

Schedule 13
Funding Request for the 2014-15 Budget Cycle

Department: EDUCATION
 Request Title: Core Network and Information Technology Refresh
 Priority Number: R-3

Dept. Approval by: 988 B. J. 10/22/13 Date Decision Item FY 2014-15
 Base Reduction Item FY 2014-15
 Supplemental FY 2013-14
 Budget Amendment FY 2014-15
 OSPB Approval by: Erin M. [Signature] 10/22/13 Date

Line Item Information		FY 2013-14		FY 2014-15		FY 2015-16
		1	2	3	4	5
Fund		Appropriation FY 2013-14	Supplemental Request FY 2013-14	Base Request FY 2014-15	Funding Change Request FY 2014-15	Continuation Amount FY 2015-16
Total of All Line Items	Total	2,723,713	-	2,792,971	3,070,988	1,678,615
	FTE	23.0	-	23.0	4.6	5.0
	GF	2,098,959	-	2,167,877	3,070,988	1,678,615
	GFE	-	-	-	-	-
	CF	-	-	-	-	-
	RF	624,754	-	625,094	-	-
	FF	-	-	-	-	-
(1) Management and Administration,	Total	2,723,713	-	2,792,971	3,070,988	1,678,615
(B) Information Technology, Information Technology Services	FTE	23.0	-	23.0	4.6	5.0
	GF	2,098,959	-	2,167,877	3,070,988	1,678,615
	GFE	-	-	-	-	-
	CF	-	-	-	-	-
	RF	624,754	-	625,094	-	-
	FF	-	-	-	-	-

Letternote Text Revision Required? Yes: No: If yes, describe the Letternote Text Revision:

Cash or Federal Fund Name and COFRS Fund Number:

Reappropriated Funds Source, by Department and Line Item Name: Various appropriations to Dept. of Education

Approval by OIT? Yes: No: Not Required:

Schedule 13s from Affected Departments:

Other Information:

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Cost and FTE

- The Department requests \$3,070,988 General Fund and 4.6 FTE in FY 2014-15 with ongoing costs of \$1,678,615 General Fund and 5.0 FTE in FY 2015-16 and beyond to update and improve the Department's information technology systems.

Current Program

- The Information Management Systems (IMS) function is one of the most important functions of the Department. The IMS Unit is charged with providing and processing timely, accurate information about the quality and performance of the State's schools and districts.
- IMS maintains systems that collect, synthesize and report student, financial and performance information for the entire state.
- One of the most urgent and pressing projects is the Educator Effectiveness system, which will electronically match up over 60,000 teachers with over 800,000 students statewide.

Problem or Opportunity

- The current information technology infrastructure is outdated and in danger of failure. The hardware system used to collect student count and district financial data is obsolete and no longer supported by the vendor.
- Database and network hardware is at the end of or past its estimated useful life.
- Programming and network support staff are required for support and development of the internal and external systems that directly support schools, districts, and Department staff.

Consequences of Problem

- Increased system downtime or degradation of service due to equipment failure leading to lost productivity at both districts around the State and the Department.
- Failure to meet desired implementation targets for key initiatives such as School Accountability (SB09-163) and Educator Effectiveness (SB10-191).
- Missed reporting deadlines which could jeopardize state and federal funding.

Proposed Solution

- The Department's request will address obsolescence in critical systems, implement key legislation, and support internal and external IMS customers across the state.
- This request will allow the Department to provide reliable, timely and accurate education data.

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State of Colorado
Department of Education
FY 2014-15 Funding Request
November 1, 2013

John W. Hickenlooper
Governor

Robert K. Hammond
Commissioner

Department Priority: R-3
Request Detail: Core Network and Information Technology Refresh

Summary of Incremental Funding Change for FY 2014-15	Total Funds	General Fund	FTE
Information Technology Services	\$3,070,988	\$3,070,988	4.6

Request Summary:

The Department requests \$3,070,988 General Fund and 4.6 FTE in FY 2014-15 to respond to growing demands for the Department's information technology services and systems. Ongoing costs for this request are \$1,678,615 General Fund and 5.0 FTE for FY 2015-16 and beyond.

