

Colorado Department of Public Safety

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Executive Director

Report to the Joint Budget Committee

Annual Report

**Colorado State Patrol
Computer Aided Dispatch, Records Management,
Mobile Data Computers, and Maintenance**

Executive Summary

This report describes past, current, and projected expenditures by the Colorado State Patrol (CSP) in the areas of Computer Aided Dispatch (CAD), Records Management (Niche RMS), Mobile Data Computers (MDC legacy Fujitsu tablets and new Panasonic CF-33), and Maintenance, from FY 2019-2024. The CSP utilizes a variety of technology platforms to deliver dispatch services, perform records management, and provide mobile situational awareness capabilities. These technologies continue to evolve and mature, and require ongoing upgrades and maintenance to ensure viability. Additionally, product improvements and replacements are also required to remain relevant and interoperable into the future.

Of particular interest, during this FY (FY 2020) the CSP will experience multiple technological upgrades to existing equipment in several areas. The State of Colorado will transition to Next Generation 911 (NG911), impacting three CSP dispatch centers; the CSP will transition to Motorola Premier One Computer Aided Dispatch (CAD) version 4.4; and the CSP will make a significant decision on the direction of future wireless capabilities impacting Mobile Data Computers and hand-held devices. Additionally, upgrades to the two non-911 communications must be made to keep pace with IT and next-generation technology. These actions all have corresponding workforce FTE growth requirements, and training, equipment, and maintenance costs, which must be thoughtfully budgeted for to ensure the success of our Troopers and Dispatchers. The in-car mobile data computers (MDC's) that are used by the Troopers, which represent a mission critical platform, are now on a three-year replacement schedule. This three-year replacement cycle represents an identifiable risk to the agency, because: 1) all of the current Fujitsu tablets are at or near end-of-life cycle (and all are out of warranty), and 2) the requirement to upgrade to Windows 10 and remain interoperable with all other mission critical IT systems (CAD 4.4, mobile fingerprint, driver's license scanners, etc) complicate the process. Additionally, some MDC's will remain in use in the fleet for an additional two-years, for a total of a five-year deployment. The Niche RMS is evolving from version 5.04 to 5.05, and then to version 6.0 (with a new NHTSA/MMUCC compliant crash report) in September of 2020. During these transitions, latitude and longitude locations will be captured and mapped for increased accuracy and more efficient resource deployment. Each of these technological upgrades represents a mission critical platform, and must be fully funded to ensure no gaps occur in CSP's capability to provide public safety.

Computer Aided Dispatch

The CSP currently utilizes the Motorola Premier One Computer Aided Dispatch (CAD) system version 3.3. This system is an essential element of the Communications Branch's emergency communications suite and is how the CSP:

- Logs all incoming requests for service from both citizens and partner agencies
- Electronically dispatches resources to fulfill requests for service
- Tracks people, resources, events, and incidents
- Logs abandoned vehicles and motorist assists processed by Troopers
- Retains historical data on services and actions for fee for service billing and records

Using this system, the CSP Communications Branch is able to provide Computer Aided Dispatch services for several divisions within the Department of Public Safety, and a large and wide variety of federal, state, county, and local public safety partners. In total, the CSP Communications Branch provides communication services for over 120 agencies.

Our current CAD system, Motorola Premier One Computer Aided Dispatch (CAD) system version 3.3. will be upgraded, from September 2019 to March 2020, to version 4.4. This upgrade is a critical component sustaining our overall communications capability and will bring significant improvements to mission functionality, including enhanced Geographic Information System (GIS) data, additional data storage and audio and visual cues to the communication officer, and upgrades and modifications to the continuity of operations (COOP) system for CAD.

Despite these upgrades, the CAD version 4.4 has a technological shelf life of only 5 years, and must be re-procured by 2025 with a replacement system. This future re-procurement has an estimated cost of between \$20-25M dollars. Coincident with this mandatory replacement of CAD 4.4, the Patrol will also evaluate the potential efficiencies in cost and interoperability, by examining single vendor solutions for CAD and Records Management.

