Fiscal Year 2019-20 Information Technology Request

Governor

Health IT Roadmap Initiatives

PRIORITY NUMBERS

Prioritized By	Priority		
DeptInst	1	of	1
OSPB	4	of	8

PRIOR APPROPRIATION AND REQUEST INFORMATION

Fund Source	Prior Approp.	FY 2019-20	FY 2020-21	Future Requests	Total Cost
CCF	$1,875,500	$1,150,833	$445,000	$0	$3,471,333
FF	$4,729,500	$10,357,500	$4,005,000	$0	$19,092,000
Total	$6,605,000	**$11,508,333**	$4,450,000	$0	$22,563,333

ITEMIZED COST INFORMATION

Cost Item	Prior Approp.	FY 2019-20	FY 2020-21	Future Requests	Total Cost
Land Acquisition	$0	$0	$0	$0	$0
Professional Services	$6,605,000	$11,508,333	$4,450,000	$0	$22,563,333
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	$6,605,000	**$11,508,333**	$4,450,000	$0	$22,563,333

PROJECT STATUS

This is a continuation project.

PROJECT DESCRIPTION / SCOPE OF WORK

The Governor's Office of eHealth Innovation (OeHI) and the Colorado Department of Health Care Policy and Financing (HCPF) are requesting a combination of state funds and federal funds spending authority for the second phase of a three-phase project to implement nine initiatives in the Colorado's Health IT Roadmap to support health delivery reform, payment reform, improve care coordination, reduce costs, and ultimately improve health care value. OeHI says that most of the initiatives will build upon the current health information infrastructure to broadly share health information regardless of location, insurer, or system; thereby, improving health care delivery and payment models. The nine initiatives in the budget request are:

1. Reporting tools and registry for clinical quality measures (eCQMs tools). According to the Centers of Medicare & Medicaid Services (CMS) website, clinical quality measures (CQMs) help measure and track the quality of health care services that providers report in order to participate in incentive programs. The *eCQM Tools* initiative will expand health IT infrastructure for health providers improving the capture, aggregation, and creation of multiple eCQM reporting data as specified in requirements from the state, federal programs, and various commercial payers.

2. Master data management. This initiative will improve coordination of health care services by identifying Coloradans across multiple health care provider systems by implementing: (a) a master person index *(MPI)* that identifies a person across multiple systems and points of care; and (b) a master provider directory *(MPD)* that

identifies a health care provider, its affiliations, and patient relationships across health care systems.

3. *Automated and integrated consent.* The two Colorado Health Information Exchanges (HIEs), Colorado Regional Health Information Organization (CORHIO) and Quality Health Network (QHN), have completed pilot projects through the Office of National Coordinator's Advanced Interoperability Initiative grant to share behavioral health and substance use clinical data using automated and integrated patient consents between providers. This initiative will expand the pilots to a statewide consent framework that provides individuals an opportunity to consent online, or opt-out of sharing health information with certain providers; thereby, reducing variations in privacy laws interpretation, and inconsistent patient consent procedures among providers.

4. *Colorado Consumer Portal for Health (Consumer Portal).* OeHI says this initiative will provide Coloradans with accurate health plan and health provider costs and quality information through an online consumer portal. The consumer portal starts with alignment and coordination with existing assets, and then connects consumers to self-service, interactive resources, and empowers consumers to make informed decisions about cost, quality, and service.

5. *Advancing Colorado's state HIE infrastructure.* Colorado has two HIEs: (1) CORHIO serves the front range, southern Colorado, and the eastern plains, and (2) QHN serves the western slope. This initiative: (a) supports value-based payment models; (b) produces population-level analytics; and (c) provides centralized clearinghouse functions, such as automated patient consents, quality measurement, advanced directives, and information about clinical trials in new delivery models, including coordinating clinical information with other states.

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

7. *Health IT Portfolio and Program Management Office (PMO).* Colorado has more than 90 health IT or HIE projects. OeHI and the Colorado State Innovation Model (SIM) are working with OIT to create a Health IT PMO to focus on the Roadmap and ensure the state's health IT projects are following best practices, incorporating health data standards, following technical and security standards, and are aligned with the state's vision, infrastructure, and architecture.

8. *Data governance tools and processes.* OeHI says the goals of this initiative include: (1) reducing operational costs; (2) mitigating data privacy and security risks; and (3) improving consumer confidence. OeHI explains the initiative will implement data governance to improve data sharing, analytics, and care coordination by supporting data accuracy and the evolution of new payment models.

9. *Systems integrator.* OeHI says the systems integrator is a subject matter expert and consultant who provides guidance on infrastructure, architecture, and data integration between health care systems, along with ensuring connections between systems, promoting efficient systems architecture, and cost-effective operations that are configurable, modular, and scalable.

Federal match. The *Consumer Portal* initiative is 100 percent state funded. For the remaining eight initiatives, OeHI expects a 90 percent federal match as set forth in the Medicaid administrative funding.

PROJECT JUSTIFICATION

OeHI says that federal funding to build and improve Colorado's health IT and HIE infrastructure is available through September 30, 2021. The department says that without state support, Colorado could fall behind in the necessary infrastructure to improve health care delivery. For example, OeHI explains that the *eCQM tools* initiative will help providers automate the collection of clinical quality measures that are required or requested by Medicare, Medicaid, or commercial payers. The deliverable from this initiative will provide new tools and systems that will assist Colorado providers with value-based care since these measures are also used in the calculation of value-based payments. OeHI lists the following risks if Colorado providers are not successful with adapting payment reform: (1) potentially lose providers, including providers servicing rural areas; (2) continue to experience costly, volume-based payments models; (3) not fully achieve quality care; and (4) not achieve Colorado's *Triple Aim* health care goal: Best Care, Best Health, and Best Value. Finally, OeHI says that the *Consumer Portal* empowers Coloradans with health plan,

provider cost, and quality information online; thereby, promoting patient engagement, consumer health literacy, transparency, and increasing market competition.

OeHI says that leveraging HIEs can reduce cost and improve quality of care by reducing medical errors, readmission rates, and redundant tests. OeHI says that the initiatives included in the budget request will enhance health provider notifications and the information shared to further improve care and reduce costs. OeHI further explains HIE information is a key data source for actionable data for the Medicaid program; however, some claims data is still not timely. The department provides specific examples, such as more complete claims data for some members would help reduce duplication of services, and Medicaid could use the data to identify a member's prior primary care physician even if a member's insurance changes.

OeHI further explains that better use of the information from HIEs would lessen some current data issues and support regional health care efforts. OeHI explains that the amount of information received from HIEs is too large to make actionable decisions. OeHI says that the initiatives will help refine the amount and type of HIE data disseminated to regional organizations.

PROGRAM INFORMATION AND IMPLEMENTATION PLAN

Program information. The roadmap was finalized November 2017. In October 2015, the Office of eHealth Innovation (OeHI) was established through executive order. The same executive order established the eHealth Commission to provide advice and guidance to OeHI. OeHI partners with Mosaica Partners to assist in the roadmap's development.

Implementation plan. The nine initiatives include implementing new systems, leveraging existing systems, and employing term-limited subject matter experts in order to achieve Colorado's health care goals. OeHI says that the implementation plans for the initiatives were developed by OeHI, in collaboration with the Colorado State Innovation Model (SIM), OIT, the Health IT PMO, and governed by the eHealth Commission. Also, OeHI says that for the *Health IT Portfolio and PMO* initiative, it plans to work with the OIT project management office. OeHI explains that an OIT program manager currently coordinates multiple electronic health record and HIE projects. OeHI plans to contract additional OIT program and project managers, along with external project managers as required given the level of project complexity and skill set needed.

OeHI says that Mosiaca Partners was engaged November 7, 2018, to assist with high-level planning for the *Consumer Portal* initiative. OeHI explains that it has experienced some delays with this effort due to delays in funding. OeHI also says that the *eCQM tools* initiative preceded development of the roadmap and is currently being implemented with Colorado SIM funding. This budget request expands SIM's approach to additional health providers that serve Medicaid patients, and then to all interested payers, providers, and patients.

COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES

OeHI says that it will first focus on Medicaid populations and then expand the initiatives' scope statewide. OeHI explains that it is partnering with HCPF to further refine how HIEs are leveraged by Medicaid administrators and health providers to provide better care at a lower cost. OeHI explains that the Colorado SIM says that it has identified that 50 percent of physician practices are connected to a HIE, and opportunities exist to connect other practices and clinicians. OeHI says that many health providers, health systems, and insurance payers have implemented health IT systems that are not integrated with the HIEs, which creates silos of health information. However, HIE organizations, such as CORHIO and QHN, connect data silos to provide holistic patient data for health providers. OeHI says that the HIEs are evolving, and are now being used for Medicare and Medicaid's required value-based payment programs.

SECURITY AND BACKUP / DISASTER RECOVERY

Many of the initiatives streamline and provide access to protected health information and confidential data. The deliverables from some of the initiatives will provide data access for different types of users, such as clinicians and health providers that may have offices in more than one state; thereby, requiring that systems comply with federal laws and possibly multiple state laws. OeHI explains that privacy and security requirements are included in the roadmap. Additionally, OeHI says it plans to work closely with OIT's Chief Information Security Office and security

professionals employed at most major health organizations and hospitals. OeHI says initiative projects will follow OIT's project guidelines, which include a risk assessment, disaster recovery plan, and authorization to operate.

BUSINESS PROCESS ANALYSIS

Business process analysis. OeHI provided market research that indicates that other states that pursued the same health care goals realized significant returns. OeHI summarizes the health care value propositions as:

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

PROJECT SCHEDULE

	Start Date	Completion Date
Consumer Portal Initiative	August 2018	January 1, 2019
Vendor Kick-Off	November 2018	November 1, 2018
High-Level Planning	November 2018	May 1, 2019
Advancing Colorado's HIE Infrastructure	TBD	September 1, 2021
Systems Integrator Initiative	TBD	September 1, 2021

OPERATING BUDGET

OeHI says it has a corresponding FY 2019-20 operating budget request for a 50/50 percent state/federal match. The FY 2019-20 operating budget request has two components: (1) establish OeHI office; and (2) operating funds to support the capital initiatives.

Governor's Office of eHealth Innovation (OeHI) and
Colorado Department of Health Care Policy and Financing (HCPF)
Colorado Health IT Roadmap

Joint Technology Committee Staff Questions

The following questions reference Colorado's Health IT Roadmap, and the FY 2018-19, and FY 2019-20 OeHI capital construction budget requests.

1. Colorado's Health IT Roadmap (Roadmap) says that OeHI was established by an executive order in October 2015. The same executive order established the eHealth Commission to provide guidance to OeHI on advancing health IT in Colorado by supporting the implementation of the state's health IT strategy and interoperability objectives, including setting goals for health IT programs, and creating a process for developing common policies and technical solutions.

   Please provide an updated member list of the eHealth Commission.

   Michelle Mills, Chair (CEO, Colorado Rural Health Center)
   Marc Lassaux, Co-Chair (Chief Technology Officer, Quality Health Network)
   Jason Greer, Co-Chair (Executive Director, Colorado Community Managed Care Network)
   Dr. Ann Boyer, Chief Medical Information Officer, Denver Health
   Adam Brown, Strategy and Program Development Director, Anthem
   Jon Gottsegen, Chief Data Officer, Office of Information Technology, State of Colorado
   Morgan Honea, CEO, Colorado Regional Health Information Organization (CORHIO)
   Mary Anne Leach, Director, Office of eHealth Innovation, State of Colorado
   Dana Moore, Chief Information Officer, Children's Hospital Colorado
   Sarah Nelson, Information Technology Director, Colorado Department of Human Services
   Chris Underwood, Director, Health Information Office, Health Care Policy and Financing,
   Chris Wells, Director, Center for Health and Environment Data, Colorado Department of Public Health and Environment
   Dr. Justin Wheeler, Vice President of Clinical Services, Clinical Family Health
   Wes Williams, Chief Information Officer, Mental Health Center of Denver
   Tania Ziegler, Digital Strategy Director, Kaiser Permanente

2. The Roadmap explains that the state used a structured, evidence-based methodology, developed by Mosaica Partners, a nationally recognized health information strategy and exchange consulting firm, to guide the Roadmap development. According to the Mosaica Partners website, www.mosaicapartners.com, Mosaica's projects also include the: (1) Vermont Health Information Technology Plan; and (2) Arizona Health IT Roadmap 2.0.

   Please provide a short description of Mosaica Partners, and its current relationship with the nine IT capital construction initiatives. If applicable, please include the status of both Vermont's and Arizona's efforts, and if Colorado is able to leverage any of the technology from these efforts.

   Mosiaca Partners is a consulting firm specializing in state health IT planning, and health information exchange (HIE) consulting. Their only current relationship to the nine capital construction initiatives, is a $150,000 purchase order (recently signed) to assist in leveraging their unique methodology in identifying needs, objectives, and recommendations relative to the Consumer Engagement initiative. This work begins in late November 2018 and will likely conclude within six (6) months, with requirements and specifications for creating consumer health information resource/s for Coloradans.

   Each state's Roadmaps (Colorado's, Arizona's, and Vermont's) are unique to their state, and the technology and data assets already in place. As such, we're not able to immediately leverage work product from these other states; Arizona currently seems to be making more progress than Vermont (where they seemed to be challenged with organization and

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Joint Technology Committee Staff Questions

governance). We are in contact with multiple states where we can leverage progress they have made with similar challenges; California and Michigan, for instance, have made progress in the person-identity-management domain. We remain open to leveraging, borrowing, and sharing whatever we can from other states.

3. The Roadmap lists several health care objectives related to data, such as governance, analytics, integration, security, availability, and improving efficiency. If applicable, briefly describe any high probability risks regarding Roadmap support and acceptance among the data owners.