Problem or Opportunity:

One of the most important activities of the Colorado Department of Education is to collect, aggregate, analyze, and report student, educator, school, and district data in order to measure school and district education performance and progress and to provide accurate information so decision makers can design effective education policies and practices. These data collection, reporting and on-line systems are maintained by the Department's Information Management Services Unit. In recent years, demand for the Department's information technology infrastructure and support services has outpaced the Department's capability to both maintain current systems and fulfill requests from districts, schools, and programs. Specifically, the Department is facing the following challenges described below.

- **Infrastructure:** The Department's current information technology infrastructure is outdated and in danger of failing. For example, the hardware used for district student count and district financial data collections is no longer supported by the vendor due to obsolescence. Database and network hardware is at the end of its useful life and not maintainable beyond FY 2013-14.
- **Additional IT staff and infrastructure are needed due to growth in use and demand:** Growth in students, employees, and statewide reform efforts require upgrades to hardware, software and support. Since FY 2007-08:
 - Student counts statewide have increased by 67,161 (8.8 percent). The growth in students as well as new student data requirements result in greater demands on school, districts, and state information systems. Processing time for data uploads has increased accordingly, sometimes leading to capacity issues and district service denials during peak times.

- Department staff has increased by 87.7 FTE (18.4 percent) resulting in greater network and bandwidth needs, more program-driven data requests, and more help desk volume. A modernized and adequately staffed help-desk is needed to support both internal and external technology service requests, answer data-related questions and securely manage access to student and teacher data.
- Major legislation and education reform initiatives have created additional demands for data collection, processes, and reporting. For example, SB 10-191 requires system development, modification, and ongoing maintenance to match over 800,000 students with approximately 60,000 educators in order to accurately measure student growth for each teacher in the state. Also, SB 09-163 requires that school district performance frameworks be developed and collected from over 2,000 schools and districts statewide. Lastly, new on-line student assessments will be implemented in FY 2014-15 requiring additional resources to input, validate, integrate, store, and support this expanded assessment process.
- Demands for data analysis and reporting has outstripped the department's capacity to produce validated reports and customized data requests. Also, the Department has recently expanded authorized access to student-level performance and growth information to a wider audience of education professionals via single-sign-on authentication process. This has expanded the Department's direct information customer base from hundreds to thousands of statewide users, placing new burdens on the Department's central support staff and on maintaining security.

Proposed Solution:

To address the issues outlined above, the Department requests an increase of \$3,070,988 General Fund and 4.6 FTE positions in FY 2014-15 to update and maintain IT infrastructure and to respond to growing data, reporting, and analysis demands from our staff and larger education community. Ongoing costs for this request are \$1,678,615 General Fund and 5.0 FTE.

One-time Infrastructure Needs

The Department requests \$1,422,034 in FY 2014-15 for one-time expenses to replace outdated computing hardware and network equipment as follows:

- \$375,424 for network equipment replacement and connectivity upgrades for increased internal and external access demand;
- \$263,559 for security firewalls, intrusion protection and data access monitoring tools;
- \$123,729 for wireless network equipment and improved access points; and
- \$659,322 for database hardware and server devices, increase processor capacity, and associated license upgrades for doubling database performance capability.

. See Table 1 in the Assumptions and Calculations section for more detail.

On-going IT Maintenance and Staffing Needs

The Department also requests \$1,648,954 and 4.6 FTE in FY 2014-15 (annualizing to \$1,678,615 and 5.0 FTE in FY 2015-16 and beyond) to support, develop, maintain, and improve the Department's information systems. Ongoing needs include three major issues: (1) additional IT staff to meet services and support demands; (2) hardware/software upgrades and maintenance; and (3) additional contract services for development and support needs.

- **Additional IT Staff to Meet Services and Support Demands:** The Department requests \$583,638 and 4.6 FTE in FY 2014-15 (annualizes to \$613,299 and 5.0 FTE in FY 2015-16 and beyond) to increase Department staff to meet IT services and support demands. Specifically, the staff will be assigned to following tasks:
 - 1.0 FTE position to implement, maintain and manage a multi-tiered help-desk process. This FTE position will help the Department reduce service response times by 50 percent by filtering only help request to the appropriate experts. This should improve customer satisfaction and maximize efficiency.
 - 1.0 FTE position to provide programming and reporting support for the School/District Performance Frameworks and Unified Improvement Planning reports by enabling reporting on mobile devices and app-based tools.
 - 1.0 FTE position to implement and monitor security processes to ensure the confidentiality of student and educator data and to reinforce security protocols for all department data systems.
 - 1.0 FTE position to develop, integrate and support new data systems supporting preschool, educator effectiveness, and dropout prevention. The position will also support data system integration with the Departments of Human Services, Higher Education, Labor, and Corrections when needed.
 - 1.0 FTE position to develop and support data collection and reporting related to new on-line student assessments, including statewide broadband support.