Records Management

The CSP currently utilizes the Niche Records Management System (RMS). Implemented in 2018, the Niche system serves as a central records management tool that records the following in its database:

- Traffic stops initiated by CSP Troopers
 - The collection of this data satisfies statutory requirements for racial profiling data collection and reporting
- Traffic crashes investigated and reported by CSP Troopers

- The collection, reporting, and transmission of this crash data to the Colorado Department of Revenue (DOR) satisfies statutory requirements and provides important data for statistical analysis that leads to strategic planning and resource deployment decisions
- The first phase of the Niche RMS implementation established the following:
 - Live use of the Niche RMS in a production environment
 - The development and use of the electronic crash form (currently the DR2447), to include an approval workflow mechanism
 - The development and use of the traffic stop form
 - The development and use of a fully functional interface with DOR to electronically transmit crash report data
 - The creation and use of the interface from Computer Aided Dispatch (CAD) to Niche – enabling the RMS to receive incident data that has been entered into CAD
 - The creation and use of a data warehouse into which Niche feeds its data
 - The creation and use of statistical reports is then pulled from the data warehouse, as Niche itself cannot generate statistical reports
- The next phase of the Niche RMS is intended to incorporate the following in FY20/21:
 - A new version of the Colorado DOR crash report, identified as the DR3447 (described more fully below)
 - The Incorporation of latitude/longitude data for increased accuracy as well as for use in crash mapping, created by the CSP Crime Analysis Unit. This advancement will create a visual tool for Troopers and supervisors to more appropriately deploy resources
 - The ability for Troopers to scan driver licenses and vehicle registrations into the Niche RMS via a new CF-33 mobile data computer platform (MDC). Scanning is anticipated to save time, increase accuracy, and allow Troopers to scan the new MyColorado App mobile driver's license

Department of Revenue, in conjunction with the State Traffic Records Advisory Committee, has recently developed a new crash reporting form, identified as the DR3447. The new form adds additional required data points so as to be consistent with new National Highway Traffic Safety Administration (NHTSA) Model Minimum Uniform Crash Criteria (MMUCC) guidelines. Law enforcement agencies have until approximately October 1, 2020 to begin submitting crash information on the new DR3447 form. This will necessitate a complete redesign of the crash form by Niche RMS. Testing, development of a new Niche to DOR interface, agency-wide training, and full deployment will all need to be completed prior to this date. This endeavor is being funded through the CSP's normal yearly contract with Niche RMS.

The data gathered from the current and future crash reporting forms are analyzed for intelligence-driven resource deployment and enforcement strategies. The accurate and timely collection and interpretation of crash data allows the CSP and other data users at the local, state, and federal levels to address changes to the traffic safety environment, with the ultimate goal of saving lives on our highways. Incorporating these advanced technology options will improve, and better inform, resource deployment decisions and traffic safety initiatives.

Mobile Data Computers

The CSP's Mobile Data Computer (MDC) is a mission critical piece of equipment which allows Troopers to communicate and interact with the CSP's CAD system, Niche RMS, NCIC/CCIC crime databases, DOR driver license/registration information, and various other software packages needed for preparing law enforcement case files and accomplishing the mission and statutory requirements of the CSP. The MDC enables more efficient operations and improved situational awareness of events for both the Trooper in the field and the Dispatcher in the communications center.

The CSP's MDC program currently utilizes the Fujitsu Q704 tablet. The Fujitsu MDC's are at their end-of-shelf life, are all out of warranty, and are no longer in production. Due to several concerns (durability, functionality, form factor/design changes) identified by several business units, the CSP selected the Panasonic CF-33 Toughbook as the replacement MDC.