Detailed data risks and challenges will be more fully identified once the Data Governance initiative gets launched. (State funding for Roadmap initiatives was not "released" until November 6, 2018 and Federal Funding Participation has not yet been approved by the Centers for Medicare and Medicaid for this initiative – so this work has not yet started). We anticipate the following challenges and risks with regard Colorado health data, and the related Roadmap Initiatives:

- *HIPAA and 42 CFR Part 2 (substance use) – common understanding and interpretation of these rules, so data sharing is facilitated (as appropriate)*
- *Consent – obtaining time-bounded, specific patient consent to share substance use and behavioral health information*
- *Data quality – reliable, consistent data standards and data quality, which is necessary to effectively support clinical quality reporting and analytics*
- *Data integration standards – supporting FHIR-based APIs (fast health interoperability rules for application programming interfaces); use of the Mulesoft enterprise service bus as a standard, eliminating point-to-point interfaces over time*
- *Data sharing agreements – across state agencies, state entities, and community partners*
- *Data standards – across state agencies, and statewide, for key data elements (to be defined)*
- *Data security, and data privacy – following HITRUST, ONC and NIST best practices, among others*

4. According to last fiscal year's FY 2018-19 budget request, OeHI will focus on the state's Medicaid population before expanding the initiatives statewide. For example, the budget request says that the OeHI and HCPF are partnering with the Colorado health information exchanges (HIEs) to reduce costs and improve quality of care by reducing medical errors, readmission rates, and redundancy. The budget request further explains that the initiatives enhance health provider notifications and shared information in order to further improve care and reduce costs. This includes advancing the state's foundational health IT systems, and programs to further integrate Colorado's electronic health record systems and HIEs.

Do these statements still apply? Please provide status updates or clarifications.

Yes, our plan is still to start with the Medicaid population where appropriate to leverage federal implementation funds and where enhancements to community infrastructure can be leveraged for all Coloradans. The Roadmap's Person Identification Initiative, for example, is focused on how Medicaid's Person Identifier (SIDMOD) is being used across state systems and in the community, specifically evaluating how the state systems may be enhanced by modernized to allow for better coordinated care. A detailed analysis is ongoing with OIT and OeHI to determine where and how the SIDMOD identifier is used in Medicaid operations, how to leverage HIE technology, as well as other state agency systems, interfaces, reports and functions. OIT anticipates replacing SIDMOD by December 31, 2019 – or be faced with the possible cost in migrating SIDMOD off the mainframe system – so there are multiple business drivers on this

Governor's Office of eHealth Innovation (OeHI) and
Colorado Department of Health Care Policy and Financing (HCPF)
Colorado Health IT Roadmap

Joint Technology Committee Staff Questions

effort. OIT is determining how to best modernize identity not just with Medicaid but across all state agencies. OeHI has identified capabilities within Colorado's Health Information Exchanges that may enhance state agency and statewide identity matching-ultimately improving care coordination. Discussions are underway to solidify prototypes with the HIEs and OIT.

OeHI continues to work with Colorado's Health Information Exchanges to advance their infrastructure as specified by the Roadmap initiative. Budgets and projects are being defined by the eHealth Commissions working group. HIEs involvement with Health Care Policy and Financing the State's Medicaid Department, include onboarding Medicaid providers to HIEs and work with Regional Accountability Entities (RAEs). HCPF's efforts are aligned with OeHI and focused on better coordinating care for Coloradans, (using clinical and demographic information available in the exchange), reducing costs (by eliminating duplication across health systems), and leveraging event notification services (for instance, be notified of an admission, ED visit, or discharge). These efforts are ongoing.

The Master Data Management Initiative

5. According to Table 3: *Project Detail – Capital Construction – Paid Basis*, the budget request provides estimates of the Master Data Management initiative based on the status of quotes as of August 20, 2018. Have these amounts changed? What is the status of selecting vendor(s) for this initiative?

    a) *The "Master Data Management" initiative is really two primary identity management efforts – for providers, and for patients.*
    b) *The Master Provider Directory (MPD) – is being developed by CDPHE, and OeHI will monitor progress in meeting requirements, and assist in funding (and scaling) efforts, as needed.*
    c) *The Person Identification (MPI) effort – vendors have not been selected, other than IBM to help identify the scope and complexity of the current SIDMOD function (State ID Module used by Medicaid). Discussions are underway to explore leveraging identity solutions within Colorado's Health Information Exchanges.*

The Colorado Consumer Portal for Health Initiative (Portal)

6. Regarding the estimated capital construction cost for the Portal, has the department also considered the cost of training, user and technical support documentation, and testing, such as break/fix iterations, user acceptance testing and performance testing?

    - *These are excellent considerations, though we are not this far in our planning efforts, at this point. Within six (6) months or so – we should have a better sense of what Colorado health consumers really want, what they will use (and how), and how those objectives can be met.*
    - *We're also hoping we can leverage some of our current infrastructure in meeting these requirements, such as CIVHC's consumer views, and Connect for Health Colorado's infrastructure.*

7. Please describe the planning of the Portal's maintenance and support. Will OeHI manage and support the Portal after implementation, and if so, in what capacity? Will other state department(s) assist in maintenance and support?

    OeHI will not implement or support this technology; and it is unlikely that OIT, or another state department will. Rather, this portal operational support would likely be done by an independent

Governor's Office of eHealth Innovation (OeHI) and
Colorado Department of Health Care Policy and Financing (HCPF)
Colorado Health IT Roadmap

Joint Technology Committee Staff Questions

community organization, or an extension of an organization like CIVHC or Connect for Health Colorado.

8. What is the strategy to increase awareness and acceptance of the Portal? What type of acceptance among patients and providers has occurred so far? If applicable, please include a brief description of the department's Portal research, and any related experience.

- *Like the success of Connect for Health Colorado, the marketing effort for the future portal will be critical. The planning for this has not yet started.*
- *Acceptance among consumers and providers will be critical; therefore, we're starting this effort by engaging as many of these stakeholders as possible during the Mosiaca Partners led planning effort. Mosiaca Partners helped OeHI engage over 1,000 stakeholders in building the Roadmap, hence it's acceptance in the community; this is why we're engaging Mosiaca again to assist OeHI with this effort.*
- *States like Connecticut, Florida, and New York have developed similar consumer health portals. Once we develop and confirm Colorado's requirements, it may be possible to just license this capability from another state like New York (Fair Health: youcanplanforthis.org).*

Fiscal Year 2019-20 Information Technology Request

Office of Information Technology
Data Center Strategic IT Infrastructure Needs

PRIORITY NUMBERS

Prioritized By	Priority	
DeptInst	1 of 1	
OSPB	3 of 8	Recommended for funding.

PRIOR APPROPRIATION AND REQUEST INFORMATION

Fund Source	Prior Approp.	FY 2019-20	FY 2020-21	Future Requests	Total Cost
CCF	$5,122,000	$5,264,000	$0	$0	$10,386,000
Total	$5,122,000	**$5,264,000**	$0	$0	$10,386,000

ITEMIZED COST INFORMATION

Cost Item	Prior Approp.	FY 2019-20	FY 2020-21	Future Requests	Total Cost
Land Acquisition	$0	$0	$0	$0	$0
Professional Services	$1,290,000	$1,490,000	$0	$0	$2,780,000
Construction	$0	$0	$0	$0	$0
Equipment	$3,832,000	$3,774,000	$0	$0	$7,606,000
Miscellaneous	$0	$0	$0	$0	$0
Contingency	$0	$0	$0	$0	$0
Software Acquisition	$0	$0	$0	$0	$0
Total	$5,122,000	**$5,264,000**	$0	$0	$10,386,000

PROJECT STATUS

This is a continuation project. The first phase was approved in FY 2018-19.

PROJECT DESCRIPTION / SCOPE OF WORK

The Governor's Office of Information Technology (OIT) is requesting state funds for the second phase of a two-phase project to replace or update critical infrastructure, and add public cloud integration at the state-owned Lakewood Data Center (LDC). OIT says these changes will help meet its goal of improving security, and 100 percent system availability and support.

The department describes the following two objectives: (1) replace or update critical infrastructure at the LDC, some of which has not been updated in the past thirty years; and (2) update and transform OIT's infrastructure operations by improving services with a public cloud option that will support the security compliance needs of each agency.

OIT lists some of the critical components that need to be updated:
• humidifiers to reduce static electricity;
• main circuit breaker;
• physical security;
• power distribution units;
• electrical system overhaul, including an uninterruptable power supply;
• network equipment;
• generators;

- cooling system; and
- fire suppression system.

PROJECT JUSTIFICATION

OIT says that this project is essential due to advancements in technology and to ensure that the state does not face rising support costs, along with technological incompatibilities. OIT explains that the LDC infrastructure, some of which is over 30 years old, is at risk of failure and can no longer be maintained. OIT states that the project's changes will extend the life of the LDC, along with providing customers integration with modern public cloud infrastructure services.

OIT further explains that by offering cloud-based services, the state will have the ability to achieve true automated service delivery, which is demanded by the needs of some of its customers. For example, project changes include the ability for OIT to perform routine maintenance while the data center remains in service instead of scheduling maintenance system downtime. OIT says that the LDC changes will result in faster turnaround and a lower error-rate for customers.

PROGRAM INFORMATION AND IMPLEMENTATION PLAN

OIT plans to work with the OIT program management office, which provides project management services, and will also leverage professional services and contractors where needed. Although funding is requested through two phases, the department further explains that implementation and transformation will occur over three years. Year one goals are: (1) prioritizing components and services based on criteria, such as infrastructure support end-of-life date, risk level of infrastructure failure, and optimization / upgrade opportunities; (2) training staff; and (3) redefining the LDC service descriptions. Year two goals include implementing: (1) foundational automation and availability functions; (2) cloud integration; (3) additional skills training; (4) additional infrastructure upgrades and replacements; (5) cost modeling; and (6) organizational realignment to a new LDC operational support model. Year three goals will assess the: (1) configuration management of the infrastructure resources; (2) migration of workloads into an integrated hybrid-cloud architecture; and (3) expansion of additional resources at the LDC, and in the cloud.

COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES

Project alternatives. OIT says it considered the following five options to improve the LDC:

(1) Migrate all application workloads to a cloud service. OIT finds that some workloads require using a state-owned facility; therefore, using a cloud solution is not an option. OIT says that some cloud solutions currently lack flexible functionality and acceptable cost models, which may cause price and service fluctuations.

(2) Continue with standard maintenance at the LDC. OIT finds that critical equipment will become unmaintainable in a few years.

(3) Consolidate all the LDC infrastructure to the other state data center in Centennial Colorado. OIT finds that maintaining one state data center instead of the existing two state data centers, and using cloud services, would reduce options and increase risks with some of the critical state systems.

(4) Build a new state data center. OIT finds that the cost of this option is prohibitive.

(5) Improve the LDC by replacing and upgrading the existing infrastructure, and adopt a hybrid-cloud service model. OIT finds that a hybrid-cloud service, using multiple cloud providers, along with the two state data centers, enables the department to offer flexible services that meet its customers' needs.

OIT has not compared costs between the LDC costs and a cloud solution, but explains that state-owned data centers are necessary because cloud solutions may not offer the service and cost flexibility that some state systems require, including systems that require hosting at a state-owned facility. OIT also says that it used Gartner, Inc., an international research and advisory firm, for its market research and cost estimates, along with other market analysis,

industry experts, previous service acquisitions and projects, and vendor workshops. OIT also issued a request for information (RFI). Based on the RFI responses, OIT increased generator capacity, reduced the estimate for electrical work, and increased costs for air conditioning and thermal work in its budget request.

SECURITY AND BACKUP / DISASTER RECOVERY

OIT explains that each agency develops and maintains its own disaster recovery and business continuity plans (DR/BC) for systems hosted at the LDC. Even so, OIT says it plans to work with each agency to update its DR/BC plans as the changes at the LDC occur. OIT further explains that security, backups, and disaster recovery are major factors driving the need to update the LDC.

BUSINESS PROCESS ANALYSIS

In 2009, OIT says it conducted an engineering evaluation of the LDC, which documented architectural deficiencies. In 2011, the department added infrastructure to host agency systems, and it began years of implementing virtualization to reduce the need for physical servers. In FY 2016-17, OIT says it performed a cloud automation workshop. The department's goal is to modernize the LDC to a Tier III data center by eliminating shutdowns for equipment maintenance, providing redundant power and cooling, and increasing system availability and resiliency.

PROJECT SCHEDULE

	Start Date	Completion Date
Cloud Services	September 2018	December 2019
Digital Transformations	July 2018	June 2020
Solicitation and Vendor Contract	July 2018	October 2018
Design	November 2018	August 2019
Construction	September 2019	December 2019

OPERATING BUDGET

OIT plans to submit an ongoing maintenance operating budget request starting in FY 2020-21. OIT estimates that an additional $480,000 will be needed annually to update and transform infrastructure operations. The existing operating budget for both the LDC and eFORT data centers is $804,009, which funds of eight full-time employees.

Governor's Office of Information Technology (OIT)
FY 2019-20 OIT Strategic IT Infrastructure Needs

Joint Technology Committee Staff Questions

1. According to the FY 2018-19 budget request, "all seventeen state agencies utilize the Lakewood Data Center (LDC) as either a production or disaster recovery (DR) site."

   a. Please provide an approximate number of systems hosted at LDC, along with the number or percentage that are production systems and DR systems.

      There are four (4) distinct tenants within the LDC environment, the information requested is broken down as it reflects to each of those tenants:
      - *Judicial: 134 servers all serving as a DR site*
      - *Colorado Interactive: 16 Production servers, 1 DR system*
      - *OIT: 894 servers all serving as Production servers*
      - *Colorado Department of Human Services (CDHS): 39 Production servers, 1 DR system*

      There are approximately 1085 total server systems. 87.5% of these systems are production servers, the remaining 12.5% are DR systems.

   b. Please provide a short description of one or two of the critical production systems hosted at LDC.

      Each of the four agencies have their own critical systems operating within the LDC.
      - *Judicial: Case management, e-filing, and public access systems for the courts and other agencies to run background checks, which are required to hold court throughout the State*
      - *Colorado Interactive: Manage 200 websites through Colorado.Gov*
      - *OIT: Colorado Department of Revenue GENTAX system which manages all aspects of the department's taxation programs*
        - *Colorado Department of Human Services (CDHS): CDHS TMS (Treatment Management System), CDHS CCAR (Colorado Client Assessment Record System), and the Avatar Health Care System.*

   c. Regarding the systems hosted at LDC, or eFORT, the other state data center located in Centennial, Colorado, are any of the systems currently identified for migrating to a cloud solution in the future? Please explain.

      There are currently systems at both of the data centers that will be migrated to public cloud services. However, this list is being assessed and determined for prioritization and timeline. A system or applications age and feasibility to migrate to the cloud will be taken into consideration as part of the assessment process, as well as total cost of ownership to reflect cost avoidance in the future.