See Table 2 in the Assumptions and Calculations section for the details for the FTE positions.

- **Hardware/Software Upgrades and Maintenance:** The Department requests \$558,316 in FY 2014-15 and each year thereafter for ongoing hardware maintenance and software licensing needs as follows:
 - \$255,966 is an increase for annual replacement and maintenance costs for IT infrastructure;
 - \$187,094 will be used to increase data storage capability; and
 - \$115,256 for necessary license expansions, including mobile device supports and data quality components.

See Table 3 in the Assumptions and Calculations section for details on the on-going hardware/software upgrades and maintenance costs.

- **Contract Services for Development and Support Needs:** The Department requests \$507,000 in FY 2014-15 and each year thereafter to increase the number of IT contract service hours available to the Department. Increasing IT contract service hours will provide the Department with greater flexibility when managing IT projects, supports, and infrastructure needs. Specifically, the contract hours will be used, when necessary, for the following IT services:
 - System migration and upgrades;

- Application development support and consulting;
- LEAN process efficiency analysis and implementation;
- Data visualizations and dashboards;
- User experience/ application interface design or redesign;
- Mobile device support and help-desk augmentation;
- External security audits;
- Performance optimization and troubleshooting;
- Emergency technology support and services;
- Server/ network architecture auditing and recommendations; and
- Project management and coordination.

See Table 3 in the Assumptions and Calculations section for details on the on-going contractor costs.

Anticipated Outcomes:

This request will provide the necessary resources to increase the Department's ability to meet the information demands from the Department staff and greater education community in a reliable, timely, and accurate manner. Outcomes anticipated from this request are as follows:

- Improved system stability and uptime, leading to greater productivity.
 - Increase network availability during work hours from 99.5 percent (approximately 4 hours of unscheduled downtime per month) to 99.8 percent uptime (less than 90 minutes of unscheduled downtime per month).
- Improved database load and query performance.
 - District data upload process times will be increased by 50 percent. Average file upload times of 120 seconds will be reduced to less than 60 seconds.
 - Database query performance will be increased by 50 percent.
- Successful implementation and integration of the Teacher-Student Data Link, Roster Verification, and Educator Effectiveness for school year 2014-15.
- Timely updates of Data Center, Growth Model, and associated information on the Department's SchoolView information portal.
- Improved security monitoring and auditing – further diminishing the odds of a security breach of student and educator privacy.
- Longitudinal data connections to enable measuring of academic programs from preschool through K-12 and into post-secondary and workforce.
- Successful transition to new on-line state student assessments, including quicker turnaround on test results.
- Greater flexibility and agility to meet future informational needs for improved education outcomes, as measured by increased statewide academic performance.

Assumptions and Calculations:

Table 1 below summarizes the \$1,422,034 requested for one-time hardware and software network and infrastructure upgrades.

Table 1					
Colorado Department of Education					
Schedule of <u>One-Time</u> Costs FY 2014-15					
Network and Infrastructure Hardware and Software					
Description	Purpose of Expenditure	Type	A Estimated Purchase Price	B Maintenance Cost (18%) ^{/1}	C = A-B One-time Costs FY 2014-15
Core Nexus Switches	Network Connectivity for the Department's Data Center (2 units at \$151,300 each)	Hardware	\$302,600	\$46,159	\$256,441
Server Distribution Switches	Virtual Machine and Storage Area Network Convergence	Hardware	56,400	8,603	47,797
Access/Closet Switches (High Density)	High Density switches (10 units at \$5,200 each)	Hardware	52,000	7,932	44,068
Access/Closet Switches (Low Density)	Low Density switches (10 units at \$3,200 each)	Hardware	32,000	4,881	27,119
Cisco perimeter firewalls	Intrusion protection for Data Center (2 units at \$72,500 each)	Hardware	145,000	22,120	122,880
Cisco perimeter firewalls	Intrusion protection for E-Fort secondary data center (2 units at \$35,000 each)	Hardware	70,000	10,678	59,322
QRadar Server replacement log and event correlation	Secure data access monitoring and detailed session logging.	Software	96,000	14,644	81,356
Wireless network	Wireless access controller (2 units at \$22,525 each)	Hardware	45,050	6,872	38,178
Wireless access	Wireless access points (54 units at \$1,550 each)	Hardware	83,700	12,768	70,932
Wireless Infrastructure Management	Wireless management and security software	Software	17,250	2,631	14,619
Oracle Server Replacements	Database Server Machines (2 units at \$122,000 each)	Hardware	244,000	37,220	206,780
Oracle Server Licenses	Licensing for additional processor cores (8 units at \$51,625 each)	Software	413,000	63,000	350,000
Oracle Adaptive Access	Security software	Software	121,000	18,458	102,542
TOTAL ONE-TIME COSTS REQUEST			\$1,678,000	\$255,966	\$1,422,034

