decisions; (3) DHS enterprise data models and mappings; (4) authoritative data sources for all data types; (5) an enterprise data dictionary and taxonomy; (6) data solutions that serve multiagency business needs; (7) a metadata repository, and; (8) interoperability data and systems efficiency targets to ensure quality, reliability, and integrity of the data.

Key stakeholder implementation work stream. The goal of this work stream is to effectively communicate and engage stakeholders as early as possible. Some deliverables and activities include creating: (1) internal

dissemination of the Colorado Client Information Sharing Systems (CCISS) implementation plan to develop an agency-wide plan and agreement; (2) an CCISS interoperability implementation plan for external key stakeholders; (3) a communications and change management work group under the governance structure to establish the structure for change; (4) a process to record, collate, and use key stakeholder feedback, and; (5) documentation of external partners such as Department of Education, OIT, HCPF, the Judicial Branch, Colorado Integrated Criminal Justice Information System, county human services staff, Colorado Regional Health Information Organization, health information exchange organizations, Connect for Health Colorado, and others identified by the executive planning team.

Business process improvement work stream. This work stream will entail an examination of work flows and processes of the systems and offices that will be affected. Some deliverables and activities include creating: (1) documentation of areas that should be included in the business process improvement (BPI), and then conducting a BPI analysis of applicable systems and offices; (2) documentation of BPI future state processes, and; (3) documentation of training and monitoring.

Change Management and Communication Work Stream. The goal of this work stream is to implement an effective change management program that will: (1) improve organizational outcomes and performance; (2) enhance employee satisfaction, morale, and engagement, and; (3) improve service quality. Deliverables include the communications plan, training plan, process development plan, and communication materials.

PROJECT SCHEDULE

	Start Date	Completion Date
Governance and Stakeholder Engagement	July 2015	Ongoing
Additional Planning for CMS	July 2015	June 2017
Metadata Repository	July 2015	June 2017
Identity Management, Security, ESB	July 2015	June 2017
Data Systems/Interoperable Environment	July 2015	June 2020
Professional Consumer Portal	July 2015	June 2017
Business Intelligence and Analytics	July 2015	June 2020

OPERATING BUDGET

The $1,323,360 requested for FY 2015-16 and FY 2016-17 will continue in FY 2017-18 for staffing and employee costs. Staff recommends that the department request these funds through an associated operating budget request, instead of through its capital construction request. After the project's five-year development and implementation, an operational request to fund support and maintenance will be submitted for 75 percent federal funds and 25 percent state funds.

STAFF QUESTIONS AND ISSUES

See Attachment A.

COLORADO
Department of Human Services

Document: Capital IT – 2 Interoperability
Due Date: November 4, 2016
To JBC Staff: Jean Billingsley
Budget Contact: Cathy Trujillo

1. **Please describe the Health Information Technology (HIT) workgroup and the Evaluation Collaborative, mentioned on page IT-01-3 and 4, and their involvement, authority, and influence on the project.**

   The HIT workgroup is convened by the Governor's Health IT Coordinator with technology decision makers from the Governor's Office of Information Technology (OIT), Health Care Policy and Financing (HCPF), Colorado Department of Public Health and Environment (CDPHE) and Colorado Department of Human Services (CDHS). This group works to align and coordinate health IT projects between agencies. The HIT workgroup serves in an advisory capacity to the Interoperability project to ensure alignment with other health IT projects and to ensure a reference architecture is implemented that will scale beyond currently identified Interoperability needs. The HIT workgroup is limited to an advisory capacity and does not have any authority on the project.

   The Research and Evaluation (R&E) Collaborative is a quarterly meeting of CDHS staff, program managers and departmental leaders who are involved with research, evaluation or analytics activities. The goals of the Collaborative are to (1) foster research-oriented and evidence-based decision making, (2) align research and evaluation activities with agency strategy, (3) facilitate research across program areas, and (4) engage the academic and research community in Colorado to further the Department's learning and effectiveness. The Collaborative is one forum through which the Interoperability effort regularly seeks guidance and input from CDHS research staff to ensure the analytics platform supports and aligns with the Department's research and evaluation needs. The Collaborative provides input and does not have authority on the project.

2. **The project has been appropriated a total of $24,751,180. The Centers for Medicare and Medicaid Services (CMS) has approved planning work for a total of $2,803,221 with a planned completion date of June 2017. Does the department expect to need more than $21,947,959 during FY 2017-18? Please explain the reason CMS would not approve the remaining $21,947,959 for FY 2017-18 if an additional $10,611,880 is not appropriated this budget cycle.**

   CMS has not provided direction and will not provide additional guidance to the State until the approved planning work is completed. The Department goal is to complete

the planning work by June 30, 2017. In the absence of federal guidance, CDHS is proceeding with the budget requests as originally outlined in the five year implementation plan. The continuing allocation of the 10% State share required to request the 90% match demonstrates the State's commitment to Interoperability. The Department will spend to the level authorized by CMS however, at this time it cannot quantify if the approved amount will exceed $21,947,959.

CMS will not approve the funding for implementation unless the State demonstrates the ability to provide the 10% match to the 90% federal funding. If the Department moves forward with CMS on an implementation request, it is possible that CMS would determine that the State does not have sufficient matching funds to complete the project and therefore, not approve any portion of the project.

3. **If this is not the first time the department has implemented SOA (service oriented architecture), please describe previous efforts, the status, and if these efforts can be leveraged for this Interoperability project. Is the Colorado Benefits Management System (CBMS) using SOA? If so, can this project leverage CBMS SOA? Please explain.**

   Yes, SOA was used in the development of Colorado Program Eligibility and Application Kit (PEAK). PEAK serves as a client access portal for CBMS. SOA refers to the principles by which an application is designed. Interoperability will use SOA principles and other existing IT services currently in place in existing IT systems as part of the Interoperability design plan.

4. **Even though the project is in the planning stage, please describe any infrastructure or system work that has been completed under this project.**

   The planning work is a technical assessment of existing IT services and infrastructure that will be components of Interoperability. No infrastructure or system work beyond planning will be started until approved by CMS.

5. **Does the department plan to use, or is currently using, OIT's enterprise SSO (single sign-on) and IdAM (identity and access management) systems? If not, please provide the cost, security, and maintenance benefits from implementing a separate SSO and IdAM, and the status of OIT's CISO's review and approval.**

   Yes, Interoperability intends to use State enterprise SSO and IdAM services once the current planning effort validates they will meet all of the needs of the vision of Interoperability. OIT and the Chief Information Security Officer (CISO) are included in the review and approval of Interoperability planning work. There are currently no identified barriers to using the existing SSO and IdAM.

6. **The advantages of SOA to integrate heterogeneous technologies and implement loose coupling between systems has many benefits. The nature of SOA could consume large memory usage if the size of the data or the number of messages**

being passed is substantial. Has the department planned for resources for performance testing, such as stress or load testing? If so, please explain.

There is data from CBMS related activities to inform the appropriate sizing of the required IT services like the Enterprise Service Bus (ESB). The Department has planned for resources that will also conduct additional proof of concept testing, inclusive of performance, load and stress testing, as part of both the current planning and future implementation activities.

7. **According to the FY 2017-18 budget request:**

   "After the five-year development and implementation, there will be an operational budget to fund the ongoing support and maintenance of the environment at a 75/25 federal match. The amount will be determined based on ongoing operational needs."

   Please provide alternatives if a 75/25 federal match for operational needs is not awarded.

   If the 75/25 federal match is not approved, the operations costs could be evaluated to determine an allocation to each IT system's current operations and maintenance budget line proportionate to usage based upon amount of data transported or other metric to be determined.

8. **Please describe the challenges of adding systems to this project's SOA that will not receive a federal match?**

   The Interoperability project is designed to provide a reference architecture and enterprise SOA standards approved by OIT and other stakeholders. The financial challenge of adding systems outside of the federally approved match will be to incorporate this reference architecture into their future plans for development funding.

9. **Does the planned cost of the project require more than one project manager? If so, please provide the reason and the responsibilities for each project manager.**

   Yes, the project as currently planned will have two project managers. The first will have overall responsibility for the project to include stakeholder engagement, privacy review, IT security requirements, and budget monitoring. The second project manager will report to the first project manager providing oversight on all technical components such as the Enterprise Service Bus (ESB), Identity and Access Management (IdAM), and analytics platform.

Fiscal Year 2017-18 Information Technology Request

Human Services

Regional Centers Electronic Health Record System

2018-015

PROGRAM PLAN STATUS and OIT BEST PRACTICES

Approved Program Plan? N/A **Date Approved:**

The department says it has gathered requirements and conducted market research by publishing a request for information (RFI) and working with the Governor's Office of Technology (OIT).

PRIORITY NUMBERS

Prioritized By	Priority	
DeptInst	3 of 3	
OSPB	NP of 8	Not recommended for funding

PRIOR APPROPRIATION AND REQUEST INFORMATION

Fund Source	Prior Approp.	FY 2017-18	FY 2018-19	Future Requests	Total Cost
CCF	$0	$2,342,771	$0	$0	$2,342,771
Total	$0	**$2,342,771**	$0	$0	$2,342,771

ITEMIZED COST INFORMATION

Cost Item	Prior Approp.	FY 2017-18	FY 2018-19	Future Requests	Total Cost
Land Acquisition	$0	$0	$0	$0	$0
Professional Services	$0	$1,390,817	$0	$0	$1,390,817
Construction	$0	$0	$0	$0	$0
Equipment	$0	$642,545	$0	$0	$642,545
Miscellaneous	$0	$0	$0	$0	$0
Contingency	$0	$138,248	$0	$0	$138,248
Software Acquisition	$0	$171,161	$0	$0	$171,161
Total	$0	**$2,342,771**	$0	$0	$2,342,771

PROJECT STATUS

This is a new, never-before requested project.

PROJECT DESCRIPTION / SCOPE OF WORK

The Department of Human Services (DHS), Office of Community Access and Independence, Division of Regional Center Operations (DRCO) is requesting state funds for the implementation of an Electronic Health Record (EHR) system that meets federal regulatory and reimbursement standards. This project will implement a comprehensive, integrated EHR system, and install wireless and network infrastructure, along with personal computers, tablets, and scanners. This request will implement an EHR system with the modules and functions required to meet the existing and pending "meaningful-use" standards. "Meaningful-use" standards are criteria established by the Centers for Medicare and Medicaid Services Electronic Health Records incentive program.

The new system will be integrated with other systems from outside providers, labs, pharmacies, and other entities. The system will serve as a: (1) point-of-care documentation tool for active treatment and individualized care plan; (2) system for historical records retention; and (3) fully hosted and web-based solution. The department says that the EHR system will comply with records management best practices and will be securely hosted off site.

Fiscal Year 2017-18 Information Technology Request

Human Services

Regional Centers Electronic Health Record System

According to the department, a secure wireless network will be implemented at the three regional centers and associated group homes. The department also says it needs to lease personal computers (PCs) and electronic tablets so that physicians and clinicians may enter orders, update charts, and access medical information real-time while conducting group activities and interacting with residents. The leased tablets will also provide bar code scanning for the pharmacies, thereby, reducing medication transcription errors.

PROJECT JUSTIFICATION

According to the department, each regional center uses a manual paper process for assessments and charting, which results in errors and delays in admissions, care records, accounts receivable, and billing.

The department explains that without an EHR system, improvements in medication practices will be less attainable. Additionally, the department does not currently monitor the effectiveness of resident treatment in a single database. The existing paper-based health records are difficult to use for comprehensive review of treatment practices, whereas, an EHR system provides the metrics to track key performance indicators.

Since most of the state's community providers have implemented EHRs, the regional centers will be unable to share timely vital patient information about residents. For example, when a patient transfers from the community to a DHS regional center, the patient record will be shared using the EHR system. According to the department, the regional centers served an average of 263 residents per month between July 1, 2015 and June 30, 2016.

