

OFFICE OF ENTERPRISE TECHNOLOGY SERVICES

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March 7, 2023

The Honorable Ronald D. Kouchi President of the Senate and Members of the Senate Thirty-Second State Legislature State Capitol, Room 409 Honolulu, Hawai'i 96813 The Honorable Scott K. Saiki Speaker and Members of the House of Representatives Thirty-Second State Legislature State Capitol, Room 431 Honolulu, Hawai'i 96813

Aloha Senate President Kouchi, Speaker Saiki, and Members of the Legislature:

Pursuant to HRS section 27-43.6, which requires the Chief Information Officer to submit applicable independent verification and validation (IV&V) reports to the Legislature within ten days of receiving the report, please find attached the report the Office of Enterprise Technology Services received for the State of Hawai'i, Public Utilities Commission (PUC), Content and Document Management System Project.

In accordance with HRS section 93-16, this report may be viewed electronically at http://ets.hawaii.gov (see "Reports").

Sincerely,

Douglas Murdock (Mar 7, 2023 10:35 HST)

Douglas Murdock Chief Information Officer State of Hawai'i

Attachment



Final Submitted: 3/2/2023



Overview

- Executive Summary
- IV&V Findings and Recommendations
- IV&V Preliminary Concerns
- IV&V Scope and Approach
- IV&V Engagement Status
- Appendices
 - A IV&V Criticality Ratings
 - B IV&V Inputs
 - C Upcoming IV&V Activities





The Project reported on January 17, 2023 the Execution/Development phase of the CDMS was complete. Previous PUC concerns that delayed their signoff on completion of this phase were addressed when the SI implemented missing core functionality that PUC identified during their independent quality assurance (QA) testing and review. The Project entered the System Test phase and plans to begin User Acceptance Testing (UAT) on February 6, 2023, and is targeting a golive date of May 8, 2023. However, IV&V and PUC remain concerned that the SI approach to System Testing may prove inadequate. Although PUC's independent testing efforts likely reduced the number of defects and surprises UAT may have uncovered, if System Testing is insufficient, defects or missing functionality may be promoted to UAT and cause further delays if the Project cannot resolve issues timely. Although additional time has been allotted to UAT, go-live could be delayed.

The Project decided to leverage DCCA's existing payment system instead of creating a separate payment system, which should save time and simplify payment functionality of CDMS and reduce the risk of a delayed go-live. The Project intends to implement payment and complete system integration in parallel with UAT.



Jan '23	Category	IV&V Summary
L		PUC SMEs and staff continue to be available to support Project activities. Project managers and leadership have communicated to PUC SMEs and staff the importance to prioritize UAT activities
		beginning in February 2023.
•	Project	PUC approved Execution Phase deliverables once core functionality was addressed. The SI also submitted Deliverable 5.1 Test Plan and Schedule on January 18, 2023, which has yet to be formally approved by PUC.
M	Management	The Project schedule was re-baselined for UAT to begin on February 6, 2023, and end April 7, 2023, with a go-live date of May 8, 2023.
M		The Project decided to leverage DCCA's current payment system instead of creating a separate payment system, which should save time and simplify payment functionality of CDMS and reduce the risk of a further delayed go-live. The Project intends to integrate the payment system with the CDMS in parallel with UAT and complete the integration before UAT ends.

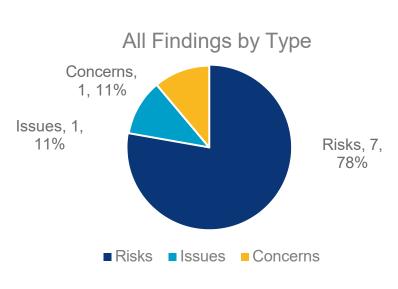


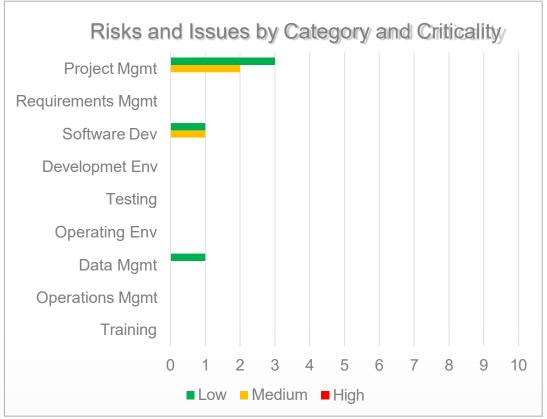
Jan '23	Category	IV&V Summary
M	Software Development	The SI addressed the 22 core functional items that were missed during the Execution Phase and caused a 6-week delay. The PUC agreed that non-core functional items will be addressed during UAT.