2. According to the budget request on page thirteen, moving all the systems hosted at LDC to an off-premise cloud service is not feasible because "there are many workloads that must reside on-premise" at a state location. Also, "security compliance dictates a state owned facility is the preferred target for particular workloads." The budget request further explains that a "lack of maturity results in escalating costs and unrealistic funding requirements if there is ever a need to bring workloads back on-premise from the cloud service."

   a. Please provide one or two examples of the critical systems that must reside on-premise, along with a brief explanation of the requirement, such as state or federal compliance.

The Colorado Department of Revenue GENTAX system is governed by the Federal Internal Revenue Service (IRS). The security requirements set within IRS PUB 1075 make having an on-premise location much easier to ensure Federal Tax Information (FTI) compliance.

The Colorado Department of Human Services Kronos system is a set of physical servers which must be connected to a physical modem (serial or USB) connection. Keeping these physical connections are much more secure and maintainable at the physical LDC location.

b.   Through its research, does the department have an estimate of when cloud solutions will become more mature and stable from a cost perspective?

OIT Infrastructure Operations is currently working with our partners to develop a "Total Cost of Ownership" scenario for our on-premise systems that do not "require" to be on-premise, such as those described above. OIT is certain there is a cost benefit, clearly identifying exactly what that looks like is underway and expected to be complete within the next 90 days.

3.   After the work described in the department's budget request is complete, has the department planned for future end-of-life cycles and maintenance at LDC? Please briefly describe the scope, and explain how this is currently planned, monitored, and budgeted.

The future end-of-life and maintenance cycles is difficult to determine at this time. While the project is on-track, it is not yet reached the milestone where replacement equipment is identified. Life expectancy and maintainability will be two of the many factors in choosing replacement equipment. Other factors include overall cost, compatibility with other infrastructure components, and integration into the specific data center environment at the Lakewood Data Center.

4.   On page two, the budget request describes high-level risks and constraints as: (1) the current drawings of the power distribution systems are not up-to-date; and (2) increases in prices for equipment could impact existing cost estimates. Has the status of these risks, or constraints changed? Please explain.

With regard to drawings not being up-to-date; Howell Construction was awarded the design/build contract to plan and execute the upgrades to the Lakewood Data Center. Phase I of this contract is to verify the current set of drawings are accurate, thereby minimizing this risk.

Current market research suggests that companies are working around recently imposed material taxes by moving production to other countries where the taxes are not levied. The Department of Personnel and Administration (DPA) and OIT have required that Howell Construction make every reasonable effort to source all replaced components from those made within the United States.

During the current assessment of the LDC it was identified that the requirements to achieve a TIER III data center may end up being too costly to fully achieve, or not feasible because of a lack of available space. The LDC is currently a TIER I facility with only one path of service delivery for power and cooling. A TIER III facility has fully redundant paths for both power and cooling, as well as backup power, meaning two (2) diesel generators. OIT, DPA, and Howell Construction are working closely together to evaluate the current data center equipment condition, as well as the facility space constraints. This evaluation will allow the team to develop a renovation plan that will increase the data center's resiliency as much as possible within the physical and financial boundaries of the project.

Several electrical components have been identified as needing replaced due to significant age. Replacing these components safely will require some level of outage to the Lakewood Data Center. In order to minimize the impact of any such outage, funds may need to be used for secondary power generators. This will reduce the overall funds available for actual capital improvements. The exact figures of costs are not yet available, but the actual need has been identified. The design/build firm is working with OIT and DPA to accurately identify the cost and impact to operations for all such components. Once obtained OIT will assess to determine best path forward.

5. According to the budget request on page four, the upgrades will provide cloud solutions that will give departments "seamless access to additional infrastructure resources from a vendor that specializes in providing [just-in-time] resources that can be scaled up quickly to coincide with higher seasonal demand." On page six, the budget request describes implementing a self-service portal that designated personnel will use to provision infrastructure resources, which will, as a result, provide better service, and eliminate some of the existing manual tasks.

   a. Are the cloud solutions described in the budget request available to systems hosted at LDC, or does the department plan to offer these cloud solutions to state systems at other locations, such as eFORT. Please describe any restrictions, or limitations, including any system prioritization to migrate to a cloud solution is planned.

      Our effort is to look across both the Data Centers to identify appropriate systems to migrate to public cloud services. As described in the response to question 5 in this document, systems are in review for feasibility and prioritization for public cloud candidacy. In addition, systems that may reside on agency premises (not either of the current two state Data Centers), OIT will review these opportunities for migration to one of the two state data centers or the public cloud services.

   b. How will this new provisioning model impact existing full-time employees or contractors?

      The new self service capability will enable existing employees or contractors to meet customer resource-demand much quicker, as manual processes would be eliminated and/or drastically reduced. For example, a given process that may take a day or two now would be reduced to a matter of minutes. With the extra time that employees or contractors gain from this portal, the states day-to-day operational performance and sustainability will be greatly enhanced to reflect more efficiency. In addition, a transformation of responsibility would recognize more focus on cloud service support and its security.

6. The budget request states on page twelve that "at the end of the project, the data center will meet modern Tier III requirements, which will support Colorado's initiatives to become a fully online enterprise." Please define all the Tiers and explain how Tier III supports Colorado's initiative.

   The Tiers (I-IV) are progressive; each Tier incorporates the requirements of all the lower Tiers. Each increasing Tier level increases the level of fault tolerance for data center operations.

   Tier I: Basic Capacity A Tier I data center provides dedicated site infrastructure to support information technology beyond an office setting. Tier I infrastructure includes a dedicated space for IT systems; an uninterruptible power supply (UPS) to filter power spikes, sags, and momentary outages; dedicated cooling equipment that won't get shut down at the end of normal office hours; and an engine generator to protect IT functions from extended power outages. There is no redundancy in a Tier I system, therefore if any one component breaks the entire data center must suffer some level of an outage until repairs are made. The current equipment configuration of the Lakewood Data Center meets this Tier I design.

Tier II: Redundant Capacity Components Tier II facilities include redundant critical power and cooling components to provide select maintenance opportunities and an increased margin of safety against IT process disruptions that would result from site infrastructure equipment failures. The redundant components include power and cooling equipment such as UPS modules, chillers or pumps, and engine generators.

Tier III: Concurrently Maintainable A Tier III data center requires no shutdowns for equipment replacement and maintenance. A redundant delivery path for power and cooling is added to the redundant critical components of Tier II so that each and every component needed to support the IT processing environment can be shut down and maintained without impact on the IT operation.
This Tier meets the state's desires by providing more availability and resiliency to operations, ensuring that critical systems are not impacted (or drastically reduced) from potential negative impact due to a power outage or other data center operational functions which are being improved through this DI.

Tier IV: Fault Tolerance Tier IV site infrastructure builds on Tier III, adding the concept of Fault Tolerance to the site infrastructure topology. Fault Tolerance means that when individual equipment failures or distribution path interruptions occur, the effects of the events are stopped short of the IT operations.

Fiscal Year 2019-20 Information Technology Request

Colorado Historical Society (History Colorado)

Office of Archeology and Historic Preservation Database and Systems Modernization

PRIORITY NUMBERS

Prioritized By	Priority	
DeptInst	1 of 1	
OSPB	8 of 8	Recommended for funding

PRIOR APPROPRIATION AND REQUEST INFORMATION

Fund Source	Prior Approp.	FY 2019-20	FY 2020-21	Future Requests	Total Cost
CCF	$0	$393,026	$0	$0	$393,026
CF	$0	$125,000	$0	$0	$125,000
Total	$0	**$518,026**	$0	$0	$518,026

ITEMIZED COST INFORMATION

Cost Item	Prior Approp.	FY 2019-20	FY 2020-21	Future Requests	Total Cost
Land Acquisition	$0	$0	$0	$0	$0
Professional Services	$0	$387,947	$0	$0	$387,947
Construction	$0	$0	$0	$0	$0
Equipment	$0	$0	$0	$0	$0
Miscellaneous	$0	$0	$0	$0	$0
Contingency	$0	$24,668	$0	$0	$24,668
Software Acquisition	$0	$105,411	$0	$0	$105,411
Total	$0	**$518,026**	$0	$0	$518,026

PROJECT STATUS

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

PROJECT DESCRIPTION / SCOPE OF WORK

History Colorado is requesting a combination of state funds and cash funds spending authority to implement a new customized web application for the Office of Archeology and Historic Preservation (OAHP). According to History Colorado, the new system will integrate the three current systems used by OAHP (Site Files, GIS, and Compass) and allow for paperless electronic submissions and payment. The project will also involve moving the History Colorado databases from servers and to a cloud-based environment.

Federal regulations. Section 106 of the National Historic Preservation Act of 1966 requires federal agencies, along with state and local governments using federal funds, to take into account the effects of their undertakings on historic areas and give the Advisory Council on Historic Preservation an opportunity to comment on such projects prior to the expenditure of federal funds. Federal agencies are responsible for initiating such Section 106 reviews, most of which take place between the federal agency and a state historic preservation office. OAHP serves as the state agency that coordinates the state's historic preservation program on behalf of the advisory council and consults with the federal, state, or local agency during Section 106 review.

Cash funds. The cash funds portion of this request comes from funds provided by the Colorado Department of Transportation (CDOT) and minority share limited gaming funds.

Colorado Historical Society (History Colorado)

Office of Archeology and Historic Preservation Database and Systems Modernization

History Colorado, though the Federal Highway Administration and CDOT, received $100,000 over the course of two years to help the department explore the Section 106 process. According to History Colorado, of the remaining CDOT funds, $15,000 has been committed to this project for further modifications of the Site Files database.

In 1990, Colorado citizens passed a constitutional amendment allowing limited gaming in Black Hawk, Central City, and Cripple Creek. The amendment directs that a portion of the gaming tax revenues be used for historic preservation throughout the state. History Colorado receives a portion of the limited gaming tax revenue.

PROJECT JUSTIFICATION

History Colorado states that approximately 350 federal, state, tribal, and private partners use History Colorado systems every day. Currently, some of the data contained in History Colorado's Site Files, the archeology and historic preservation database, is combined with GIS data for access by customers with subscriptions through Compass, a database on History Colorado's website. History Colorado employees create hard copy submissions using the separate systems. According to History Colorado, data challenges arise when using three separate systems for a largely paper-based Section 106 process. Currently, 4.0 FTE review over 2,500 hard copy submissions per year of paper reports, business letters, and the manual input of data into both Site Files and GIS systems. However, according to the department, these unintegrated systems and paper processes are not meeting the needs of the department and their partner in processing Section 106 reviews in a timely fashion. History Colorado states the integrated system will make the process easier for consumers and the department.

PROGRAM INFORMATION AND IMPLEMENTATION PLAN

History Colorado reviewed system modernizations in New Mexico, Washington, and Virginia. In addition, History Colorado hired a consultant to provide the department with a roadmap for solutions in 2017. History Colorado states that the OIT solution team reviewed the proposed roadmap solution as well as the current landscape of off-the-shelf solutions, but determined a customized solution was the preferred alternative to address History Colorado's needs. Once funding is appropriated, History Colorado will issue a request for proposal for the project. History Colorado plans to follow OIT project management processes.

COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES

History Colorado estimates that the project will provide $1.5 million in one-time cost savings, with an additional $554,000 in ongoing annual savings. History Colorado attributes these cost savings to more efficient data collection and a reduction in the duplication of data.

SECURITY AND BACKUP / DISASTER RECOVERY

According to History Colorado, data in the systems are regularly backed up and secured according to an OIT plan. History Colorado states that OIT will provide assistance and advice regarding security planning and disaster recovery.

BUSINESS PROCESS ANALYSIS

History Colorado and OIT recently revised a document discussing the project's high-level business process, which outlines a streamlined solution to meet History Colorado's business and user requirements.

Colorado Historical Society (History Colorado)

Office of Archeology and Historic Preservation Database and Systems Modernization

PROJECT SCHEDULE

	Start Date	Completion Date
RFP	July 2019	November 2019
System Development	November 2019	June 2020
Data Verification	June 2020	August 2020
Public Release	August 2020	September 2020
Completion		September 2020

OPERATING BUDGET

History Colorado estimates an annual maintenance cost of $93,570. According to History Colorado, the operating costs will be paid by OAHP fees, which range from $0.20 for hard copies of file searches to a $250 annual fee for Compass access.

History Colorado
E-106 and Office of Archeology and Historic Preservation Database and System Modernization

Joint Technology Committee Staff Questions

1. Please provide a description of all the project alternatives considered. What Colorado "sufficient differences" caused a lack of project alternatives? Why do other commercial-off-the-shelf software solutions not work for OAHP?

    As stated above, a proposal from an outside vendor was out of date, new technologies have become available and legislative changes had deemed any COTS solution not viable.

2. Does the department foresee any data migration and modernization challenges with the proposed integration of three existing databases (Site Files, GIS, and Compass)? How is the department planning to mitigate any issues or risks?

    The OIT solution team has analyzed the situation and collaborated with vendors on a solution that mitigates any issues with data migration and modernization at this point. OIT believes with strong collaboration and communication with stakeholders that this concern can be managed.

Human Services
Joint Agency Interoperability

PRIORITY NUMBERS

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

PRIOR APPROPRIATION AND REQUEST INFORMATION

Fund Source	Prior Approp.	FY 2019-20	FY 2020-21	Future Requests	Total Cost
CCF	$3,139,298	$2,320,949	$0	$0	$5,460,247
FF	$28,253,682	$0	$0	$0	$28,253,682
RF	$500,000	$0	$0	$0	$500,000
Total	$31,892,980	**$2,320,949**	$0	$0	$34,213,929

ITEMIZED COST INFORMATION

Cost Item	Prior Approp.	FY 2019-20	FY 2020-21	Future Requests	Total Cost
Land Acquisition	$0	$0	$0	$0	$0
Professional Services	$11,922,480	$1,228,351	$0	$0	$13,150,831
Construction	$0	$0	$0	$0	$0
Equipment	$12,600,000	$0	$0	$0	$12,600,000
Miscellaneous	$0	$526,436	$0	$0	$526,436
Contingency	$0	$0	$0	$0	$0
Software Acquisition	$7,370,500	$566,162	$0	$0	$7,936,662
Total	$31,892,980	**$2,320,949**	$0	$0	$34,213,929

PROJECT STATUS

This is a continuation project. For federal and state funding information, please see the Project Description section.