DHS says that storing a resident's complete health information in an EHR system would ensure that information is current and relevant. This information would give clinicians past medication treatment, including drug reactions. Additionally, an EHR system provides options and explanations that improve the clinician's efficiency and compliance with accepted practice guidelines. As a result, an EHR system increases efficiencies by reducing the amount of time clinicians spend locating and documenting patient care.

Project alternatives. The department says that without the new EHR system, the regional centers will continue to use paper for assessments, which impacts the quality, quantity, and effectiveness of resident treatment.

PROGRAM INFORMATION AND IMPLEMENTATION PLAN

Program information. DHS consists of eight offices. The DHS Office of Community Access & Independence has six divisions, including DRCO. DRCO provides oversight for the three state-owned and operated regional centers: Grand Junction, Pueblo, and Wheat Ridge. These three regional centers serve people with intellectual and developmental disabilities.

The regional centers are funded by reappropriated Medicaid and cash funds from resident payments. According to DRCO, the regional centers have 356 licensed beds across the state. Of those beds, 168 are Home and Community Based Services Waiver (HCBS Waiver) and 188 are licensed as Intermediate Care Facilities/Intellectual Developmental Disabilities.

Implementation plan. According to the department, depending on the vendor and IT solution selected, the best approach for implementation will be determined at a later date and as recommended by the OIT project manager and the Independent Validation and Verification reviews.

The project will be managed in phases, including initiation, planning, building, execution, and monitoring.

COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES

The department says that funding will improve clinical efficiency by providing information quickly and easily, thereby, improving patient safety and operations. A fully-integrated EHR system will automatically tie resident treatments to outcomes, and will directly assist clinical efforts to address any resident behavioral issues that may require more restrictive interventions.

Fiscal Year 2017-18 Information Technology Request

Human Services

Regional Centers Electronic Health Record System

SECURITY AND BACKUP / DISASTER RECOVERY

Security. The department plans to implement a vendor-hosted EHR system with the security, backup, redundancy, and disaster recovery responsibility residing with the vendor, per the guidelines established by OIT and enforced by the contract between the vendor and the department.

According to the department, OIT has been an integral partner with DHS in developing the EHR business requirements to ensure personal identifiable information (PII), and personal health information (PHI) and data security all meet industry standards and government regulations. Additionally, the department says it plans to work with OIT for the entire project, including with the OIT Chief Information Security Office.

Disaster recovery. The department says it has worked with OIT to establish business continuity and disaster recovery plans and procedures. The department plans to manage the project using OIT's gating methodology, which requires a review of the system security plan, security vulnerability testing, and business continuity and disaster recovery plan review.

BUSINESS PROCESS ANALYSIS

According to the department, a request for information (RFI) was published. The department: (1) attended demonstrations of various EHR systems, (2) researched lab and pharmacy systems, (3) conducted online research, and (4) met with clinical and operations staff. The results from the research were cost estimates and business requirements for the new EHR system

PROJECT SCHEDULE

	Start Date	Completion Date
RFP for EHR system	July 2017	August 2017
Select EHR Vendor	August 2017	August 2017
Contract Execution	August 2017	September 2017
EHR Development and Implementation	September 2017	June 2018

OPERATING BUDGET

The department is requesting $698,688 for FY 2017-18 in operating costs. FY 2017-18 operating costs include: (1) annual leasing fees for personal computers and tablets; (2) network maintenance; (3) annual vendor maintenance; and (4) full-time employees (network engineer, EHR manager, and deskside support). The department expects annual operating costs will continue in FY 2018-19 and FY 2019-20 at $648,280 each year. Staff recommends that the department request these funds through an associated operating budget request, instead of through its capital construction request. The department says that an operating budget request has not been submitted to the Joint Budget Committee based on guidance from the Office of State Planning and Budgeting since the capital IT request is prioritized below the funding line.

STAFF QUESTIONS AND ISSUES

See Attachment A.

COLORADO
Department of Human Services

Document: Capital IT – 3 Electronic Health Record
Due Date: November 4, 2016
To JBC Staff: Jean Billingsley
Budget Contact: Cathy Trujillo

Project Schedule and Resources

1. **The EHR system "development and implementation" activities are planned to start on September 1, 2017, with a planned end date of June 30, 2018. Does the department plan to do the following during this project period? If not, please explain.**
   - **disaster recovery and business continuity testing;**
   - **data migration from existing repository to new EHR system;**
   - **business process reengineering, and;**
   - **COTS (commercial off-the-shelf) customization.**

   Yes, the Department plans to conduct the above activities during the development and implementation period.

2. **The request includes a cost estimate for training in the amount of $1,038.069. Please quantify this amount. The quote from RFI covers both Professional Service fee and Training fee.**

   The Professional Service fees include all the work that will be done to understand the Division of Regional Center Operations' (DRCO's) current workflows and to build out and test and retest the system and roll it out to the three facilities. This also includes the hours for train the trainer requirements. The amount of $1,038,069 for training was provided by a prospective bidder in response to a request for information published for this project.

3. **The FY 2017-18 capital construction budget request includes annual operating costs for three FTEs (network engineer, electronic health record manager), user hardware leasing fees, and network maintenance in the total amount of $698,688. Has an operating budget request been submitted to the JBC for these items?**

   No, based on guidance from the Office of State Planning and Budgeting (OSPB) as the Capital IT request is prioritized below the funding line. The Capital IT request does include a summary of the operating budget. The operating budget would be funded through a combination of cash and reappropriated funding. The Regional Centers are funded with reappropriated Medicaid funds and cash funds from resident payments, through a cost-reimbursement methodology. Ongoing operation of the

EHR system is an allowable operating cost within the reimbursement methodology at the Centers for Medicare and Medicaid Services (CMS), and as a result would be paid for with a mixture of reappropriated Medicaid funds and resident cash funds.

4. **The personal computer (PC) and tablet lease costs are "*based upon the current lease costs through the Governor's Office of Information Technology vendor, Hewlett Packard*". Please explain the ROI (return on investment) and decision to lease hardware for $44,556/annually instead of purchasing 75 personal computers (PCs) and 24 tablets. Also, please provide the estimated leased amount for the PCs and tablets separately. If the Colorado Department of Human Services (CDHS), DRCO currently owns or leases PCs or tablets, please explain the reason new user hardware is required for this project.**

   Currently, there is only one computer in each group home. The request includes personal computers and tablets in each home to alleviate any data entry bottleneck when utilizing the Electronic Health Record System. The estimated amounts for leasing 75 personal computers are $33,694 and 24 tablets for $10,862.

   The Department has leased computers since 2000 for desktops and laptops to standardize hardware, simplify support, expedite maintenance, and automate the hardware renewal process. The total cost of leasing, support, maintenance and renewal is a lower overall cost as compared to purchasing hardware with the additional administrative costs.

   Computers have not been provided to every CDHS employee. Employees that historically did not need a computer to perform their duties, e.g. nurses and other care providers, utilize shared work stations in administrative locations as needed to periodically complete tasks that require a computer. With the implementation of an EHR system many additional computers are required to be accessible in each home and mobile devices to accompany employees providing health care or other services to be documented in the EHR.

5. **Please provide the reason the annual cost of the "electronic health record manager" and the "annual vendor maintenance" decreases after FY 2017-18.**

   The 2017-18 cost includes the one-time purchase for office furniture and equipment during the first year of this EHR Manager. Vendor maintenance fee includes one time "Application Services Provider Fees" and "Technology Fee" which all occurred at the beginning.

6. **Please provide more details regarding the cost of $104,931 / annually for "network maintenance". Please include details about the existing network, wireless infrastructure and the annual cost. What is the technical reason a network or wireless addition or change is needed for the project to be successful? For example, how many wireless access points will be needed at the three regional centers and surrounding group homes?**

The design for the Regional Centers network is based on the number of buildings, square footage, projected network bandwidth increases, new network connections, new network switches, and estimated number of wireless access points. The experiences from implementing network upgrades in the Veterans Community Living Centers, at Youth Corrections in support of education, and at the Mental Health Institutes were incorporated into the estimates. Site surveys will be completed after the project is started to confirm final placement and numbers of wireless access points. There is no wireless network in the Regional Centers. There is not enough wired networking and the existing wired network does not have enough bandwidth, sufficient wired data jacks, and in some cases is not the secure state network, i.e. is a Digital Subscriber Line (DSL) or similar consumer network service. For the EHR to be reliably and securely accessed, these network upgrades are required. The $104,931 / annually for "network maintenance" is the projected annual maintenance cost for the additional infrastructure.

7. **Does the department plan to use OIT's wireless infrastructure? If not, why?**

   Yes, CDHS has worked in cooperation with OIT networking teams to plan for the implementation of the State standard for wired and wireless networking at the Regional Centers in support of the EHR needs.

8. **The project manager will be an OIT employee. Will the network engineer and desk side support technician also be OIT employees? If not, why?**

   Yes, both the network engineer and desk side support technicians will be OIT employees.

9. **The department's "*existing operation largely relies on hard copy records*".**

   a. **Will the new EHR system reduce this reliance on hard copy records? If so, what is the purpose of the new $6,600 high volume scanners?**

      Yes. The new EHR will reduce reliance on hard copy records; however, we still need to scan the record from the vendors who do not utilize electronic record or does have an EHR but it is incompatible with the Regional Center EHR system.

   b. **Please provide the planned number of scanners and cost per unit used to calculate $6,600. Please include the number of locations for the scanners and estimated volume.**

      There will be 5 scanners, which are estimated to cost $1,200 each. These scanners will be located in three Regional Centers. While the exact volume is unknown, based on the experience of the Veterans Community Living Centers' implementation of an EHR, this is the number of scanners identified

as necessary for implementation in the Regional Centers. This includes 2 scanners at Wheat Ridge Regional Center, 1 at Pueblo Regional Center and 2 at Grand Junction Regional Center. Wheat Ridge Regional Center has approximately twice the volume of residents as the other two centers, indicating a need for an additional scanner.

c. Does the department have resource(s) for the anticipated scanning volume at these locations?

Currently, the Department has a few scanners built into Xerox machines that are contracted for CDHS administrative buildings. The scanners proposed in the budget request are medical record scanners that will be used by the medical records offices at each Regional Center. The number of scanners is based on the experience of the Veterans Community Living Centers when implementing the EHR system.

10. According to the FY2017-18 budget request on page IT-01-8:

The department, in conjunction with the Governor's State Health Information Technology officer, held discussions regarding the opportunity for systems integration with other offices within the department and with other state agencies. The conclusion was that the health system needs and scopes of the various departments and agencies were too diverse to pursue enterprise solutions for EHRs, instead the state and the department would align their EHR efforts though coordination with each other and with the state's two health information exchanges (HIEs), CORHIO and Quality Health Network (QHN). These efforts include sharing EHR business requirements, vendor evaluations, practice transformation, staff training, and establishing secure HIE connections to other health providers.

From a cost and time perspective, was the department able to leverage from any of the other state agencies EHR efforts? If so, how?

Not as of this time, programmatic needs that drive functional requirements for EHR systems are very diverse, i.e. a hospital's needs as compared to a nursing home. This variance resulted in it being an overall lower cost to the State to purchase smaller EHR systems that target a specific population. Each of the State's EHR systems is connected or will be connected to the HIE. Leveraging the HIE enables the EHRs to exchange information without having an additional interface or integration.

11. According to the FY 2017-18 budget request on page IT-01-3:

The Regional Centers are funded with reappropriated Medicaid funds and cash funds from resident payments, through a cost-reimbursement methodology. Capital projects, such as implementation of an EHR system, are not allowable

cost under the cost-reimbursement methodology, and therefore must be funded with General Funds (or Capital Construction Funds Exempt).

Is there a possibility that the resident payments may increase due to the operational costs of the new system? If so, please provide any concerns or analysis conducted regarding possible payment increases and the impact on residents.

