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Agency of Digital Services

Selected Information Technology Projects Had Cost Increases, Schedule Delays, and Poorly Defined Measures

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DOUGLAS R. HOFFER
Vermont State Auditor

Mission Statement

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Dear Colleagues,

The State of Vermont relies on information technology (IT) systems to serve Vermonters by allowing individuals and businesses to apply for benefits, pay taxes, and access numerous other government services.

In 2017, an Executive Order created the Agency of Digital Services (ADS) to consolidate the Executive Branch's IT activities. Part of ADS's role, which was later codified in statute, is to provide project management services to implement new IT systems. ADS's Enterprise Project Management Office (EPMO) works with State client entities to fulfill this role. In a recent report, EPMO identified 64 on-going IT projects with expected costs of $500,000 or more that it was managing. The total estimated costs to implement these projects was $206 million.

Because of the high cost of IT projects and the relatively recent establishment of ADS, we decided to audit a selection of six IT projects.

Our first audit objective was to determine whether and why costs and schedules for selected IT projects changed. Only one of the six projects delivered the expected IT system on time and within budget. Most notably, one project has failed to deploy a usable system more than two years after it was expected, despite paying the vendor $2 million or 95 percent of its maximum contract amount. This project had an unrealistic completion date and the contractor eventually stopped working on the project without addressing problems identified during testing. In March 2023, ADS formally notified the contractor that it was seeking to recapture about $700,000 that had already been paid (as of May 24, 2023, the contractor had not responded). The State is trying to salvage this project by splitting it into two projects and hiring new contractors to complete the work.

In two other projects, the estimated costs had more than doubled and the estimated completion dates had been extended by at least 18 months. Among the reasons for deviations to the costs and schedules for these and other projects were (1) changes to functional requirements, which are specific activities a product or service is expected to perform, (2) changes to development/deployment approaches, and (3) additional security requirements.

Our second objective was to evaluate how the State measured, or planned to measure, whether the selected projects met their business goals. Five of the six IT projects had poorly defined measures that did not (1) include a baseline, (2) quantify the size, amount, or degree of the change expected, or (3) appear relevant to the project's implementation. Additionally, most client entities made limited efforts or plans to evaluate whether the new systems were meeting the projects' measures.

During the audit we also identified several other matters that warrant reporting. These relate to how EPMO publicly reports the status of IT projects, EPMO's performance measures, and contract oversight.

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This report includes recommendations to ADS to address the issues identified. After we provided ADS with our draft report, it fully implemented one of our recommendations, so we removed it from this report. However, ADS did not commit to implementing most of the remaining recommendations because, in some cases, statute does not *require* them to do more than they currently do. ADS has the authority to implement our recommendations, but because of its response to our report draft, we added recommendations to the Legislature to change ADS's statute to require the Agency to take certain actions.

I would like to thank EPMO staff, as well as staff at the client entities, for their cooperation and professionalism during our audit.

Sincerely,

Doug Hoffer

DOUGLAS R. HOFFER
State Auditor

ADDRESSEES

The Honorable Jill Krowinski
Speaker of the House of Representatives

The Honorable Philip Baruth
President Pro Tempore of the Senate

The Honorable Phil Scott
Governor

Ms. Kristin Clouser
Secretary, Agency of Administration

Mr. Adam Greshin
Commissioner, Department of Finance and Management

Mr. Shawn Nailor
Secretary of the Agency of Digital Services

Contents

	Page
Highlights	1
Background	4
Objective 1: Costs and/or Schedule Estimates Were Exceeded in Five of Six Selected Projects for Various Reasons	5
Cost and Schedule Status for Six Selected IT Projects	5
Reasons For Changes to Cost and Schedule Estimates	9
Objective 2: Selected Projects Had Poorly Defined Measures of Success	13
Other Matters	16
Public Reporting on the Status of IT Projects	16
EPMO Performance Measures	19
Contract Oversight	21
Conclusions	22
Recommendations	23
Management's Comments and Our Evaluation	25
Appendix I: Scope and Methodology	26
Appendix II: Abbreviations	28
Appendix III: Project Description and Status	29
Appendix IV: Comments from Management	33
Appendix V: SAO Evaluation of Management's Comments	38

Highlights

Information technology (IT) is critical to the effective and efficient operation of Vermont State government. Using IT systems: (1) Vermonters can apply for benefits and pay taxes online, (2) the State pays employees and contractors, (3) individuals can find jobs, child care providers, and licensed professionals, and (4) businesses can find bid opportunities. Some past IT projects had significant problems or were even abandoned. In 2015, for example, we reported on how system development and IT governance/project management shortcomings contributed to Vermont Health Connect's significant deficiencies.

In 2017, the State centralized its IT activities into the newly formed Agency of Digital Service (ADS). ADS' Enterprise Project Management Office (EPMO) provides project management services via internal staff or contractors to State entities that wish to implement an IT project (called client entities in this report). EPMO's latest annual report identified 64 on-going projects with total costs of $500,000 or more and estimated that these projects would cost a total of around $206 million to implement.

Because of the relatively recent establishment of ADS and the high cost of IT projects, we decided to review recent projects being managed by EPMO. Our objectives were to (1) assess whether and why the costs and schedule of selected IT projects managed by ADS changed and (2) evaluate how the State measured, or plans to measure, whether selected IT projects have met their business goals.

We chose six projects to review: (1) Secretary of State (SOS) Business Portal and Filing project, (2) Cannabis Control Board (CCB) Application project, (3) Department of Liquor and Lottery (DLL) Licensing and Enforcement project, (4) Department for Children and Families (DCF) Child Development Division Integrated Information System (CDDIS), (5) Department of Vermont Health Access (DVHA) Interoperability and Patient Access (IPA) project,[1] and (6) DVHA Medicaid for the Aged, Blind, and Disabled Self-Service Application project.[2]

Objective 1 Finding

Five of the six selected IT projects had significant cost increases and/or schedule delays caused by a variety of reasons. Two of the selected projects were deployed and three have been partially deployed although only one project was on-time.[3] The sixth project—the SOS Business Portal and Filing project—has failed to produce a usable system. This project was supposed to be completed in December 2020 at a

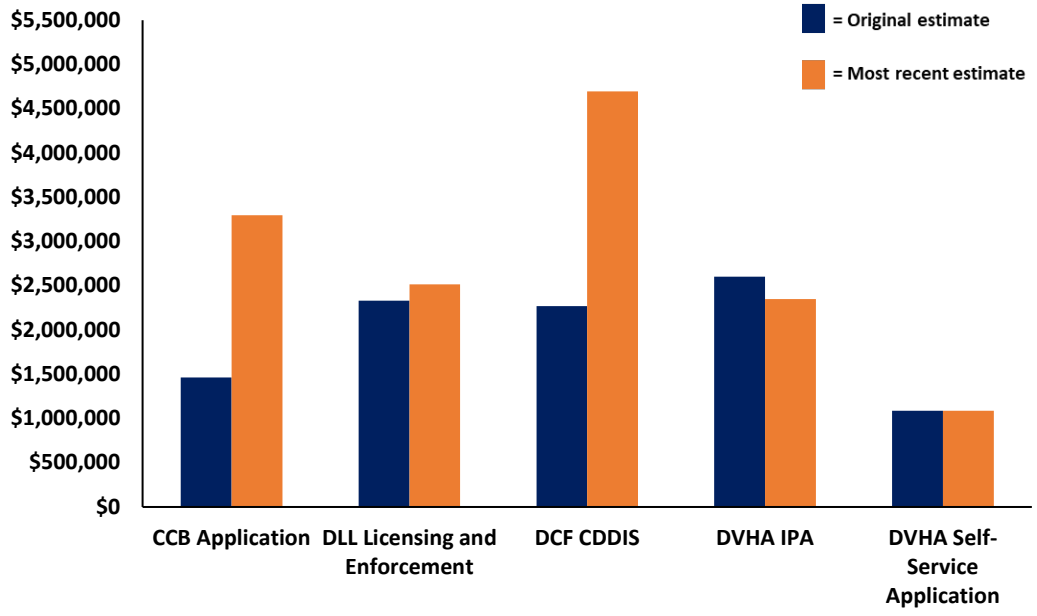
[1] This is one of several projects pertaining to the Medicaid Management Information System.

[2] Appendix I contains information on how we chose these projects and the methodology we used in our audit. Appendix II contains a list of abbreviations used in this report. Appendix III contains descriptive information about the IT projects reviewed .

[3] In this report the term deployed means that that the software is being used in a live environment.

cost of $2.17 million. As of December 31, 2022, the State had spent $2.42 million on the project, including paying a contractor $2 million, yet no part of the project has been deployed. In early 2023, the State decided to split the SOS Business Portal and Filing project into two projects and hire new contractors to complete the work. In March 2023, ADS estimated that one of the projects would cost an additional $2.73 million and would be completed in June 2024. However, the estimated costs and completion dates of the second project were still unknown. Exhibit 1 compares the original cost estimate to the most recently approved cost estimate for five of the selected projects. The exhibit excludes the SOS Business Portal and Filing project because of the incomplete cost and completion date estimates.

Exhibit 1: Comparison of Original to Most Recent Estimate or Actual Implementation Costs for Five IT Projects



	CCB Application	DLL Licensing and Enforcement	DCF CDDIS	DVHA IPA	DVHA Self-Service Application
Original Estimate[a, b]	$1,463,335	$2,330,202	$2,270,477	$2,600,615	$1,088,822
Most Recent Estimate/Actual[a, c]	$3,297,097	$2,515,341	$4,695,874	$2,347,380	$1,086,756
Amount of Change[d]	**$1,833,762**	**$185,140**	**$2,425,397**	**-$253,235**	**-$2,066**
% Change	**125%**	**8%**	**107%**	**-10%**	**-0.2%**

[a] DVHA staff costs were available for both the original and most recent cost estimate for the IPA and Medicaid for the Aged, Blind, and Disabled Self-Service Application projects so such costs were included in these amounts. While DCF tracks their staff costs for the CDDIS project, we did not include this amount in the most recent estimate because they were not included in the original so adding them in would overstate the amount of change. CCB and DLL staff costs for their projects were not available for either the original or most recent estimates.

[b] Generally based on project estimates approved when the implementation contractor's costs were known. The exception is the DVHA IPA project because this project did not update the applicable form when the contract was executed.