PROJECT DESCRIPTION / SCOPE OF WORK

The Colorado Department of Human Services (DHS) is requesting a combination of state funds and federal funds spending authority for the fifth phase of a five-phase project to create a new system to implement and maintain an interoperable environment, in order to improve communication and the exchange of data across multiple, disparate applications. DHS says this shared information environment will provide better coordinated services to improve the lives of children, youth, and families in Colorado.

Federal match. DHS submitted a state capital construction budget request each fiscal year between FY 2015-16 and FY 2018-19, continuing its expectation of a 90 percent federal match as set forth in the federal Office of Management and Budget Circular A-87 waiver (waiver). DHS says that the federal waiver expires December 31, 2018. DHS explains that if it receives federal approval, and purchases for software licenses before the expiration date in December 31, 2018, the 90 percent federal fund match will apply. DHS further says that after the waiver expires, it plans to receive approximately 70 percent federal funds match from its three federal partners: (1) the Centers for Medicare and Medicaid Services (CMS); (2) U.S. Department of Agriculture, Food and Nutrition Services; and (3) the U.S. Department of Health and Human Services, Administration for Children and Families (ACF).

PROJECT JUSTIFICATION

DHS says that an interoperability system will improve its ability to assist families in crisis and reduce the cost of more expensive interventions. For example, DHS explains that with a shared interoperability information environment, the 1.3 million Coloradans receiving Medicaid, would receive better coordination across other programs, such as child support, child welfare, and child care; thereby, improving the lives of Colorado children, youth, and families.

Interoperability implements a service-oriented architecture using a connected enterprise service bus (ESB). Service-oriented architecture provides the ability for applications to leverage technical services using a standard protocol. An ESB provides a single, unified technical platform that manages access to different applications using a consistent communication mechanism. According to DHS, it maintains hundreds of unique technical interfaces that send or collect data between existing department systems, and 95 different federal, state, and county IT systems used for department services, programs, clients, and finances. Without interoperability, the department says that the systems will remain disconnected or continue to transfer data using disparate legacy technical interfaces.

Project alternatives. DHS says that without interoperability, it will continue to support disparate, legacy technical interfaces. Using the ACF planning grant, DHS conducted an assessment with Deloitte Consulting in 2013, which found the total number of system interfaces maintained by DHS are over 500. The department explains that maintaining the existing interfaces increases its security risk because it must implement security controls in different software interfaces that handle sensitive personal, health, and financial data. DHS also says that maintaining a custom interface costs between $15,000 and $30,000 per year, per interface, and a new custom interface costs between $10,000 and $40,000, depending on the complexity.

PROGRAM INFORMATION AND IMPLEMENTATION PLAN

Program information. DHS partners with state and county governments, nonprofits, and other organizations to design and deliver human and health services that improve the safety, independence, and the well-being of Colorado citizens. The department assists children at risk of abuse or neglect, and Colorado families who need food, monetary, or energy assistance, as well as safe and affordable childcare.

Implementation plan. DHS plans to continue to collaborate with key stakeholders, such as: (1) the Government Data Advisory Board; (2) counties; and, (3) OIT. DHS explains that the federal approval process has been slower than expected. Between October 1, 2012, and January 31, 2014, the department received a $1,125,000 planning grant from ACF. The information from this planning effort was used to develop the interoperability plan, timeline, costs, and state budget requests. After the ACF grant, the department obtained CMS approval for $2,803,221 in February 2016 for planning only. In March 2016, DHS issued a request for information (RFI) for interoperability implementation strategies. The planning funds were also used for an OIT project manager and consulting services for: (1) privacy and security; (2) cost estimates; and (3) documentation of the current IT environment, technical requirements, and implementation plan.

DHS says that if it receives CMS approval before the waiver expires in December 31, 2018, DHS will purchase licenses for MuleSoft, Salesforce, and Dell One Identity using the 90 percent federal match. In 2019, the department plans to work with the Colorado Department of Health Care Policy and Financing to submit the required Implementation Advance Planning Document Update (IAPDU).

The department says this funding request will be coordinated with its federal partners for an approximate 70 percent match. DHS explains that the federal funding risk is that any one of the federal partners may decide not to fund its share. If that were to happen, DHS says it will consider changing the project's scope, requesting additional General Fund dollars, or identifying other potential funding sources.

COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES

DHS says that maintaining, updating, and monitoring disparate interfaces creates significant risks, especially when handling sensitive personal, health, and financial information. DHS provides the following examples describing challenges with the existing disparate legacy interfaces and disconnected systems: (1) for direct service providers, client information is not easily coordinated or provided among the services provided to children, youth, or families,

such as child welfare, mental health, youth services, and school counselors; (2) at the managerial level, analyzing the effectiveness across services to provide recommendations to direct service providers is sometimes challenging since easy access to statewide data is difficult; and (3) at the program administration and policy levels, county and state administrators do not have access to aggregated, real-time data across systems in order to make operational and strategic decisions about services and investments.

SECURITY AND BACKUP / DISASTER RECOVERY

DHS says that the interoperability environment is designed to meet federal and state IT architecture, security, and business continuity requirements. Additionally, the interoperability environment, and the associated systems will follow the state cybersecurity policies set forth by OIT, and the National Institute of Standards and Technology (NIST) 800-53 guidelines for access and identity management. DHS also says that it will develop redundant IT components for backup purposes.

BUSINESS PROCESS ANALYSIS

DHS lists the following changes during the planning phase of the project that impacted the original estimated costs and state/federal matches: (1) improvements in the state's IT infrastructure because of other state projects such as, the Colorado Benefits Management System, Trails, CHATS, Secure Colorado, and the Colorado Health IT Roadmap; (2) changes to the Interoperability project plans because of a detailed technical analysis that was completed in 2017; (3) changes to the scope of the initial interoperability release to include only the foundational capabilities necessary to establish interoperability services; and (4) changes in the federal funding match rates. DHS explains the original state CCF request totaled $5.7 million. The department says that if the FY 2019-20 budget request is approved using the new federal funding model, the total state appropriation amount will be $5.9 million.

PROJECT SCHEDULE

	Start Date	Completion Date
Governance and Stakeholder Engagement	July 2015	Ongoing
CMS Required Additional Planning	July 2015	September 2018
Design and Build	July 2015	September 2019
Interoperability Infrastructure Functional	July 2015	June 2020

OPERATING BUDGET

DHS plans for the operating funding match to be approximately 30 percent state funds and 70 percent federal funds. In previous fiscal years, the requests planned for 75 percent federal funds and 25 percent state funds for the operating budget.

Colorado Department of Human Services (CDHS) IT Capital Construction
Joint Agency Interoperability

Joint Technology Committee Staff Questions

The questions below reference the CDHS FY 2019-20 Joint Agency Interoperability (InterOp) budget request, and the previous years' budget requests.

1. In the FY 2018-19 budget request, the department says it plans to submit its "Implementation Advance Planning Document" (IAPD) to the Centers for Medicare and Medicaid Services (CMS) by January 2018. Please provide the outcome of the IAPD, and describe the CMS existing requirements for the InterOp project. Is the "Implementation Advance Planning Document Update" (IAPDU) described in the FY 2019-20 budget request different from the IAPD? If the IAPD and IAPDU are different documents, please describe the difference and the reasons two implementation planning documents are required.

   The IAPD is the original annual funding request submission for CMS. For example, each year in June-July the Colorado Department of Health Care Policy and Financing (HCPF) submits the IAPD for the following Federal Fiscal Year (FFY) funding approval. Once approved, those funds are valid from Oct 1-Sept 30. An IAPDU is used when there is a need for additional funding or a change to the approved IAPD during the course of the FFY. The IAPD and IAPDU are the same document; one is simply an update to the other.

   HCPF submitted the FFY 2018 IAPDU to CMS on March 16, 2018. After their initial review, CMS submitted questions to HCPF and asked for more information regarding the common business requirements, unique business requirements and cost allocation components of the plan. After multiple attempts and meetings to answer these questions, HCPF retracted the IAPDU on April 2, 2018. CDHS and HCPF began meeting on a weekly basis to further define the scope of the project to ensure the project met CMS concerns.

   Since the Joint Agency Interoperability (JAI) requires approval from all federal partners, HCPF submitted JAI as a multi-operational division submission to CMS, U.S. Department of Agriculture Food and Nutrition Services (FNS) and U.S. Department of Health and Human Services Administration for Children and Families (ACF) for approval with the FFY 2019 IAPDU on October 3, 2018. We received questions from CMS on 10/23/18, 10/24/18 and 10/29/18. HCPF and CDHS provided responses to those questions on 10/31/18 and 11/7/18. We are still awaiting approval. Once approval is obtained from all three federal partners, work will begin to complete the capital project by September 30, 2019.

2. Please describe InterOp's mitigation if the federal funding request to match the project's capital construction budget is not approved before the Office of Management and Budget Circular A-87 Cost Allocation Waiver (Waiver) expires in December 2018. Please include a description of the impact on the project's budget and schedule if federal funding is not approved before the Waiver's expiration.

   The current budget proposed to federal partners and the General Assembly identifies $5,608,240 in expenses that would be funded using the A-87 Waiver and enhanced 90% federal funding from CMS. If CMS does not approve these expenses for funding under the A-87 waiver, the $5.6M will need to be allocated to other federally-funded programs and will require additional General Funds to match those federal dollars.

   Table 1 demonstrates the estimated difference in General Funds needed if the $5.6 million cannot be paid for with A-87 matching funds. This table assumes the same allocation formula used to estimate the allocation of the remainder of the development after the A-87 funds expire in December. The post-December cost allocation method is based on each federal program's current cost allocation methodology as described in their federally approved cost allocation plans. The impact of distributing the other 31% of year one costs is that CMS would see a $2M reduction, other federal partners would see a $1.2M increase and the State would see an increase of $776K.

Table 1: Funding Match

Program	With A-87 Waiver		Without A-87 Waiver		Difference	
	Federal	State	Federal	State	Federal	State
Medicaid	$7,655,928	$1,430,328	$5,620,318	$1,204,149	-$2,035,610	-$226,179
Food Assistance	$681,053	$681,053	$1,336,344	$1,336,344	$655,291	$655,291
Child Support Services	$437,322	$225,287	$858,102	$442,053	$420,780	$216,765
Cash Assistance	$105,876	$105,876	$207,747	$207,747	$101,871	$101,871
Child Welfare	$29,703	$29,703	$58,283	$58,283	$28,580	$28,580
Child Care Assistance	$54,837	$0	$107,599	$0	$52,762	$0
Total	**$8,964,720**	**$2,472,248**	**$8,188,392**	**$3,248,575**	**-$776,327**	**$776,327**

3. The department says it submitted its IAPDU to CMS October 2018, and the department plans to receive a response in December 2018, the same month that the Waiver expires.

   a) According to the footnotes in Table 8 and Table 9 of the budget request, "estimated expenditures . . .are subject to change based on approval by CMS, ACF, and FNS of the October IAPDU submission". Does the October IAPDU submission require approval from all three partners, or is CMS the only approving entity? Please describe the procedure, status, and any applicable next steps.

   All three federal partners must approve the IAPDU, because they are required to commit funds after December 2018. The state briefed all three federal agencies jointly by webinar in August and in person in September. On October 3, 2018, HCPF submitted the IAPDU request. Benefits and requirements for all three federal agencies are incorporated into the IAPDU. FNS and ACF provided the state with verbal confirmation that they support the project and that they would accept the singular submission.

   The procedure, status and next steps are described above in response 1.

   b) Based on previous annual budget requests between FY 2015-16 and FY 2018-19, the department requested a total of $32,276,754 federal funds (FF), and $3,586,306 state general funds (GF), resulting in a 90 percent federal match. In the current FY 2019-20 budget request, the department is requesting ($18,378,046) in FF, and $2,320,948 in GF, resulting in a 70 percent federal match (see Table 1). Please provide the reason the department is not requesting a 90 percent federal match for the capital construction, as originally planned.
   The Department is seeking 90% federal match for the components of the project that can be completed by December 31, 2018, namely purchasing licenses. After that, the 90% match rate is no longer available. The reason that the Department cannot request a 90% match for the whole project is that the 90% match rate was only applicable under the OMB A-87 Cost Allocation waiver. The A-87 waiver expires December 31, 2018, and therefore the Department can only request the funds that we can spend before December 31, 2018 at the 90/10 match rate.

4. According to the budget request, the department received a $1,125,000 planning grant from the Department of Health and Human Services' Administration on Children and Families (ACF). The grant was used to gather information to develop the InterOp plan, timeline, costs, and budget requests. In February 6, 2016, after the ACF grant, the department obtained CMS approval for $2,803,221 for planning only. Regarding the federal funding request, has $2,803,221 been appropriated, or should the ACF grant of $1,125,000 be included in the total federal appropriation?

   The ACF grant pre-dates state General Fund requests. We do not need to add the ACF grant to total federal spending authority. Because it was a grant, requiring no state match, we are able to add the award as non-appropriated federal spending authority. While CMS approved $2.8M for planning, that

amount was not fully expended, and the authorization from CMS to spend that $2.8M for planning expired September 30, 2017.

5. According to the budget request, the project is using a modular, agile methodology, which is now preferred by federal funding partners to manage risk. Additionally, on page two of the FY 2019-20 budget request, the department explains that the modernization of some state systems and initiatives, such as CBMS, TRAILS, CHATS, Secure Colorado and the Colorado Health IT Roadmap, have reduced the cost of the InterOp project. Finally, the department further explains that the rules engine to provide decision support to caseworkers has been removed from the project's implementation plan.

   a) Please compare the scope planned in the FY 2018-19 budget request to the scope in the FY 2019-20 budget request, along with a list, and brief description, of the systems that will be integrated in the InterOp environment by the project's planned end date of September 2019. Pertaining to the requirements and/or the technology, please include a description of the scope change that permitted the ($18,378,046) reduction in federal funds, and the $2,320,948 of state funds in the FY 2019-20 budget request.

   The following sections describe the change in project scope, reasons for reduced costs and a description of the systems that will be integrated into the interoperability environment, including the workstreams from the FY 2018-19 request and how these functions are fulfilled in the FY 2019-20 request. This table also identifies specific capabilities in the current funding request, which were identified during the detailed technical assessment as being essential for interoperability.