The Regional Centers are primarily funded through reappropriated funds, which come from Medicaid and General Fund. Patient payments are only a small portion of those revenues and are set based on a formula from Medicaid. For residents living in Regional Centers, patient payments are based on the amount of Social Security Disability Income of the resident, not the overall cost per day of living in one of the Regional Center homes. As such, patient payments would not increase based on increased operating costs related to implementing this system.

System and Business Clarifications

12. According to the FY 2017-18 budget request on pages IT-01-3 to 4:

The existing operation largely relies on "hard copy" records, and utilization of a portion of a legacy health information management system, AVATAR. This poses an on-going HIPAA liability risk through the use of Access, Excel and Word to help manage protected health information (PHI) and complete quality assurance activities.

Please explain how AVATAR is used now, and the reason enhancing or upgrading AVATAR is not a viable option. Please include details regarding any missing mandatory technical or business requirements. For example, please indicate if AVATOR can be enhanced to include:

- **the functionality provided by currently using Microsoft Access, Excel and Word;**
- **proper storage, transmission and monitoring of PHI, and;**
- **regulatory and HIPAA compliance.**

Currently, the Regional Centers use AVATAR for tracking patient census days and resident banking. The Colorado Mental Health Institutes within CDHS also use AVATAR, but are phasing out AVATAR once their EHR system is implemented. AVATAR is not a complete health record system and, there is no indication that AVATAR offers the functionality needed to fulfill the Regional Centers' electronic health record needs. In addition, the existing AVATAR system was implemented in 2005.

Provided this project is funded, the Department will release a Request for Proposal that includes all project requirements. If AVATAR has a system that can meet those

requirements, the Department would consider any bids by AVATAR along with bids received from other vendors.

13. According to the FY 2017-18 budget request on page IT-01-6:

"A*s most of the state's community providers implement EHR's, the regional centers will be unable to share timely vital patient information about residents who often move from the community, to the regional centers, and back to the community*".

a. **Please provide a high-level description of the differences between the community and regional centers as it relates to this sentence.**

The community providers referred to means medical service professionals who open their practice to the general public. Regional Centers licensed as Home and Community Based Service providers (such as Pueblo Regional Center and some of Grand Junction Regional Center) must make sure residents get the medical care they need from providers in the community.

b. If readily available, please give an approximate number of people DRCO serviced during a recent twelve-month period, the dates of the twelve-month period, and/or the percentage that moved from community to regional centers that year.

During the FY 2015-16 (July 01, 2015 to June 30, 2016), there were an average of 263 residents per month in the Regional Centers. In total, there were 48 residents who moved from community placements to regional center services in FY 2015-16.

14. According to the FY 2017-18 budget request on page IT-01-6:

"*Without an EHR, the regional centers will continue to use paper to do assessments and monitor the quality, quantity and effectiveness of resident treatment.*"

If available, please provide the results of any monitoring regarding quality, quantity, and effectiveness of resident treatment. If not available, please describe any planned future monitoring.

The Department does not currently monitor the effectiveness of resident treatment in a single database system. Without an EHR, the current manual system is less reliable and data entry takes extra time to track and input hardcopy data. The EHR will allow our practice to become more reliable (quality), scalable (quantity) and transferrable (effectiveness) through the electronic management of data internally and with community providers. Paper-based health records make it difficult to do

comprehensive review of treatment practices. Electronic Health Records have built in metrics that can be used to track key indicators of quality of care for the residents.

Security, Disaster Recovery and Business Continuity

15. **How will the department ensure that additions and changes to the office's wireless and network infrastructure will comply with OIT best practices / standards, regulatory and HIPAA compliance? Will PII (personal identifiable information), PHI (personal health information), and sensitive data be encrypted at rest (e.g., in the database) and in transit? If not, please explain.**

    OIT has been an integral partner with CDHS in developing the EHR business requirements since the beginning of this project to ensure PII, PHI, and data security all met the industry standard and governmental regulations.

    CDHS has worked in cooperation with OIT networking teams to plan for the implementation of the State standard for wired and wireless networking at the Regional Centers in support of the EHR needs. The State standards for networking utilize industry best practices and are compliant with IT security and privacy policies including HIPAA, PHI, and PII, including among other things that the data is encrypted in transit and at rest.

16. **How will the department ensure that changes in business processes and procedures will implement security, disaster recovery, and business continuity controls and how will those controls be *maintained* after implementation. Does the department plan to add security, disaster recovery and business continuity requirements in the vendor's contract, along with periodic testing and reports?**

    Yes, CDHS has worked with OIT in developing the requirements which include security controls, business continuity plans, and disaster recovery procedures. Additionally the project will follow the mandated project gating process including Gate 4 which reviews system security plans, vulnerability testing, business continuity review, and disaster recovery plan review. Gate 4 must be completed to the satisfaction of the Information Security Office before the project will be allowed to move into production.

Fiscal Year 2017-18 Information Technology Request

Labor and Employment

Unemployment Insurance Mainframe Migration and Modernization

2017-083

PROGRAM PLAN STATUS and OIT BEST PRACTICES

Approved Program Plan? N/A **Date Approved:**

The department says it complies with the Governor's Office of Information Technology (OIT) best practices and policies.

PRIORITY NUMBERS

Prioritized By	Priority	
OSPB	NP of 8	Recommended for funding from cash sources.

PRIOR APPROPRIATION AND REQUEST INFORMATION

Fund Source	Prior Approp.	FY 2017-18	FY 2018-19	Future Requests	Total Cost
CF	$25,263,480	$26,213,480	$0	$0	$51,476,960
Total	$25,263,480	**$26,213,480**	$0	$0	$51,476,960

ITEMIZED COST INFORMATION

Cost Item	Prior Approp.	FY 2017-18	FY 2018-19	Future Requests	Total Cost
Land Acquisition	$0	$0	$0	$0	$0
Professional Services	$4,463,480	$4,213,480	$0	$0	$8,676,960
Construction	$0	$0	$0	$0	$0
Equipment	$800,000	$0	$0	$0	$800,000
Miscellaneous	$0	$0	$0	$0	$0
Contingency	$0	$2,000,000	$0	$0	$2,000,000
Software Acquisition	$20,000,000	$20,000,000	$0	$0	$40,000,000
Total	$25,263,480	**$26,213,480**	$0	$0	$51,476,960

PROJECT STATUS

This is a continuation project. The department is requesting cash funds spending authority for the second phase of the two-phase project. The first phase was funded in FY 2016-17. According to the department, the first-year funds have been awarded to a vendor for code conversions, and the project is on schedule. Additionally, 60 percent of the FY 2016-17 funds have been encumbered.

PROJECT DESCRIPTION / SCOPE OF WORK

The Unemployement Insurance Division of the Colorado Department of Labor and Employment (CDLE), in cooperation with OIT, is requesting cash funds spending authority to migrate the current benefits and employer premium systems onto a modernized computer platform. The project will result in better compliance with federal technologies, minimize benefit overpayments, improve data security, and enhance effective communication with claimants and employers.

During the project, the department will convert the mainframe COBOL code to Java and move the data stored in the mainframe to a relational database, such as a Microsoft SQL Server. The impacted mainframe systems are the Colorado Unemployment Benefits System (CUBS) and the Colorado Automated Tax System (CATS).

Fiscal Year 2017-18 Information Technology Request

Labor and Employment

Unemployment Insurance Mainframe Migration and Modernization

PROJECT JUSTIFICATION

According to the department, CDLE's Unemployment Insurance (UI) mainframe system does not have the ability to meet claimant, employer, or departmental needs and reporting requirements. UI staff manually process some claims and the department cannot rapidly report financial information. The existing system is over 30 years old, unreliable and challenging to maintain. Making changes to the system, such as changes required by state or federal mandatory requirements, has become increasingly complex, and takes a noticeable amount of time and resources to implement.

The department says that migrating to a modern technology will provide additional functionality, including the ability to integrate with other department and state systems. A modern system will provide the foundation to integrate with systems that could verify legal residency and the internet self-service system, thereby permitting customers to use more self-service options. The department believes this will reduce staff involvement with routine, housekeeping activities and enable staff to concentrate on more value-added activities.

PROGRAM INFORMATION AND IMPLEMENTATION PLAN

The Colorado UI program provides temporary and partial wage replacement to workers who have become unemployed. The department adminsters the employer premium and unemployment benefits claim systems. According to CDLE, the UI Mainframe Migration and Modernization project will be implemented using two-phases: a code conversion, testing, and production release phase and a refactor phase. The CUBS and CATS migration will be complete in early 2017, with 70 percent of migration and 15 percent of testing completed to date.

COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES

The department calculates a savings of $2.9 million per year through reductions in staff costs, network, and mainframe costs. The department estimates that these savings will pay for the cost of the project over a 20-year time frame. The savings are based on the assumption that the new system will be maintained and updated.

SECURITY AND BACKUP / DISASTER RECOVERY

According to the department, the new system will include a modern virtual infrastructure that permits a daily backup of the entire system, virtualized redundancy of the database, and possibly a transaction log transmission between sites. For security, the department complies with OIT rules and policies.

BUSINESS PROCESS ANALYSIS

According to the department, CDLE is currently performing business process modeling and will continue to do so throughout the project and beyond. This will help to define the initial test cases to use in verifying the success of the initial code migration to Java, as well as creating a basis for modernization planning. Continued improvements to the system will be designed, developed, and implemented based on analysis of the business process models to determine efficiencies and cost savings that can be accomplished.

PROJECT SCHEDULE

	Start Date	Completion Date
Contracting	July 2016	January 2017
Implementation		June 2019
Equipment		June 2019
Completion		June 2019

Fiscal Year 2017-18 Information Technology Request

Labor and Employment

Unemployment Insurance Mainframe Migration and Modernization

OPERATING BUDGET

This project has no projected impact on the department's operating budget.

STAFF QUESTIONS AND ISSUES

1. What is the current solvency and balances of the Employment and Training Technology Fund Balance and the Unemployment Revenue Fund?

As of June 30, 2016 the fund balance of the Employment and Training Technology Fund was $25,924,823.79 and fund balance of the Unemployment Revenue Fund was $21,637,617.21.

2. Is the current system considered high volume? Are there a high number of concurrent users during peak periods? Besides unit testing, system integration testing, and user acceptance testing, what are CDLE's plans for performance testing?

The current system is considered high volume, with greater than four hundred concurrent users during peak periods on the mainframe. Performance tuning and analysis will begin during Functional Integration Testing and User Acceptance Testing. The project has time allocated during the first quarter of 2017 to perform additional performance testing and tuning prior to full deployment of the migrated system.

3. CDLE recently requested a spending authority extension for its Workers' Compensation Mainframe Migration and Modernization Project. Does CDLE potentially expect to request a spending authority extension for this project in the future?

At this point in the project the Department does not expect to request an extension for spending authority but that will be analyzed every six months.

Fiscal Year 2017-18 Information Technology Request

Public Health and Environment

Customer Interface for a Lean Environment Online Permitting System

PROGRAM PLAN STATUS and OIT BEST PRACTICES ***2018-020***

Approved Program Plan? N/A **Date Approved:**

The Colorado Department of Public Health and Environment (CDPHE) says that the project aligns with the strategies and policies of the Governor's Office of Information Technology (OIT). The department is currently conducting a pilot project in conjunction with OIT and will work with OIT to implement the project.