[c] For the two projects that were completed (DLL Licensing and Enforcement and DVHA Medicaid for the Aged, Blind, and Disabled Self-Service Application), the most recent estimate is the actual project cost. For the other projects, the most recent estimates were in March 2023. Adjustments were made for errors.

[d] May not add due to rounding.

There were a variety of reasons for cost increases and/or schedule delays. In the case of the SOS Business Portal and Filing project, the primary reasons were that (1) the estimated completion date itself was known to be unrealistic at the time it was set and (2) the contractor stopped working on the project and did not address identified problems. Reasons for deviations to the costs and schedules for the other projects included (1) functional requirement changes, (2) development/deployment approach changes, and (3) additional security requirements.

Objective 2 Finding

ADS staff approved five of the six selected projects even though the justification for the five projects had measures that did not include a baseline, quantify expected results, or appear relevant to the implementation of the new system. As an example, an approved measure for the DLL Licensing and Enforcement project was that manual handling of documents would be reduced or eliminated. However, this measure does not specify how much of a reduction was expected with the new system. Thus, even a miniscule reduction in manual document handling could be deemed a success.

Additionally, most client entities had made limited efforts or plans to evaluate whether the new systems were meeting the projects' measures. In particular, in just one instance, the DVHA Medicaid for the Aged, Blind, and Disabled Self-Service Application, did the client entity assess whether all project goals and measures had been met.

Other Matters

During the audit we identified several issues related to ADS reports to the Legislature and contract oversight. For example, ADS's required annual report to the Legislature on the status of IT projects did not include their cost and schedule baselines. When a project's budget or schedules changed, ADS did not always explain or report these changes. For example, the end date for one project was extended by 18 months between the 2022 and 2023 annual reports without any note or explanation. Only by comparing the 2022 and 2023 annual reports could a reader know that the completion of this project had been delayed significantly.

Recommendations

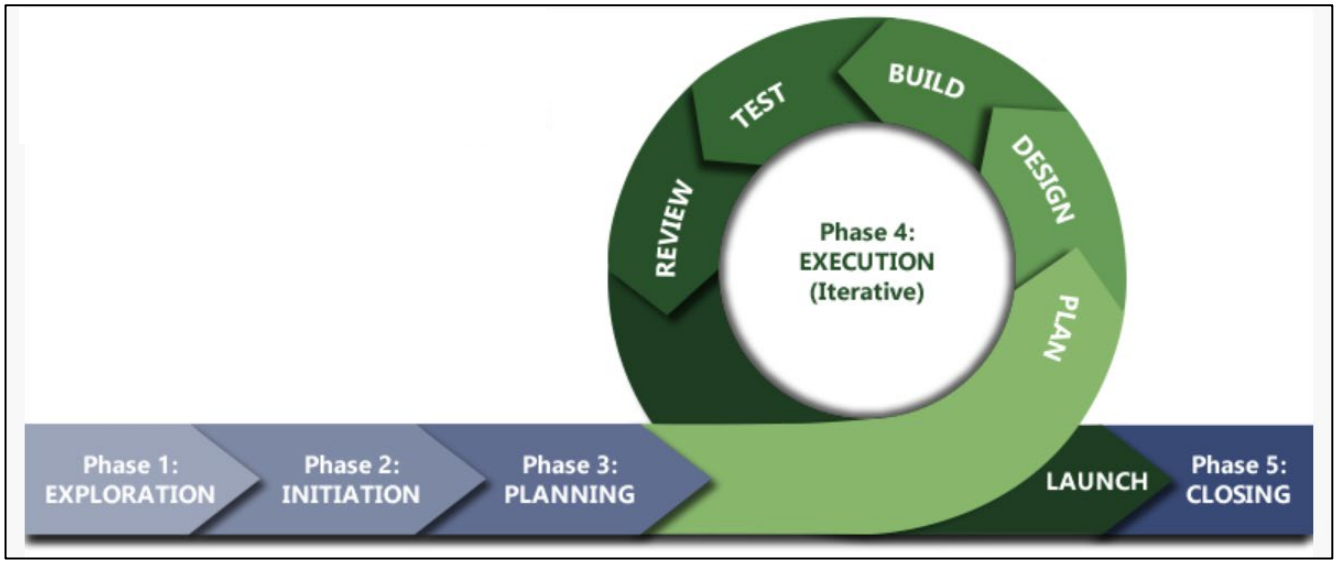
We made various recommendations in this report, including that, before approving an IT project, ADS work with client entities to ensure that measures include a baseline, quantify results, and are relevant.

Background

Effective April 17, 2017, Executive Order No. 06-17 consolidated the IT activities of the State's Executive Branch into a newly created Agency of Digital Services. One purpose of this reorganization was to improve project management practices and standards. A 2019 law codified ADS's creation in statute and required ADS to (1) provide IT project management and business analyst services to the Executive Branch and (2) maintain a business case and detailed project plans and status reports for all IT projects with a total cost of $500,000 or greater.

IT projects are implemented through a partnership between ADS's EPMO and the requesting State client entity using the five phase process illustrated in Exhibit 2.

Exhibit 2: Five Phases of a Vermont IT Project



Source: ADS.

- *Exploration.* This phase defines and justifies the business need, proposed solution, and estimated solution cost.

- *Initiation.* In this phase, the client entity commits to moving forward with the project and ADS and the client entity complete a project charter. The charter formally authorizes the project, commits funding and staff resources, and defines initial business level requirements.

- *Planning.* In this phase, requirements are further defined, and a contractor is procured.

- *Execution.* Projects may take different approaches to implement this phase. One approach is called "agile," which supports shorter software delivery based on an inspect and adapt approach. This approach uses iterative bodies of work called "sprints" to plan, design, build, test, review, and launch functional product increments. According to EPMO, sprints typically last between 2 and 4 weeks.

- *Closing.* This phase involves the client entity's acceptance that the product is complete based on requirements, and formally identifying lessons learned on the project.

Objective 1: Costs and/or Schedule Estimates Were Exceeded in Five of Six Selected Projects for Various Reasons

Only one of six selected IT projects met its original cost and schedule estimates. ADS expects the other five to be implemented at a higher cost and/or later than initially projected. **For example, the estimated cost of the CCB Application and DCF CDDIS projects more than doubled and their completion dates have been delayed at least 1 ½ years. Moreover, the SOS Business Portal and Filing project, which was scheduled to be completed by the end of 2020, has failed to deploy a usable system**. Most notable among the reasons the SOS Business Portal and Filing project did not meet its cost and schedule estimates is that after being paid almost the entire amount of the contract ($2 million), the contractor stopped working on it. The reasons for the cost increases and schedule delays for other projects varied but one reason was common to all these projects, namely changes to functional requirements.

Cost and Schedule Status for Six Selected IT Projects

ADS is statutorily required to review and approve all IT activities within State government. The statute defines IT activities as the design, construction, purchase, installation, maintenance, or operation of systems, including hardware, software, and services that perform or are contracted to perform these activities. For IT projects with a total cost of $500,000 or more, ADS is also required by statute to have a business case that includes life-cycle costs and sources of funds. ADS uses the IT Activity Business Case & Cost Analysis Form (ABC Form) to fulfill these requirements.

At the initiation of an IT project with expected costs greater than $100,000 or which involves confidential, sensitive, or other non-public information, the applicable client entity and ADS staff fill out the ABC Form. The ABC Form is approved by the ADS Secretary and the leadership of the applicable client entity. Among other things, this form provides the business justification for the project, estimated implementation and operating costs, sources of funds, and the estimated completion date. According to EPMO's guidance, the ABC Form should be updated upon completion of the procurement process, whenever a change request is executed that significantly impacts the budget of the project, and upon project closure.

The cost section of the ABC Form includes the cost of contractors to provide implementation and other services, project management (may be performed by ADS staff or under an ADS contract), other ADS staff, and other costs. However, at ADS's direction, the cost section in the form does not currently include the staff costs incurred by the client entities. The ABC Form states that business-related costs "are considered operation costs not specific to projects." However, the staff of the client entities serve as subject matter experts and perform critical tasks, such as testing, for projects. Thus, not including such costs in the ABC Forms understates the total project cost and does not provide a complete picture of a project's true costs and benefits. DCF and DVHA captured their staff costs for their three projects included in this review. For example, between mid-August 2021 and mid-February 2023, DCF incurred almost $560,000 in staff costs for the CDDIS project and estimated that it would incur an additional $324,000. The client entities for the other three projects reviewed did not capture their staff costs.

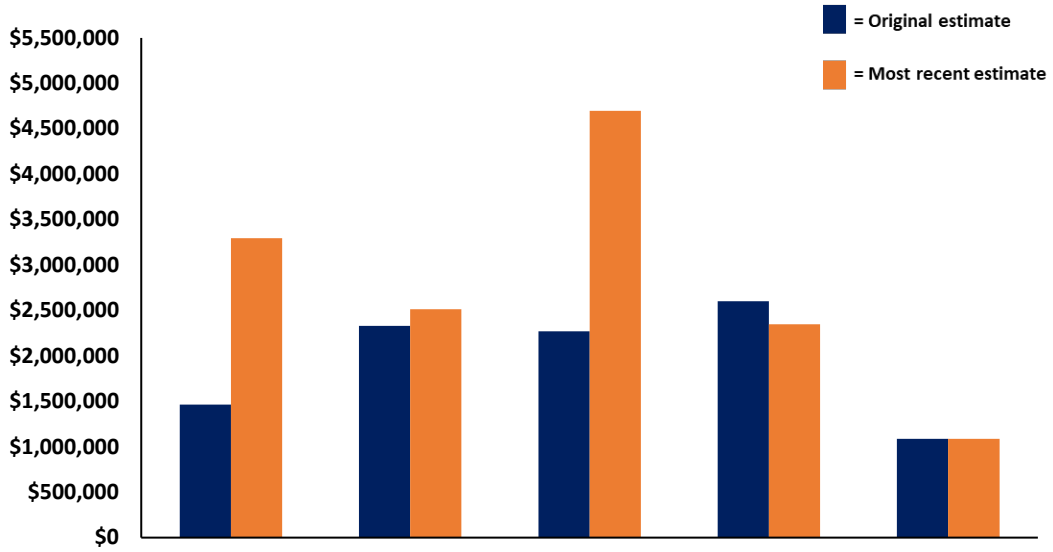
To determine the original estimated cost and completion dates of each project, we generally used the version of the ABC Form approved at the time when contract costs for implementation services were known. In addition, we included the client entity's staff costs for the two DVHA projects because they were available for both the original and current estimates. To determine the most recent cost estimates and completion dates of the three projects in progress (CCB Application, DCF CDDIS, and DVHA IPA), we used the most recently updated ABC Forms. We used actual costs for the two completed projects (DLL Licensing and Enforcement and Medicaid for the Aged, Blind, and Disabled Self-Service Application) as well as the actual deployment dates for these projects.