^{/1} The costs of items in Table 1 reflect the one-time purchase costs for hardware and software. The 18 percent maintenance costs are included in the purchase price but are subtracted out in order to arrive at the one-time costs. Because these maintenance costs are ongoing, they are included in Table 3: Schedule of On-going Costs.

Table 2 below provides the detail for the FTE positions requested.

Table 2: FTE Position Calculation Details					
Calculation Assumptions:					
Personal Services – Based on the Department of Personnel and Administration’s August 2011 Annual Compensation Survey Report, 5.0 IMS Positions at the top of the pay range will require a monthly salary of between \$71,172 and \$8,880.					
Operating Expenses – Base operating expenses are included per FTE for \$500 per year. In addition, for regular FTE, annual telephone costs assume base charges of \$450 per year.					
Standard Capital Purchases – Each additional employee necessitates the purchase of a Personal Computer (\$900), Office Suite Software (\$330), and office furniture (\$3,473).					
General Fund FTE – New full-time General Fund positions are reflected in FY 2012-13 as 0.9166 FTE to account for the pay-date shift.					
Expenditure Detail		FY 2014-15		FY 2015-16	
Personal Services	Monthly Salary	FTE	Funding	FTE	Funding
Principal Consultant/Programmer	\$8,197	1.8	\$180,315	2.0	\$196,721
PERA			18,302		19,967
AED			7,213		8,656
SAED			6,762		8,361
Medicare			2,615		2,852
STD			343		374
Health-Life-Dental			<u>8,842</u>		<u>8,842</u>
Subtotal Position 1, ## FTE		1.8	\$224,392	2.0	\$245,773
Principal Consultant/Systems Int.	\$8,880	0.9	\$97,670	1.0	\$106,557
PERA			9,914		10,816
AED			3,907		4,689
SAED			3,663		4,529
Medicare			1,416		1,545
STD			187		202
Health-Life-Dental			<u>4,421</u>		<u>4,421</u>
Subtotal Position 2, ## FTE		0.9	\$121,178	1.0	\$132,759
Principal Consultant/Identity Mgmt.	\$8,538	0.9	\$93,914	1.0	\$102,459
PERA			9,532		10,400
AED			3,757		4,508
SAED			3,522		4,355
Medicare			1,362		1,486
STD			178		195
Health-Life-Dental			<u>4,421</u>		<u>4,421</u>
Subtotal Position 3, ## FTE		0.9	\$116,686	1.0	\$127,824
Senior Consultant/Help Desk Support	5,900	0.9	\$64,895	1.0	\$70,800
PERA			6,587		7,186
AED			2,596		3,115
SAED			2,434		3,009
Medicare			941		1,027
STD			123		135
Health-Life-Dental			<u>4,421</u>		<u>4,421</u>
Subtotal Position 4, ## FTE		.09	\$81,997	1.0	\$89,693
Total		4.6	\$544,253	5.0	\$596,049

Table 2: FTE Position Calculation Details (Continued)					
Expenditure Detail	Operating Base Cost	FY 2014-15		FY 2015-16	
		FTE	Funding	FTE	Funding
Regular FTE Operating Expenses	\$500	4.6	\$2,300	5.0	\$2,500
Telephone Expenses	450	4.6	2,070	5.0	2,250
PC, One-Time	1,230	5.0	6,150		0
Office Furniture, One-Time	3,473	5.0	17,365		0
Rent-Leased Space	2,500	4.6	<u>11,500</u>	5.0	<u>12,500</u>
Subtotal Operating Expenses		4.6	\$39,385	2.0	\$17,250
Table 2 Summary					
Personal Services		4.6	\$544,253	5.0	\$596,049
Operating			<u>39,385</u>		<u>17,250</u>
TOTAL FTE POSITION REQUEST			\$583,638		\$613,299

Table 3 below details the on-going maintenance, data storage, and contract services costs.