Jan '23	Category	IV&V Summary
L	Data Management	The Project plans on going live with some data that cannot be cleaned up prior to go-live, specifically, duplicate accounts that could not be programmatically identified. Going live with bad data can increase the risk of r educed user buy-in and/or increased user confusion until data can be fully cleansed post go-live.



IV&V is monitoring nine findings. A new preliminary concern was opened under Testing. There are seven risks and one issue. The issue is related to Software Development and is rated at a medium criticality. Two risks are medium, and five risks are low criticality. Five risks fall in the Project Management category, one falls under Software Development and one falls under Data Management.







IV&V Findings and Recommendations

IV&V ID #14 Type: Risk

Rating: Low

Status: In progress

Category: Project Management

Date Opened: September 30, 2021

Title: Limited PUC resource availability could lead to schedule delays and incomplete system design.

Observation: Although the CDMS Project is a high priority at the PUC, resource limitations appear to exist throughout the life cycle of the Project. These constraints were communicated to the System Integrator (SI) early in the project for planning purposes.

Context: System development projects require coordination and engagement between the SI and the client in order to accurately document business needs, processes, user stories, business rules, and anything needed to build a system that meets the client's needs.

Impact: Schedule delays, increased project cost, implementation of a solution that that does not meet the PUC's needs

Updates

1/31/2023: PUC SMEs and staff continue to be available as necessary to support Project activities. Project managers and leadership emphasized the need i to prioritize UAT activities in February 2023. The Project plans to go-live May 8, 2023 and does not anticipate staffing challenges as PUC's busy filing period will be finished by then.



IV&V ID #14 (cont.) Type: Risk

Rating: Low

Status: In progress

Category: Project Management

Date Opened: September 30, 2021

Recommendations/Action Items	Period	Status
The Project conduct detailed resource planning under the new schedule to avoid resource constraints.	Medium Term	New
PUC PM and SI PM develop a plan to address these constraint and work closely together throughout the project to plan important meetings based on resource availability.	Long Term	In progress
SI develop fully resourced work plan.	Short Term	Not started
PUC and SI review Sprint Plan and ceremonies to identify specific resources to help identify resource risk that can be addressed before sprint cycles begin.	Short Term	In progress
SI employ agile processes and methodologies so that progress can be made regardless of PUC resource availability.	Long Term	In progress



IV&V ID #15 Type: Risk

Rating: Low

Status: In progress

Category: Project Management

Date Opened: September 30, 2021

Title: Project deliverables and artifacts that lack sufficient detail could lead to project delays, misunderstandings, inefficient project execution, and rework.

Observation: Early SI submissions of project deliverables lacked sufficient detail.

Context: Project planning documentation such as the Project Plan, Risk Management Plan, Communication Plan and Change Management Plan, can be effective tools for projects of this size to increase stakeholder understanding of the goals, approach, steps, timelines, roles and responsibilities. Additionally, conceptual designs, requirements traceability matrices, and process maps can also provide important information for successfully developing a system that meets PUC's needs.

Impact: Failure to provide sufficient detail in project deliverables can lead to project team confusion, missteps, project delays, misunderstandings, inefficient project execution, and rework.

Updates

1/31/2023: PUC approved the Execution Phase deliverables after the core functional items PUC identified during their QA review and testing were addressed. The SI also submitted Deliverable 5.1 Test Plan and Schedule on January 18, 2023. PUC and IV&V provided comments that the SI addressed. The Project plans to approve Deliverable 5.1 early in February 2023. Although the approval of Deliverable 5.1 is behind schedule, the delay to approve this deliverable does not appear to impact the testing schedule.