Exhibits 3 and 4 summarize the changes in costs and schedule duration for the five selected projects that have current estimates or actual costs and completion dates. As illustrated in these exhibits, four of the five projects had significant changes to their cost and/or schedule. Nevertheless, two of

the selected projects were deployed and three have been partially deployed although only one met its original deadline. In contrast, the sixth project we reviewed, the SOS Business Portal and Filing project, failed to deploy any part of the project[4] even though it was supposed to be completed by December 31, 2020. As of December 31, 2022, the actual costs incurred for this project had exceeded estimates by $250,000 ($2.17 million original estimate vs. $2.42 million actual cost). The State is trying to salvage this project by splitting it into two projects and hiring new contractors to complete the work. In March 2023, ADS estimated one of those projects would be completed in June 2024 and would cost $2.73 million to implement. Because the cost and completion date estimates for both new projects were not available, we did not include the SOS Business Portal and Filing project in Exhibits 3 and 4. Appendix III provides additional information on the status of each project.

[4] According to the EPMO director, the contractor produced software for the portal part of this project, but it was not released for public use because connections to other systems have not been established. The purpose of this system was to establish a single point through which business owners could register with multiple State entities.

Exhibit 3: Comparison of Original to Most Recent Estimate or Actual Implementation Costs for Five IT Projects



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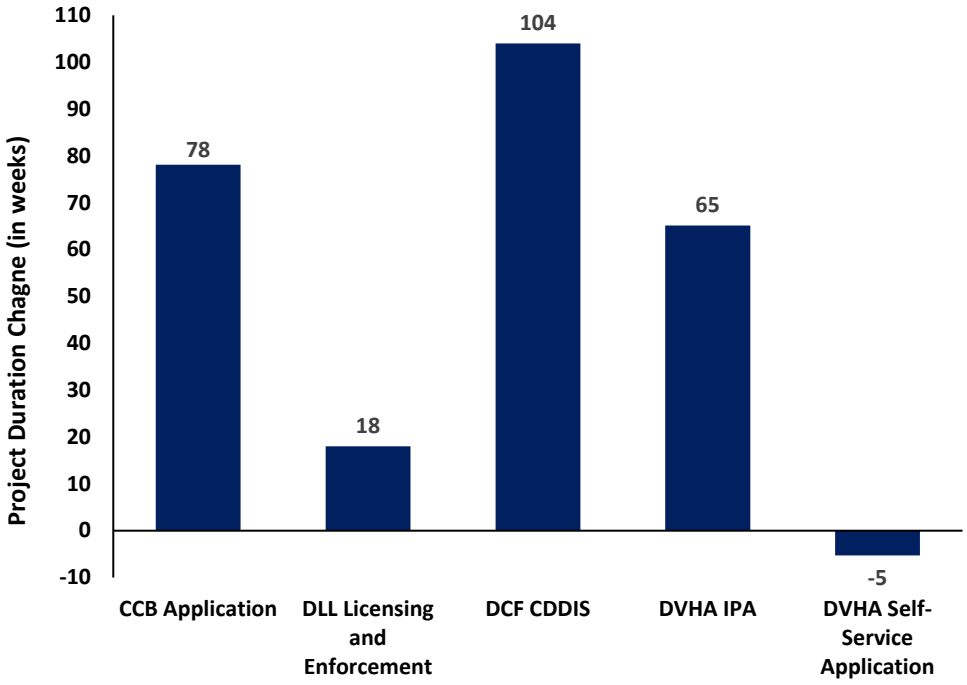
[a] DVHA staff costs were available for both the original and most recent cost estimate for the IPA and Medicaid for the Aged, Blind, and Disabled Self-Service Application projects so such costs were included in these amounts. While DCF tracks their staff costs for the CDDIS project, we did not include these costs in the most recent estimate because they were not included in the original estimate so adding them in would overstate the amount of change. CCB and DLL staff costs for their projects were not available for either the original or most recent estimates.

[b] Generally based on the ABC Form approved when the implementation contractor's costs were known. The exception is the DVHA IPA project because this project did not update the ABC Form when the contract was executed.

[c] For the two projects that were completed (DLL Licensing and Enforcement and DVHA Medicaid for the Aged, Blind, and Disabled Self-Service Application), the most recent estimate is the actual project cost. For the other three projects, March 2023 draft ABC Forms are the basis for the CCB and DCF project estimates and an approved March 2023 ABC Form is the basis for the DVHA IPA project estimate. Adjustments were made for errors.

[d] May not add due to rounding.

Exhibit 4: Changes in Project Duration for Five IT Projects (in Weeks)



Start Date	11/15/2021	03/29/2021	07/01/2020	12/01/2020	03/15/2021
Original Est. Completion Date[a]	12/31/2022	04/22/2022	12/31/2021	06/30/2022	03/31/2022
Most Recent Completion Date[b]	06/30/2024	08/26/2022	12/31/2023	09/29/2023	02/22/2022
Original Est. Duration (in weeks)	59	56	78	82	54
Current Est. Duration (in weeks)	137	74	183	147	49
Change (in weeks)[c]	78	18	104	65	-5
Percent change	**133%**	**32%**	**133%**	**79%**	**-10%**

[a] Generally based on the ABC Form approved when the implementation contractor's proposal was known. The exception is the DVHA IPA project because this project did not update the ABC Form when the contract was executed.

[b] For the two projects that were completed (DLL Licensing and Enforcement and DVHA Medicaid for the Aged, Blind, and Disabled Self-Service Application), the most recent completion date is the date the system was deployed. For the other three projects, the most recent estimated completion date is as of March 2023.

[c] May not add due to rounding.

Reasons For Changes to Cost and Schedule Estimates

Since the results of the SOS Business Portal and Filing project were materially different than that of the other four projects with cost and completion date changes, we are providing an explanation of this project separate from the other projects.

SOS Business Portal and Filing Project

The SOS Business Portal and Filing project was supposed to be completed by December 31, 2020 at a cost of $2.17 million. More than two years and $2.42 million later, no usable system has been deployed. Despite this, the State has paid the contractor $2 million, or 95 percent of the $2.1 million maximum contract amount. In March 2023, the ADS Secretary sent a letter to the contractor requesting that the State be reimbursed $706,870, stating "critical defects and undelivered functionalities have plagued the project … [and] the portal is not yet a reality." As of May 24, 2023, the contractor had not responded to this letter.

The following are the primary reasons why the project did not succeed.

- The State's decision to fund this project with money from the Federal Coronavirus Relief Fund caused an unrealistic completion date. When the Deputy Secretary of Administration approved the usage of money from this fund for the SOS Business Portal and Filing Project on September 10, 2020, the Federal law that established this fund required that costs be incurred by December 30, 2020. Although this was later changed to December 31, 2021, it meant that when the project started the contractor was supposed to deploy a tested and State-approved system within about three months. According to ADS staff, the intention was for the vendor to quickly produce a very simple version of the system to meet the Coronavirus Relief Fund deadline and then fix it during a subsequent three-month system warranty period. This approach is evidenced by on-going testing reported in project status reports in 2021 through mid-2022.

- The contractor stopped working on the project and did not address the problems identified during user acceptance testing. Project status reports in June 2022 indicate that the State was having a difficult time getting the contractor to respond to its communications. In addition, in August 2022, the contractor's project manager left and was not replaced for several months. In early 2023, ADS decided to end their relationship with this contractor for this project.

Additional issues that caused cost increases and schedule delays related to this project were (1) delays hiring a separate contractor to provide document management services for the creation and storage of SOS documents and (2) delays in obtaining cooperation with SOS's existing system contractor. In March 2022, the State signed a statement of work with a contractor to provide document management services at an estimated cost of about $123,000, but SOS has had difficulty getting the

contractor responsible for the *existing* system to export historical data and documents for use in the new system. The SOS's contract with the existing contractor requires the contractor to develop a transition plan. The plan is supposed to include any costs associated with retrieving the State's data. However, current SOS staff cannot find this plan and are unsure if it was ever created. As of early May 2023, the SOS did not have an agreement in place with its existing contractor to extract the historical data and documents.

Four Other Projects with Cost and Schedule Changes

A reason for cost and schedule increases common to each of the four other projects with such increases were changes to their functional requirements, which are specific behaviors a product or service is expected to perform. These changes were due to both external and internal factors. To illustrate, about a month after ADS and CCB signed the contract to implement the CCB Application project, the Legislature changed CCB's statute by setting new fees. As a result, a product registration function was added to the project via a contract with a second contractor to comply with this statute. CCB also chose to add a medical licensing function to the Application project because its existing system was becoming obsolete. Taken together, these functional requirement changes resulted in approximately $1 million in additional contractor costs. To date, these additions to the functional requirements have added at least eight months to the project's schedule but could add more because ADS and CCB are still in the process of procuring the medical licensing function.

In other cases, functional requirements were changed because they had been omitted in error or were added, altered, or removed after the planning period. For example, as of mid-March 2023, ADS and DCF approved 15 change requests totaling $730,000 for functional enhancements that added months to the CDDIS project. In addition, in March 2023, ADS and DCF approved removing a functional requirement relating to Approved Relative Child Care providers from the CDDIS project to fund some of the enhancements that were higher priority functionality missed during planning. The deleted functionality is still needed so there will be a later cost to add it back in.

There were additional reasons for estimated costs and completion date changes:

- *Problems Resulting from Dependencies.* Schedule and cost changes for two projects arose from problems in other systems or projects upon

which they were dependent. The DVHA IPA project, which is supposed to allow Medicaid members access to their health care data in an easy and accessible way, is an example of how a dependency can negatively affect an IT project. Clinical data was among the health care data that was part of this project. This data resides in a system operated by the Vermont Information Technology Leaders, Inc., (VITL). VITL is a non-State entity designated by the Legislature as the State's exclusive operator of a statewide health information exchange network and is largely funded by State grants and contracts. The State's negotiation with VITL to transmit clinical data to the IPA project delayed the project for many months. The State's agreement with VITL was not signed until January 2023 (the State paid VITL $218,100 for this work). Once the vendor started transmitting the clinical data, the IPA project's implementation contractor discovered significant quality issues with the data. Because of these data quality issues, in early 2023, the State decided not to include clinical data in the IPA project. Thus, Medicaid beneficiaries will not have access to these records via their mobile devices as envisioned. Nevertheless, the decision to remove clinical data from the IPA project decreased total estimated project expenses by about $180,000 and reduced the current length of the project by three months. The State plans to include the effort to clean up this data in a different project so there will be future costs associated with the clinical data, though they will be associated with the other project.