Table 3: Schedule of Ongoing Costs		
Colorado Department of Education		
Schedule of On-going Costs Beginning in FY 2014-15		
Licensing / Maintenance / Consulting		
Description	Purpose of Expenditure/Need	Amount
Ongoing Maintenance for Hardware and Software (detailed in Table 1)		
Maintenance Contract for Switches	Hardware maintenance contract for switches to control network traffic.	\$67,576
Maintenance and Licensing for Firewall	Hardware maintenance contract for firewall equipment and licensing costs for firewall administration software.	32,797
QRadar Server Licensing	Licensing costs for data access monitoring and session logging.	14,644
Wireless Network Maintenance and Software Licensing	Hardware maintenance contract and licensing costs for wireless network equipment and software.	22,271
Oracle Server Maintenance	Hardware maintenance contracts for Oracle database servers	37,220
Oracle Licensing for Server and Security Software	Software, processor, and seat licenses for Oracle database and security administration software	81,458
Subtotal for Hardware/Software Maintenance		\$255,966
Software and Storage Ongoing Costs		
Annual Storage Expansion, Storage Area Network	Accommodating digital information storage and space needs. Department data storage needs are doubling and expected to continue doubling every 10-12 months.	\$187,094
Mobile Application Development and Reporting Software	Expanding existing Cognos reporting software to include Mobile Device formatting/features and Mobile Apps development, along with additional processor licenses necessary to keep up with reporting demands.	20,733
Virtualization Software Licensing	On-going licensing and maintenance costs for server virtualization and advanced process load balancing.	22,800
Data Integration / Data Quality Software Licensing	Software Licensing and maintenance for federated data connectivity software (Informatica) for linking Pre-K, Post-Secondary, Workforce, and Corrections data with K-12 for longitudinal reporting and analysis	71,723
Subtotal for Software & Storage Needs		\$302,350

Table 3: Schedule of Ongoing Costs (Continued)		
Colorado Department of Education		
Schedule of On-going Costs Beginning in FY 2014-15		
Licensing / Maintenance / Consulting		
Description	Purpose of Expenditure/Need	Amount
Consulting Ongoing Costs		
Project Management and Coordination	To assist with work overflow of Department Project Managers when working to meet critical deadlines and for short term projects. (Estimated 1,520 hours @ 100/hr).	\$152,000
System Migration and Updates	Contract specialists to assist Department network staff with implementation of migration and updates to mission-critical systems (Estimated 875 hours @ \$80 / hr)	\$70,000
Data Visualizations/Dashboards/Mobile application Development	Temporary/contract help to assist with data processing and reporting updates during high-volume times of the year, such as when student assessments data is released. Consulting guidance/augmentation in the emerging area of mobile apps and custom analytics. "User Experience" consulting to continuously improve navigation and usefulness of SchoolView and Data Center (Estimated 1,000 hours @ \$125/hr)	125,000
Mobile Device Support/Help Desk Augmentation/Security	When large numbers of new devices are issued, such as at the beginning of the year, temporary help with the rollout is required. Also accommodating heavy external help-desk demand during peak data collection / reporting times (Estimated 1,625 hours @ \$40/hr).	65,000
Strategic Planning/Organizational Analysis	Consulting around resource and strategic planning, process analysis (LEAN), and change management (Estimated 300 hours @ \$150/hr).	45,000
Training and Professional Development	To ensure staff stay up to date and trained on all technologies being used in the Information Management Services unit. Professional development courses vary from hundreds of dollars for on-line classes up to \$1,000/day for very specialized training.	50,000
Subtotal for Ongoing Consulting Costs		\$507,000
Table 3 Summary		
--Ongoing Hardware/Software Maintenance		\$255,966
--Ongoing Software and Storage		302,350
--Ongoing Consulting		<u>507,000</u>
TOTAL ON-GOING COSTS (not associated with FTE)		\$1,065,316