PRIORITY NUMBERS

Prioritized By	Priority	
DeptInst	1 of 2	
OSPB	NP of 8	Recommended for funding from cash sources

PRIOR APPROPRIATION AND REQUEST INFORMATION

Fund Source	Prior Approp.	FY 2017-18	FY 2018-19	Future Requests	Total Cost
CF	$0	$896,588	$896,588	$896,588	$2,689,764
FF	$0	$100,000	$100,000	$100,000	$300,000
Total	$0	**$996,588**	$996,588	$996,588	$2,989,764

ITEMIZED COST INFORMATION

Cost Item	Prior Approp.	FY 2017-18	FY 2018-19	Future Requests	Total Cost
Land Acquisition	$0	$0	$0	$0	$0
Professional Services	$0	$996,588	$996,588	$996,588	$2,989,764
Construction	$0	$0	$0	$0	$0
Equipment	$0	$0	$0	$0	$0
Miscellaneous	$0	$0	$0	$0	$0
Contingency	$0	$0	$0	$0	$0
Software Acquisition	$0	$0	$0	$0	$0
Total	$0	**$996,588**	$996,588	$996,588	$2,989,764

PROJECT STATUS

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

PROJECT DESCRIPTION / SCOPE OF WORK

CDPHE is requesting cash funds and federal funds spending authority to implement an online permitting system for its environmental programs. The department plans to use a vendor-hosted, web-based system that allows customers and the department to interact via a new online submission system. CDPHE has purchased an off-the-shelf product (GovOnline) from EnfoTech which it plans to customize to the department's separate permit-related processes. According to the department, GovOnline meets both federal Environmental Protection Agency (EPA) and OIT regulatory requirements.

The department is currently implementing a pilot phase funded by a one-time EPA grant and with additional federal funding through the Colorado Water Resources and Power Development Authority. This pilot phase is currently implementing five initial regulatory processes, with expected completion by the end of January 2017.

Fiscal Year 2017-18 Information Technology Request

Public Health and Environment

Customer Interface for a Lean Environment Online Permitting System

PROJECT JUSTIFICATION

According to CDPHE, the new system will allow regulated entities greater process visibility and a faster application process. Customers will be able to apply for, upload documents, track the status of, modify their submissions, and pay for their permits. Internally, department staff will have better access to applications and required documents and will be able to generate required documentation based on submitted applications, and better manage business processes.

PROGRAM INFORMATION AND IMPLEMENTATION PLAN

The department plans a phased implementation: a Pilot Phase, Phase 1, and Phase 2. The Pilot Phase implements the base system along with five permit-related processes, such as the stormwater construction permit application process. Phase 1 and Phase 2 will implement 45 simple and 15 moderate processes. While not all 300 processes identified will be implemented into the Customer Interface for a Lean Environment Online Permitting (CIMPLE) system, the department plans on initially implementing 15 simple and 5 moderate processes, along with the 5 pilot processes. Of the processes not initially incorporated, 75 percent of the processes are simple, 20 percent are intermediate, and 5 percent are complex.

COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES

CDPHE believe the project will save 225 staff hours per year by moving from a paper-based process to a web-based process. Staff hours will be redirected to the maintenance and management of the new system, as well as to addressing existing backlogs.

SECURITY AND BACKUP / DISASTER RECOVERY

The new system complies with OIT information security policies. Following OIT and department guidelines, contractors working on the project will manage backup and disaster recovery

BUSINESS PROCESS ANALYSIS

According to the department, the current pilot phase has undergone a business process analysis, and the next phases will also integrate a business process analysis before online development.

PROJECT SCHEDULE

	Start Date	Completion Date
Pilot Phase	March 2016	June 2017
Phase 1	July 2017	June 2018
Phase 2	July 2018	June 2020
Completion		June 2020

OPERATING BUDGET

CDPHE expects a $401,634 three-year cost for operations and maintenance on the new system. The department plans to submit a cash funds spending authority request for operating costs in the future, if needed.

Fiscal Year 2017-18 Information Technology Request

Public Health and Environment

Customer Interface for a Lean Environment Online Permitting System

STAFF QUESTIONS AND ISSUES

1. How was the breakdown between the five cash funds determined? Does the department anticipate raising fees to cover the cost of the project?

Five sources of cash funds were identified from within the Hazardous Materials and Waste Management and Air Pollution Control Divisions. Each of these cash funds supports programmatic areas that will greatly benefit from business process improvements (i.e., on-line permitting.) The cash funds identified were based on their ability to absorb these expenses. Actual amounts contributed by each cash fund may vary depending on available revenues and cost to incorporate the specific project into the system. Projects will be selected partially on their ability to fund expenditures without necessitating a fee increase. Whenever possible, federal funds will be used to support implementation.

Fiscal Year 2017-18 Information Technology Request

Public Health and Environment

Electronic Birth Registration System Replacement

2018-019

PROGRAM PLAN STATUS and OIT BEST PRACTICES

Approved Program Plan? N/A **Date Approved:**

The Colorado Department of Public Health and Environment (CDPHE) says that the project aligns with the strategies and policies of the Governor's Office of Information Technology (OIT).

PRIORITY NUMBERS

Prioritized By	Priority	
DeptInst	2 of 2	
OSPB	NP of 8	Not recommended for funding

PRIOR APPROPRIATION AND REQUEST INFORMATION

Fund Source	Prior Approp.	FY 2017-18	FY 2018-19	Future Requests	Total Cost
CCFE	$0	$1,000,000	$0	$0	$1,000,000
CF	$0	$300,000	$0	$0	$300,000
FF	$0	$200,000	$0	$0	$200,000
Total	$0	**$1,500,000**	$0	$0	$1,500,000

ITEMIZED COST INFORMATION

Cost Item	Prior Approp.	FY 2017-18	FY 2018-19	Future Requests	Total Cost
Land Acquisition	$0	$0	$0	$0	$0
Professional Services	$0	$240,000	$0	$0	$240,000
Construction	$0	$0	$0	$0	$0
Equipment	$0	$0	$0	$0	$0
Miscellaneous	$0	$0	$0	$0	$0
Contingency	$0	$60,000	$0	$0	$60,000
Software Acquisition	$0	$1,200,000	$0	$0	$1,200,000
Total	$0	**$1,500,000**	$0	$0	$1,500,000

PROJECT STATUS

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

PROJECT DESCRIPTION / SCOPE OF WORK

CDPHE is requesting a combination of state funds, cash funds, and federal funds spending authority to implement a new electronic birth registration system. The department plans to purchase an off-the-shelf, web-based product, with support from a third-party vendor. The new system business requirements include:

- a web-based portal for data exchange;
- Health Insurance Portability and Accountability Act (HIPAA) compliant electronic reporting;
- integration with electronic death reporting;
- data quality assurance capabilities;
- data analysis and reporting functionality;

- records retention;
- ability to issue certificates; and
- ability to interact with state and local vital records.

The department plans on issuing a Request for Information (RFI) in early 2017 to gauge the cost and viability of the proposed business requirements. CDHPE will investigate the potential to integrate the new system with existing hospital records, which the department hopes will reduce human error risks, reduce double data entry, and streamline workflows. Additionally, the department will research including additional database components for adoption, paternity, marriage, and divorce data.

PROJECT JUSTIFICATION

The existing Colorado Vital Information System (CORVIS) was implemented in 2007, but still runs on an original 2003 SQL server platform. According to CDPHE, the system is outdated and unable to fulfill the needs of state and local records offices and data providers. The current vendor contract for CORVIS expires in 2019. According to the department, after 2019, the state will continue to pay $184,000 for system maintenance to a vendor for an outdated system that does not meet current needs. The department states it does not have the funding needed to upgrade the current system. Along with the inability to maintain data integrity, the current system prevents integration and does not meet data security standards. CORVIS is the only electronic mechanism for counties to issue birth certificates and needs to be updated for state and local record offices.

PROGRAM INFORMATION AND IMPLEMENTATION PLAN

The department plans to issue an RFI to determine the business requirements for a new vital records system. The department then plans to undergo a request for proposal (RFP) process to find a vendor to develop a secure, web-based system. According to CDPHE, it is looking at potentially linking the system to electronic health records systems in the state. After a vendor is selected, an OIT project manager will be assigned to the project, with the expectation of departmental Executive Governance Committee oversight. An independent verification and validation will be conducted, according to CDPHE.

COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES

CDPHE estimates that the new system will save $64,000 a year in annual maintenance. Additionally, the new system can be installed onto an individual user's computer, saving time for personnel and customers. In 2015, the Vital Records Section introduced large-scale process improvements. The new system will improve work flow.

SECURITY AND BACKUP / DISASTER RECOVERY

The new system complies with OIT information security policies. A new web-based cloud solution will ensure disaster recovery and data protection.

BUSINESS PROCESS ANALYSIS

The department plans on addressing both internal and external stakeholder needs. Addressing these needs will improve the quality of data, make sure that specific workflow processes are working, and better protect the state's data. Additionally, the new system will further departmental goals of promoting programmatic excellence and creating a more efficient and effective experience for departmental customers.

Fiscal Year 2017-18 Information Technology Request

Public Health and Environment

Electronic Birth Registration System Replacement

PROJECT SCHEDULE

	Start Date	Completion Date
RFI/RFP	October 2016	August 2017
System Development	September 2017	September 2018
Data Migration, System Testing, and Training	November 2018	March 2019
Completion		April 2019

OPERATING BUDGET

CDPHE says ongoing operating and maintenance costs will be abosorbed within the department's existing annual operating appropriation.

STAFF QUESTIONS AND ISSUES

1. What research was conducted to arrive at the estimated cost of $1,500,000? Were other states contacted?

Yes, the program contacted other states who recently implemented a new electronic birth registration system, including Alaska and Washington, to get cost estimates. The program also obtained information from the National Association for Public Health Statistics and Information Systems (NAPHSIS), a national organization that represents state vital records programs. The program is in the process of conducting a RFI to get cost estimates and a list of potential vendors that can meet the system business requirements. The RFI should be posted in January 2017 and cost estimates should be available in the spring of 2017.

2. From a cost and time perspective, has CDPHE researched leveraging from any of the other state agencies' EHR efforts, such as adding a system for vital records?

The program is researching the potential to import data from Electronic Health Records (EHRs) for those demographic and medical fields collected in the electronic birth registration system; however, there are several reasons that the EHR platform cannot be used to replace the current electronic birth registration system (EBRS):

1. A hospital's EHR may not be updated with all of the required data at the time of registration. Therefore, birth registrars are often required to access paper records and/or other electronic systems to obtain the data required to register a birth. For example, data includes results from hearing tests, pulse oximetry, the mother's prenatal history, Hepatitis B screenings, and content from paper medical charts that may not have been scanned into a records management system. Some medical information may be entered in the EBRS before it is entered in the hospital's HER, as state statute requires that every birth be registered with the state within 10 days after the child is born.

2. The electronic birth registration system is accessed and updated by county vital records offices throughout the state. County vital records offices do not have access to EHRs.

3. An EBRS has unique requirements that the EHR platform cannot provide. For example, the birth system must have the capability to not only collect data from the hospital, but must also have the capability to do things such as:

- *issue certified documents (birth certificates) with limited fields, which also includes inventory management for the secure certificate paper located in multiple locations throughout the state;*
- *collect and reconcile payment based on certificate and transaction type (birth certificate, adoption record, data modification, etc.);*
- *upload, scan, and flag attached documents: for example, confirm if a document is a driver's license and archive identity documents with the record request to detect potentially fraudulent activity;*

- *modify birth data based on legal records and provide an audit trail for field modifications (name changes, paternity changes, etc.); and*
- *link a person's record to multiple certificate types: for example, an adoptee who has two birth certificates, one with the adopted parents' information, and the other with the biological parents' information.*

Fiscal Year 2017-18 Information Technology Request

Transportation

US 24 Fiber Optic Telecommunications Cable

2018-022

PROGRAM PLAN STATUS and OIT BEST PRACTICES

Approved Program Plan? N/A **Date Approved:**

CDOT believes using available technology to effectively manage and operate the state's roadway system given limited funding for major construction projects is consistent with and aligns with the Governor's Office of Information Technology best practices. OIT will work with CDOT to establish security and connectivity protocols for the installed fiber optic cable. CDOT says it will also complete a program plan review process that will follow CDOT standard practices for capital engineering projects, along with a transportation maintenance system and operational evaluation review.

