Colorado Department of Public Safety

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Annual Report to the Joint Budget Committee

on the

Colorado State Patrol's
Computer Aided Dispatch (CAD), Records Management System (RMS), Mobile Data Computers (MDC), 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 System (RMS), Mobile Data Computers (MDC) and their Maintenance, from FY 2020-2025. The CSP utilizes a variety of technology platforms to deliver dispatch services, perform records management, and provide mobile situational awareness capabilities. As these technologies continue to evolve and mature, they require ongoing upgrades, maintenance, and replacement to ensure viability.

During FY 2020, the CSP accomplished technological upgrades to existing equipment in several areas. CSP began transitioning to Next Generation 911 (NG911) at one of the three CSP dispatch centers that provides 911 services. Prerequisite hardware upgrades were conducted at the Lakewood/Kipling complex to set the foundation for the transition to Motorola Premier One Computer Aided Dispatch (CAD) version 4.4. Additionally, at every Regional Communications Center, universal power supplies and associated ancillary devices were replaced due to shelf life expiration and repeated failures. Additionally, during the past year, the NICHE RMS was upgraded to version 6.0 and over 200 MDC's were upgraded with new replacement models. Finally, all MDCs were imaged for Windows 10.

The contractual requirements for the CAD system increase annually over the next five years to well over $400K/year, shrinking available funds for other mission essential communications requirements under this budget line item.   This leaves little budget space to mitigate unforeseen equipment failures or unplanned maintenance costs. Funding requirements for other essential public safety communications technology requirements, such as handheld and vehicle police radios, radio encryption, handheld wireless services, audio and video records from NG911, digital video evidence processing and storage, RADAR/LIDAR, and the integration costs of all the above, outstrip the agency's ability to support with existing appropriations. Each of these technology programs interrelates with CAD, RMS, and MDC, and requires careful consideration for funding as they operate as a system, and not stand-alone capabilities.

To ensure uninterrupted public safety communications service, each CSP Communications Center requires a redundant network and phone infrastructure path. Lack of this redundant path frequently results in extended outages (up to 48 hours) when the single path is compromised or severed. These repeated long duration outages at several locations throughout the state necessitated further exploration of how to mitigate the challenge. This project, currently in the technological planning phase, would ensure fewer long duration outages. Planning also began to determine required technological upgrades to the two non-911 communications. This will ensure all Centers keep pace with next-generation information technologies and ensure interoperability with other CSP Communications Centers. This upgrade would also ensure redundancy of service and support for our three 911 centers.   Planning also began for a mobile CAD handheld capability for Troopers, to enhance operations and public safety. Each of these technological and communications upgrades represents a component of mission essential communications, and must be fully funded to ensure no gaps occur in CSP's ability to provide public safety around the state.

Computer Aided Dispatch

The CSP currently utilizes the Motorola Premier One Computer Aided Dispatch (CAD) system version 3.3, and is upgrading to version 4.4. This system is an essential element of the Communications Branch's emergency communications suite and:

- 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 56 agencies (Federal, State, Local) in Colorado.

A significant delay caused by both COVID-19's effect on travel and unforeseen difficulties integrating CrowdStrike security software impacted CSP's planned upgrade of the CAD system from Motorola Premier One CAD system version 3.3. to version 4.4. Despite the delay in fielding, the upgrade is planned to occur in Q4 of FY 2020. This upgrade brings significant improvements to mission functionality, including enhanced Geographic Information System (GIS) data, additional data storage, and audio and visual cues to the communication officer.

The CAD version 4.4 has a technological shelf life of approximately 5-6 years, and must be re-procured by 2026 with a replacement system. This future re-procurement has an estimated cost of between $20-25M dollars. Coincident with the 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 RMS.

Records Management System

The CSP currently utilizes Niche for our Records Management System (RMS). First 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
    - 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:
    - 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 Department of Revenue (DOR) crash report
    - Latitude/longitude data for increased accuracy and use in crash mapping. 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

The 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, 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 necessitates 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 MDC program currently utilizes the Fujitsu Q704 tablet and the Panasonic CF-33 Toughbook tablet. The Fujitsu MDC's are at their end-of-shelf life, are all out of warranty, and are no longer in production.   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 new Panasonic CF-33 Toughbook's and complementing hardware (in-car docking stations, power supplies, wiring harnesses, etc). This allowed the decommission of some of the Fujitsu MDC's currently in service. In 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 allows for 1/3 of the MDC fleet to be purchased during each fiscal year. This limitation will lead to risks. As the aging Fujitsu MDC's have remained in many CSP patrol cars for up to two additional years beyond shelf life, we have seen resulting failures due to age. 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.

Maintenance

Maintenance requirements include computer hardware and server reliability for both CAD and Niche RMS, maintenance of MDC's, generator maintenance to ensure reliable back-up power, and the repair/replacement of ancillary devices, and universal power supplies.   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 Information Technology (IT) budget. MDC hardware is supported through manufacturers' warranties. Software technical support for MDC's is provided through OIT desktop support resources embedded within CDPS.