IV&V ID #15 (cont.) Type: Risk

Rating: Low

Status: In progress

Category: Project Management

Date Opened: September 30, 2021

Recommendations/Action Items	Period	Status
Although DEDs were developed for all deliverables, the SI should involve PUC before providing the draft deliverable to obtain feedback and expedite review cycles.	Long term	In progress
The SI should perform additional QA of deliverables prior to submission	Long term	In progress

IV&V Preliminary Concerns

ID #16 Type: Risk

Rating: Medium

Status: In progress

Category: Project Management

Date Opened: September 30, 2021

Title: Adoption of an aggressive schedule can lead to poor system design, PUC stakeholder frustration, and stretch PUC resources beyond their capacity.

Observation: The project has an aggressive schedule with little slack given the volume of deliverables and artifacts, the availability of PUC resources, and the perceived cadence of project meetings and workshops.

Context: A schedule with flexibility and sufficient slack to accommodate project changes that impact the schedule such as resource availability, activities that take longer than anticipated, or missed dependencies, typically result in a project that is delivered on time. Projects with aggressive schedules tend to rush project activities to meet deadlines.

Impact: Rushed project activities can reduce document and system quality. When activities do not seem thorough, customer frustration can result. A rushed schedule can place unnecessary demand on PUC resources, especially if PUC resources are already fully utilized.

Updates

1/31/2023: The Project was delayed approximately 6 weeks to identify and catch up on missing core functionality. The Project schedule was re-baselined for UAT to begin on February 6, 2023 and end April 7, 2023, with a go-live date of May 8, 2023. Although the Project reduced the risk of finding too many defects during UAT during PUC's independent QA review and testing, PUC and IV&V remain concerned UAT could result in uncovering many defects causing further project delays..



IV&V ID #16 (cont.) Type: Risk

Rating: Medium

Status: In progress Category: Project Management

Date Opened: September 30, 2021

Recommendations/Action Items	Period	Status
Provide reports that communicate progress clearly such as a burndown chart and sprint metrics such as planned user stories, completed user stories, cancelled user stories, and new/added user stories so as to clearly demonstrate if the project is on track or not.	Medium term	In progress



IV&V ID #17 Type: Issue

Rating: Medium

Status: In progress

Category: Software Management

Date Opened: September 30, 2021

Title: Inefficient business analysis activities could lead to rework, schedule delays, SME frustration, and poor system design

Observation: PUC and IV&V were concerned that many analysis outputs lacked sufficient quality and comprehensiveness. For example 1) PUC workshop attendees mentioned various workshops and meetings were not very useful, unorganized and unproductive; 2) The workshop cadence seemed slow and did not appear to achieve all intended goals of each workshop session; 3) Although not a contractual requirement, meeting notes from the workshops were not sent to meeting attendees which helps confirm the SI's understanding and shows visibility that the SI understands PUC's needs; 4) Although not explicitly required, PUC requested the SI to review the business documentation provided by a 3rd party prior to conducting the as-is workshops to save time and not start from a blank slate. Despite having access to and reviewing the existing business documentation, PUC observed many questions and time spent on areas that were already documented and PUC was not confident as to how much of the existing documentation was leveraged.

Context: Efficient business analysis processes promote effective communications resulting in productive meetings, good project documentation that provides clarity to complex topics, and overall, foster trust.

Impact: Inefficient analysis activities can negatively impact the Project. For example, 1) Project delays can occur if meetings do not meet intended goals and require additional clarification; 2) Rework and redesign can happen if accurate information was not solicited because participant expectations were not clear during the meeting; 3) Client buy-in and system acceptance may reduce.

Updates

1/31/2023: The SI addressed the 22 core functional items that were missed during the Execution Phase and caused a 6-week delay. Although the QA review reduced the number of defects and missing functionality found during UAT, PUC and IV&V remain concerned further delay could occur. Additionally, many non-core functional items that were supposed to be addressed prior to UAT, will now be addressed during UAT instead. It remains unclear if the Project will have sufficient time to address these items and any additional items found during UAT.

IV&V ID #17 (cont.) Type: Issue

Rating: Medium

Status: In progress

Category: Software Management

Date Opened: September 30, 2021

Recommendations/Action Items	Period	Status
Institute continuous process improvement activities to refine the analysis processes and maximize their cadence without sacrificing quality.	Long term	In progress
Request the SI track their cadence/velocity to improve estimation of task durations to assure planned milestone due dates are realistic.	Long term	In progress



IV&V ID #18 Type: Risk

Rating: Low

Status: In progress

Category: Software Management

Date Opened: October 28, 2021

Title: Lack of attention to process improvement can lead to a system that simply automates existing processes instead of improving them

Observation: The extent to which the Project intends to focus on process improvements remains unclear. Pain points do not seem comprehensively tracked or considered during design sessions or whether all stakeholders are aware of or are actively utilizing the pain points list. While IV&V recognizes that change is difficult, some stakeholders appear to be hesitant to let go of familiar processes during the design sessions. It remains unclear if PUC has assigned the role of change champion to drive organizational process improvements.