PRIORITY NUMBERS

Prioritized By	Priority	
DeptInst	1 of 1	
OSPB	NP of 8	Not recommended for funding

PRIOR APPROPRIATION AND REQUEST INFORMATION

Fund Source	Prior Approp.	FY 2017-18	FY 2018-19	Future Requests	Total Cost
CCF	$0	$3,669,675	$0	$0	$3,669,675
Total	$0	**$3,669,675**	$0	$0	$3,669,675

ITEMIZED COST INFORMATION

Cost Item	Prior Approp.	FY 2017-18	FY 2018-19	Future Requests	Total Cost
Land Acquisition	$0	$0	$0	$0	$0
Professional Services	$0	$708,883	$0	$0	$708,883
Construction	$0	$146,140	$0	$0	$146,140
Equipment	$0	$2,639,906	$0	$0	$2,639,906
Miscellaneous	$0	$0	$0	$0	$0
Contingency	$0	$174,746	$0	$0	$174,746
Software Acquisition	$0	$0	$0	$0	$0
Total	$0	**$3,669,675**	$0	$0	$3,669,675

PROJECT STATUS

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

PROJECT DESCRIPTION / SCOPE OF WORK

The Colorado Department of Transportation (CDOT) is requesting state funds to construct 17.4 miles (92,100 linear feet) of fiber optic telecommunications cable along U.S. Highway 24 from Woodland Park to I-25 in Colorado Springs. The project also includes the installation of cameras, switches, and routers. The fiber optic cable will tie into existing road closure gates and cameras along the U.S. 24 corridor, as well as the existing fiber cable along I-25.

PROJECT JUSTIFICATION

CDOT says the project will address limited and inconsistent communication infrastructure that exists along U.S. 24.

Fiscal Year 2017-18 Information Technology Request

Transportation

US 24 Fiber Optic Telecommunications Cable

The project will enhance communications during incident management events (e.g., floods, rockslides, fires, etc.) and will allow CDOT and local emergency response agencies to access live direct camera feeds of the area. The corridor is susceptible to flooding and mud/debris flows, especially following the Waldo Canyon Fire. The project will also improve CDOT's ability to communicate between its divisions and to quickly and effectively warn motorists of hazardous conditions along U.S. 24. It will also help minimize CDOT employee exposure to traffic safety hazards by automating road closure gates.

Project alternatives. CDOT says there are no suitable, comparable, or feasible alternatives to this project due to the local topography and geographic terrain of the area. The corridor has limited cellular phone service in areas that cannot be addressed by adding radio/cellular towers. Without adequate connectivity along the corridor, response time and communication to area residents during times of flash floods, rockslides, and other incidents will continue to be limited.

PROGRAM INFORMATION AND IMPLEMENTATION PLAN

A prior CDOT project installed road closure gates and some cameras along the corridor. Project plans and specifications for the remainder of the project are approximately 80 percent complete. If funding is approved for the project, CDOT would review clearances required under the National Environmental Policy Act, as well as the required right-of-way clearances. CDOT will coordinate the project with local stakeholders including emergency responders, El Paso County, Teller County, Park County, town municipalities, and several divisions within CDOT.

COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES

CDOT says the project will improve emergency responder and CDOT response time to incidents along the corridor. It will also minimize CDOT employee exposure to live traffic and reduce an estimated four hours of maintenance staff time to manually operate road closure gates for each incident. CDOT's cost-benefit analysis of the project is based on national studies for similar fiber optic applications. Citing several national studies, CDOT says similar fiber optic applications have an overall cost-benefit ration of 5:1.

SECURITY AND BACKUP / DISASTER RECOVERY

CDOT says system backups will be in place at its Intelligent Transportation Services (ITS) office through the Colorado Transportation Management Center (CTMC) and the Colorado Springs Traffic Operations Center. The fiber optic cable will be constructed using National Electrical Code guidelines.

BUSINESS PROCESS ANALYSIS

CDOT says the project underwent extensive planning efforts to identify need and purpose. The proposed project allows CDOT to address operational problems identified along the U.S. 24 corridor. CDOT believes the project provides many opportunities for system integration between the CTMC, the Colorado Springs Traffic Management Center, and CDOT Region 2 operations, including improving connectivity, real-time management of ITS infrastructure, traffic operations, and the effective use of CDOT personnel. The project also improves mobility and the response time required to provide information to local residents about incidents along the U.S. 24 corridor.

Fiscal Year 2017-18 Information Technology Request

Transportation

US 24 Fiber Optic Telecommunications Cable

PROJECT SCHEDULE

	Start Date	Completion Date
Design	December 2016	September 2017
Construction	September 2017	July 2018
Equipment	July 2018	November 2018
Occupancy		November 2018

OPERATING BUDGET

This project has no projected impact on state operating costs. CDOT expects annual maintenace will cost $15,000, which can be absorbed into CDOT's current operating budget.

STAFF QUESTIONS AND ISSUES

None.

Fiscal Year 2017-18 Information Technology Request

Pikes Peak Community College

Campus Emergency Notification and Power Systems

2018-018

PROGRAM PLAN STATUS and OIT BEST PRACTICES

Approved Program Plan? Waived **Date Approved:** October 24, 2016

Pikes Peak Community College (PPCC), as part of the Colorado Community College System (CCCS), adheres to the system's IT policies and procedures.

PRIORITY NUMBERS

Prioritized By	Priority	
DeptInst	1 of 1	
CCHE	17 of 32	
OSPB	32 of 47	Not recommended for funding

PRIOR APPROPRIATION AND REQUEST INFORMATION

Fund Source	Prior Approp.	FY 2017-18	FY 2018-19	Future Requests	Total Cost
CCF	$0	$1,653,360	$0	$0	$1,653,360
Total	$0	**$1,653,360**	$0	$0	$1,653,360

ITEMIZED COST INFORMATION

Cost Item	Prior Approp.	FY 2017-18	FY 2018-19	Future Requests	Total Cost
Land Acquisition	$0	$0	$0	$0	$0
Professional Services	$0	$0	$0	$0	$0
Construction	$0	$0	$0	$0	$0
Equipment	$0	$1,653,360	$0	$0	$1,653,360
Miscellaneous	$0	$0	$0	$0	$0
Contingency	$0	$0	$0	$0	$0
Software Acquisition	$0	$0	$0	$0	$0
Total	$0	**$1,653,360**	$0	$0	$1,653,360

PROJECT STATUS

This is a new, never-before requested project.

PROJECT DESCRIPTION / SCOPE OF WORK

PPCC is requesting state funds for campus emergency notification and power systems. PPCC plans to install emergency notification alert speakers, scrolling marquees, and flashers in hallways, open spaces, atriums, and common areas near buildings and parking lots on its three campuses: Rampart Range, Downtown Studio, and Centennial. PPCC states it already alerts personnel and students via voice and text, but wants to expand notification through this project to areas without phone and desktop access. PPCC states that it also plans to install the necessary redundant power infrastructure to support its existing paging equipment and the new paging system requested by under this project. According to PPCC, the project includes replacing the aging generators at the Centennial and Rampart Range campuses to allow for continuity of operations in the event of a power failure. PPCC plans to relocate the undersized generator at its Rampart Range campus to the smaller Downtown Studio campus.

Fiscal Year 2017-18 Information Technology Request

Pikes Peak Community College

Campus Emergency Notification and Power Systems

PROJECT JUSTIFICATION

According to PPCC, the 30-year-old generator at its Centennial Campus has become unreliable, while the generator at its Rampart Range campus is undersized and at capacity. PPCC notes that the Downtown Studio campus has never had a generator. According to PPCC, this project would be difficult to phase over time because of the upfront costs associated with the required equipment. PPCC states that this project will help PPPC further its goals by providing a safe and optimum learning environment for its students, including students with hearing and/or vision impairments.

PROGRAM INFORMATION AND IMPLEMENTATION PLAN

PPCC's IT staff will be responsible for the implementation of the project in close consultation with PPCC's facilities staff and campus police. PPCC states that staff will work closely with vendors and/or contractors to ensure satisfactory installation. PPCC notes that there will be little downtime for end-users.

COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES

PPCC was unable to quantify cost savings or return-on-investment calculations as required by House Bill 15-1266, but states that the project will create a safer environment for students. PPCC notes that new equipment at the Centennial campus will allow the campus to operate fully during a power outage. In the past, the campus was closed during power outages.

SECURITY AND BACKUP / DISASTER RECOVERY

According to PPCC, access to the system via usernames and passwords will only be granted to authorized personnel. PPCC states that the uninterruptible power supply and emergency generator power are critical to security operations. CCCS provides backup security and disaster recovery for PPCC.

BUSINESS PROCESS ANALYSIS

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

PROJECT SCHEDULE

	Start Date	Completion Date
Equipment Installation	August 2017	
Completion		June 2018

OPERATING BUDGET

Operating expenses are paid from institutional sources. PPCC states that it expects minimal increases in its budgeted costs for ongoing maintenance and services as a result of this project.

STAFF QUESTIONS AND ISSUES

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

Pikes Peak Community College does not collect student fees specifically for technology.

2. Currently, how does the PPCC communicate with students, staff, and visitors during an emergency or adverse

event?

Our current system requires a number of different systems to be used on each campus separately, including phone messages, email, and the PA system. The proposed system would consolidate all the different systems in a single one, capable of alerting all PPCC on-campus constituents both audibly and visually.

3. As reference in the narrative, please provide more details on the CCCS-sponsored assessment of PPCC's systems in Spring 2016 that led to this request.

In early 2016, the college conducted an assessment of its emergency preparedness procedures. This assessment identified opportunities for improvement, some of which led to this capital request. For reasons of campus safety, we need to maintain the confidentiality of the supporting documentation as it constitutes specialized details of security arrangements or investigations which are not open records under CRS 24-72-204 (2)(a)(VIII)(A). We hope that the relevant details we have provided in the narrative of the original request provide staff and the Committee with enough details about the justification for the request.

Fiscal Year 2017-18 Information Technology Request

Pueblo Community College

Wireless Networking, Conferencing Solutions, and Related Technologies

PROGRAM PLAN STATUS and OIT BEST PRACTICES

2018-021

Approved Program Plan? Waived **Date Approved:** October 24, 2016

Pueblo Community College (PCC), as part of the Colorado Community College System (CCCS), adheres to the system's IT policies and procedures.

PRIORITY NUMBERS

Prioritized By	Priority	
DeptInst	1 of 1	
CCHE	21 of 32	
OSPB	36 of 47	Not recommended for funding

PRIOR APPROPRIATION AND REQUEST INFORMATION

Fund Source	Prior Approp.	FY 2017-18	FY 2018-19	Future Requests	Total Cost
CCF	$0	$1,280,550	$0	$0	$1,280,550
CF	$0	$426,850	$0	$0	$426,850
Total	$0	**$1,707,400**	$0	$0	$1,707,400

ITEMIZED COST INFORMATION

Cost Item	Prior Approp.	FY 2017-18	FY 2018-19	Future Requests	Total Cost
Land Acquisition	$0	$0	$0	$0	$0
Professional Services	$0	$0	$0	$0	$0
Construction	$0	$0	$0	$0	$0
Equipment	$0	$1,707,400	$0	$0	$1,707,400
Miscellaneous	$0	$0	$0	$0	$0
Contingency	$0	$0	$0	$0	$0
Software Acquisition	$0	$0	$0	$0	$0
Total	$0	**$1,707,400**	$0	$0	$1,707,400

PROJECT STATUS

This is a new, never-before requested project. However, PCC received funding for critical core technology infrastructure upgrades in FY 2016-17.

PROJECT DESCRIPTION / SCOPE OF WORK

PCC is requesting a combination of state funds and cash funds spending authority to upgrade its wireless networking infrastructure, conferencing solutions, and related technologies. Areas of improvement include:

- network wireless solutions;
- conferencing solutions; and
- classroom/administrative computer technology replacement.

According to PCC, upgrades will include both physical systems and associated software. PCC plans to replace and

upgrade the existing, end-of-life wireless systems that have limited to no support from vendors. PCC states that the project includes the upgrade and replacement of 668 administrative computers and 415 instructional computers. According to PCC, the project will allow PCC to supply, support, and meet the collaborative and online learning environment that students require.