Mission Critical Equipment and Interfaces

Mission critical equipment to connect and provide services from CAD, RMS, and MDCs far CSP exceeds the narrow list on which this budget line item focuses. The list includes: Mobile Radios, Handheld Radios, and Communications Center Radios (and encryption capabilities); 911 and Administrative Phones; the CAD systems ancillary information technology equipment, hardware, and software; facilities for dispatching; and primary and alternate power supplies. Other critical equipment, not owned or maintained by CSP, include the voice communications, internet, and wireless networks provided by commercial vendors, the Digital Trunked Radio (DTR) system provided by the Office of Information Technology (OIT), and CDPS servers and network, managed by OIT. Critical technological interfaces include the following: the MDC / NetMotion interface; the RMS / CAD interface; the MDC / CAD and RMS interfaces; Automatic Number Indicator / Automatic Location Information (ANI/ALI) provided by commercial phone vendors; interfaces with the Colorado Department of Revenue (DOR) for driver's license and registration scanning; interfaces with the Colorado Department of Transportation (CDOT) for traffic camera feeds; Reverse 911; the Integrated Public Alert and Warning System (IPAWS); Active 911; and the

telephone/radio digital voice recording system at each Center. Additionally, the primary interface for all CSP Communications Centers is Building 690 at the Lakewood/Kipling campus. This building houses all CDPS servers, and is the sole access point to communicate with E-Fort. Additionally, Building 690 and the Denver Communications Center share a common primary and alternate power supply. As the reader can imagine, this integrated and complicated system exceeds the limited funds available for CAD, RMS, and MDC. The interrelationship and interoperability of each component, mandates we examine it as a whole system that provides public safety communications. It is for that reason the above narrative is included in this report.

Projects Completed in FY 2020

- 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. The upgrades ensured CAD 3.3 remained operational until the transition to CAD 4.4 could occur.

- 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 helped ensure the CSP is prepared to replace equipment before it fails, but not before it is needed.

- Video camera feeds from the Colorado Department of Transportation (CDOT) were brought into the Denver Regional Communications Center, to help better facilitate the coordination of traffic management challenges.

- Initial technology upgrades were completed to set the foundation for the eventual transition to NG911 at all three Public Safety Answering Point (PSAP) dispatch centers operated by the Colorado State Patrol.

- 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 consider procuring common encryption technologies and upgrade radios to ensure uninterrupted communication abilities.

- The first of three phases of CF-33 MDC laptop replacements have been purchased and have been fielded.

- 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 trough 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.

Information Technology Asset Maintenance	FY 2020
CAD Premier One version 3.3 System Maintenance	$298,749.00
DSS Voice recorder Maintenance	$50,743.00
NetMotion (Insight)	$43,205.71
Software Maintenance (Esri, Adobe, Symantec)	$17,000.00
Quality Assurance Maintenance (Guardian Tracker)	$4,600.00
RMS- Niche	$227,012.00
CAD Upgrade	$570,335.80
GIS Refresh - CAD Upgrade Project Management	$19,741.00
Computer Equipment (CAD Upgrade)	$112,752.00
Computer Software	$1,149.06
Hardware Repair	$10,000.00
FirstNet Devices	$5,000.00
MDC Mobile Printers	$29,672.50
Radio Equipment	$7,008.00
MDC Antenna	$40,584.00
APEX 7/800 Console	$6,766.37
Servers and Equipment	$4,474.84
MDC Replacement	$1,000,000.00
UPS - Hardware Maintenance	$21,891.23
UPS - Batteries	$21,682.00
Montrose Phone System Warranty	$2,259.24
CAD Training/Travel - CDPS Staff	$5,000.00
Cell Phone / Modem	$320,000.00
Printer Cartridges	$1,000.00
TOTALS	$2,820,625.75

Projects, both underway and planned for FY 2021

- The second phase of CF-33 MDC laptop replacements will be purchased and fielded.

- Maintenance contracts for all systems will be continued to ensure a stable and dependable operating platform for each system.

- A redundant communications path for CSP's 911 Centers will be established and maintained.

- Handheld CAD devices for all Troopers will be purchased and fielded.

Information Technology Asset Maintenance	FY 2021
CAD Premier One version 4.4 System Maintenance / Motorola	$373,445.00
Server Equipment	$100,000.00
Computer Equipment	$100,000.00
Computer Software and Licensing	$10,000.00
Hardware Repair	$10,000.00
GIS Software Refresh - ESRI	$30,000.00
Licensing / Insight	$43,500.00
DSS Voice recorder Maintenance / Equature	$50,743.00
UPS - Hardware Maintenance and Batteries / Various	$116,922.00
Generator Maintenance / Various	$20,000.00
Niche RMS	$211,400.00
Easy Street Draw	$12,500.00
MDC Replacement	$200,000.00
MDC Mobile Printers	$50,000.00
Printer Cartridges	$1,500.00
Redundant Comm Path for CAD (COMCAST)	$75,000.00
Handheld Device with Mobile CAD	$750,000.00
Cell Phone / Modem / MDC	$450,000.00
Phones / Centers	$200,000.00
TOTALS	$2,805,010.00

Planned Projects for FY 2022

- The third phase of CF-33 MDC laptop replacements will be purchased and fielded.