- *Security Requirements Added.* Three projects added security requirements after they began. For example, the security level of the DLL Licensing and Enforcement project was increased, which caused a cost increase of about $73,000.

- *Development/Deployment Approach Changed.* Two projects decided to change their development/deployment approach. For example, the DLL Licensing and Enforcement project was supposed to be deployed in a single release, but the State and contractor decided to switch to three releases because it was deemed a less risky approach. This added cost and time to the project because each release required testing and deployment resources.

- *Staffing Changes.* In three of the projects, at least one project manager left before the project was complete and had to be replaced. In addition, the CDDIS project lost significant program expertise due to staff leaving DCF (e.g., retiring). While other DCF staff were moved onto the project, many were new to CDD and lacked the historical knowledge of the departed staff.

- *Other.* Individual projects had other reasons for cost and schedule changes. For example, after deploying the first release of CDDIS—comprised of the project's first nine sprints or increments—the next four sprints were devoted largely to fixing defects and the project did not get back to focusing on its planned scope until the fourteenth sprint.

Lastly, cost and schedule are related. Thus, cost increases were sometimes due to schedule delays because they increased project management and other staff costs. For example, about $1.3 million of the CDDIS project cost increase was due to the increase in ADS resources needed for the additional months of implementation work. In another example, ADS labor costs increased in the CCB project by about $175,000 due to the extension of the project schedule.

Objective 2: Selected Projects Had Poorly Defined Measures of Success

Five of the six selected projects had poorly defined measures to evaluate the success of the project. These measures did not include a baseline, did not quantify the expected results, or were not relevant to the project. For example, staff indicated that one measure of success for the DLL Licensing and Enforcement project was that manual handling of paper would be reduced or eliminated. However, staff did not identify a baseline or indicate how much of a reduction would be needed to consider the project a success. Additionally, only the DVHA Medicaid for the Aged, Blind, and Disabled Self-Service Application project had a process to track and evaluate the status of all of the project's measures. Without well-defined measures and a process to collect and evaluate results once the system is in place, ADS and the client entities cannot demonstrate that projects were successful.

State Law makes ADS responsible for reviewing and approving all IT activities within State government and for maintaining a business case for all IT projects costing $500,000 or more. The business case is supposed to include expected benefits, including cost savings and service delivery improvements.

At the start of a new project, ADS and the client entity identify the goals of the proposed project.[5] Examples of project goals include reducing

[5] For clarity, this report uses "goal" and "measure" as general terms because EPMO's project documentation uses multiple terms for these concepts. Specifically, the ABC Form identifies the "Business Value" of project and how the achievement will be measured while the charter uses the terms "Project Objectives" and "Success Criteria."

operating costs, improving customer service, improving security, or addressing equity issues. As part of this process, staff also identify how achievement of those goals will be measured. The goals and measures are included in the ABC Form and the project charter, which are approved by both the client entity and ADS.

Guidance from the State's Chief Performance Office defines measures as "a quantifiable unit used to express the size, amount, or degree of something." This guidance also states that each measure should have a baseline to serve as a point of reference.

ADS's instructions for the ABC Form and the project charter include examples of measures that would meet this definition, such as a before and after comparison of costs or revenue, a customer satisfaction rate, or the number of people accessing a web page. ADS's ABC Form instructions also describe more qualitative measures, such as meeting a compliance requirement or reducing risks and the instructions state that there should be a description of how this will be known or verified.

Only the DVHA Medicaid for the Aged, Blind, and Disabled Self-Service Application project had a set of measures, listed in Exhibit 5, that followed ADS's instructions.

Exhibit 5: Example of Project Goals and Measures, DVHA Medicaid for the Aged, Blind, and Disabled Self-Service Application Project

Goal	Measure
At the completion of the project, Vermonters can apply for Medicaid for the Aged, Blind, and Disabled benefits online 24/7 as well as over the phone during business hours. Adding the online modality and increasing the availability of the phone option to all applicants brings us into compliance by offering all four application modalities.	Online application available 24/7
At least 15% of applicable Medicaid for the Aged, Blind, and Disabled applications are submitted online within 6 months of implementation.	% of applicants applying via phone % of applicants applying via paper % of applicants applying via the online application
The Medicaid for the Aged, Blind, and Disabled self-service online application abandonment rate is less than 10% post implementation.	# of applications abandoned # of applications submitted
Obtain customer satisfaction rating of 4 or greater for the Medicaid for the Aged, Blind, and Disabled self-service online application within 6 months of implementation.	Using the scale of (1) strongly disagree; (2) disagree; (3) neither agree nor disagree; (4) agree; (5) strongly agree

The other five projects had poorly defined measures that did not (1) include a baseline, (2) quantify the size, amount, or degree of the change

expected, or (3) appear to be relevant to the project's implementation. For example,

- One measure for the DLL Licensing and Enforcement project was that manual handling of documents would be reduced or eliminated. This measure does not include a baseline, nor does it describe *how much* of a reduction was expected with the new system. **Thus, even a miniscule reduction in manual document handling could be used to declare the project a success.**

- A DCF CDDIS measure is that the project will ensure a client-centered design and will solicit feedback from stakeholders. This measure has no baseline, does not include how DCF will assess the extent to which the system uses a client-centered design, or define the scale to be used to measure stakeholder feedback. **Without such specifics, this measure is of limited usefulness in evaluating how well the system design is meeting the needs of its users.**

- A measure for the CCB Application project was an increase in revenue generated by the fees associated with cannabis licenses. However, this is not relevant to the implementation of the project because recreational cannabis licensing was a completely new revenue stream for the State. **This means that revenue would have increased with or without this new IT project.**

EPMO staff said that the client entities were solely responsible for developing the measures, but ADS staff must ultimately approve both the ABC forms and charters that contain the measures. Additionally, EPMO staff said the ADS Secretary may reject project proposals that do not have adequate measures. ADS staff, including in some cases the Secretary, accepted and approved measures that did not have baselines, expected results, or that were not relevant for five projects.

The lack of well-defined measures limits the ability of ADS and the client entities to evaluate whether most of the selected projects were successful. Even when measures were defined, the client entities' plans and efforts to evaluate whether projects successfully met the established measures varied.

Of the six projects reviewed, the DVHA Medicaid for the Aged, Blind, and Disabled Self-Service Application project had the most comprehensive effort to evaluate whether it met its goals and measures. Specific reports were built as part of this project to calculate key performance indicators to be able to demonstrate whether the project met its goals and measures.

About six months after the system was completed, these reports were used to show the extent to which the project met its goals and measures. The reports can also be run at later times to track on-going progress.

Plans and efforts to track and evaluate measures for the other projects were more limited. DLL staff had created a process to collect data on one of the measures for the DLL Licensing and Enforcement project, but staff did not identify specific plans to test the other measures. Client entity staff for the other four projects indicated they did not have definite plans for tracking project measures. While the implementation of these four systems was still in progress at the time of the audit, it is important to plan the approaches that will be used to calculate the results of measures to ensure that they are in place once the project is complete.

Other Matters

Public Reporting on the Status of IT Projects

Each week, EPMO project managers report on the status of each of their projects, and this information is provided to members of the project team and ADS and client entity leadership. Project managers use a red/yellow/green color scale to denote the status of various elements of the project. Exhibit 6 shows the elements that are captured and EPMO's criteria for the different colors. For example, a "green" schedule is supposed to mean that 90 percent of tasks are on track to meet dates. At the time of our audit, EPMO did not have criteria for the risk, resource, and overall status categories (EPMO developed these criteria after receiving our draft report for comment). Moreover, project managers stated that they rely on professional judgement when applying those criteria to their projects, which means the criteria may not be consistently applied across different projects.

Exhibit 6: EPMO's Criteria for IT Project Status

Element	Green Criteria	Yellow Criteria	Red Criteria
Scope	No outstanding changes that have not been formally approved and logged.	Additions/deletions being acted on without formal sponsor approval.	Out of scope and unfunded work being done, remaining work ignored, previous warning not being acted on.
Schedule	Tasks are starting and ending on time and 90% are on track to meet dates.	75%+ of tasks are starting and ending on time and 90% are on track to meet dates.	Less than 75% of tasks are starting and ending on time and are on track to meet dates.
Budget	Costs for tasks and phases are less than 110% of baseline costs for same.	Costs for tasks and phases are less than 125% of baseline costs for same.	Costs for tasks and phases are greater than 125% of baseline costs for same.
Quality	Quality expectations are being met according to deliverable expectation documents.	85% of deliverables are meeting quality expectations.	Less than 85% of deliverables are meeting quality expectations resulting in defects and issues with release management.
Resource[a]	Resources are available and engaged according to the timeline.	Resources are constrained due to competing priorities resulting in minor scheduling delays.	Resources are not available creating a project stoppage.
Risk[a]	Low impact and low, medium or high probability to occur. Medium impact and low probability to occur.	Medium impact and medium or high probability to occur. High impact and low probability to occur.	High impact and medium or high probability to occur.
Overall[a]	All status categories are on track.	Status categories are experiencing delays or changes but the risks/issues are being mitigated.	Significant issues lead the team to believe the project is in jeopardy, the team is unable to remove blockers and leadership intervention is needed to resolve issues.

[a] ADS added these definitions on May 16, 2023.

EPMO uses the same project status information to update a project status dashboard that it maintains on the ADS website, which is updated weekly (see Exhibit 7 for an excerpt). This dashboard does not include baseline data (e.g., the original cost and schedule estimates).[6] Thus, the dashboard is not a transparent indicator of whether the project is going well or poorly. For example, Exhibit 7 shows the status of the SOS Business Portal and Filing project's scope as "green," and the schedule, budget, and overall status as "yellow" in April 2023. This is despite the very serious problems noted with this project in Objective 1 that were known well before this date. In addition, since this project's schedule is unknown, it is unclear how a "yellow" is appropriate since EPMO's criteria indicates that this

[6] At the time of our audit, the dashboard maintained on the ADS website also did not define the color scale being used. ADS has since added definitions.

color should be used when 90 percent of tasks are on track to meet dates. Lastly, without baseline data, the user of this dashboard cannot tell that this project was supposed to be implemented in December 2020 and is years late.