FY 2018-19 Request Workstreams	FY 2019-20 Request
Governance	Resources for data governance manager, data architects
Metadata Repository	Licensing for metadata repository, resources for data architects
Business Intelligence/Analytics	Licensing for analytics
Key Stakeholder Implementation	Resources for project management, program management
Business Process Improvement	Resources for business analysis
Change Management/Communication	Resources for business analysis, project management
Enterprise Service Bus (ESB) to start to address hundreds of point-to-point data interfaces	Licensing and resources for ESB
	Licensing and resources for access and identity management (user access)
	Licensing and resources for identity resolution (client matching)
	Licensing and resources for caseworker view (client lookup screen)

Factors leading to reduced overall cost:
Some factors that lead to lower overall implementation cost are due to progress OIT has made in implementing enterprise tools that were available two years ago:

- *Salesforce as a platform -- moving CBMS and CHATS to Salesforce allows re-use of licenses already purchased for up to 80% of county users; provides cost effective use of the Salesforce Einstein analytics platform; and the acquisition of Mulesoft (enterprise service bus) by Salesforce enables more out-of-the box integrations*

- *Mulesoft -- standardizing on an API-led approach to integrations, and using this across the state makes it more affordable and supportable than if this was the first and only project to use it*

- *One Identity -- the state strategy for managing users is already being funded for state employees through Secure Colorado, and so CDHS and HCPF users are a subset of users for whom this project does not have to procure licensing*

Systems to be Integrated into the overall Interoperability Environment:

By September 2019 the Department expects to e create the interoperability infrastructure, analytics and a search screen so that in a single view a caseworker can see the services a client is receiving across these systems:

IT System	Program(s)	Agency
CBMS	Medicaid, SNAP, TANF	HCPF and CDHS
Trails	Child Welfare	CDHS
ACSES	Child Support	CDHS
CHATS	Child Care Assistance	CDHS

b) Please describe the impact, along with the percentage of total users, of not including the rules engine that provides decision support to caseworkers in September 2019. Please provide a description of the estimated time and cost of implementing the rules engine, and if applicable, the planned implementation date. Also, please describe the functionality of the caseworker view consumer portal that will be implemented September 2019.

The rules engine to aid in decision support is not viewed as critical and an essential capability to implement the interoperability program. Rather it is a future enhancement that can be added once data is interconnected. Focusing now on the ability to connect data and conduct analytics across systems will reveal insights that will then inform the business rules to be developed in a rules engine in a subsequent phase. For now this decision impacts all users.

6. Please provide the status of implementing the Governor's Office of Technology's (OIT) identity and password management, OIT Information Security Office approvals, and the enterprise service bus (ESB).

OIT's selected tools for identity and password management (One Identity) and enterprise service bus (ESB) (Mulesoft) are already in use in many areas for other projects. OIT is implementing One Identity for CDHS and HCPF state users this fiscal year to improve account management, oversight and auditing. JAI would extend this licensing to cover county users, which comprise a large portion of the overall user base for many key CDHS systems. CBMS, LEAP, CDLE's Unemployment Insurance Program and other systems are already using Mulesoft as the Enterprise Service Bus to make available and exchange information. JAI would extend this licensing to handle the additional.

7. Please see page 13, "June 2019: Implementation". What will be implemented?

We are working to build the caseworker view (client look-up screen) by June 2019 in order to coincide with a scheduled CBMS major release. This will produce a screen where a county caseworker can look-up a client and obtain basic contact information if the client is known to CBMS, CHATS, Trails and/or ACSES.

8. Please see page 16, Estimated Project Time Table. How is the September 2019 implementations different from the June 2019 implementations?

   June is the initial target release of the caseworker view with September being the target to release enhancements to the caseworker view, if needed. The functionality is not expected to be substantially different in September compared to June. We are also maximizing the amount of time to deliver by aligning with the federal fiscal year pursuant to our federal funding authorizations.

9. Please see page 13, "July 2019: Submit FFY 2020 IAPDU for an approval date of October 1, 2019". Since the department will be working with three different federal partners using three different methodologies, does the department still submit an IAPDU, or is the federal funding request different? Please explain, including a description of any risks and mitigations.

   The Department will work with HCPF to submit an Implementation Advance Planning Document Update (IAPDU) to request continued funding. This will be drafted in the format for Centers for Medicare & Medicaid Services (CMS) funding as used for CBMS and other state efforts. The Department will coordinate with other federal partners to review and approve the singular IAPDU through the multi-operational division. This is the same process we followed for the initial project development funding that was just approved.

   With the Federal Fiscal Year (FFY) beginning October 1, 2019 for FFY2020, the risk continues to be that any one of the federal partners may decide not to fund its share. If that were to happen the Department would revisit the budget to evaluate options including: (1) changing scope; (2) may request additional general fund; and (3) identifying other potential payers.

   Enlisting additional payers would require modifying scope to deliver benefit to new parties, and the project feasibility would need to be evaluated.

Fiscal Year 2019-20 Information Technology Request

Human Services
Colorado Crisis System Enhancements

PRIORITY NUMBERS

Prioritized By	Priority	
DeptInst	1 of 2	
OSPB	2 of 8	Recommended for funding.

PRIOR APPROPRIATION AND REQUEST INFORMATION

Fund Source	Prior Approp.	FY 2019-20	FY 2020-21	Future Requests	Total Cost
CCF	$0	$1,590,225	$0	$0	$1,590,225
Total	$0	**$1,590,225**	$0	$0	$1,590,225

ITEMIZED COST INFORMATION

Cost Item	Prior Approp.	FY 2019-20	FY 2020-21	Future Requests	Total Cost
Land Acquisition	$0	$0	$0	$0	$0
Professional Services	$0	$100,000	$0	$0	$100,000
Construction	$0	$0	$0	$0	$0
Equipment	$0	$84,000	$0	$0	$84,000
Miscellaneous	$0	$0	$0	$0	$0
Contingency	$0	$75,725	$0	$0	$75,725
Software Acquisition	$0	$1,330,500	$0	$0	$1,330,500
Total	$0	**$1,590,225**	$0	$0	$1,590,225

PROJECT STATUS

This is a new, never-before requested project.

PROJECT DESCRIPTION / SCOPE OF WORK

The Colorado Department of Human Services (DHS) Office of Behavioral Health (OBH) is requesting state funds to improve its technical infrastructure to support service coordination within the behavioral health crisis system by adding functionality and integrating disparate technologies. The proposed solution will implement:

(1) a single crisis record system for the state's crisis hotline that will standardize clinical documentation and improve responses between hotline callers and crisis intervention;
(2) GIS mapping;
(3) direct access to the two state Health Information Exchanges (HIE); and
(4) texting, chatting, and mobile device functionality.

The project cost includes about $1.4 million to implement an interoperable environment and about $150,000 to add crisis mobile tools and functionality. The cost to implement an interoperable environment are not included in the Joint Agency Interoperability project.

PROJECT JUSTIFICATION

DHS says the project will improve health crisis care outcomes and the integration between services across communities. The department explains the project will allow it to: (1) determine if at-risk populations are receiving

intended interventions and services; (2) adjust resources based on regional demand; and (3) make recommendations to improve interventions, cost, quality, and outcomes.

PROGRAM INFORMATION AND IMPLEMENTATION PLAN

Program information. DHS explains that the Colorado crisis system, created in response to the Aurora Theater shooting, was designed to strengthen Colorado's mental health system, and provide Coloradans with greater access to behavioral health care services as part of a continuum of care, regardless of the ability to pay. The existing Colorado crisis system consists of: (1) a crisis support telephone hotline; (2) crisis walk-in stabilization centers; (3) a mobile crisis response unit; and (4) crisis respite care. DHS says that in FY 2018-19, the four OBH crisis providers serviced a total of 41,784 clients by providing 121,979 services. DHS says it currently manages $31.6 million in state funds to operate the OBH statewide.

Implementation plan.   The department plans to use a cloud-based solution to improve data collection for clients using geo-mapping and remote data entry. A cloud-based solution will also allow it to implement reporting, integrate with the state HIEs, and utilize DHS's enterprise service bus, which enables an interoperable environment (i.e., sharing data across systems).

COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES

DHS says that the existing state crisis system does not reliably coordinate or integrate health care information between state systems; therefore, providers of crisis services cannot leverage existing state HIE records to support clinical decisions, share or report clinical information between providers, or effectively monitor and evaluate overall program effectiveness. DHS explains that if it does not standardize clinical information and enable sharing of care interventions between crisis providers, it will be unable to drive intended outcomes, such as improving continuity of behavioral health crisis care, eliminating duplicative and costly processes, and identifying opportunities for improvements.

SECURITY AND BACKUP / DISASTER RECOVERY

DHS says its data protection and disaster recovery plans follows OIT security policy guidelines, along with DHS and OIT procurement and contract standards.

BUSINESS PROCESS ANALYSIS

To plan for the project, DHS says it collaborated with two OIT subject matter experts, specifically the Electronic Health Records (EHR) and Health Information Exchange program manager, and a budget and policy analyst IV. DHS also says it has identified an EHR solution for community, mobile-based, and behavioral health data collection and processing. Finally, DHS says the project aligns with its agency's Five-Year IT Roadmap, and OIT's Playbook.

Accessibility compliance. DHS says the project will meet statutory requirements for non-visual access.

PROJECT SCHEDULE

	Start Date	Completion Date
RFI, Business Requirements, and RFP	July 2019	May 2020
Crisis Record Vendor Engagement	July 2020	Ongoing
Vendor Designs and Builds	October 2020	July 2021
User Acceptance Testing and Training	February 2021	June 2021
Deploy to Production	July 2021	July 2021

OPERATING BUDGET

DHS plans to submit a FY 2019-20 operating budget request totaling $2.5 million for 3.6 full-time employees (FTE) and in FY 2020-21 request totaling $1.4 million for 3.0 FTEs.

Colorado Department of Human Services (CDHS) IT Capital Construction
Office of Behavioral Health (OBH)
Colorado Crisis System Enhancements

Joint Technology Committee Staff Questions

The questions below reference the CDHS FY 2019-20 Colorado Crisis System Enhancements budget request.

1. Please describe the responsibilities of the Office of Behavioral Health (OBH), a short description of the existing crisis system support model, the existing number of personnel supporting the crisis system, including personnel type, such as full-time employee or contractor.

The Office of Behavioral Health (OBH) administers the two State mental health hospitals, purchases services to prevent and treat mental health and substance use disorders through contracts with behavioral health providers, regulates the public behavioral health system, and provides training, technical assistance, evaluation, data analysis, prevention services and administrative support to behavioral health providers and relevant stakeholders. The Office of Behavioral Health is made up of the Division of Community Behavioral Health and the Division of Mental Health Institutes and is supported by fiscal, data and evaluation, and strategy, communications and policy teams. In FY 2018-19 the Office of Behavioral Health has a total budget of $345,272,368 with an appropriation of 1,350.7 FTE.

The existing crisis system includes Hotline services and Community Based Crisis Services outlined below:

- *The Behavioral Health Crisis Response System Telephone Hotlines line item funds a twenty-four hour telephone crisis service hotline for the statewide behavioral health crisis response system pursuant to 27-60-103 (1)(b)(I) C.R.S. (2018). The telephone hotline provides a contact point where people across the State can dial a single toll free number and be connected to mental health professionals that provide immediate support and connections to further resources.*

- *The Community Based Crisis Services provide the key services statewide for individuals experiencing a behavioral health crisis pursuant to 27-60-103 C.R.S. (2018). The services are available to individuals regardless of their ability to pay. S.B. 13-266 "Concerning a Request for Proposals to Create a Coordinated Behavioral Health Crisis Response System for Communities throughout the State" directed the Department to issue an RFP for crisis services. The specific components of the crisis response system include: walk-in locations for face to face assessments and interventions, crisis stabilization units that may include a 5 day length of stay for stabilization, mobile crisis units that have the ability to initiate a community based mobile response, and respite crisis services.*

- *The Behavioral Health Crisis Response System includes funding for a public information campaign to increase awareness of the statewide behavioral health crisis response system.*

- *The Office of Behavioral Health administers this program with general support from the OBH Director, Division of Community Behavioral Health Division Director, financial and data and evaluation staff. Programmatically, the Division of Community Program's Adult Treatment and Recovery unit is responsible for overseeing crisis services. There are 3.0 FTE allocated specifically for crisis services in the Community Behavioral Health Division- 2 state FTE are clinical and oversee the program and 1.0 state FTE in the Division's Data and Evaluation Unit to monitor data submission and performance outcomes from the crisis system.*

2. The department is requesting an appropriation to enhance an existing crisis system. Please send the following information about the existing crisis system:

- Summary of the technical platform, length of time in use, and past upgrades and enhancements; and
- Capabilities to integrate with other systems, and existing integration(s).

The Colorado Crisis System does not currently operate with a uniform reporting data system. Each provider within the Crisis system has their own Electronic Health Record system. The current crisis regions use a Microsoft Excel template provided by the Office of Behavioral Health (OBH) to provide aggregate statistics. This reporting structure has been in place since the inception of the Crisis System, so approximately five (5) years. Due to the lack of any technical platform, the crisis system is currently unable to integrate with other systems.

3. In the budget request, the department describes some of the system's stakeholders as:

- DHS, the Colorado Department of Health Care Policy and Financing (HCPF), and the Governor's Office of Information Technology (OIT);
- Colorado Crisis Steering Committee (Steering Committee), formed in early 2018;
- hotline, mobile and health care providers;
- Colorado health information exchanges (HIE);
- external, public users and patients, including crisis services for youth;
- emergency medical service and co-responder personnel (i.e., operating budget request pilot program); and
- four crisis contractors that collect data from each CMHC provider.

a) If applicable, please add or update the primary stakeholders, along with a brief description.