The Panasonic CF-33 Toughbook is a modern, ruggedized device that addresses the concerns identified with the Fujitsu tablet. The CF-33 Toughbook also has an internal modem, which will allow Troopers to use the device in a fully connected state outside of its in-car docking station. This flexibility will enable greater functionality of the units as Troopers complete their duties/investigations at other venues; such as within correctional facilities, hospital emergency rooms, towing yards, etc.

In October 2019, the CSP took delivery of 212 Panasonic CF-33 Toughbook's and complementing hardware (in-car docking stations, power supplies, wiring harnesses, etc) and will begin to decommission some of the Fujitsu MDC's in service. In the next two subsequent FY's, the CSP plans to acquire the remaining required CF-33 Toughbook's, until all 575 Fujitsu MDC's have been replaced. The CF-33 Toughbook's are being purchased in three waves (a three-year deployment cycle) because the funding allocated to purchase MDC's is only sufficient to allow for 1/3 of the MDC fleet to be purchased during each fiscal year. This limitation will lead to negative risks. As the aging Fujitsu MDC's will remain in many CSP patrol cars for up to two additional years beyond shelf life, several may fail. For those remaining Fujitsu MDC's that do physically survive this extended timeline, their memory space and outdated processors will struggle with the modern software applications being run on them. The replacement plan is further complicated in that all MDC's (both Fujitsu and Panasonic) must be made Windows 10 compliant by January 2020. This impacts both existing and future CAD systems and MDC's. Our existing CAD 3.3 cannot be sustained beyond April 2020, and cannot run on Windows 10. The upgraded CAD 4.4 cannot run on Windows 7. Our Fujitsu MDC's cannot operate fully with Windows 10, while the replacement CF-33 MDC utilize Windows 10. The Patrol is currently searching for a solution to ensure interoperability with CAD 4.4 and both current (Fujitsu) and future (Panasonic) MDCs to provide Troopers the communication tools they need.

Maintenance

Maintenance requirements include computer hardware and server reliability for both CAD and Niche RMS, MDC’s, generator maintenance to ensure reliable back-up power, and the repair/replacement of ancillary devices, and universal power supplies. Although not part of CAD, Niche RMS, or Mobile Data Computers, the State’s transition from Enhanced 911 (E911) to Next Generation 911 (NG911) will have an associated unknown maintenance cost to the CSP. The majority of this cost will be paid by local 911 Authorities, but some costs will still require the expenditure of CSP dollars to ensure NG911 requirements are met and maintained at our three regional 911 centers (Alamosa, Montrose, Craig). Additionally, the CSP will upgrade and maintain our two non-911 regional communications centers (Denver and Pueblo), plus the Executive Security Unit (ESU) communications center, to ensure they are not technologically “left behind” and remain viable with next-generation technologies used to ensure public safety.

CAD specific software and hardware maintenance is covered in the current upgrade contract for a period of five (5) years. This maintenance contract covers 24/7 software technical support and 24/7 hardware technical support from HP and Motorola. Niche RMS software and system support are covered under a maintenance agreement which is funded from the CSP CAD budget. MDC hardware is supported through manufacturers’ warranties. Software technical support for MDC’s is provided through OIT desktop support resources embedded within CDPS. As noted above, the warranties have expired on all Fujitsu MDC’s.

Projects Completed in FY 2019

- Each of the five regional communications centers (Denver, Pueblo, Alamosa, Montrose, and Craig) and the Executive Security Unit (ESU) communications center received upgraded network switches, CAD computer stations, and ancillary devices supporting CAD 3.3.
- Maintenance contracts for all systems were continued to ensure a stable and dependable operating platform for each system. Additionally, an annual review was conducted for equipment replacement life cycles. This helps to ensure the CSP is prepared to replace equipment before it fails, but not before it is needed.
- Continued analysis of current MDC shelf life to ensure MDC viability. Planned replacements procured and maintenance conducted based upon available budget resources.
- Performed upgrades to migrate Niche RMS v5.04 to v5.05.