Exhibit 7: Snapshot of ADS IT Project Dashboard Excerpt, April 24, 2023

Agency	Name	Stage	Scope Complete	Timeline Elapsed	Budget Used	Est. Completion Date	Est. Implementation $	Budget	Resource	Risk	Schedule	Scope	Overall
ACCD	ACCD Grants Management Solution	Initiation	5%	48%	1%	1/1/2024	$1,725,000	✓	✓	✓	✓	✓	✓
AG	AGO Case Management System Project	Planning	26%	30%	1%	9/30/2024	$2,180,134	✓	✓	✓	✓	✓	✓
AHS	AHS DCF CDD Integrated Information Sy...	Execution	90%	80%	11%	12/29/2023	$3,605,388	!	!	✗	!	!	!
AOA	AOA BGS Workplace Information Manag...	Execution	48%	66%	63%	12/31/2024	$2,332,787	✓	✓	✓	✓	✓	✓
AOA	AOA Enterprise Resource Planning (ERP)...	Planning	11%	38%	1%	9/30/2025	$11,005,691	!	!	!	!	✓	!
AOE	AOE Dual Enrollment Voucher System	Planning	25%	76%	14%	9/29/2023	$450,210	✓	✓	!	!	✓	✓
AOE	AOE Educator Licensing System (ELS)	Planning	20%	80%	11%	12/29/2023	$1,315,646	✓	✓	✓	✓	✓	✓
AOE	AOE Vermont Adult Education and Liter...	Execution	98%	101%	10%	4/14/2023	$510,304	✓	✓	✓	✓	✓	✓
AOT	AOT DMV Core Systems Replacement	Execution	45%	41%	17%	7/31/2025	$50,785,690	✓	✓	!	✓	✓	✓
DPS	DPS Fire Safety Records Management Sy...	Planning	20%	85%	7%	7/1/2023	$1,047,096	✓	✓	✓	✓	✓	✓
NRB	NRB Act 250 Scanning Project	Planning	12%	44%	5%	12/31/2024	$500,000	✓	✓	!	✓	✓	!
Def. Gen.	ODG Case Management System	Execution	86%	91%	74%	7/31/2023	$759,148	✓	✓	✓	✓	✓	✓
SAS	SAS Case Management System (CMS) Pr...	Planning	8%	89%	1%	6/30/2023	$1,689,236	✓	✓	✓	✓	✓	✓
VDOL	VDOL Unemployment Insurance Moder...	Planning	25%	50%	4%	6/30/2025	$3,500,000	✓	!	!	✓	✓	✓
VDOL	VDOL Workforce Development CRM	Execution	30%	93%	10%	6/30/2023	$1,769,684	!	✓	✓	!	✓	!
SOS	Vermont Business Portal	Execution	75%	79%	91%	12/30/2023	$2,556,530	!	✓	!	!	✓	!

Source: ADS.

The weekly status updates also provide the basis for ADS's statutorily required annual report to the Legislature that details the scope, schedule, budget, and status for IT projects with total costs of $500,000 or more. This report has the same problems as the dashboard, namely that it does not (1) include baseline data or (2) define the color scale used. To illustrate, Exhibit 8 shows that the end date for the DVHA IPA project was extended by 18 months between the 2022 and 2023 annual reports, but the schedule color changed from yellow to green between the two reports. Because the 2023 report does not acknowledge the project extension, a reader would not know the project had been delayed unless they compared the 2022 and 2023 reports. We found that other IT projects also had unacknowledged project cost and schedule changes in the 2021, 2022, and 2023 reports.

Exhibit 8: Excerpts from the 2022 and 2023 Annual IT Activity Reports for the IPA Project

2022 Annual IT Activity Report

IT ACTIVITY ANNUAL SUMMARY REPORT					
Project	**MMIS Interoperability**				
Agency	Human Services			**Report Date**	12/1/2021
Department	Vermont Health Access				
Project Start Date	1/1/2021	**Project End Date**	6/30/2022	**Solution Life Cycle (Years)**	5
Current Project Phase	**Exploring**	**Initiating**	**Planning**	**Executing**	**Closing**
Project	**Status**	**Update**			
Schedule	Yellow	The approved project schedule does not meet the requested Centers for Medicare and Medicaid Services (CMS) date and several activities are very tight to the current schedule.			

2023 Annual IT Activity Report

IT ACTIVITY ANNUAL SUMMARY REPORT					
Project	**AHS DVHA MMIS Interoperability**				
Agency	Agency of Human Services			**Report Date**	12/12/2022
Department	Department of Vermont Health Access				
Project Start Date	1/1/2021	**Project End Date**	12/29/2023	**Solution Life Cycle (Years)**	5
Current Project Phase	**Exploring**	**Initiating**	**Planning**	**Executing**	**Closing**
Project	**Status**	**Update**			
Schedule		Interoperability and Patient Access (IPA) Workstream: Initial Go-Live July 2022 and Clinical Data Go-Live remains on track for May 2023 MMA / Buy In File Workstream: April 2022 Closed			

Source: ADS.

EPMO Performance Measures

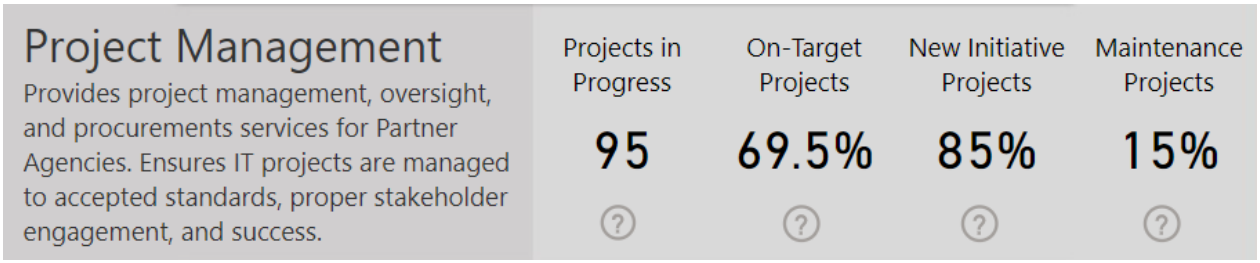
Statute requires ADS to report to the Legislature on performance metrics and trends, including baseline and annual measurements, for each of its divisions, which includes EPMO. EPMO's purpose is to enable IT project success through the practice of project management and business analysis. EPMO demonstrates its success in meeting this purpose via performance measures reported (1) on a dashboard on the ADS website, (2) in testimony before Legislative committees, and (3) to the State's Chief Performance Officer for inclusion in a required annual report to the Legislature.

The State's Performance and Productivity Measure Primer indicates that data can be used to measure the quantity, quality, and impact of programs by answering three critical questions, (1) "how much", (2) "how well" and (3) "is anyone better off."

Exhibit 9 is a snapshot of the EPMO's performance measures and results contained on the ADS website on April 24, 2023. A similar snapshot was

presented as part of 2023 testimony before the House and Senate Appropriations Committees. The first two measures in Exhibit 9 are also contained in the State's fiscal year 2024 Programmatic and Performance Measure Budget Report.[7] Three of the measures address the "how much" question while the measure labeled "On-Target Projects" measures "how well." None of these measures address the third question in the State's performance measure primer, "is anyone better off (i.e., outcomes)."

Exhibit 9: Snapshot of EPMO Performance Measure Results on the ADS Website, April 24, 2023



Source: ADS.

ADS's measure of on-target projects is calculated based on the percentage of projects in "green" status. As previously described, an IT project can be in "green" status even with significant cost increases and completion date extensions. Thus, while this measure may show the status of projects at a given point in time, it does not show the extent to which IT projects met their original cost and schedule estimates (either before or after a contractor was selected). Thus, labeling this as a measure of whether a project is on-target is misleading because the reader may infer that it is based on the original estimated baseline.

EPMO does not currently track the extent to which the division's IT projects' original cost or schedule estimates were met. Without such tracking and a corresponding measure showing the results, ADS lacks key mechanisms to establish transparency and accountability about the cost and schedule performance of its IT projects. Such information could also be valuable to the Legislature in its oversight role. Moreover, tracking and reporting on the extent to which projects meet cost and schedule estimates may help identify areas needing action to improve results.

ADS also has not established a performance measure to demonstrate the extent to which IT projects result in organizations or people that are better off. In particular, ADS does not have a mechanism in place to

[7] The terminology of the first two measures in Exhibit 9 is different in the Programmatic and Performance Measure Budget report but the EPMO director stated that the calculation is the same.

effectively collect information and report on the extent to which IT projects met their business goals.

The EPMO project management process requires projects to complete a close-out report that contains an assessment of whether the project successfully met its goals and measures for the business. However, the close-out reports are expected to be completed shortly after projects are deployed and the data is not always available. For example, the DVHA Medicaid for the Aged, Blind, and Disabled Self-Service Application project completed its close-out report about a month after the project was deployed. The report stated that data for three of the four business measures for this project were not yet available.

By collecting such information at a later point, ADS could report on the percentage of projects that resulted in business improvements, as defined in the ABC Forms and project charters, thus measuring "is anyone better off." Such a measure would demonstrate to executive leadership and the Legislature the impact of IT projects and the extent to which they are achieving their intended benefits.

Contract Oversight

We noted several issues related to contract oversight for the six selected projects. These issues increased the risk that the State would not receive what was expected from the vendor. Specifically:

- Contracts for each of the six selected projects required the State to formally accept deliverables before paying invoices. In three projects some invoices were paid before the related deliverable was accepted or when acceptance of the deliverable was not documented. Such payments disadvantage the State if performance issues arise. A good example is the SOS Business Portal and Filing project. In this case, ADS paid the vendor $2 million—or 95 percent of the $2.17 million maximum value of the contract—despite the vendor not delivering a usable system. In March 2023, ADS formally notified the contractor that ADS was seeking to recapture about $700,000 that had already been paid (as of May 24, 2023, the contractor had not responded). EPMO's contract management procedures do not require staff to verify that deliverables were accepted before approving invoices for payment. The EPMO director stated EPMO is in the process of updating procedures and this update would include a requirement that project managers review invoices before they are approved for payment to ensure associated deliverables were accepted.