- *The Governor's Office of e-Health Innovation has been an essential partner in state-wide health information technology advances. The Office of eHealth Innovation is responsible for defining, maintaining, and evolving Colorado's Health IT strategy concerning care coordination, data access, healthcare integration, payment reform and care delivery. It is led by Carrie Paykoc, State Health IT Coordinator.*
- *County Human Services Directors Association and the Colorado Association of Local Public Health Officials are both member organizations representing county health and human services professions. They serve an overlapping population with the crisis system and are familiar with local challenges that need to be addressed for success.*
- *Managed Service Organizations contract with a network of local substance use providers to ensure funding and services for uninsured and underinsured individuals in need of treatment and recovery services. They partner closely with mental health providers, especially those that also provide substance use services. Information sharing agreements will need to include the Managed Service Organizations (MSOs).*

b) Please explain which user groups will use the GIS mapping capabilities of the crisis system enhancements. Please include a description or scenario of how these user groups access mapping capabilities with the existing crisis system.

It is envisioned that the mobile crisis teams will primarily utilize this functionality. Currently, we have no capacity to monitor mobile responses including locations of response, availability to deploy a mobile team to behavioral health emergencies, and provide a public facing services locator. This GIS mapping operations will need to be fully vetted in partnership with OIT and

will be selected via a request for proposal process in which the prospective bidder will have input into the development of the GIS mapping capabilities.

c) What is a CMHC provider? Please include how the CMHC providers will use and benefit from the crisis system enhancements.

A CMHC provider is a Community Mental Health Center (CMHC). CMHCs primarily treat clients with behavioral health needs.

Currently, Colorado's 17 CMHCs formed four administrative organizations to operate the community based crisis services and subcontracted the community based crisis services to each CMHC. These regions are the current crisis vendors but are being re-procured according to state procurement rules and will be in place by June 30, 2019.

The crisis service enhancements will enhance two primary functions:

1. *Community based crisis providers with an electronic health record will leverage health information exchange in an effort to access current health care information from the State's Health Information Exchange (HIE) for individuals in a behavioral health emergency. The information in the longitudinal record of the HIE may include patient health and behavioral health treatment information to support clinical decision making and reduce the likelihood of unnecessary interventions. Having access to this information in this emergent situation will vastly improve triage capacity, care coordination and discharge planning for providers.*
2. *The second key element of the Crisis System Enhancements include the creation of a unified record. This record will enable hotline providers and other community based providers that do not have an Electronic Health Record (EHR) to document in one record that will also be connected to the HIEs. In our current state, providers are conducting hotline and community based services without the ability to review records of historical or current services. Frequently, hotline staff request a mobile response and have no way to determine if the intervention occurred. The unified record will allow for improved coordination and decision making for patients, improved monitoring and evaluation of the system, and reduce duplicative processes for providers.*

d) Describe the relationship of the four crisis contractors with DHS, and how the use of the crisis system enhancements will improve some of the current challenges.

The Department currently contracts with four regional crisis services contractors to administer Statewide, 24/7/365 crisis services. The Department has released an RFP to re-procure the Crisis System according to state procurement rules. The system will align with the Medicaid regions and will move from 4 to 7 administrative regions effective June 30, 2019. Currently, the four providers administer direct crisis services to Coloradans in the designated service areas in the attached map. Each contractor is responsible for providing the following crisis services to individuals:

- *Crisis stabilization services, which include walk-in crisis services and crisis stabilization units with the capacity for immediate clinical intervention, triage, and stabilization.*

- *Mobile crisis services, that are dispatched to various locations in the community and crisis respite services that include hourly and per-diem residential respite services to care-givers.*

- *Crisis respite services, which include services that provide additional crisis stabilization and support in an individual's home, in the community, and/or in a residential facility.*

The crisis system enhancements will address the current challenges and future programmatic needs of multiple providers documenting crisis services in their own EHR and then reporting data in spreadsheets and/or required demographic data. The unified crisis record will allow for the following:

- *Documentation in one standard record to improve standard data extraction and reporting, and calculation of utilization, cost, and outcomes data for the crisis system. Establishing one record for documentation of crisis services also allows for regular and consistent reporting of data to improve day-to-day decision making and make continual adjustments to the crisis system with the use of real-time data. Lastly, the Electronic Crisis Record System would give providers access to meaningful data to improve the quality of care for crisis clients.*
- *The Electronic Crisis Record System would also serve as an outcomes evaluation system to investigate the extent to which the crisis system is achieving its short-term and medium-term outcomes. These outcomes are under development but the new system will inform the degree to which these outcomes are attributable to the new system. It could measure the effectiveness of the system, and ultimately make it more effective in terms of delivering the intended benefits.*

An Electronic Crisis Record System solution will help providers coordinate care across the Crisis Services Hotline, Crisis mobile response providers, and State leadership. The purpose of this is to:

- *Create a centralized repository of standardized client information that may be integrated with current OBH treatment data that is collected as a requirement as the State Behavioral Health Authority to better coordinate care for consumers with co-occurring disorders;*
- *Allow access and utilization of a client record from any entry or referral point (i.e., crisis hotline or the mobile response unit);*
- *Allow access to query or build a direct interface into the State Health Information Exchanges to allow access to patients' historical treatment records to enable appropriate treatment interventions, enable continuity of care, and inform timely crisis interventions;*
- *Allow data collection and report standardized quality metrics pertinent to contract management and policy decisions (e.g., mobile dispatch times, bed utilization);*
- *Allow data collection of cross-system, client-level outcomes congruent with strong research and evaluation principles;*
- *Allow real-time system metrics such as geo-mapping of response used in emergency services/911 service deployment to inform local policy and coordination of response; and*
- *Allow connectivity to the existing uniform data set and data warehouse of OBH treatment data.*

4. The budget request says, on page 12 of Table 6: "Additional Text Line Enhancements", that the crisis system mobile application estimated cost is $150,000 for the initial build. Page 11 explains that this is a downloadable mobile telephone application that consumers, law enforcement, first responders and the general public will use.

   a) Please briefly describe the mobile application's functionality besides providing resource referrals.

   It is envisioned that the crisis system will have a mobile application and web-based front end. The mobile application will need to be deployed in rural areas where there is little to no broadband. A mobile application will allow clinicians using the crisis system to document clinical

assessments without an internet connection. When broadband connection is available, the mobile application will synchronize with the crisis database.

b) Will the department leverage other state or health care mobile applications? Please explain.

The Department is not aware of any other mobile applications that would be appropriate for the state crisis system but will work with OIT and the Office of e-Health Innovation to leverage other potential solutions.

c) Why did the department decide to implement a mobile application instead of a website that is mobile device compatible? Is the mobile application more efficient to maintain across the different device types compared to a web site solution? Please explain.

The Department has not decided to implement a mobile application instead of a website. If this project is funded, the determination of the best means will be established through an RFP process.

For functionality and efficiency purposes, the Department will require in the RFP that any application that is proposed must enable the capacity to document in the crisis record so mobile staff may perform offline work to cover circumstances where broadband is not available. The application will need to be deployed in rural areas where there is little to no broadband capacity. This approach will ensure that crisis providers are able to document assessments and synchronize with the crisis database when broadband is available. Additionally, a public facing website may be an option to support individuals in locating services in their community.

5. In the budget request, on page 6 of Table 2: "Summary of Data Analysis Themes", three themes are described about the new electronic health care record system. The themes describe data integrity issues between OBH, the CSOs, HCPF Medicaid IDs, and hotline data. Also on page 6, the budget request says that "all data pulls, including dashboards and key indicators, could be built off a shared system and available to users designated through data use agreements."

a) What is a CSO? Please include how the CSOs will use and benefit from the crisis system enhancements.

CSO stands for Crisis System Organization. Currently, we have four CSOs that are service providers and administer the community based crisis services. These CSOs subcontract with providers at the local level (i.e., Community Mental Health Centers or CMHCs) in order to deliver services. Currently, CSOs report aggregate data and performance in an Excel spreadsheet from the individual providers (CMHCs). These data are submitted from each provider's native EHR to the CSO. Standardizing the methodology and reporting consistent data from each provider has been a challenge. The lack of standardization eliminates the possibility to do any sort of comparative or system-wide analysis. CSOs will be required to utilize HIE and connect their respective EHRs to the HIE to ensure coordinated services and reporting of standard data. All mobile service providers and hotline services will be required to document in the single crisis system record. This will ensure capacity to document services in real-time, improve decision making for the hotline when requesting mobile services, report critical data and improve performance monitoring to ensure quality service delivery to clients.

b) Will the crisis system enhancements improve data integrity issues with HCPF Medicaid IDS? Please explain.

The crisis system will leverage identity solutions within the health information exchanges to improve and resolve use of multiple client identifications, which impact data integrity and the State's ability to accurately match client health records. HCPF and CDHS are currently working with OIT and OeHI to understand and enhance these State systems related to the Medicaid IDs and identity management.

c) According to the budget request, the crisis system is a $33 million statewide resource for people in need of mental health, substance use, or emotional crisis help, information and referrals. Does the department charge any fees to use the existing system? Additionally, please provide more information about the data use agreements. Who are the parties? If a fee or cost is associated with the data use agreements, please describe.

Hotline services are contracted to Rocky Mountain Crisis Services who operate 24 hours a day, seven days a week. There is no charge to use these services. If an individual needs a face to face service through a walk-in center, a mobile response, or placement at a higher level of care such as a Crisis Stabilization Unit or Respite stay, the provider is required to collect any insurance information and bill the individual's health plan for covered services. If the individual has no health coverage or the provider is not contracted as an in-network provider, the service is covered with the funding provided via the CSO contract.

Presently, there is no uniform data system for the crisis system. Crisis providers self-report their data and performance to the Office of Behavioral Health via Microsoft Excel spreadsheets. The Office of Behavioral Health does not charge providers to submit data or for the analysis of that aggregate data. Data use agreements are used to ensure that the legal obligations from both HIPAA and 42 CFR Part 2 are met while allowing data and information to be transferred and used between organizations or individuals for the purposes of quality assurance, quality improvement, program evaluation, analysis, and reporting. The Office of Behavioral Health does not charge entities to enter into data use agreements, and these types of agreements are often integrated into the contracting process.

6. The budget request says on page 4 that "through the data integrity evaluation, fifty percent of OBH's crisis line referrals for mobile units were not deployed by the crisis providers between July 2016 and January 2017." The budget request further explains that the "primary reasons these rescues were reported as not completed were reportedly due to inadequate staffing, or separately reassessing client needs, and diverting the client to an alternative lower cost service such as a walk-in."

a) Will the budget request crisis system enhancements fully correct these issues? Please explain.

No, this request will not fully correct these issues. It does not address staffing nor directly facilitate triage. However, the data captured or collection, and standardization will provide a critical enabling platform to partly address the non-staffing issues. Due to the nature of obtaining increased quality and quantity of complete data, OBH will be better equipped to analyze client-level data and summarized trends to lend transparency to crisis system performance. This will allow for enhanced accountability within the contractual relationship with providers and ensure appropriate interventions and drive outcomes for clients.

b) Have the stakeholders with disparate data record collection agreed to use the department's standardized format? Please explain, including the status and a brief description of next steps.

As a result of the confidential nature of the November 1st Governor's Budget Request process OBH did not disclose this budget request to stakeholders. Additionally, crisis service

organizations have not yet agreed to use the Department's format because the Department is currently re-procuring the crisis services system for the contract year beginning July 1, 2019. The communication of this requirement is stated in the RFP to re-procure the crisis services. The requirement to use the OBH prescribed data infrastructure will be reinforced in the contracting process. Additionally, if funded in preparation for development of the RFP for the Crisis Record System the Department will work with providers to develop the system requirements.

7. The budget request says on page 1 and 2 that the Steering Committee will: (1) leverage technology to connect and simplify data collection and standardized processes between the state and local crisis lines; and (2) leverage opportunities to utilize the co-responder models within the crisis system, specifically mobile crisis responses.

    a) Please provide a member list of the Steering Committee, including names, titles, and role, and the Committee's schedule.

    The Executive Steering Committee did not request the title of each member, only the organization they represented. In addition to the voting members, many others attended and contributed to these public meetings in-person and by phone.

    Theresa Anselmo, Colorado Association of Local Public Health Officials
    Tom Barrett, Mental Health Colorado
    Aubrey Boggs, Colorado Mental Wellness Network
    Jason DeaBueno, Southern Colorado Crisis Connection
    Rick Doucet, Community Crisis Connection
    Joshua Ewing, Colorado Hospital Association
    Gretchen Hammer, Department of Health Care Policy & Financing
    Camille Harding, CDHS OBH
    Jarrod Hindman, Colorado Department of Public Health & Environment
    Cheri Jahn, State Senator
    Tracy Kraft-Tharp, State Representative
    Lois Landgraf, State Representative
    Bev Marquez, Rocky Mountain Crisis Partners
    Michael McIntosh, County Sheriffs of Colorado Association
    Dafna Michaelson Jenet, State Representative
    Jerene Petersen, CDHS
    Larry Pottorff, Northeast Behavioral Health
    Shelly Spaulding, West Slope CASA
    Sarah Vaine, Summit County Government Department of Human Services
    Robert Werthwein, Committee Chair, CDHS Office of Behavioral Health
    Tonya Wheeler, Advocates for Recovery

    The Executive Steering Committee met twice monthly from March 2018 through June 2018. Formally, the committee met eight times, though sub-committees met informally outside of these meetings to determine recommendations for the larger Executive Committee. The meetings took place on the following dates:

    - *March 9*
    - *March 23*
    - *April 6*
    - *April 20*
    - *May 4*

- *May 18 (full day)*
- *June 1*
- *June 15*

Each meeting lasted 2 hours, except for one meeting on May 18, 2018, which lasted from 9;00am-4:30pm. All meeting materials, agendas, presentations, and reports are available on the [Executive Steering Committee website](#).

b) If applicable, briefly define and describe how co-responder models and mobile crisis responses are utilized after the crisis system enhancements are implemented.

Mobile Crisis teams may include paired behavioral health providers or behavioral health and law enforcement teams described as "co-responders." Co-responder teams will be able to provide better comprehensive assessment of clients experiencing a behavioral health crisis that is determined to have some level of risk requiring a law enforcement response. Through SB 17-207, several co-responder programs were implemented. In an effort to leverage these investments, the Department envisions that these co-responder teams are included as part of the Crisis Service System. The behavioral health provider in these teams will be able to document emergency services in the Crisis Record system. Mobile crisis service providers will have access to a comprehensive health history of the client that will improve the coordination of the client care within the crisis care system and/or referral to health care treatment. This is the same way that any mobile response team would be documenting and leveraging the health information exchange. Additionally, the same historical health care record perspective made available? from this budget request will assist walk-in and crisis stabilization facilities to better assist co-responder teams that physically transport or refer clients to these facilities. The health history and medication history will greatly enhance health care providers to properly medicate, if necessary, and/or identify aggregating health care factors and need to be addressed to resolve the client's behavioral health crisis. The budget request also includes funding for pilot programs for 911 and Emergency Medical Services programs to improve community based responses to behavioral health crises. This includes the potential for training, technology, and community partnerships for the 911 system to better connect and coordinate between 911, state patrol, EMS, co-responders, law enforcement, and crisis providers.