Context: IT Projects that assign change champions and prioritize process improvement have an increased likelihood of resulting in systems that meet the organization's future business needs and improve system acceptance.

Impact: Lack of attention to process improvement can lead to a final product that fails to provide maximum value to users. Tracking pain points can be an effective OCM strategy to promote user adoption and increase user buy-in by providing visibility into how the system can resolve their pain points. Also, identifying and implementing opportunities for process improvement avoids SME frustration and rework.

Updates

1/31/2023: The SI continued to address process gaps PUC identified during the QA review. PUC and IV&V remain concerned additional process gaps may be uncovered during UAT through the PUC's end-to-end testing.



IV&V ID #18 (cont.) Type: Risk

Rating: Low

Status: In progress

Category: Software Management

Date Opened: October 28, 2021

Recommendations/Action Items	Period	Status
Identify a PUC process improvement resource to drive/coordinate organizational process improvement efforts and assure system related processes are optimized. This resource could attend design sessions and validate designs support process improvement.	Short term	Not started
Work closely with the SI to identify opportunities for process improvement and implement associated features in the system being careful not to overwhelm users with too much change.	Long term	In progress
Formally engage stakeholders in identifying and tracking pain point and out-of-scope requirements so they are not forgotten and can be revisited in future project phases or other organizational initiatives.	Long term	In progress

ID #19 Type: Risk

Rating: Low

Status: In progress

Category: Project Management

Date Opened: November 30, 2021

Title: Key PUC project resources performing multiple roles could lead to schedule delays and significant project disruption.

Observation: IV&V has noted that at least two of the PUC project team members perform multiple roles and responsibilities on the project which may impact their ability to be successful if project demands increase.

In addition to serving as PUC's CDMS PM, this position also performs the following roles: Organizational Change Management lead, Process Improvement lead, Business Analyst Co-lead, User Acceptance Test (UAT) Co-lead, and Contract Administrator. In addition to performing ongoing operational responsibilities, the PUC CDMS Technical Lead is the Project IT Sponsor, Data SME, BA Co-Lead, and User Acceptance Test Co-Lead, and is heavily relied on for business analysis.

While these team members have indicated a strong commitment to project success, each has multiple competing priorities. The team members stated their support staff, including the new communications lead, will take on more responsibility to alleviate demands on their time. Also, the team members believe that the overall future workload will lessen.

It remains unclear if PUC staffing levels are appropriate for this project.

Context: Typically, Hybrid Agile projects require an increased level of customer engagement through all phases of the project. Overreliance on key resources can not only overtax and thereby reduce the effectiveness of these key individuals but also present a risk of significant project disruption in the event of their departure.

Impact: If the PUC PM and Technical SME are unable to transfer some responsibilities to other PUC resources, this could stretch them beyond their capacity which may lead to project delays and a decrease in quality in the project tasks they perform.

Updates

1/31/2023: The new PUC PM is heavily relied on and appears to be over-allocated. However, the PUC PM is able to prioritize responsibilities and also puts in extra time as needed. For example, the PUC PM facilitated QA testing that identified missing core functionality and numerous defects and prevented many surprises during UAT. Although the PUC PM may be behind on some activities such as reviewing and approving deliverables, the PUC PM also focused on planning and coordinating PUC SMEs and staff to begin UAT on February 6, 2023. The PUC Technical SME is also able to prioritize project activities and does not appear to negatively impact the Project schedule.