PCC currently utilizes classroom-based conferencing solutions for collaborative distance learning. The project would replace older existing conferencing solutions with conferencing that could work with mobile devices, providing better support to and opportunities for distance learning students and staff.

PROJECT JUSTIFICATION

PCC states that the college is working to fund technology upgrades through general and grant funds while also trying to establish a student technology fee. PCC notes that its wireless network cannot keep up with demand due to the proliferation of numerous wireless-connecting devices, such as smart phones and tablets, per student. Limited funding has meant that the college is unable to keep up with growing demands. In addition, PCC's current conferencing solutions are approaching end-of-life support from vendors. According to PCC, current systems will be challenged to offer web-based learning, video conferencing, and collaborative learning technologies to remote students. Remote learning helps both students, faculty, and PCC by saving money on instructional costs. According to PCC, if the project does not move forward the college could see a substantial decrease in the ability to offer and support courses.

PROGRAM INFORMATION AND IMPLEMENTATION PLAN

PCC IT staff will be responsible for the implementation of the project. Systems will be installed on a schedule that minimizes impact to daily operations whenever possible.

COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES

PCC states that it anticipates immediate cost savings due to the installation of equipment that will provide significant performance increases due to faster technology. According to PCC, video conferencing equipment can save PCC $155,000 per year by not having to hire additional faculty for remote campus locations.

Project Alternatives. PCC explored several alternatives to the project. According to PCC, each access point requested in this request costs $1,300 per 12 students while the wired cost for 12 students is $16,800. Additionally, PCC states this one-time investment will help the college dedicate more funding from administrative budgets to technology in the future.

SECURITY AND BACKUP / DISASTER RECOVERY

PCC states that training and knowledge will be in place for PCC's IT staff prior to implementation. According to PCC, it follows CCCS security protocol.

BUSINESS PROCESS ANALYSIS

PCC states that the project will improve performance and reliability of all systems. According to PCC, the reliability and performance upgrades will increase the productivity of staff, faculty, and students.

PROJECT SCHEDULE

	Start Date	Completion Date
Equipment Installation Completion	July 2017	April 2018

Fiscal Year 2017-18 Information Technology Request

Pueblo Community College

Wireless Networking, Conferencing Solutions, and Related Technologies

OPERATING BUDGET

Operating expenses are paid from institutional sources. PCC does note that there could be some additional costs associated with maintenance, software, and licenses that will need to be a part of PCC's IT general fund budget going forward.

STAFF QUESTIONS AND ISSUES

1. When will PCC begin to collecting the proposed student technology fees? If so, why not wait until the implementation of the fee to replace older technology?

The rapid changes in technology warrants a sustainable and continued investment in technology upgrades to ensure that the institution remains competitive and that the teaching and learning environment provide the appropriate tools necessary for the students to be technologically competent upon entering the workforce. The cost to maintain such an environment far outweighs a potential student fee.

As a result, Pueblo Community College is proposing a collaborative effort that includes a combination of student fees and a state capital request. The current college operating budget cannot provide for the college's immediate technology needs. The investment in updating the wireless technology and aging systems is above and beyond all other ongoing daily operational costs. If the proposed fee is approved by students, collection of the fee would not begin until FY18 and the benefits of these funds will not be realized for 3 -4 additional years as the college saves enough to start affording to make capital investments with the revenue. Without the capital investment now, the college will be really far behind the technology curve.

Fiscal Year 2017-18 Information Technology Request

Otero Junior College

Telecommunications Upgrade

2018-017

PROGRAM PLAN STATUS and OIT BEST PRACTICES

Approved Program Plan? Waived **Date Approved:** October 24, 2016

Otero Junior College (OJC), as part of the Colorado Community College System (CCCS), adheres to the system's IT policies and procedures.

PRIORITY NUMBERS

Prioritized By	Priority	
DeptInst	1 of 1	
CCHE	31 of 32	
OSPB	46 of 47	Not recommended for funding

PRIOR APPROPRIATION AND REQUEST INFORMATION

Fund Source	Prior Approp.	FY 2017-18	FY 2018-19	Future Requests	Total Cost
CCF	$0	$507,375	$0	$0	$507,375
Total	$0	**$507,375**	$0	$0	$507,375

ITEMIZED COST INFORMATION

Cost Item	Prior Approp.	FY 2017-18	FY 2018-19	Future Requests	Total Cost
Land Acquisition	$0	$0	$0	$0	$0
Professional Services	$0	$0	$0	$0	$0
Construction	$0	$0	$0	$0	$0
Equipment	$0	$507,375	$0	$0	$507,375
Miscellaneous	$0	$0	$0	$0	$0
Contingency	$0	$0	$0	$0	$0
Software Acquisition	$0	$0	$0	$0	$0
Total	$0	**$507,375**	$0	$0	$507,375

PROJECT STATUS

This is a new, never-before requested project. However, OJC received funding for technology infrastructure upgrades in FY 2016-17.

PROJECT DESCRIPTION / SCOPE OF WORK

OJC is requesting state funds to upgrade its technoloy communication infrastructure. Improvements include:

- replacing all telephone handsets;
- installing telephones in all classrooms;
- adding virtual desk infrastructure and projectors to classrooms; and
- utilizing a digital signage directory system.

According to OJC, the request includes the classroom projectors and minimal digital signage improvements that were not funded in its FY 2016-17 budget request. OJC states that these upgrades will help provide effective campus

communication. According to the OJC, the goal is to provide notification to all students, staff, and visitors of any adverse situations on campus through the availbility of updated telephones in all classrooms and a digital signage system.

PROJECT JUSTIFICATION

According to OJC, the campus' current telephones are seven or more years old and do not support current technologies that support robust campus communications. OJC states that its telephones are unable to take maximum advantage of CCCS' telephone and classroom communication network. OJC plans on installing backup power supply units to allow for uninterupted service during power outages. According to OJC, the classroom projectors and virtual desktop infrastructure will improve instructional goals. OJC notes that all improvements will enhance OJC's ability to inform the campus with fast and accurate information during an emergency situation in order to minimize damage and loss of life.

PROGRAM INFORMATION AND IMPLEMENTATION PLAN

OJC computer center staff will be responsible for the implementation of the project with the support of CCCS IT staff. Systems will be installed on a schedule that minimizes impact to daily operations whenever possible. OJC states that staff will work closely with vendors and/or contractors for consultation and installation support.

COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES

OJC was unable to quantify cost savings or return-on-investment calculations as requested by House Bill 15-1266, but states that the project is an important part of creating a safer environment for the entire campus population during crisis situations.

SECURITY AND BACKUP / DISASTER RECOVERY

OJC states that FY 2015-16 and FY 2016-17 funding allowed OJC to purchase state of the art security and backup equipment. CCCS currently provides backup security and disaster recovery for OJC.

BUSINESS PROCESS ANALYSIS

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

PROJECT SCHEDULE

	Start Date	Completion Date
Equipment Installation	September 2017	
Completion		April 2019

OPERATING BUDGET

Operating expenses are paid from institutional sources. OJC states that operating expense increases will be minimal and covered within OJC's general fund.

Fiscal Year 2017-18 Information Technology Request

Otero Junior College

Telecommunications Upgrade

STAFF QUESTIONS AND ISSUES

1. Currently, how does the OJC communicate with students, staff, and visitors during an emergency or adverse event?

OJC currently communicates with students for immediate notification via personal telephones (both automated audio messages and text messages), e-mail, Facebook, Twitter, local media (radio), as well as video message boards throughout the Campus and direct audio contact with students via face to face meetings in classrooms, dormitories, and public gathering places such as the Student Center and Cafeteria. We believe notification of students, staff, and visitors on the Campus is vital in emergency situations, however, we are unable to control when people notified actually answer/listen to a telephone message, read a text, see a message board, etc. This funding will allow us to expand the effectiveness of the notification systems by providing the College ability to broadcast audio information and instructions throughout the Campus and improving the chance that all people on the College grounds will be notified in a timely fashion of emergency situations and actions to take.

2. 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 OJC 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 CC-C narrative.

A safe and comfortable environment to live, teach, and learn has always been the top priority for Otero Junior College to provide for students, staff, and visitors to our Campus. When health and safety issues are at stake, it becomes impossible to quantify any savings or return on investment. If the College is fortunate enough to be funded to the extent of our request of $507,375, the completion of the project will enable our students to take advantage of learning with the latest technology and our staff will have the ability to teach with improved technology. However, the most important reason the College needs this project is to further ensure the safety and well-being of the students, staff, and visitors to the Campus through more effective communication and direction in the event of a natural disaster such as a tornado or severe snowstorm or some sort of human instigated event that could result in disaster.

3. Please submit a detailed list of proposed expenditures.

- *408 campus telephones handsets for $92,375*
- *digital signage directory system for $200,000*
- *virtual desk infrastructure for $175,000; and*
- *40 classroom projectors for $40,000.*

Fiscal Year 2017-18 Information Technology Request

Lamar Community College

Technology Infrastructure

PROGRAM PLAN STATUS and OIT BEST PRACTICES

2018-016

Approved Program Plan? Waived **Date Approved:** October 24, 2016

Lamar Community College (LCC), as part of the Colorado Community College System (CCCS), adheres to the system's IT policies and procedures.

PRIORITY NUMBERS

Prioritized By	Priority	
DeptInst	1 of 1	
CCHE	32 of 32	
OSPB	47 of 47	Not recommended for funding

PRIOR APPROPRIATION AND REQUEST INFORMATION

Fund Source	Prior Approp.	FY 2017-18	FY 2018-19	Future Requests	Total Cost
CCF	$0	$651,704	$0	$0	$651,704
Total	$0	**$651,704**	$0	$0	$651,704

ITEMIZED COST INFORMATION

Cost Item	Prior Approp.	FY 2017-18	FY 2018-19	Future Requests	Total Cost
Land Acquisition	$0	$0	$0	$0	$0
Professional Services	$0	$0	$0	$0	$0
Construction	$0	$0	$0	$0	$0
Equipment	$0	$651,704	$0	$0	$651,704
Miscellaneous	$0	$0	$0	$0	$0
Contingency	$0	$0	$0	$0	$0
Software Acquisition	$0	$0	$0	$0	$0
Total	$0	**$651,704**	$0	$0	$651,704

PROJECT STATUS

This is a new, never-before requested project. However, LCC received funding for technology infrastructure upgrades in FY 2016-17.

PROJECT DESCRIPTION / SCOPE OF WORK

LCC is requesting state funds to upgrade its technology infrastructure. Areas of improvement include:

- instructional technology;
- office and classroom computer equipment;
- servers;
- internet protocol (IP) telephony devices; and
- digital signage for centralized messaging.

According to LCC, the request includes items that were not funded in its FY 2016-17 budget request. LCC states that

these upgrades will improve the quality of student education, productivity, data availability, and campus communications and safety.

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 notes that much of the equipment will be reaching the end of vendor support within 18 months. LCC states that many of its computer systems are obsolete and performing poorly for today's 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 during emergencies or crisis situations. According to LCC, new digital signage that can display information and campus messages would be expanded to all buildings on campus, as part of this request.

Although LCC does not charge student technology fees, LCC received federal funding to purchase some classroom technology and computers for applicable career and technical education programs. According to LCC, the federal funding allowed LCC to reduce requested funding for this project.

PROGRAM INFORMATION AND IMPLEMENTATION PLAN

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

COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES

LCC was unable to quantify cost savings or return-on-investment calculations, as required by House Bill 15-1266, but states that the project is an important part of creating a more safe and educational environment for students. LCC notes that technology and innovation will help the college retain and graduate students.

SECURITY AND BACKUP / DISASTER RECOVERY

LCC states that the funding received in FY 2016-17 allowed investment in switches and wireless network infrastructure that improved the overall network. CCCS currently provides backup, security, and disaster recovery for LCC.