- The original contract for the DCF CDDIS project contained 102 functional requirements that the vendor was to complete in 6 sprints. A subsequent contract amendment increased the number of sprints needed to complete the work on the project. The contract did not always define the work to be completed in each of these sprints and ADS did not track which sprints implemented which requirements. Only after we requested that information did project staff identify that 17 of the requirements had not been implemented or had only been partially implemented. As of April 5, 2023, this analysis had not been completed and staff had not confirmed whether an additional 54 contractually required functional requirements had been implemented or were even needed.

- The State's Procurement and Contracting Procedures notes that retainage "strengthens the position of the State to enforce contract compliances and helps ensure that the work is completed without material error." Contracts for five of the six projects **required** the State to withhold retainage until the project was fully implemented. But in two of these five projects, ADS paid each invoice in full when it was received, contradicting the contractual retainage requirement. This appeared to be an oversight.

Conclusions

With one exception, the six EPMO-managed projects did not meet their cost and/or schedule estimates, in some cases missing by a significant degree. In one project, ADS paid a contractor $2 million—almost the full amount of the contract—even though the system has not been deployed more than two years after the scheduled completion date. There were multiple reasons for this failure as well as for the increases in cost and/or schedule of other selected projects, most commonly due to changes to functional requirements.

Also with one exception, the selected projects could use improvement in developing measures to determine the success of the projects and tracking their results. The projects' measures did not always include a baseline, quantify results, or appear to be relevant to the projects' implementation. In addition, the ADS reporting on EPMO's performance as a whole could benefit from additional transparency and measures that record the quality and impact of IT projects.

Recommendations

We make the recommendations in Exhibit 10 to the Secretary of the Agency of Digital Services.

Exhibit 10: Recommendations and Related Issues

Recommendation	Report Pages	Issue
1. Include client entity's staff costs in implementation estimates.	5, 6	The cost section of the ABC Form does not currently include the staff costs incurred by the client entities. The ABC Form states that business-related costs "are considered operation costs not specific to projects." However, the staff of the client entities serve as subject matter experts for the project and perform critical tasks, such as testing. Not including such costs in the ABC Forms understates the total project cost.
2. Before approving IT projects, work with client entities to ensure that the project has performance measures that include baseline data, quantify results, and are relevant to the project.	13-15	Five of the six selected projects had measures to evaluate the success of the project that did not include a baseline, did not quantify results, or were not relevant to the project.
3. Include in EPMO's project dashboard on the ADS website and the annual report on the status of IT projects, baseline cost and schedule information. Also include in the annual report, the criteria of the color scale used.	16-18	The EPMO project dashboard on the ADS website and its annual IT activity report do not include baseline cost and schedule data. In addition, the annual report on the status of IT projects uses, but does not define, a red/yellow/green color scale to denote the status of project elements like schedule.
4. Develop a tracking mechanism on the extent to which IT projects met their original cost and schedule estimates for the division as a whole.	19-20	EPMO does not currently track the extent to which the division's IT projects meet their original cost or schedule estimates. Without such tracking, ADS lacks key mechanisms to establish transparency and accountability about the cost and schedule performance of its IT projects.
5. In conjunction with client entities, implement a process to obtain information on the extent to which IT projects achieved their business goals after completion once sufficient time has lapsed to allow for evaluation of a mature system (e.g., 6-12 months).	20-21	ADS does not have a mechanism in place to effectively collect information and report on the extent to which IT projects met their business goals. The EPMO project management process requires projects to complete a close-out report that contains an assessment of whether the project successfully achieved value for the business. However, the close-out reports are expected to be completed shortly after projects are deployed and do not always have data available about whether its business goals and measures were met.

Recommendation	Report Pages	Issue
6. Include on the ADS website and in the annual performance report, performance measures that show the extent to which projects (1) met their original cost and completion date estimates and (2) achieved their intended business goals.	20-21	ADS's programmatic performance measures for IT project management do not (1) include the extent to which IT projects met their original cost and schedule estimates (either before or after a contractor was selected) or (2) demonstrate the extent to which IT projects result in organizations or people that are better off.
7. Develop procedures to ensure that contract deliverables are formally accepted before paying invoices.	21	Contracts for each of the six selected projects required the State to formally accept deliverables before paying invoices. In three projects some invoices were paid before the related deliverable was accepted or when acceptance of the deliverable was not documented.

In response to our draft report, ADS did not commit to implementing most of the recommendations because, in some cases, statute does not *require* them to do more than they currently do. ADS does have the authority to implement our recommendations, but in light of their response, we recommend the Legislature consider the statutory changes contained in Exhibit 11.

Exhibit 11: Matters for the Consideration of the Legislature

Recommendation	Report Pages	Issue
1. Consider modifying statute to require ADS to include client entity staff costs in its estimates to implement IT projects.	5-6	Statute requires ADS to include life-cycle costs for IT projects with a total cost of $500,000 or more. ADS indicates it believes that life-cycle costs do not include client entity costs associated with IT projects. While client entity costs are not in ADS's control, nothing prevents ADS from including those costs. Failure to include these costs presents an incomplete picture of a project's true costs.
2. Consider modifying statute to require ADS to include baseline cost and schedule data in reports on the status of IT projects.	18	Statute requires ADS to provide an annual report to the Legislature detailing the scope, schedule, budget, and status of IT projects with total costs of $500,000 or more. ADS does not include baseline cost and schedule information in this report. As a result, it is not always clear when project schedules are delayed or costs are increased.

Recommendation	Report Pages	Issue
3. Consider modifying statute to require ADS to track and report on whether its IT projects achieved their business goals.	20-21	Statue requires ADS to report performance metrics to the Legislature for each division, which includes EPMO. While ADS reports some EPMO performance measures, it does not track or report on the extent to which IT projects met their business goals. As a result, ADS cannot demonstrate the impact and benefits of IT projects to executive leadership and the Legislature.

Management's Comments and Our Evaluation

On May 24, 2023, the ADS Secretary provided written comments on a draft of this report, which are reprinted in Appendix IV. Our evaluation of these comments is in Appendix V.

Appendix I
Scope and Methodology

To obtain background information pertaining to both objectives, we reviewed Executive Order No. 06-17 that created ADS and the agency's statutory responsibilities in 3 V.S.A. Chapter 56. We also reviewed ADS's strategic plan for fiscal years 2022-2026, EPMO's annual IT activity reports for fiscal years 2020 to 2023, and the State's fiscal years 2023 and 2024 Programmatic and Performance Measure Budget reports.

To select the IT projects to evaluate as part of our objectives, we worked with EPMO leadership to identify the population of projects that (1) were estimated to cost more than $1 million to implement, (2) started January 1, 2019 or later, and (3) were in the execution phase or had been closed as of October 24, 2022. We identified 17 IT projects that met these criteria and chose six projects for testing.

To gain an understanding of EPMO's expected project processes as part of Objective 1, we (1) identified and reviewed EPMO's guidance, including documentation templates and (2) interviewed EPMO leadership.

For each of the six selected projects, we reviewed the following documents to the extent that they existed:

- Contracts for implementation services and amendments,
- State payments to contractors and supporting invoices,
- ABC Forms and supporting worksheets,
- Independent review reports,
- Project charters,
- Decision, risk, and change logs or related documentation,
- Status reports, and
- Close-out documents.

Based on this review, we identified and calculated cost and schedule changes, identified reasons for these changes, and obtained clarifying information from the ADS project manager[8] and client entity's staff that worked on the

[8] The Medicaid for the Aged, Blind, and Disabled Self-Service Application project was closed and the project manager not available so we interviewed the applicable EPMO portfolio manager instead.

project. From these sources we also obtained information on the status of the project, including plans for future work.

For Objective 2, we reviewed EPMO guidance pertaining to performance measurement as well as the State of Vermont Performance and Productivity Measure Primer. We identified the business goals and performance measures for each of the six selected projects by reviewing the ABC Forms and project charters. We evaluated the goals and measures against EPMO and State guidance. We inquired of client entity representatives about any tracking mechanisms they had established, or planned to establish, to determine whether project business goals and measures were being met.

We limited our consideration of internal controls to evaluating how they affected our results and identified performance measurement, reporting, and process improvements that could be made to strengthen internal controls.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Appendix II
Abbreviations

ABC	IT Activity Business Case & Cost Analysis Form
ADS	Agency of Digital Services
CCB	Cannabis Control Board
CDD	Child Development Division
CDDIS	Child Development Division Integrated Information System
CMS	Centers for Medicare and Medicaid Services
DCF	Department for Children and Families
DLL	Department of Liquor and Lottery
DVHA	Department of Vermont Health Access
EPMO	Enterprise Project Management Office
IPA	Interoperability and Patient Access
IT	Information Technology
SOS	Secretary of State
VITL	Vermont Information Technology Leaders, Inc.

For each project selected for review in this audit, this appendix describes the intent of the project and its status.

SOS Business Portal and Filing Project

Purpose

The intent of this project was to make it easier for business owners to register and operate their business. This meant creating a single point through which business owners could register their businesses with the Secretary of State and connect with other State entities (e.g., Department of Labor, Department of Tax) involved in the business registration process. The system was also intended to be used by businesses to submit required documents.

Implementation Contract

ADS signed a contract with a contractor in November 2020 to implement this project at a cost of about $2 million. There was one contract amendment signed in March 2022, which changed the contract term with no change in the contract amount.

Status

The State has not deployed this system and ADS is not sure which portions of the software the contractor developed can be used. The project has been split into two separate projects—one to implement a business registration system and a second to implement a document management system. ADS estimates the document management project will cost $2.7 million to implement and be completed in June 2024. In March 2023, SOS issued a request for proposal to implement this project. ADS does not have a cost and schedule estimate for the business registration project and has not issued a request for proposal for its implementation.

CCB Application Project

Purpose

The intent of this project was to develop a system that would allow CCB to process applications and issue licenses for cannabis establishments as required per Act 164 (2020). The new system was also intended to support CCB's enforcement of cannabis licensing regulations. Shortly after the project started, the State passed Act 86 (2022) which required that CCB collect fees for different cannabis products. CCB and ADS decided to adjust the scope of the project to also include a product inventory component to meet this new requirement.

Implementation Contract

ADS contracted with a vendor in February 2022 to implement the licensing phase of the project at a cost of about $500,000. A subsequent contract amendment increased the implementation cost to $812,000.