- Maintenance contracts for all systems will be continued to ensure a stable and dependable operating platform for each system.

- 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 2022
CAD Premier One version 4.4 System Maintenance / Motorola	$392,121.00
Server Equipment	$100,000.00
Computer Equipment	$100,000.00
Computer Software and Licensing	$10,000.00
Hardware Repair	$10,000.00
GIS Software Refresh - ESRI	$30,000.00
Licensing / Insight	$43,500.00
DSS Voice recorder Maintenance / Equature	$50,743.00
UPS - Hardware Maintenance and Batteries / Various	$116,922.00
Generator Maintenance / Various	$20,000.00
Niche RMS	$211,400.00
Easy Street Draw	$12,500.00
MDC Replacement / Shelf life	$200,000.00
MDC Mobile Printers	$50,000.00
Printer Cartridges	$1,500.00
Redundant Comm Path for CAD (COMCAST and Mammoth)	$175,000.00
Handheld Device with Mobile CAD	$350,000.00
Cell Phone / Modem / MDC	$450,000.00
Phones / Centers	$200,000.00
TOTALS	$2,523,686.00

Planned Projects for FY 2023

- Maintenance contracts for all systems will be continued to ensure a stable and dependable operating platform for each system.

- All audio recording equipment in our communication centers will begin to be replaced, as the current equipment life cycles start to expire.

- Niche RMS will continue to be develped and enhanced as appropriate and required.

Information Technology Asset Maintenance	FY 2023
CAD Premier One version 4.4 System Maintenance / Motorola	$411,729.00
Server Equipment	$100,000.00
Computer Equipment	$100,000.00
Computer Software and Licensing	$10,000.00
Hardware Repair	$10,000.00
GIS Software Refresh - ESRI	$30,000.00
Licensing / Insight	$43,500.00
DSS Voice recorder Maintenance / Equature	$50,743.00
UPS - Hardware Maintenance and Batteries / Various	$116,922.00
Generator Maintenance / Various	$20,000.00
Niche RMS	$211,400.00
Easy Street Draw	$12,500.00
MDC Replacement / Shelf life	$200,000.00
MDC Mobile Printers	$50,000.00
Printer Cartridges	$1,500.00
Redundant Comm Path for CAD (COMCAST and Mammoth)	$175,000.00
Handheld Device with Mobile CAD	$350,000.00
Cell Phone / Modem / MDC	$450,000.00
Phones / Centers	$200,000.00
TOTALS	$2,543,294.00

Planned Projects for FY 2024

- 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 develped and enhanced as appropriate and required.

- CAD reprocurements prerequisite estimated costs are included in this FY, as CAD 4.4 has a 5-6 year technological shelf-life.

Information Technology Asset Maintenance	FY 2024
CAD Premier One version 4.4 System Maintenance / Motorola	$432,314.00
Server Equipment	$100,000.00
Computer Equipment	$100,000.00
Computer Software and Licensing	$10,000.00
Hardware Repair	$10,000.00
GIS Software Refresh - ESRI	$30,000.00
Licensing / Insight	$43,500.00
DSS Voice recorder Maintenance / Equature	$50,743.00
UPS - Hardware Maintenance and Batteries / Various	$116,922.00
Generator Maintenance / Various	$20,000.00
Niche RMS	$211,400.00
Easy Street Draw	$12,500.00
MDC Replacement	$200,000.00
MDC Mobile Printers	$50,000.00
Printer Cartridges	$1,500.00

Redundant Comm Path for CAD (COMCAST)	$75,000.00
Handheld Device with Mobile CAD	$300,000.00
Cell Phone / Modem / MDC	$450,000.00
Phones / Centers	$200,000.00
TOTALS	$2,413,879.00

Planned Projects for FY 2025

- 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 develped and enhanced as appropriate and required.

- CAD 4.4 Replacement (Year 1) Costs as required (projected future contract).

Information Technology Asset Maintenance	FY 2025
CAD Premier One version x.x System / Motorola	$1,000,000.00
CAD Premier One version 4.4 System Maintenance / Motorola	$200,000.00
Server Equipment	$100,000.00
Computer Equipment	$100,000.00
Computer Software and Licensing	$10,000.00
Hardware Repair	$10,000.00
GIS Software Refresh - ESRI	$30,000.00
Licensing / Insight	$43,500.00
DSS Voice recorder Maintenance / Equature	$50,743.00
UPS - Hardware Maintenance and Batteries / Various	$116,922.00
Generator Maintenance / Various	$20,000.00

Niche RMS	$211,400.00
Easy Street Draw	$12,500.00
MDC Replacement	$200,000.00
MDC Mobile Printers	$50,000.00
Printer Cartridges	$1,500.00
Redundant Comm Path for CAD (COMCAST)	$75,000.00
Handheld Device with Mobile CAD	$300,000.00
Cell Phone / Modem / MDC	$450,000.00
Phones / Centers	$200,000.00
TOTALS	$3,181,565.00

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.