IV&V ID #19 (con't) Type: Risk

Rating: Low

Status: In progress

Category: Software Management

Date Opened: October 28, 2021

Recommendations/Action Items	Period	Status
Identify a PUC process improvement resource to drive/coordinate organizational process improvement efforts and assure system related processes are optimized. This resource could attend design sessions and validate designs support process improvement.	Short term	Not started
Work closely with the SI to identify opportunities for process improvement and implement associated features in the system being careful not to overwhelm users with too much change.	Long term	In progress
Formally engage stakeholders in identifying and tracking pain point and out-of-scope requirements so they are not forgotten and can be revisited in future project phases or other organizational initiatives.	Long term	In progress

ID #20 Type: Risk

Rating: Low

Status: In progress

Category: Data Management

Date Opened: March 31, 2022

Title: Data cleansing challenges could overwhelm PUC SMEs and could confuse users, reduce user buy-in, and/or lead to schedule delays if the Project went live with some bad data

Observation: IV&V is concerned with the poor quality of the legacy system data and whether PUC has the capacity to effectively cleanse their data. Further, if the project aims to meet data conversion milestones, the project may elect to go-live with some bad data to meet their planned go-live date.

Context: Typically, any bad data is addressed prior to go live to facilitate user adoption and to increase perceived system quality.

Impact: If all important data is not cleaned up prior to go-live, user adoption may be challenged, and user perception of the system may be diminished.

Updates

1/31/2023: The Project was able to begin UAT with converted data. The Project plans to go live with some data that cannot be cleansed prior to go-live. The Project is still estimating how long after final data conversion it will take to clean up this data to assess how much of an impact it could have to production users.



IV&V ID #20 (cont.) Type: Risk

Rating: Low

Status: In progress

Category: Data Management

Date Opened: March 31, 2022

Recommendations/Action Items	Period	Status
The Project determine how long it will take to complete the post go live cleanup activities and if possible, complete after go-live is complete, but prior to production users using the system.	Medium term	Not Started



Status: New

IV&V ID #21 Type: Risk

Rating: Medium

Category: Project Management

Date Opened: May 31, 2022

Title: Delays in establishing card-not-present payment gateway could lead to schedule delays and increased cost

Observation: The Project elected to pause most activities for almost 3 months to procure a card-not-present payment processing vendor. Originally, the Project was planning on forego a public solicitation for these services, but the State Procurement Office required it. The SI stated the pause will be a no cost change order.

Context: The Project has had past difficulties accurately estimating the procurement of the card-not-resent service vendor and it is unclear how accurate these new estimates are.

Impact: If the Project is unable to begin processing payments on August 14th, 2022, the Project may be further delayed. Given the SI will not charge the customer for the delay, the budget impact could be minimal. However, the SI stated if payment processing is not available by` 8/14, there is a\$10,000 a week fee for schedule extension. If the vendor is not ready for transaction by 8/14, further delayed, \$10,000 a week. PUC stated they are confident they can complete this procurement before the 8/14 deadline but if the Project is unable to meet these deadlines, the Project stated they have alternative plans.

Updates

1/31/2023: The Project decided to leverage the existing DCCA payment system (currently being utilized by other DCCA divisions) instead of creating a separate payment system, which should save time and simplify payment functionality of CDMS as well as reduce the risk of a delayed go-live. The Project intends to implement payment system integration in parallel to UAT and complete before UAT ends.



IV&V ID #21 (cont.) Type: Risk

Rating: Medium

Status: In progress Category: Project Management

Date Opened: May 31, 2022

Recommendations/Action Items	Period	Status
Closely monitor procurement for any signs of delay	Medium term	In Progress
Develop mitigation strategies if procurement activities appear unfavorable	Medium term	In progress

IV&V Preliminary Concerns (These are not findings, rather, these are observations based on limited information at the time of reporting and require further discovery, research and clarification.)

IV&V Preliminary Concerns

IV&V ID #22 Type: PC

Rating: n/a

Status: New

Category: Testing

Date Opened: 1/31/2023

Title: Inadequate System Test activities could lead to unidentified testing gaps and leaked defects into future project phases

Observation: The Project conducted and exited System Test without fully reviewing all test scripts and results, and without confirming all tests traced back to all requirements.