ADS contracted with a different vendor in September 2022 to implement the product registration phase of the project. This contract was for about $285,000 and two subsequent contract amendments increased this amount to about $460,000.

ADS is currently seeking bids to complete work on the last component of the system related to enforcement of cannabis licensing rules and implementation of a medical cannabis system. ADS estimates that it will cost approximately $1.3 million to complete this work.

Status

Work was completed on the licensing phase in July 2022 and the product inventory component is expected to be completed in May 2023. ADS's current estimate is that the enforcement phase of the project will be completed by June 2024.

DLL Licensing and Enforcement Project

Purpose

The intent of this project was to make the licensing process more efficient by allowing online applications and payments. The new system was also intended to improve DLL's enforcement process by consolidating information about liquor licenses from three different systems into a single, centralized system.

Implementation Contract

ADS contracted with a vendor in March 2021 to develop the new system at a cost of $1.5 million. There were three subsequent contract amendments that increased the total implementation costs to around $2 million.

Status

The system was completed in August 2022.

DCF CDDIS Project

Purpose

The intent of the DCF CDDIS project is to operationalize federally-mandated changes to the Child Care Financial Assistance Program. This program pays childcare tuition on behalf of eligible families to childcare providers. The DCF CDDIS project is also the first phase of replacing the CDD's current outdated and unstable system.

Implementation Contract

ADS signed a contract for this project in April 2021 that included implementation services costing $1,852,309. As of April 28, 2023, three amendments to this contract were executed and a fourth was pending that will increase the implementation services cost to $2,838,309.

Status

The contractor deployed the project's first release on July 3, 2022. Additional releases were deployed since then and as of mid-April 2023, the remainder of this project is expected to be completed by the end of December 2023.

As of April 26, 2023, the CDDIS project had a list of 146 open requested changes that DCF staff have submitted for review. The project manager estimated that half of these requests pertain to defects and half constitute small changes or enhancements the contractor has agreed to make during the defect fixes without additional cost. Additionally, there are 41 other significant changes/enhancements that DCF staff have submitted for review for which funding is not yet identified as available.

DVHA IPA Project

Purpose

The purpose of this project is to meet new (May 2020) Center for Medicare and Medicaid Services (CMS) requirements for interoperability and patient access to data. The IPA project is comprised of three workstreams, to: (1) increase the frequency of data exchanges with CMS, (2) implement application programming interfaces so Medicaid members can access their medical and pharmacy benefit claims and clinical data, provider directory information, and preferred drug list information from any computer or handheld device, and (3) implement an application programming interface to allow current and former Medicaid members to request their patient data be shared with other payers.

Implementation Contract

ADS signed a contract in November 2021 with a cost of $593,000 for implementation services.

Status

ADS completed the first workstream in April 2022 using internal resources and a contractor implemented part of the second workstream in July 2022.

This project has not completed providing access to clinical data nor the payer-to-payer exchange. In February 2023, the State decided to remove the clinical data aspect of this project until its Medicaid data warehouse is in place. As of April 10, 2023, completion of the payer-to-payer workstream was contingent on CMS finalizing a proposed rule that replaces its prior payer-to-payer exchange policy. According to CMS, they proposed changes to this rule because multiple payers had reported that the lack of technical specifications in the original rule was creating implementation challenges. As of April 7, 2023, CMS guidance on the payer-to-payer work was still pending.

DVHA Medicaid for the Aged, Blind, and Disabled Self-Service Application Project

Purpose

The intent of the Medicaid for the Aged, Blind, and Disabled Self-Service Application project was to allow applicants or enrollees to be able to apply for this type of benefit online, as required by CMS.

Implementation Contract

In August 2021, ADS signed an agreement with a contractor to implement this project at a cost of $499,899. There was one amendment to this agreement, which did not change its cost.

Status

The system was launched publicly in February 2022.

The following is a reprint of management's response to a draft of this report. Our evaluation of these comments is contained in Appendix V.

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Shawn Nailor, CIO & Secretary
Denise Reilly-Hughes, Deputy Secretary

May 23, 2023

Mr. Doug Hoffer
Office of Vermont State Auditor
132 State St.
Montpelier, VT 05633

Dear Mr. Hoffer

In response to the State Auditor Office's draft report, "Agency of Digital Services, Selected Information Technology Projects Had Cost Increases, Schedule Delays, and Poorly Defined Measures", please incorporate this enclosed letter as Management's Comments.

The Agency of Digital Services (ADS), and the Enterprise Project Management Office (EPMO) were established under an Executive Order which was later codified under State Statute, 3 V.S.A. Chapter 56. Specifically, § 3303 directs the EPMO to provide an annual report that includes "(4) an outline summary of information, including scope, schedule, budget, and status for information technology projects with total costs of $500,000.00 or greater;" and "(6) a summary of independent reviews".

It also requires the EPMO to "maintain the following records for information technology projects with a total cost of $500,000.00 or greater:

(1) A business case, including life-cycle costs and sources of funds for design, development, and implementation, as well as maintenance and operations. The business case shall include expected benefits, including cost savings and service delivery improvements.

(2) Detailed project plans and status reports, including risk identification and risk mitigation plans."

See SAO Comment 1 on page 38

By these statutory requirements, the EPMO nor ADS has the authority to collect, monitor, track, or report on business-side costs and performance measures for technology projects.

The rapid pace at which technology evolves means the EPMO has to stay flexible and agile in its approach to deliver the best product to its customers. This approach to project management allows for the adoption of new technology and the incorporation of new information as it becomes available during the project lifecycle. Understandably this methodology can lead to adjustments to the project's original cost and schedule estimate or may change its scope from what was originally intended. With that being said, ADS believes this approach to project management is necessary to ensure the customer is left with a modern product at the end that fits their needs.

See SAO Comment 2 on page 39

See SAO Comment 1 on page 38

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According to the Project Management Body of Knowledge (PMBOK), a project is defined as "a temporary effort used to create a unique product, service, or result that has a definite beginning and an end." The EPMO assigns ADS resources specifically for the purpose of managing projects according to the project schedule. Once a project is complete, the resources assigned by the EPMO are released from the project team and assigned to the next project prioritized by the State. The newly implemented system is then turned over to the business operations team for use. The authority given to ADS under statute excludes the ability to implement and enforce the execution of a process to obtain information on the extent to which IT projects achieved measured business goals before, during, or after the completion of the project.

It is also important to note that some information technology projects are initiated as a result of a technological risk to the State and not based on operational process improvements and may not have quantifiable business performance measurements associated with them. Aside from technological risk, projects can be initiated from various sources of need. This can include but is not limited to, legislative mandates, federal rule changes, public emergency demands, grant funding schedules, cyber security vulnerabilities, technology lifecycle dependencies, and contract expirations.

The Administration is committed to continuous improvements of all processes and procedures within the executive branch. Starting with the recent updates made to ADS' strategic plan that was submitted to the legislature in January of 2023, under the guidance of the administration, ADS set out to improve its KPIs, so they more accurately measure the performance and outcomes of its initiatives. Critical goals, performance indicators, public dashboards, and performance measures are practices we value and strive daily to improve upon in our agency's project delivery model.

ADS will consider the recommendations made within the State Auditor's report that align with our statutory obligations and those that meet the needs of State Government and Vermonters.

Thank you for the opportunity to respond.

Sincerely,

DocuSigned by:
E4490DF1BEAE444...
Shawn Nailor
ADS Secretary & CIO

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Comments from ADS Management

Recommendation	Report Pages	Issue	ADS Response
1. Include client entity's staff costs in implementation estimates.	6	The cost section of the ABC Form does not currently include the staff costs incurred by the client entities. The ABC Form states that business-related costs "are considered operation costs not specific to projects." However, the staff of the client entities serve as subject matter experts for the project and perform critical tasks, such as testing. Not including such costs in the ABC Forms understates the total project cost.	Under 3 V.S.A. 3303 the Agency of Digital Services is required to maintain the following records for information technology projects with a total cost of $500,000.00 or greater: (1) A business case, including life-cycle costs and sources of funds for design, development, and implementation, as well as maintenance and operations. The business case shall include expected benefits, including cost savings and service delivery improvements. (2) Detailed project plans and status reports, including risk identification and risk mitigation plans. Lifecycle costs as referenced in the statute are limited to the costs associated with implementing and maintaining technology systems, which include the costs of ADS Staff but are not inclusive of the costs of the business to operate in the system. Those costs are managed within the business budgets and ADS does not have the access or authority to report on or manage business operational resources and budgets.
2. Before approving IT projects, work with client entities to ensure that the project has performance measures that include baseline data, quantify results, and are relevant to the project.	12-14	Five of the six selected projects had measures to evaluate the success of the project that did not include a baseline, did not quantify results, or were not relevant to the project.	ADS recognizes the importance of measuring performance that includes baseline data and quantified results, and we will encourage our business partners to improve on how they evaluate project success in their business case documents. It is important to note not all projects driven by process improvement are initiated with business measures in mind. Many projects are initiated based on outstanding risk, technical debt, and other security vulnerabilities. These drivers may not provide quantifiable means by which to measure business performance.