8. Could the department partner with other crisis centers? Has the department researched similar systems being used in the public (e.g., other states) and private (e.g., Denver Health, Kaiser) sector? Will the enhanced Colorado crisis system leverage any other crisis systems (i.e., private or public sector)? Please explain.

This is dependent upon the provider network that is developed in response to of the RFP. "The objectives of this program are to "Partner with the Regional Accountable Entities, Managed Service Organizations, Law Enforcement, Counties, and other community providers to meet the goals and objectives of the crisis system and improve the health and well-being of Coloradans." (Section IV, A.1.a.vii. - Page 25 of the RFP). "Offeror shall subcontract and maintain a network capable of ensuring access and continuity of all required behavioral health crisis services described in this RFP within its Region(s). (Section IV, 2.a.i.1. - Page 28 of the RFP).

9. Colorado has two health information exchanges (HIEs): (1) QHN is based out of Grand Junction, serving the western slope; and (2) CORHIO serves the front range, eastern planes, and some of the mountain towns. Please describe any regions (e.g., rural) or stakeholders that will not be served using the Colorado crisis system, along with any applicable alternatives for those regions or stakeholders.

The Colorado Crisis System and the two Health Information Exchanges cover the entire State and do not exclude any geographic area of the State. The map below describes the geographic service areas of the two State HIEs. Alternative service options are not necessary because the entire State is covered.

10. Please briefly compare access to the HIEs using the existing Colorado crisis system, and access to the HIEs using the crisis system enhancements.

    Currently there is no existing crisis system record that interfaces with the State HIEs. Some providers in the system may leverage their respective HIE but this is not widespread and is not standardized in the workflow of individual providers. As a result of this, behavioral health care providers in the Department's crisis system do not leverage health care records in the HIEs. The Crisis Record System will be connected to the HIE as the primary source of healthcare data for citizens in a crisis that requires intervention. Unlike the HIE, which is a tool for aggregating clinical data on citizens for the purpose of care management, the crisis record system will include, crisis specific assessments, decision support, care coordination tools, and reporting mechanisms to help coordinate the crisis interventions of a subset of the 6.3 million citizens in the HIEs who require crisis intervention.

11. The budget request states that the department is seeking a cloud solution. Will the department need a system that is configurable, such as supporting current processes for both crisis events, and daily operations usage, and will the cloud solution be configurable? Will the department include business process improvement in the project? Please explain.

Yes. The Department will need a system that is configurable. The crisis record system will be designed to OBH specifications with consideration to provider business needs and workflow. The creation of a centralized crisis system for the entire state is the main goal and will greatly help with business process improvements. Providers that deliver both crisis services and operate other lines of business may leverage HIE and/or document in the crisis record dependent upon needs.

12. Regarding "certified for 42 part 2", please summarize the federal confidentiality law and regulations that pertain to the crisis system enhancements.

42 Code of Federal Regulations (CFR) Part 2 provides additional protections beyond HIPAA for people seeking Substance Use Disorder Treatment. 42 CFR Part 2 prevents facilities that treat Substance Under Disorder (SUD) from disclosing or re-disclosing SUD Treatment data unless the consumer authorizes it. The consumer has the ability to grant, revoke, and has to be able to see who, what and when their SUD Treatment data was disclosed. The crisis system must be able to comply with 42 CFR Part 2 requirements as a good portion of the citizens the crisis system is created for suffer from Substance Use Disorders.

13. Pertaining to the crisis system enhancements, please briefly provide crisis management statistics for each Colorado region or area. If this information is not easily accessible, please do not provide the information; however, please provide an explanation of why the information is prohibitive, including if access to this information will be improved in the future.

Current State: The Colorado Crisis System does not currently operate with a uniform reporting data system. The current crisis regions use a Microsoft Excel template provided by the Office of Behavioral Health (OBH) to provide aggregate statistics. There are several deficiencies in the current reporting such as lack of interrater reliability in the way the current crisis regions count clients and services that prevents transparency or reconciliation between data sources or invoice information. The current reporting structure requires crisis regions to report on their own performance rather than affording an opportunity for OBH to collect data, calculate provider performance, and gain insight to the current quantity and quality of care delivered to constituents.

Desired Future State: OBH has already modernized the data collection practices with the creation of their new data collection system, the Data Integration Initiative (DII) which collects required demographic and outcomes data from publicly funded behavioral health providers. The funding outlined in this request would allow OBH to leverage the crisis record system to include, crisi-specific assessments, decision support, care coordination tools, and reporting mechanisms to help coordinate the crisis interventions and collect the required uniform data across the entire crisis system with improved accuracy, timeliness, and in the most cost effective manner possible. The collection of a uniform data set for each crisis modality (e.g., Hotline, Mobile, Crisis Stabilization, Respite) would allow the Office to perform business analytics and performance measurement to account for the quantity and quality of crisis services delivered to clients. Additionally, the collection of higher quality data will allow the Office to reconcile invoice data allowing greater transparency and the ability to participate in quality and cost improvement efforts.

Fiscal Year 2019-20 Information Technology Request

Labor and Employment
COSTIS System Replacement

PRIORITY NUMBERS

Prioritized By	Priority	
DeptInst	1 of 1	
OSPB	5 of 8	Recommended for funding.

PRIOR APPROPRIATION AND REQUEST INFORMATION

Fund Source	Prior Approp.	FY 2019-20	FY 2020-21	Future Requests	Total Cost
CF	$0	$2,785,277	$0	$0	$2,785,277
Total	$0	**$2,785,277**	$0	$0	$2,785,277

ITEMIZED COST INFORMATION

Cost Item	Prior Approp.	FY 2019-20	FY 2020-21	Future Requests	Total Cost
Land Acquisition	$0	$0	$0	$0	$0
Professional Services	$0	$710,277	$0	$0	$710,277
Construction	$0	$0	$0	$0	$0
Equipment	$0	$0	$0	$0	$0
Miscellaneous	$0	$0	$0	$0	$0
Contingency	$0	$200,000	$0	$0	$200,000
Software Acquisition	$0	$1,875,000	$0	$0	$1,875,000
Total	$0	**$2,785,277**	$0	$0	$2,785,277

PROJECT STATUS

This is new, never-before requested project.

PROJECT DESCRIPTION / SCOPE OF WORK

The Colorado Department of Labor and Employment (CDLE) is requesting cash funds spending authority to replace the Colorado Storage Tank Information System (COSTIS), operated by the Division of Oil and Public Safety. The department plans to develop a hosted software-as-a-service option through Salesforce, which already houses CDLE's Explosives and Conveyance program systems, to modernize and stabilize COSTIS into a more secure and easily maintainable system that can be moved into the Governor's Office of Information Technology (OIT)'s eFort data center.

Cash funds. The department is requesting cash funds spending authority from the Petroleum Storage Tank Fund and the Petroleum Cleanup and Redevelopment Fund, created in Section 8-20.5-103, C.R.S. According to the department, these cash funds were selected based on the current spending and use of the funds and a fee increase will not be needed.

PROJECT JUSTIFICATION

The COSTIS system was originally developed in 1999 and houses data related to the regulation of petroleum storage tank facilities in the state. The department notes that recent security scans of the system have identified numerous critical risks, including potential access to the system data and other CDLE systems within the same server from

outside sources. These risks are irreparable according to OIT given that the original vendor is no longer in business and the software is not supported by any other vendors. Additionally, the department is unable to maintain the current data system in its current leased location since CDLE's building is not classified as a data center, but the system must be modernized into a secure and sustainable database in order to be moved into the eFort data center.

Project alternatives. The department based its cost estimate for the project based on the responses received to a Request for Information (RFI) issued in May 2018. The RFI responses included a range of options for possible replacement systems, including customized off-the-shelf systems, which are significantly cheaper solutions than Salesforce. However, the department says most of the responses to the RFI did not adequately address the scope of work, and most only addressed one functional need of the system. (See Staff Questions #3 for further detail.)

PROGRAM INFORMATION AND IMPLEMENTATION PLAN

The COSTIS system houses data on petroleum storage tank facilities, including approximately 5,000 active facilities and about 15,000 active tanks. The system includes information related to tank registrations, permits issued, inspection records, regulatory enforcement actions, and petroleum contamination cleanup activities.

The department says this project will take three years in order to allow adequate time to identify critical business requirements, design and build the system, and provide thorough testing and training. The department says that the project will follow OIT direction and project management, along with conducting an independent verification and validation (IV&V) process.

COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES

The department did not quantify cost savings as required by statute. The department did acknowledge that the system modernization will cost a significant amount; however, it states that this is outweighed by the risks associated with continuing to operate in the current system.

The department expects the modernized system to provide on-demand access to petroleum information for citizens of the state, automatically process inspections, and allow department staff to spend less time performing data entry, along with a variety of other process improvements.

SECURITY AND BACKUP / DISASTER RECOVERY

According to the department, modernization of the system will ensure that the data within the system will remain secured. The department will be working with OIT to ensure that the system complies with OIT best practices concerning disaster recovery.

BUSINESS PROCESS ANALYSIS

The department will be working with an OIT project manager and business analyst to determine business needs. According to the department, those business needs were included in the issued RFI. Additionally, the department plans to work with internal and external stakeholders throughout the project to inform them about enhanced features, ensure proper testing, ensure system functionality, and allow for the early adoption of changes. The department states that its goal is to create a user interface that is at least somewhat similar to the current system to minimize change anxiety among users.

Labor and Employment
COSTIS System Replacement

PROJECT SCHEDULE

	Start Date	Completion Date
Planning	July 2019	October 2020
Implementation	November 2020	October 2021
Testing	November 2021	February 2022
Completion	April 2022	June 2022

OPERATING BUDGET

According to the department, current licensing for existing programs is about $30,000 per year. The department expects licenses for the replacement system to cost an additional $25,000 per year and is planning to submit an operating budget request to cover this cost.

Colorado Department of Labor and Employment
COSTIS System Replacement

Joint Technology Committee Staff Questions & Department Responses

1. What is the project's data management plan? Will data from the legacy system be migrated to the new system? If so, what are the estimated data cleansing costs? Please discuss any foreseen data risks and how they will be managed.

    Data from the legacy system will be migrated to the new database. In order to prepare for the transition, the division will be working to cleanse the data with existing staff in-house. There will be no additional costs associated with this portion of the project. During previous Salesforce database implementations, the data migration and management was overseen by a current employee of the division, with input from the vendor. This will likely be the same approach but a final plan for data management will be determined with input from the vendor, in accordance with OIT policies and requirements. The potential risks with the division's previous approach are a lack of understanding of specific data needs by the vendor, given their hands-off involvement with the migration. This will be managed by requiring on-going discussion points during project planning and development in order to ensure the needs are being met.

2. What, if any, reporting capabilities will be built into the new system? Will staff be able to modify system capabilities to address future unknown reporting needs?

    While an exact list of specific reporting capabilities has not been determined, the division will definitely be requesting that specific capabilities be built into the system. This will likely include basic reporting such as number of petroleum storage tanks, facilities, release events, dollars reimbursed and tank compliance, etc. Additionally, the capabilities will allow for integrated financial and budget tracking using modern technologies and reengineered business processes that will create an environment based upon sound, secure, and accurate processing.

    Reporting will be dynamic in order to accommodate future needs and division staff will be able to modify system capabilities in order to address future unknown reporting needs.

3. Please provide additional information related to the cost differences between the RFI responses. In addition, please explain why the cost to modernize the COSTIS system is so much greater than the cost to modernize the Conveyance program system.

    The RFI responses included everything from basic, pre-built systems to fully customized databases. The proposals at the low end of the range were built to handle only specific needs, such as registration, and do not address the full complexity of the program. The division currently regulates multiple functions including registration, inspection, environmental cleanup, and reimbursement of costs (to name a few). Therefore, due to all of the functionality needs, the cost will be greater than the lower responses reported.

    The cost to modernize the COSTIS system is so much greater due to multiple factors. To start, the size difference between the two programs is expansive. The petroleum program has been in place since the 1980s and so there is over 40 years worth of data to be housed and managed while the conveyance program was established in 2008. Additionally, the petroleum program oversees the permitting, registration, inspection and compliance of over 47,000 aboveground and underground storage tanks (15,000 active and 32,000 inactive). For each tank, there could be multiple cleanup events and the reimbursements associated with those releases. Additionally, many release sites have ongoing contamination going back decades, which requires the division to maintain historical data. In total, this amounts to a much larger bank of data than the Conveyance program.

4. Please provide an update on the modernization of the Explosives and Conveyance programs. What lessons has CDLE learned from these modernization experiences?

Both the Explosives and Conveyance modernization projects have been very successful, coming in on-time and on-budget. Explosives, which was implemented in 2015, has functioned with few issues since go-live and continues to run smoothly.

Conveyances, which was implemented in early 2018, is also functioning successfully, although there are minor issues that are being addressed. In learning from previous projects, adequate time to identify critical business requirements, project design and build as well as implementation are imperative. Additionally, thorough testing and training contribute equally to ensuring successful change management, which are all critical factors in ensuring a successful project. The three-year time frame ensures the opportunity to employ our lessons learned and gain the most from our project. Specific lessons learned from this project include:

1. *Initiating the procurement process with OIT as early as possible. With conveyances, it took just over five months to have the final contract signed by OIT and the vendor. The project budget was only available for 12 months and with the vendor not being able to start until the contract was signed, that limited the division to a seven month implementation.*

2. *Utilize a larger project team. Given that Conveyances is a significantly smaller system, we utilized a relatively small project team, relying heavily on one subject matter expert within the program. For the COSTIS implementation, the division will engage a much larger project team, in order to ensure that all roles are not being filled by one person, allowing subject matter experts from each section of the business (inspection, compliance, remediation, and reimbursement for cleanup) to participate in the testing. In addition, allowing time for cross- training and succession planning in the project plan is important.*

Fiscal Year 2019-20 Information Technology Request

Personnel and Administration
CARS System Replacement

PRIORITY NUMBERS

Prioritized By	Priority	
DeptInst	1 of 1	
OSPB	7 of 8	Recommended for funding.