Information Technology Asset Maintenance	FY 2019
CAD Premier One 3.3 Maintenance	\$ 206,621.46

Records Management System (RMS)	\$255,148.34
CAD Upgrade	\$319,956.00
Computer Equipment / supplies	\$157,089.03
Voice Recorder Maintenance	\$50,743.00
Denver Phone Differentiation	\$6,500.00
Isilon Server for CAD/RMS	\$410,139.71
Pueblo Comm Center Move	\$11,249.64
Radio Equipment	\$71,292.52
Software Upgrades / Maintenance	\$54,642.89
UPS / Generator / Phone Maintenance	\$27,041.70
Operational Expenses	\$18,017.45
Pueblo Radio Tower	\$293,652.83
CAD Training/Travel	\$2,664.63
TOTALS	\$1,884,759.20

MDC Budget	FY 2019
Mobile Connectivity (Verizon and AT&T)	\$294,700.46
Mobile Computers, Installation, and Maintenance (various suppliers)	\$73,597.78
TOTALS	\$368,298.24

Projects, both underway and planned for FY 2020

- Video camera feeds from the Colorado Department of Transportation (CDOT) were brought into the Denver Regional Communications Center, to help better facilitate coordinate traffic management challenges.
- Initial steps to begin the CAD 3.3 migration to version 4.4 are completed. Additional steps are planned with a completion date for the entire project in Q3 of FY 2020.

- Encryption and interoperability by other agencies has emerged as an unplanned challenge. As partner agencies in the Denver Metro area procure different radio encryption technologies, the Patrol, to maintain mission critical communications interoperability with partner agencies must procure common encryption technologies and upgrade radios to ensure uninterrupted communication abilities.
- Maintenance contracts for all systems will be continued to ensure a stable and dependable operating platform for each system.
- We will continue our annual review of the plan for equipment replacement cycles. To include MDC connectivity, replacement, installation, and maintenance. The first of three phases of CF-33 MDC laptop replacements (212 units) have been purchased and are on track to be installed.
- A new contract that includes an upgrade and continued maintenance and support of the Niche RMS system is in progress. This contract will support new development and enhancements through v5.05 and v6.0, as we transition to the development of the new DR3447 crash report, and we are currently in the beginning stages of this development with a deployment scheduled in FY 2020.
- The first phase of CF-33 MDC's will be purchased and deployed.

Information Technology Asset Maintenance	FY 2020
Premier One CAD	231,918.00
Premier One CAD Interfaces	\$ 24,082.00
Premier One Mobile	\$65,830.00
Third Party COMMSYS	\$2,754.00
Third Party CAD Ancillary Requirements	\$63,183.00
CAD Training/Travel	\$5,000.00
Software Upgrades / Maintenance	\$60,000.00
UPS / Generator Maintenance	\$41,000.00
Voice Recorder Maintenance	\$50,743.00
Computer Equipment Maintenance	\$95,000.00
Records Management System (RMS)	\$321,040.00
Operational Expenses (CAD / MDC / RMS)	\$5,000.00
Radio Equipment Installation / Repair	\$30,000.00

Network Infrastructure Costs	\$7,000.00
Telecommunications Charges	\$320,000.00
Radio Encryption Costs	\$800,000.00
CAD upgrade prerequisite equipment	\$603,522.00
MDC antenna replace/repair/maintain	\$40,584.00
TOTALS	\$ 2,771,656 .00

MDC Budget	FY 2020
Phase 1 (of 3) MDC computers and accessories	\$ 798,810.00
MDC related parts and supplies to maintain operability of remaining Fijitsu tablets	\$44,190.00
TOTALS	\$843,000.00

Planned Projects for FY 2021

- This will be the first year of a five-year cycle to replace over 1,200 PACset radios for all uniformed officers and communication centers. This planned replacement is based on a ten-year shelf life of existing PACset radios, and is needed to ensure technological obsolescence does not occur.
- We will continue to upgrade all of our communication center’s base station radio equipment to ensure interoperability and leverage the latest technology upgrades to ensure Trooper effectiveness and safety.
- Maintenance contracts for all systems will be continued to ensure a stable and dependable operating platform for each system.
- We will continue our annual review of the plan for equipment replacement cycles. To include MDC connectivity, replacement, installation, and maintenance.
- The second phase of CF-33 MDC’s will be purchased and deployed.
- Niche RMS will continue to be further developed and enhanced as needed, to include research and development into an eTicket capability for the CSP.