See SAO Comment 1 on page 38 and Comment 3 on page 39

See SAO Comment 4 on page 39

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See SAO Comment 5 on page 39

See SAO Comment 6 on page 40

See SAO Comment 7 on page 40

See SAO Comment 8 on page 40

3. Develop criteria for recording the overall status of IT projects as well as for resource and risk elements.	15-16	Project managers use a red/yellow/green color scale to denote the status of their project. However, EPMO has not defined the criteria for overall status nor for the resource and risk elements of the reports.	The ADS EPMO has updated the standard for determining the overall status of projects as well as assessing risks. The standards for assessing the status and risks of a project can be found on the EPMO website as follows: • Assessing Status • Risk Matrix
4. Include in EPMO's project dashboard on the ADS website and its annual report on the status of IT projects (1) the criteria of the color scale used and (2) baseline cost and schedule information.	16-17	The EPMO project dashboard on the ADS website and its annual IT activity report use a red/yellow/green color scale to denote the status of project elements like schedule but did not define the scale criteria. In addition, neither the dashboard nor the annual report includes baseline cost and schedule data.	ADS has added the definition of the status colors of a project under the external dashboard. It is important to note the current status scale is based on a point in time of project status and not a static project rating. This scale can vary based on time, date, and task completion at any point during an ongoing project. Under 3 V.S.A. 3303, ADS is required to provide an outline summary of information, including scope, schedule, budget, and status for information technology projects with total costs of $500,000.00 or greater. The request for the inclusion of baseline cost and schedule data in the summary or a dashboard would be additive to current state requirements.
5. Develop a tracking mechanism on the extent to which IT projects met their original cost and schedule estimates for the division as a whole.	19	EPMO does not currently track the extent to which the division's IT projects meet their original cost or schedule estimates. Without such tracking, ADS lacks key mechanisms to establish transparency and accountability about the cost and schedule performance of its IT projects.	The Project close-out reports include information related to whether projects met their schedule and IT budget performance. The current ADS project management tool was adopted based on the available budget provided to ADS in consideration of statutory requirements. The tool procured met those requirements, however, consideration of additive tracking at the level of detail recommended would require additional funding.
6. In conjunction with client entities, implement a process to obtain information on the extent to which IT projects achieved their business goals	19-20	ADS does not have a mechanism in place to effectively collect information and report on the extent to which IT projects met their business goals. The EPMO project management process requires projects to complete a close-out report that contains an assessment of whether the project successfully achieved value for the business. However, the closeout	Project close-out reports are completed once all invoices related to a project have been processed by the financial office, typically this is done within 30 days of project completion. During that time, ADS and the business evaluate the project and complete the close-out document. The status of business goals may be incorporated if the data regarding them is known at that time by the business. ADS is open

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See SAO Comment 1 on page 38 and Comment 9 on page 40

after completion once sufficient time has lapsed to allow for evaluation of a mature system (e.g., 6-12 months).		reports are expected to be completed shortly after projects are deployed and do not always have data available about whether its business goals and measures were met.	to including this data, for report documentation purposes only, if provided by the business, this would require the business to own this responsibility. Any further tracking of business outcomes post-project-closeout would be the responsibility of the business. It's important to note that after closeout, ADS for data privacy purposes no longer has access to business data and information.
7. Include on the ADS website and in the annual performance report, performance measures the show the extent to which projects (1) met their original cost and completion date estimates and (2) achieved their intended business goals.	19-20	ADS's programmatic performance measures for IT project management do not (1) include the extent to which IT projects met their original cost and schedule estimates (either before or after a contractor was selected) or (2) demonstrate the extent to which IT projects result in organizations or people that are better off.	During the term of a project, based on what the original cost and completion estimates are compared to the completion and end costs, there are varying factors that can occur throughout that term that can alter these items. They include but are not limited to legislative mandates, pandemics, non-projected business requirements, and other competing priorities or federal mandates/requirements. There are many factors that can impact the original cost, schedule, and business outcomes. ADS, throughout the project management process, works to document this to the best of our abilities in conjunction with business feedback and management support. Project lifecycle trend analysis would be an additive feature that is currently unavailable in the project management tool used by ADS. Business outcomes or intended outcomes of a project are captured in the IT ABC document. The extent to which IT projects result in organizations or people that are better off is not a data element that ADS is required to report on by statute.
8. Develop procedures to ensure that contract deliverables are formally accepted before paying invoices.	20	Contracts for each of the six selected projects required the State to formally accept deliverables before paying invoices. In three projects some invoices were paid before the related deliverable was accepted or when acceptance of the deliverable was not documented.	This procedure is currently under development and ADS expects it to be reviewed, approved by all stakeholders, and in circulation by the end of the 2023 calendar year.

See SAO Comment 8 on page 40

See SAO Comment 1 on page 38

Appendix V
SAO Evaluation of Management's Comments

In accordance with generally accepted government auditing standards, the following tables contain our evaluation of management's comments.

Comment #	Management's Response	SAO Evaluation
1	*"The Agency of Digital Services (ADS), and the Enterprise Project Management Office (EPMO) were established under an Executive Order which was later codified under State Statute, 3 V.S.A. Chapter 56. Specifically, § 3303 directs the EPMO to provide an annual report that includes '(4) an outline summary of information, including scope, schedule, budget, and status for information technology projects with total costs of $500,000.00 or greater;' and '(6) a summary of independent reviews' …* *[and] requires the EPMO to maintain the following records for information technology projects with a total cost of $500,000.00 or greater: … A business case, including life-cycle costs and sources of funds for design, development, and implementation, as well as maintenance and operations. The business case shall include expected benefits, including cost savings and service delivery improvements. … Detailed project plans and status reports, including risk identification and risk mitigation plans.* *By these statutory requirements, the EPMO nor ADS has the authority to collect, monitor, track, or report on business-side costs and performance measures for technology projects. …* *The authority given to ADS under statute excludes the ability to implement and enforce the execution of a process to obtain information on the extent to which IT projects achieved measured business goals before, during, or after the completion of the project."*	There is nothing in the Executive Order and cited statutes that precludes ADS from implementing the recommendations in our report to include client agency costs in IT project implementation estimates and to obtain from client entities and report whether IT projects achieved their business goals. Indeed, ADS failed to cite other criteria that support doing so. Regarding including client agency costs in its IT project implementation estimates: • Among the stated intentions of the Executive Order was to obtain a comprehensive understanding of IT spending. • 3 V.S.A. §3301, requires ADS to review, approve, and provide standards for tracking IT activities within State government, which includes "the design, construction, purchase, installation, maintenance, or operation of systems, including hardware, software, and services that perform or are contracted … to perform these activities." Staff at client entities serve as subject matter experts for IT projects and perform tasks critical to their implementation, such as testing. Thus, by not including such costs in their implementation estimates, ADS understates the total costs of its IT projects. With respect to obtaining information on whether IT projects are achieving their business goals: • ADS's mission is to "to collaborate with our partners in state government to deliver simple and intuitive technology solutions that improve the lives of Vermonters." • Among the stated intentions of the Executive Order was to support results-based accountability, a key aspect of which is to measure "is anyone better off." By tracking and reporting on the extent to which IT projects are meeting their business goals, ADS could demonstrate how well IT projects are helping achieve its mission and whether Vermonters and State organizations are better off with their implementation. Because ADS did not commit to implementing some of our recommendations because statute does not *require* them to, we added recommendations for Legislative action to this report. The effect of our recommended Legislative action would be to require ADS to do so.

Appendix V
SAO Evaluation of Management's Comments

Comment #	Management's Response	SAO Evaluation
2	*"Once a project is complete, the resources assigned by the EPMO are released from the project team and assigned to the next project prioritized by the State. The newly implemented system is then turned over to the business operations team for use."*	ADS's term "business operations team" consists of the ADS IT teams embedded in the client entity along with the staff employed by the client entity itself. Therefore, while EPMO may hand off the project, ADS itself is still involved with the new or modified system.
3	*"Lifecycle costs as referenced in the statute [3 V.S.A. §3303] are limited to the costs associated with implementing and maintaining technology systems, which include the costs of ADS Staff but are not inclusive of the costs of the business to operate in the system. Those costs are managed within the business budgets and ADS does not have the access or authority to report on or manage business operational resources and budget."*	The statute cited does not restrict lifecycle costs to ADS staff costs. In addition, under 3 V.S.A. §3301(a)(2), ADS is responsible for approving all IT activities within State government. Thus, it is ADS's choice not to include the client entity staff costs in its estimates of the implementation costs of IT projects because it could withhold approval unless and until the client entity agreed to collect this data. Additionally, our recommendation does not call for ADS to manage client entity resources and budget. Rather, our recommendation seeks to have ADS disclose the total cost of implementing its IT projects by *reporting* on relevant client agency costs. By not including client entity staff costs in its implementation estimates, ADS understates the costs of IT projects. To illustrate, DCF collects its staff costs related to the CDDIS project and estimated that it will incur $883,392 in such costs implementing this project (e.g., to test the system). ADS's most recent implementation cost estimate for this project, which does not include DCF staff costs, is $4,695,874. Taken together, the total cost to implement this project is actually $5,579,266 or 19% more.
4	*"ADS recognizes the importance of measuring performance that includes baseline data and quantified results, and we will encourage our business partners to improve on how they evaluate project success in their business case documents."*	ADS can and should do more than just encourage its client agencies to improve upon how they evaluate IT project success. ADS's statute requires its business cases for IT projects with costs of $500,000 or more to include expected benefits, including cost savings and service delivery improvements. Moreover, statute requires ADS to approve all IT activities so it could withhold such approval if the performance measures the client entity submits as part of the ABC Form do not include well-defined measures.
5	*"The ADS EPMO has updated the standard for determining the overall status of projects as well as assessing risks."*	We validated this information, so we removed this recommendation from the report.

Appendix V
SAO Evaluation of Management's Comments

Comment #	Management's Response	SAO Evaluation
6	*"ADS has added the definition of the status colors of a project under the external dashboard."*	We validated this information, so we removed this part of the recommendation from the report.
7	*"Under 3 V.S.A. 3303, ADS is required to provide an outline summary of information, including scope, schedule, budget, and status for information technology projects with total costs of $500,000.00 or greater.* *The request for the inclusion of baseline cost and schedule data in the summary or a dashboard would be additive to current state requirements."*	The cited statute does not prevent ADS from including baseline cost and schedule data in its dashboard and annual report. Because ADS cited its statute in its response, we added a recommendation for a Legislative change to its statute to report cost and schedule baselines to our report. With or without Legislative action, ADS can implement this recommendation. The effect of our recommended Legislative action would be to require ADS to do so.
8	*"The current ADS project management tool was adopted based on the available budget provided to ADS in consideration of statutory requirements. The tool procured met those requirements, however, consideration of additive tracking at the level of detail recommended would require additional funding."*	In a recent report, EPMO identified 64 on-going IT projects with expected costs of $500,000 or more. Given this relatively small number of projects, we believe that our recommendation does not require a project management tool and could be implemented using a simple spreadsheet.
9	*"Project close-out reports are completed once all invoices related to a project have been processed by the financial office, typically this is done within 30 days of project completion. … The status of business goals may be incorporated if the data regarding them is known at that time by the business. ADS is open to including this data, for report documentation purposes only, if provided by the business, this would require the business to own this responsibility. Any further tracking of business outcomes post-project closeout would be the responsibility of the business."*	Our relevant recommendation recognizes that reporting on the extent to which IT projects achieve their business goals requires a partnership between ADS and the client entity. Nevertheless, as the central agency for IT activities in the Executive Branch, ADS has the obligation to take the lead on reporting this information.