BUSINESS PROCESS ANALYSIS

LCC states this project will help IT staff realize greater efficiencies and effectiveness of existing operational process through tools that allow for increased automation and availability of data access, management, and recovery.

PROJECT SCHEDULE

	Start Date	Completion Date
Equipment Installation	August 2017	June 2018
Completion		June 2018

Fiscal Year 2017-18 Information Technology Request

Lamar Community College

Technology Infrastructure

OPERATING BUDGET

Operating expenses are paid from institutional sources. LCC does note that there could be some additional costs associated with maintenance, software, and licenses that will need to be a part of LCC's IT general fund budget.

STAFF QUESTIONS AND ISSUES

1. As noted in the narrative, please submit a detailed list of proposed expenditures.

Classroom Technology (including projectors, screens, audio/visual, cabling/connectivity, computers desk/lecterns):

- *25 for $225,774*

Computer Systems:

- *244 computers for $239,705*
- *130 monitors for $31,005*

Servers:

- *3 for $48,028*

Campus Communications:

- *180 IP telephony devices for $54, 508*
- *1 digital signage system for $46,426*
- *6 battery backups for $6,258*

Total Funding Requested: $651,704

2. 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 LCC 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 CC-C narrative.

Based on the nature of the request, it is difficult to specifically quantify a true cost benefit analysis. However, it is evident that technology and innovation are very important to our incoming students, both traditional age and adult. As a college, we need to be able to offer a quality product and effective learning environment with the technology focused backbone that students need and desire—which will not only help attract new students but also help retain and graduate students, a key goal of the state's master plan and of the college's strategic plan. In addition to students, this is very important in the recruitment and retention of faculty and staff.

Fiscal Year 2017-18 Information Technology Request

Colorado State University — Pueblo

Campus IT Upgrades

PROGRAM PLAN STATUS and OIT BEST PRACTICES

2018-014

Approved Program Plan? Yes **Date Approved:** October 29, 2015

The university says the project aligns with the strategies and policies of the Governor's Office of Information Technology (OIT). The project also aligns with OIT's and Secure Colorado's strategic plans. CSU-Pueblo is dedicated to working with OIT to make sure its campus IT policies align with those of OIT.

PRIORITY NUMBERS

Prioritized By	Priority	
DeptInst	1 of 1	
CCHE	18 of 32	
OSPB	33 of 47	Not recommended for funding

PRIOR APPROPRIATION AND REQUEST INFORMATION

Fund Source	Prior Approp.	FY 2017-18	FY 2018-19	Future Requests	Total Cost
CCF	$0	$817,823	$0	$0	$817,823
Total	$0	**$817,823**	$0	$0	$817,823

ITEMIZED COST INFORMATION

Cost Item	Prior Approp.	FY 2017-18	FY 2018-19	Future Requests	Total Cost
Land Acquisition	$0	$0	$0	$0	$0
Professional Services	$0	$90,000	$0	$0	$90,000
Construction	$0	$653,475	$0	$0	$653,475
Equipment	$0	$0	$0	$0	$0
Miscellaneous	$0	$0	$0	$0	$0
Contingency	$0	$74,348	$0	$0	$74,348
Software Acquisition	$0	$0	$0	$0	$0
Total	$0	**$817,823**	$0	$0	$817,823

PROJECT STATUS

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

PROJECT DESCRIPTION / SCOPE OF WORK

Colorado State University (CSU) – Pueblo is requesting state funds to upgrade data center infrastructure in the Administration Building, as well as door access technology for sensitive data center areas on campus.

CSU-Pueblo received state funding for a new modular data center in FY 2015-16 to replace the existing data center. This project will upgrade the existing data center to serve as a secondary back-up, fail-over data center once the new primary modular data center is completed. Specifically, the data center upgrades include:

- an electrical transfer switch (maintenance bypass) for the uninterruptible power supply (UPS) battery system;
- a new air cooling system; and

- a new false floor.

The project also installs a separate door access control system for sensitive data center areas on campus, independent of the centralized door access system. Specifically, the new system includes four new door locking mechanisms controlled by a proximity card access system, access control, and auditing software, and a set of programmable access cards.

PROJECT JUSTIFICATION

According to CSU-Pueblo, once the new modular data center is complete, a secondary fail-over data center is necessary for disaster recovery and redundancy. Without a backup data center, equipment failures can lead to extended IT system outages on campus. For example, an extended outage during finals in spring 2012 resulted in the complete loss of campus computing capabilities for seven days, causing significant disruptions to campus operations. Additionally, both university and third-party audits by IT specialists have noted the lack of adequate backup IT infrastructure on campus.

The university says an adequate backup data center can be provided by rehabilitating the existing data center on campus. The electrical transfer switch is necessary in order to take batteries off-line for required maintenance. The existing air cooling system for the data center is aging and needs to be replaced. During warm months, temperatures frequently reach critical levels, increasing the risk of system outages. Finally, the existing false floor in the data center was installed in the 1960s. The substructure has degraded over time, presents a safety hazard for staff, and is in need of replacement. These upgrades will allow the university to provide a redundant, mirror-image facility of the new primary modular data center in a geographically different location on campus, allowing the university to provide continuous IT services in the case of a system failure.

Finally, the current door access system is not adequate for the campus data center areas, says the university. The new door control system is necessary to comply with critical IT security controls and to adhere to campus IT security policies.

Project alternatives. The university also considered moving or mirroring critical campus systems to offsite "cloud" providers. While the campus is moving non-essential computing activities to cloud-based solutions, it says a high percentage of sensitive critical systems cannot become cloud-based due to their design.

PROGRAM INFORMATION AND IMPLEMENTATION PLAN

The university plans to hire an architect to work with a data center design firm on the project. The project will include all design, construction, mechanical, electrical, flooring, and any permits required for completion.

COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES

The university says the existing data center already has key infrastructure components that do not require additional investment. Since key critical systems are currently functioning, the university says upgrading the existing data center is the most feasible option and provides significant cost savings compared to building another new facility. Furthermore, the upgrades to the existing data center will decrease the risk of network outages, prolong equipment life, and provide real-time backup and robust disaster recovery.

SECURITY AND BACKUP / DISASTER RECOVERY

The project will provide a redundant data center that will improve security, backup, and disaster recover for the university's IT systems.

BUSINESS PROCESS ANALYSIS

To develop this request, the university evaluated potential IT projects for their greatest impact on IT infrastructure, including prolonged business outages or loss of system use; monetary losses due to failure, data breaches, or other

factors; and strategic goals set forth by the state, the campus, the CSU System, OIT, and the Department of Higher Education.

PROJECT SCHEDULE

	Start Date	Completion Date
Design	July 2017	December 2017
Construction	January 2018	August 2018
Equipment	January 2018	August 2018
Occupancy		August 2018

OPERATING BUDGET

Operating expenses are paid from institutional sources. The university anticipates a decrease in operating costs due to the efficiency of the new cooling system and other equipment in the data center.

STAFF QUESTIONS AND ISSUES

All responses to staff questions were incorporated into the project write-up.

Fiscal Year 2017-18 Information Technology Request

Western State Colorado University

Redundant Network Connection

PROGRAM PLAN STATUS and OIT BEST PRACTICES

2018-023

Approved Program Plan? Yes **Date Approved:** August 24, 2016

Western State Colorado University (WSCU) believes this project is in alignment with OIT's ongoing broadband initiatives and the OIT-led FirstNet project.

PRIORITY NUMBERS

Prioritized By	Priority	
DeptInst	1 of 1	
CCHE	11 of 32	
OSPB	27 of 47	Not recommended for funding

PRIOR APPROPRIATION AND REQUEST INFORMATION

Fund Source	Prior Approp.	FY 2017-18	FY 2018-19	Future Requests	Total Cost
CCFE	$0	$13,410,051	$0	$0	$13,410,051
CF	$0	$225,000	$0	$0	$225,000
Total	$0	**$13,635,051**	$0	$0	$13,635,051

ITEMIZED COST INFORMATION

Cost Item	Prior Approp.	FY 2017-18	FY 2018-19	Future Requests	Total Cost
Land Acquisition	$0	$0	$0	$0	$0
Professional Services	$0	$1,225,000	$0	$0	$1,225,000
Construction	$0	$9,676,757	$0	$0	$9,676,757
Equipment	$0	$2,084,006	$0	$0	$2,084,006
Miscellaneous	$0	$0	$0	$0	$0
Contingency	$0	$649,288	$0	$0	$649,288
Software Acquisition	$0	$0	$0	$0	$0
Total	$0	**$13,635,051**	$0	$0	$13,635,051

PROJECT STATUS

This a new, never-before requested project.

PROJECT DESCRIPTION / SCOPE OF WORK

WSCU is requesting a combination of state funds and cash fund spending authority to construct a redundant, high capacity, independent fiber-optic network connection for the WSCU and the Gunnison Valley. The fiber optic cable would originate on or near campus and progress eastward, where the cable would connect with exisiting fiber installation. The proposed route is 60 miles from Gunnison to the Poncha Springs/Salida area via U.S. Highway 50. According to WSCU, the project builds on existing IT infrastructure by providing additional links and connections to the exisiting fiber network. Users of the network include local governments, public safety communication agencies, school districts, hospitals, and WSCU.

Fiscal Year 2017-18 Information Technology Request

Western State Colorado University

Redundant Network Connection

PROJECT JUSTIFICATION

This project would create a second, redundant fiber optic network in the Gunnison Valley. WSCU and the Gunnison Valley are currently served by a single fiber optic connection running west along U.S. Highway 50 to Montrose. This leaves the area susceptible to outages. In June 2016, the cable was severed by construction crews. WSCU and Gunnison Valley experienced a seven hour outage of no landline, Internet, or cellular service. According to WSCU, this outage was an issue of life and safety as 911 services were curtailed, the hospital emergency room was unable to perform at full capacity, and other related services experienced downtime. WSCU states that the addition of a second line running east would create network redundancy and decrease the chances of a disruption of public safety and broadband services. By connecting the new fiber to an already existing installation, the project could be used as a redundant connection for local governments, hospitals, public safety operations, and internet service providers (ISPs). The project could potentially provide network redundancy for all users of local ISPs.

In addition, WSCU suffers from internet outages when ISPs experience technical or equipment failures. According to the WSCU, these outages impact instruction, distance learning, student life, and day-to-day operations of WSCU. WSCU says the new fiber optic cable would create greater redundancy in the network and, with more reliable service, allow WSCU to take advantage of cloud services, expand distance learning programs, and possibly lower the cost of internet service.

Finally, according to WSCU, the new connection furthers the broadband goals and economic development plans of the region and Colorado. WSCU states that access to abundant, inexpensive, and reliable internet service is vital to the safety, economy, and the continued success of WSCU and Gunnison Valley.

PROGRAM INFORMATION AND IMPLEMENTATION PLAN

WSCU states it would hire a private firm to assist with the planning, design, engineering, and development of the project. According to WSCU, the project will begin upon appropriation. The expected duration of the project is two years.

COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES

WSCU was unable to quantify cost savings as required under House Bill 15-1266. WSCU states that the project will provide cost savings through ensuring public safety, preventing economic loss, promoting economic growth, providing competition to the broadband market, and reducing WSCU productivity loss.

SECURITY AND BACKUP / DISASTER RECOVERY

According to WSCU, the project is not expected to have a direct impact on data protection and disaster recovery. WSCU will continue to protect data using its firewalls, network access control devices, and through network design. WSCU notes that project may make an off-site recovery site or backup repository more feasible.

BUSINESS PROCESS ANALYSIS

WSCU states the project will provide the necessary redundancy to improve operations of the WSCU and fiber users in the surrounding area. WSCU will also aggressively pursue cloud-based resources for its faculty, staff, and students.