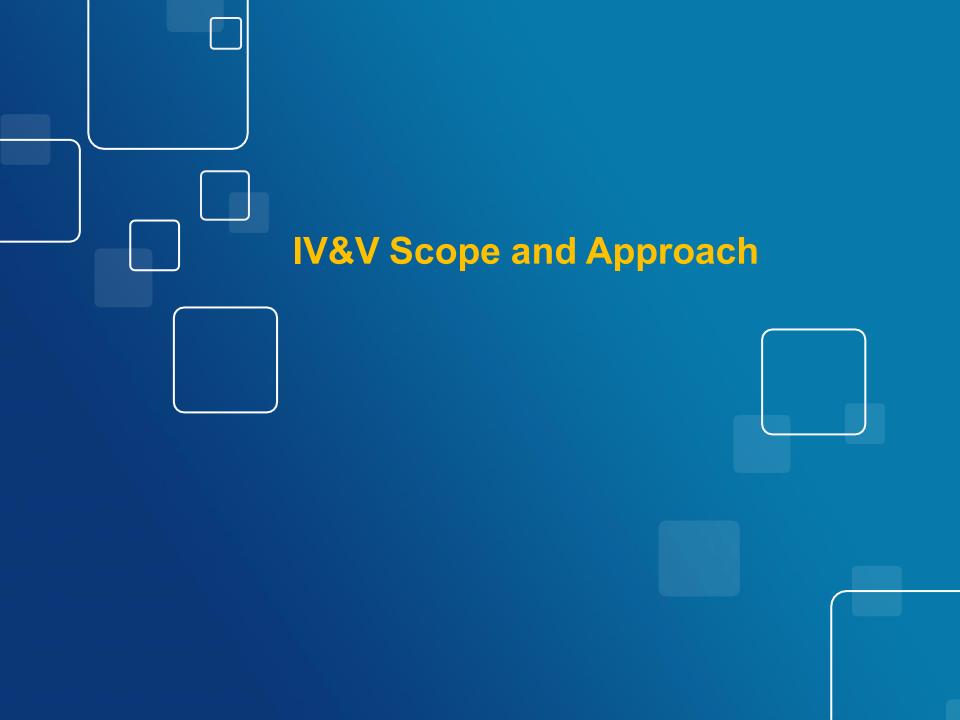
Context: The goal of System Test is typically for the Project to confirm the product is free of defects and meets all required functionality before moving to User Acceptance Testing.

Impact: If the System Test phase did not test all required functionality completely, defects and missing functionality could leak to both the UAT and Production environments.

Updates

1/31/2023: n/a





IV&V Scope

- In accordance with PCG's contract for the CDMS Project at the PUC, the subject areas that are within the scope of IV&V activities include:
 - Project Management
 - Requirements Management
 - Software Development
 - Development Environment
 - · System and Acceptance Testing

- Operating Environment
- Data Management
- Operations Oversight
- Training

 As the CDMS IV&V project progresses, PCG's activities will focus on areas that represent highest risk to the Hawaii PUC.



IV&V Approach and Methodology

- What is Independent Verification and Validation (IV&V)?
 - Oversight by an independent third party that assesses the project against industry standards to provide an unbiased view to stakeholders
 - The goal of IV&V is to help the State get the solution they want based on requirements and have it built
 according to best practices
 - IV&V helps improve design visibility and traceability and identifies (potential) problems early
 - IV&V objectively identifies risks and communicates to project leadership for risk management

PCG IV&V Methodology

- Consists of a 4-part process made up of the following areas:
 - **1. Discovery** Discovery consists of reviewing documentation, work products and deliverables, interviewing project team members, and determining applicable standards, best practices and tools
 - 2. Research and Analysis Research and analysis is conducted in order to form an objective opinion.
 - **3.** Clarification Clarification from project team members is sought to ensure agreement and concurrence of facts between the State, the Vendor, and PCG.
 - 4. Delivery of Findings Findings, observations, and risk assessments are documented in this monthly report and the accompanying Findings and Recommendations log. These documents are then shared with project leadership on both the State and Vendor side for them to consider and take appropriate action on.

Note: This report is a point-in-time document with findings accurate as of the last day in the reporting period.