PRIOR APPROPRIATION AND REQUEST INFORMATION

Fund Source	Prior Approp.	FY 2019-20	FY 2020-21	Future Requests	Total Cost
CF	$0	$1,625,610	$0	$0	$1,625,610
Total	$0	**$1,625,610**	$0	$0	$1,625,610

ITEMIZED COST INFORMATION

Cost Item	Prior Approp.	FY 2019-20	FY 2020-21	Future Requests	Total Cost
Land Acquisition	$0	$0	$0	$0	$0
Professional Services	$0	$79,200	$0	$0	$79,200
Construction	$0	$0	$0	$0	$0
Equipment	$0	$169,000	$0	$0	$169,000
Miscellaneous	$0	$0	$0	$0	$0
Contingency	$0	$77,410	$0	$0	$77,410
Software Acquisition	$0	$1,300,000	$0	$0	$1,300,000
Total	$0	**$1,625,610**	$0	$0	$1,625,610

PROJECT STATUS

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

PROJECT DESCRIPTION / SCOPE OF WORK

The Colorado Department of Personnel and Administration (DPA) is requesting cash funds spending authority to replace the Colorado Automotive Reporting System (CARS), operated by DPA's Fleet Management Program. The department plans to purchase and implement a commercial-off-the-shelf Fleet Information Management System (FIMS) to replace the current CARS system.

Cash funds. The source of cash funds is the Motor Fleet Management Fund, created in Section 24-30-1115, C.R.S. This fund is used to cover the costs of maintenance and operation of the state's motor vehicle fleet and is funded by fees charged to state agencies that use the state's fleet and from non-fee sources of revenue, such as the sale of vehicles. According to the department, the fund balance is sufficient to cover the initial cost of replacing the CARS system and to partially offset the ongoing maintenance and support costs. Continuing operating expenses for the new FIMS will be included in the calculations used to determine future fleet management fees.

PROJECT JUSTIFICATION

The current CARS system is a 21-year old custom product that is used to manage and track the state's light-duty fleet vehicles. According to the department, The Governor's Office of Information Technology (OIT) is no longer able to provide support for the CARS system due to the age of the system. Additionally, the current system does not have

appropriate levels of protections in place to prevent extended downtime for all end users if a problem arises.

Project alternatives. The department received eight responses to a Request for Information (RFI) issued in March 2018, which included a variety of proposed solutions for a new FIMS system.

PROGRAM INFORMATION AND IMPLEMENTATION PLAN

The current CARS system is used to track and report on 6,300 light-duty state fleet vehicles through their entire lifecycle, from acquisition to disposal. According to the department, there are approximately 500 users that require access to the CARS system from 19 agencies across all three branches of state government.

The department is currently coordinating with OIT on this project, including developing the project's timeline, costs, purchasing process, and other critical procurement components. The department plans to issue an RFP that incorporates information gathered during the RFI process. To ensure a smooth transition for users of the current system, the department plans to work with State Fleet Management staff and agency fleet coordinators to oversee training for the new software with vendor support.

COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES

The department did not quantify cost savings as required by statute; however, the department believes that the risks associated with continuing to operate the current system outweighs the replacement cost.

The department expects the new system to provide a variety of new features, including additional fields for data tracking, enhanced reporting capabilities, and the ability to securely interface with external software. Additionally, the department expects the new system to create a variety of staff efficiencies, including allowing registrations of state fleet vehicles to be completed and renewed more efficiently and eliminating the need for the manual entry of accident and claim information. The Colorado Department of Transportation, which does not manage its fleet of approximately 4,700 medium- and heavy-duty vehicles and equipment in the current CARS system, has indicated a desire to manage at least a portion of their fleet in the new system.

SECURITY AND BACKUP / DISASTER RECOVERY

According to the department, replacing the CARS system will ensure appropriate levels of continuity and eliminate the current risk of extended downtime to all end users if a problem arises in the current CARS system. The department has indicated that the new system will follow modern disaster recovery and business continuity needs.

BUSINESS PROCESS ANALYSIS

According to the department, the business process analysis undertaken for this project revolved around researching the current capabilities of the CARS system and the ability to upgrade and support the system, given the age of the system. OIT will be providing assistance to the department throughout the implementation of the project, including project management, business requirements analysis, and technical network integration services. Additionally, OIT will be supporting the extraction of data and data conversion from the current CARS system to the new system and will be helping to manage the vendor.

According to the department, the new system will have the capability to interface with a variety of other systems, such as Origami and the Colorado Driver License, Record, Identification, and Vehicle Enterprise Solution (DRIVES), which will allow for greater efficiencies.

PROJECT SCHEDULE

	Start Date	Completion Date
Planning	July 2019	October 2019
Implementation	October 2019	January 2020
Testing	January 2020	May 2020
Completion	May 2020	May 2020

OPERATING BUDGET

According to the department, the ongoing costs for maintenance and support are projected to be $130,000 annually, which will be paid for from the Motor Fleet Management Fund and the fleet management fee.

Colorado Department of Personnel and Administration
CARS System Replacement

Joint Technology Committee Staff Questions & Department Responses

1. How many responses to the RFI were received? Please provide all of the cost estimates that were provided through the RFI responses.

   DPA received eight responses. Participating in an RFI is purely voluntary and vendors are not required to give pricing estimates and some vendors chose not to supply this information.

   The RFI statute, 24-103-201.5(4) C.R.S., requires the state to keep RFI responses confidential.

   DPA understands that there is tension between the need for confidentiality and the need for the legislature to have information. We hope to strike this balance by providing a price range and the number of responses we received.

   The estimates the state received varied significantly in quality and price. Some vendors have more experience and had a better understanding of the state's needs. Some solutions were designed specifically to manage fleet vehicles, while other systems could incorporate fleet management into their pre-existing system. After reviewing the responses, the state based its funding request on the solutions that would likely best meet the State's needs. Some vendors' pricing was so vague that the state could not effectively estimate what a solution would realistically cost. Excluding pricing that is too vague to rely upon, the price range is approximately:

   Implementation: $275,000 to $5,900,000
   First year maintenance: $60,000 to $775,000
   Ongoing annual maintenance $60,000 to $775,000

2. What is the current annual maintenance budget for the CARS system? Does this include both OIT and DPA costs? If so, please explain. How do the current annual costs of the CARS system compare to the anticipated $130,000 in on-going costs of the new system?

   The annual maintenance for CARS is paid through the OIT common policy. The annual cost breaks down as follows:

   Servers: $17,516 (six servers hosted by OIT support the CARS solution)
   Staffing (contracted): $25,992.50 (reflects approximately 150 hours of contracted resources)
   Staffing (OIT): $221,619.80 (reflects OIT common policy development support and analyst hours)
   Total: $265,128.30

   OIT anticipates that with a COTS solution OIT staffing costs would dramatically decrease, and contracted staffing would not be necessary.

3. Please breakdown the 6,300 state-owned vehicles by general locations within the state (e.g., state-owned buildings, cities, etc.).

   The current system is not able to track vehicle locations to that level of detail. The system tracks what county each vehicle is registered in, determined by where that vehicle's "home base" is. We anticipate that the new system will be able to track physical location in much more detail. A spreadsheet detailing the county location of all vehicles can be provided upon request.

4. Will all vehicles owned by every state agency be managed by the new system (other than potentially CDOT)? If not, which agencies are not included and why not?

   With the exception of a few colleges within the Department of Higher Education, all vehicles owned by state agencies will be managed by the system. University of Colorado, Colorado State University, Colorado School of Mines, and Ft Lewis College have opted out of fleet management. CDOT's orange fleet (construction equipment) is not managed by the current system, but they plan to use the new system to manage that portion of their fleet as well as all of their other vehicles which are currently managed.

5. Please provide detailed information about the current fleet rates charged to agencies who use state fleet vehicles.

   The calculation for monthly management fees for agencies begins by determining Fleet's expenses; Personal Services, Operating Expenses, Common Policy Expenses (Workers' Comp, Leased Space, Risk Management, OIT, CORE, Legal Services), and Indirect Costs Assessment. From these expenses the estimated auction proceeds for vehicles that will be sold throughout the fiscal year are subtracted. This figure is the total management fee expenses, which is then divided by all active vehicles, and then divided by 12 to arrive at an monthly management fee.

Fiscal Year 2019-20 Information Technology Request

Public Safety
Colorado Community Corrections Information and Billing System Replacement

PRIORITY NUMBERS

Prioritized By	Priority	
DeptInst	1 of 1	
OSPB	6 of 8	Recommended for funding.

PRIOR APPROPRIATION AND REQUEST INFORMATION

Fund Source	Prior Approp.	FY 2019-20	FY 2020-21	Future Requests	Total Cost
CCF	$0	$2,205,000	$0	$0	$2,205,000
Total	$0	**$2,205,000**	$0	$0	$2,205,000

ITEMIZED COST INFORMATION

Cost Item	Prior Approp.	FY 2019-20	FY 2020-21	Future Requests	Total Cost
Land Acquisition	$0	$0	$0	$0	$0
Professional Services	$0	$2,000,000	$0	$0	$2,000,000
Construction	$0	$0	$0	$0	$0
Equipment	$0	$0	$0	$0	$0
Miscellaneous	$0	$100,000	$0	$0	$100,000
Contingency	$0	$105,000	$0	$0	$105,000
Software Acquisition	$0	$0	$0	$0	$0
Total	$0	**$2,205,000**	$0	$0	$2,205,000

PROJECT STATUS

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

PROJECT DESCRIPTION / SCOPE OF WORK

DPS is requesting state funds to replace its Colorado Community Corrections Information and Billing (CCIB) system. According to DPS, the new system will interface with five separate offender information systems that are used by 32 local facilities, along with interfacing with the state's financial system (CORE), other corrections systems, and certain Judicial Branch systems. DPS states that the new system will be compatible with all current browsers and be able to generate reports, perform analytics, and configure new reports as data needs change.

PROJECT JUSTIFICATION

The existing system was originally developed in 2008 and maintains data on offenders, staff, and users of community corrections facilities. The system also includes financial, budgetary, and billing data related to community corrections and is used to track offenders and for contracting with facilities to request payment. According to DPS, state staff, 22 community corrections boards, and 33 community corrections facilities in the state use the system.

Community corrections are a sentencing alternative to incarceration for felony offenders. DPS notes that because state community corrections treatment programs have increased 300 percent over the last 20 years, the department cannot process increasing requests for fiscal and statistical data and the system needs additional functionality. In addition, the department states that system currently cannot be updated or patched and is only compatible with

Internet Explorer. According to the department, the current system has limited reporting capabilities, which leads the department to export data and manually analyze that data in order to generate reports.

Request for information. The department and OIT issued a Request for Information (RFI), with price estimates ranging from $300,000 to $2,000,000. The department considered five project alternatives from an off-the-shelf system to a custom, hosted system. According to the department, after reviewing all RFI responses and alternatives, DPS and OIT determined to replace the system over two years.

PROGRAM INFORMATION AND IMPLEMENTATION PLAN

DPS and OIT plan to undergo a Request for Proposal (RFP) process to select a system vendor. The department states that the project will follow OIT project management guidelines and will conduct a Independent Verification and Validation (IV&V). DPS states that it will work with OIT to ensure that the project meets all state and federal requirements regarding IT accessibility standards.

COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES

DPS estimates that the department will save over 200 hours a year due to staff no longer manually creating budget and statistical reports. Staff can use those hours on higher value activities, such as managing billing data or processing background checks. Additionally, the department states the new system will eliminate lost accountability and inefficiencies.

SECURITY AND BACKUP / DISASTER RECOVERY

Currently, OIT provides system data backup and disaster recovery. DPS states that, depending upon responses to the RFP, either a vendor or OIT will host the system which will be responsible for contractual backup and disaster recovery requirements. DPS states that the system will comply with OIT user-access control policies and federal Criminal Justice Information Security policies.

BUSINESS PROCESS ANALYSIS

Prior to the issuance of the RFI, DPS staff met with an OIT business analyst and project manager to determine business needs. According to the department, those business needs were included in the issued RFI. Also, the project includes a change management plan for end user training and education.

PROJECT SCHEDULE

	Start Date	Completion Date
RFP	July 2019	January 2020
Procurement	January 2020	April 2020
System Design and Build	April 2020	July 2022
Training/Change Mgmt	July 2021	July 2022
Completion		July 2022

OPERATING BUDGET

DPS expects annual operating costs of $222,222 for licenses, support, and hosting. DPS will request these funds from the Joint Budget Committee.

Department of Public Safety
Colorado Community Corrections Information and Billing System Replacement

Joint Technology Committee Staff Questions

1. What is the project's data management plan? Will data from the legacy system be migrated to the new system? If so, what are the estimated data cleansing costs? Please discuss any foreseen data risks and how they will be managed.

    The RFI required migration of existing data in the current CCIB system to the new system. The data cleansing costs will be minimal as there are processes currently in place for cleansing all data post 2015. It is estimated that it will take approximately 80 hours of an existing Division of Criminal Justice (DCJ) analyst to cleanse data prior to 2015 in preparation for transfer to the new system. Risk is expected to be minimal, and an audit and cross-check of the data will be performed.

2. Is the existing DPS data center at eFORT? Or does OIT maintain a separate data center for DPS? What are the current leasing costs?

    The existing DPS data center is hosted in a secure facility at 690 Kipling, managed by OIT staff. OIT maintains a disaster recovery facility at eFort. If the selected system is hosted at the DPS data center, the disaster recovery version of the new CCIB system will be hosted at the eFort facility. Costs for this service are covered in Common Policy.

3. The new CCIB system will interface with five separate offender management systems, but that authorization to interface with these systems will be at agency discretion. Please provide an update on interface authorizations. What project alternatives or contingencies are being discussed if agencies do not provide authorization to interface?

    Requests for interface authorization have not occurred as funds for this project are not yet approved. If funding is approved and interface authorization issues to other systems arise, users will continue to manually enter data in the system. If such opposition occurs, DCJ leadership will escalate the issue to facility management.