Information Technology Asset Maintenance	FY 2021
Premier One CAD	\$243,514.00
Premier One CAD Interfaces	\$25,287.00
Premier One CAD Mobile	\$69,122.00
Third Party COMMSYS	\$2,892.00
Third Party CAD Ancillary Requirements	\$66,344.00
CAD Training / Travel	\$1,000.00
CAD Replacement Analysis and RFP Creation Costs	\$65,000.00
Software Upgrades / Maintenance	\$65,000.00
UPS / Generator Maintenance	\$45,000.00
Voice Recorder Maintenance	\$50,743.00
Computer Equipment Maintenance	\$50,000.00
Records Management System (RMS)	\$217,000.00
Operational Expenses (CAD / MDC / RMS)	\$5,000.00
Radio Console Upgrades	\$54,000.00
Network Infrastructure Costs	\$100,000.00
Telecommunications Charges	\$320,000.00
Voice Recorder Replacement	\$92,163.00
PACset Replacement Year 1	\$1,740,000.00
TOTALS	\$ 3,212,065.00

MDC Budget	FY 2021
Phase 2 (of 3) MDC computers and accessories	\$ 798,810.00
MDC related parts and supplies to maintain operability of remaining Fijitsu tablets	\$44,190.00

TOTALS	\$843,000.00
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Planned Projects for FY 2022

- This will be in the second year of a five-year cycle to replace over 1,100 PACset radios for all uniformed officers and communication centers. This planned replacement is based on a ten-year shelf life of existing PACset radios, and is needed to ensure technological obsolescence does not occur.
- All audio recording equipment in our communication centers will begin to be replaced, as the current equipment life cycles start to expire.
- Maintenance contracts for all systems will be continued to ensure a stable and dependable operating platform for each system. Additionally, we will continue our annual review of the plan for equipment replacement cycles. To include MDC connectivity, replacement, installation, and maintenance.
- The third and final phase (of this particular MDC replacement plan) of CF-33s will be purchased and deployed.
- Niche RMS will continue to be developed and enhanced as appropriate and required.

Information Technology Asset Maintenance	FY 2022
Premier One CAD	\$255,690.00
Premier One CAD Interfaces	\$26,552.00
Premier One CAD Mobile	\$72,579.00
Third Party COMMSYS	\$3,037.00
Third Party CAD Ancillary Requirements	\$69,661.00
CAD Training / Travel	\$3,000.00
Software Upgrades / Maintenance	\$75,000.00
UPS / Generator Maintenance	\$50,000.00
Voice Recorder Maintenance	\$25,000.00
Computer Equipment Maintenance	\$50,000.00

Records Management System (RMS)	\$227,000.00
Operational Expenses (CAD / MDC / RMS)	\$5,000.00
Radio Console Upgrades	\$75,000.00
Network Infrastructure Costs	\$100,000.00
Telecommunications Charges	\$320,000.00
PACset Replacement Year 2	\$1,740,000.00
TOTALS	\$3,030,019.00

MDC Budget	FY 2022
Phase 3 (of 3) MDC computers and accessories	\$ 798,810.00
MDC related parts and supplies to maintain operability of remaining Fijitsu tablets	\$44,190.00
TOTALS	\$843,000.00

Planned Projects for FY 2023

- This will be in the third year of a five-year cycle to replace over 1,100 PACset radios for all uniformed officers and communication centers. This planned replacement is based on a ten-year shelf life of existing PACset radios, and is needed to ensure technological obsolescence does not occur.
- The project to replace of all audio recording equipment in our communication centers will conclude.
- Maintenance contracts for all systems will be continued to ensure a stable and dependable operating platform for each system.
- We will continue our annual review of the plan for equipment replacement cycles. To include MDC connectivity, replacement, installation, and maintenance.
- A new, yet-to-be-developed MDC replacement plan, will be in its first phase of purchasing a deployment, if said plan continues on a three-year cycle, which has yet to be determined.
- Niche RMS will continue to be developed and enhanced as appropriate and required.