Fiscal Year 2017-18 Information Technology Request

Western State Colorado University

Redundant Network Connection

PROJECT SCHEDULE

	Start Date	Completion Date
Design and Permitting	July 2017	April 2019
Construction	April 2019	July 2019
Completion		July 2019

OPERATING BUDGET

Operating expenses are paid by institutional sources. According to WSCU, it aims to help pay for the annual maintenance costs of the new cable by selling and/or leasing indefeasible rights of use. However, WSCU states that it is still unknown how maintenance costs may impact the operating budget.

STAFF QUESTIONS AND ISSUES

See Attachment A.

1. Please give an update on any additional matching funding from local government entities.

   The University is continuing conversations with the following local entities: City of Gunnison, Gunnison County, Crested Butte Town Council, Mt. Crested Butte Town Council, Gunnison Valley Health and Gunnison RE1J School District. While we have not secured any formal commitments to date, some of these entities have verbally committed to some form of cash match. We expect to solidify these amounts by the end of the calendar year.

2. Does the University have student technology fees? If so, will those funds be used for this project?

   Yes, the University has a student technology fee. No, the fee does not have any excess funds available and will not be used for this project. The fee supports student computing labs on campus and only generates enough revenue to offset the costs of operating these labs.

3. Why is the University requesting this project instead of an executive agency such as CDOT or OIT?

   We cannot speak directly for CDOT or OIT, but after conversing with representatives of both agencies, it is a matter of mission, priority, timing and exigency.

   CDOT is charged with managing roadways and transportation and has an interest in using technology to assist in delivering on that mission. They have identified this proposed segment of fiber in their long-term planning and they may well make this proposal in the future. However, it is currently a lower priority behind projects along I-70 and other more actively used roadways. CDOT has stated they would welcome the opportunity to partner with Western if this project gets funded, and they may adjust their priorities if this segment were funded.

   Western's mission is to provide contemporary, high quality Bachelor's and Masters' degrees as efficiently as possible. Our priority is to deliver a safe and effective learning and living environment for our students, faculty and staff and contribute to our community's economic and civic well-being. Our stakeholders are the most affected, the ones put at risk, the ones whose educations are interrupted, because we are unable to provide the uninterrupted service that most of the state and all other four-year Universities are able to provide. Thus, we are the originators of this request.

   We have, and will continue to reach out to OIT and CDOT as we feel they are our best long-term partners on this project. CDOT has agreements in place with other institutions of higher education (e.g. CSU-Pueblo, Colorado School of Mines, CSU-Fort Collins) to advance educational data and communication networks.

4. Has the University explored any grant funding for this project?

   Western has not made any other grant requests for this project. We are participating in the DOLA grant obtained by Region 10 (see Region 10 Broadband Blueprint). We considered including a solution for redundancy in that grant. However, the DOLA grant

requires 100% matching funds, and the approximately $6.75 million match that would have been required is outside the reach of all the grant participants combined and was thus not included.

5. Please give an update on whether the University could use the Western Area Power Administration's fiber network.

   In mid-September the University submitted a joint request along with the Gunnison County Commissioners and Region 10 to Western Area Power Administration (WAPA) CEO Mark Gabriel formally asking for use of existing fiber resources on transmission lines to connect Gunnison to Montrose and Gunnison to Colorado Springs. On October 19th, WAPA senior Vice President Bradley Warren replied they would be able to provide two fibers along those routes if we were able to satisfy a number of conditions (letter attached).

   While WAPA's willingness is encouraging, the conditions stated are substantive. The most difficult condition is all existing landowner easements along these routes must be perfected to allow for the new (commercial) use of the fiber. The Montrose to Gunnison segment has approximately 110 landowners, Gunnison to Colorado Springs 230 landowners. The perfection process for the Gunnison to Montrose route alone is estimated to take two years, with no guarantee of success if not all landowners agree. All costs and time involved in the perfection would have to be borne by the University, County or Region 10. Also, they are only willing to enter into a 10-year IRU, rather than the typical 20 or 30 year relationship. If, after 10 years, WAPA no longer wishes to participate, we would find ourselves where we are now.

   We are continuing to work with WAPA to try and negotiate conditions more favorable to a long-term solution as well as vigorously investigating the implications and potential cost of meeting all of the stated conditions to determine if this an appropriate option for the University to pursue.

6. Will the University be requesting additional funding for cloud service if this project is approved?

   No.

7. Will any federal permitting be required for this project?

   Yes. Permits would need to be obtained from the US Forest Service.

8. Please provide a map of existing fiber networks in the Gunnison Valley and the proposed route for the new fiber.

   The Gunnison Valley generally includes the towns of Gunnison, Crested Butte, Mt. Crested Butte and several other smaller communities.

   Figure 1 *shows the publicly-owned fiber infrastructure in the town of Gunnison. Green is existing, purple is planned in the Region 10 project (engineering in progress) and blue is a schematic representation of CenturyLink-owned fiber. The new proposed segment is shown in red. (Not shown is the extensive fiber system on the Western campus, which interconnects all buildings.) There is a great deal of privately owned fiber in Gunnison, but we do not have access to that information.*

We do not have current maps for the town of Crested Butte and Mt. Crested Butte. These municipalities are connected to Gunnison via privately-owned fiber (CenturyLink and Time Warner) and have limited public fiber infrastructure. The ongoing Region 10 project includes constructing fiber links between many of the community anchor institutions (e.g. city hall, library, police department) to create a network similar to that which exists in Gunnison.

Figure 2 *shows the entire route from Gunnison to Poncha Springs, CO.*

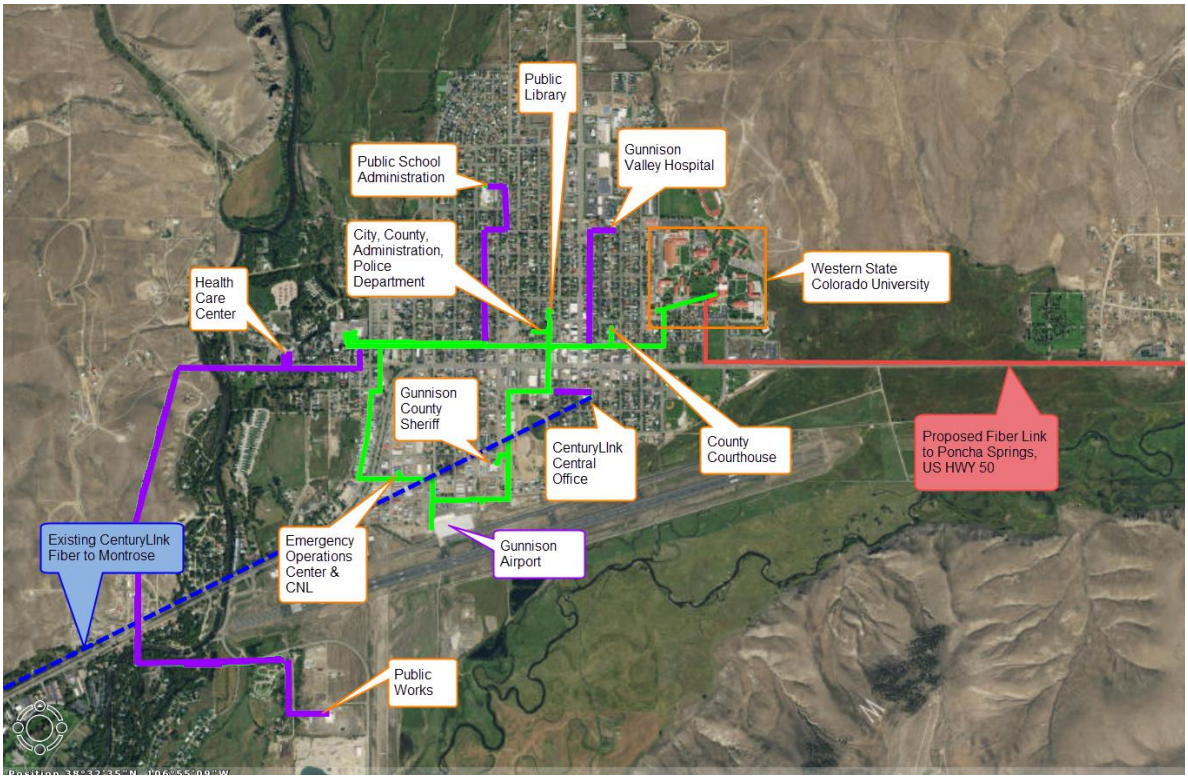

Figure 1. Publicly owned fiber infrastructure in the town of Gunnison. The proposed new segment is in red.

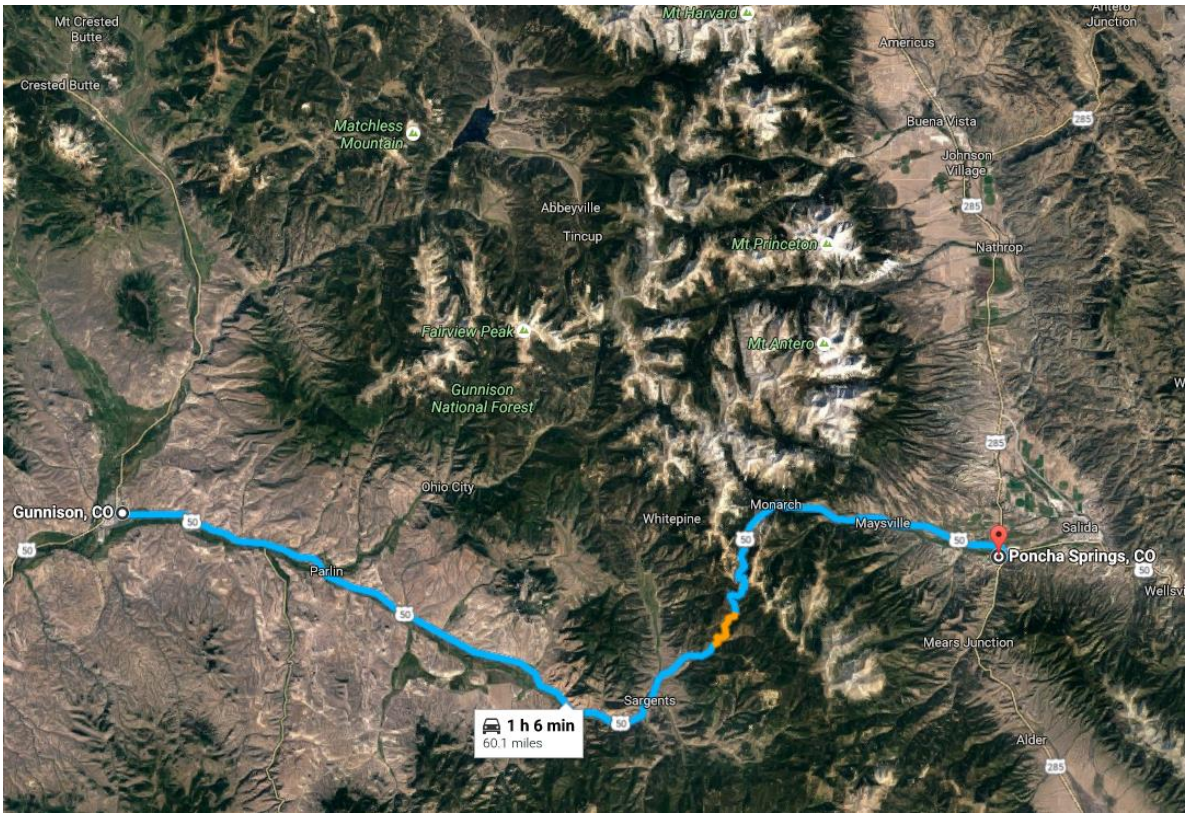

Figure 2. Complete route of proposed fiber build, Gunnison to Poncha Springs.

9. Do any other universities or colleges in Colorado own fiber infrastructure

Yes, Ft. Lewis College co-owns a small segment of fiber with the City of Durango. The Colorado School of Mines and Colorado State University – Fort Collins both have purchased indefeasible rights of use (IRU) from fiber infrastructure owners for off-campus fiber assets.