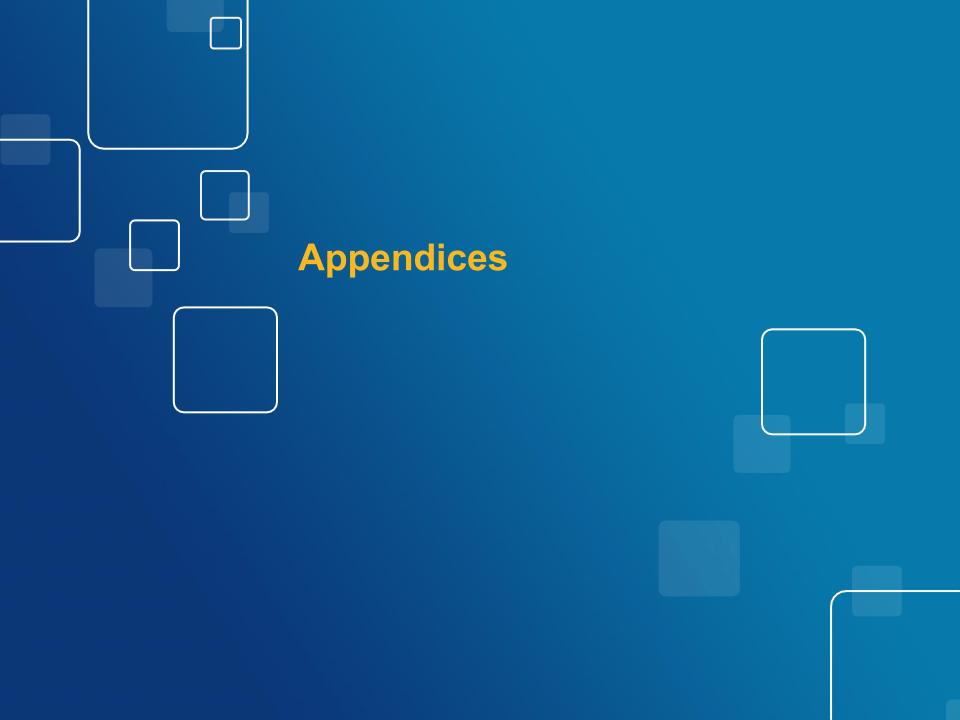


IV&V Engagement Status

IV&V Engagement Status

IV&V Engagement Area	Nov	Dec	Jan (23)	Comments
IV&V Budget				The IV&V engagement is deliverables-based and PUC is not at risk of being over budget.
IV&V Schedule				The IV&V engagement aligns with the SI schedule.
IV&V Deliverables				There are no known risks to upcoming IV&V deliverables.
IV&V Staffing				The IV&V team maintains the proposed team and there are no foreseeable changes.
IV&V Scope				The IV&V project continues to operate within the scope of its engagement.

Engagement Status Legend			
The engagement area is within acceptable parameters.	The engagement area is somewhat outside acceptable parameters.	The engagement area poses a significant risk to the IV&V project quality and requires immediate attention.	



Appendix A – IV&V Criticality Ratings

See definitions of Criticality Ratings below:

Criticality Rating	Definition
Н	A high rating is assigned if there is a possibility of substantial impact to product quality, scope, cost, or schedule. A major disruption is likely and the consequences would be unacceptable. A different approach is required. Mitigation strategies should be evaluated and acted upon immediately.
M	A medium rating is assigned if there is a possibility of moderate impact to product quality, scope, cost, or schedule. Some disruption is likely and a different approach may be required. Mitigation strategies should be evaluated and implemented as soon as feasible.
L	A low rating is assigned if there is a possibility of slight impact to product quality, scope, cost, or schedule. Minimal disruption is likely and some oversight is most likely needed to ensure that the risk remains low. Mitigation strategies should be considered for implementation when possible.



Appendix B – IV&V Inputs

Meetings attended during the reporting period:	Artifacts reviewed during the reporting period:
Weekly check-ins with PUC	Deliverables 5.1 Test Plan
Monthly check-ins with PP	
Weekly PM Meetings	
CDMS – Risk Management Meeting	
UAT working / planning sessions	
PUC 5.1 Test Plan Meetings and Reviews	



Appendix C – Upcoming IV&V Activities

Anticipated meetings to attend next period	Anticipated artifacts to review next period
Weekly check-ins with PUC	UAT results
Monthly check-ins with PP	Deliverable 5.2 System Test Results
Weekly PM Meetings	
CDMS – Risk Management Meeting	
Deliverable Review Sessions	
UAT sessions	



Appendix D – Recommendation Periods

Period	Definition
Short Term	These are recommendations that should be completed within the month and/or require less than a month to complete
Medium Term	These are recommendations that should be completed within 2-6 months and/or require 2-6 months to complete
Long Term	These are recommendations that should be completed within 6 months to a year and/or require > 6 months to complete.





Solutions that Matter