- CAD reprocurments prerequisite estimated costs are included in this FY, as CAD 4.4 has a 5 year technological shelf-life.

Information Technology Asset Maintenance	FY 2023
Premier One CAD	\$268,473.00
Premier One CAD Interfaces	\$27,878.00
Premier One CAD Mobile	\$76,208.00
Third Party COMMSYS	\$3,189.00
Third Party CAD Ancillary Requirements	\$73,145.00
CAD Replacement Prerequisite Costs	\$200,000.00
Software Upgrades / Maintenance	\$50,000.00
UPS / Generator Maintenance	\$50,000.00
Voice Recorder Maintenance	\$25,000.00
Computer Equipment Maintenance	\$50,000.00
Records Management System (RMS)	\$227,000.00
Operational Expenses (CAD / MDC / RMS)	\$5,000.00
Network Infrastructure Costs	\$100,000.00
Telecommunications Charges	\$320,000.00
PACset Replacement Year 3	\$1,740,000.00
TOTALS	\$3,215,893.00

MDC Budget	FY 2023
Mobile Computers, Installation, and Maintenance (various suppliers)	\$371,292.00
Yet-to-be-developed MDC replacement plan	\$800,000.00
TOTALS	\$ 1,171,292.00

Planned Projects for FY 2024

- This will be in the fourth year of a five-year cycle to replace over 1,100 PACset radios for all uniformed officers and communication centers. This planned replacement is based on a ten-year shelf life of existing PACset radios, and is needed to ensure technological obsolescence does not occur.
- Maintenance contracts for all systems will be continued to ensure a stable and dependable operating platform for each system.
- We will continue our annual review of the plan for equipment replacement cycles. To include MDC connectivity, replacement, installation, and maintenance.
- A new, yet-to-be-developed MDC replacement plan, will be in its second phase of purchasing a deployment, if said plan continues on a three-year cycle, which has yet to be determined.
- Niche RMS will continue to be developed and enhanced as appropriate and required.
- CAD 4.4 Replacement (Year 1) Costs as required (future contract).

Information Technology Asset Maintenance	FY 2024
CAD 4.4 Replacement Year 1 Costs	\$ 750,000.00
Software Upgrades / Maintenance	\$50,000.00
UPS / Generator Maintenance	\$50,000.00
Voice Recorder Maintenance	\$25,000.00
Computer Equipment Maintenance	\$50,000.00
Records Management System (RMS)	\$227,000.00
Operational Expenses (CAD / MDC / RMS)	\$5,000.00
Network Infrastructure Costs	\$100,000.00
Telecommunications Charges	\$320,000.00
PACset Replacement Year 4	\$1,740,000.00

TOTALS	\$3,317,000.00
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MDC Budget	FY 2024
Mobile Computers, Installation, and Maintenance (various suppliers)	\$371,292.00
Yet-to-be-developed MDC replacement plan	\$800,000.00
TOTALS	\$1,171,292.00

Conclusion

These plans and projects reflect the CSP’s continued commitment to enhance the mission critical technologies that give our agency the ability to stay relevant and responsive to our customers so we continue to make travel on our highways safer for our residents and visitors. We will continue to strive to balance the requirements to stay technologically relevant and interoperable within the constraints of our fiduciary duty to taxpayers, and appreciate the continued engagement, support and commitment to Public Safety by the Joint Budget Committee.