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September 26, 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 (Sep 27, 2023 15:18 HST)

Douglas Murdock
Chief Information Officer
State of Hawai'i

Attachment

Content and Document Management System (CDMS) Project

Hawaii Public Utilities Commission (PUC)

IV&V Monthly Status Report - FINAL

For Reporting Period: **August 2023**

Draft Submitted: 9/14/2023

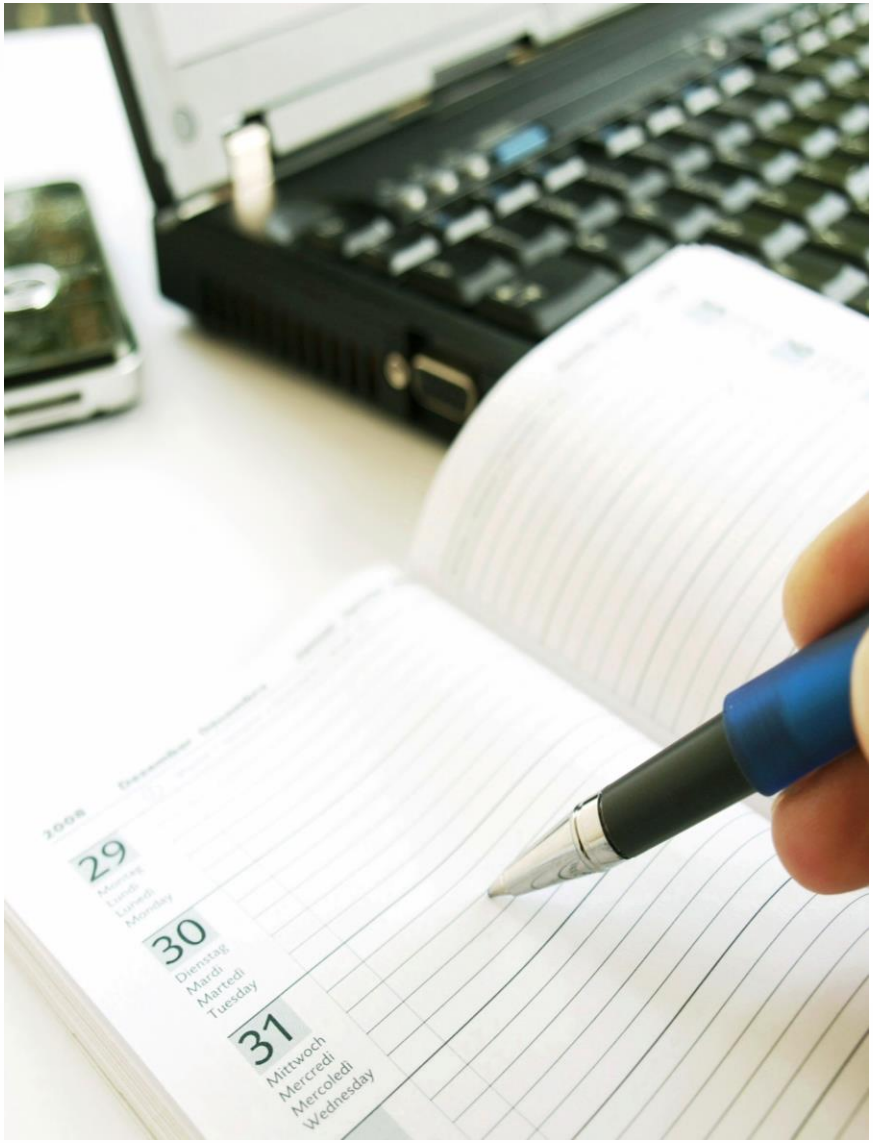
Final Submitted: 9/25/2023

PUBLIC CONSULTING GROUP

Solutions that Matter

Overview

- Executive Summary / Go-Live Readiness
- 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



Executive Summary

The CDMS has been in production for about 10 weeks and is currently covered by a 90-day warranty which is set to end on September 19, 2023. During this period, several critical issues were uncovered. For instance, users faced difficulties searching PDF content within stored documents, which has now been partially resolved, allowing for about 1000 search results. However, there's a potential future need for returning more results. Additionally, users expressed dissatisfaction with the DocuSign PDF previewer and preferred PDFs to open in their default viewers, such as Adobe Acrobat or a web browser. The SI was unable to directly address this issue and introduced a workaround requiring users to download and then open PDFs in their desired applications. Furthermore, there's an ongoing effort to resolve an Optical Character Reader (OCR) problem where certain fonts are not recognized, hindering accurate content searches. This issue is slated for resolution in September. The late discovery of these issues raises questions about why they weren't identified earlier in the project. It may be attributed to inefficient business analysis and a lack of emphasis on process improvement.

Initially, there was some confusion about which items would be addressed during the 90-day warranty period. However, both PUC and the SI have tentatively agreed on which bugs, defects, and enhancements will be completed within this period and which ones will be deferred to the 12-month extended warranty/maintenance period. Approximately five unrelated items to the original requirements have been deferred, while the remaining 30 issues are scheduled for implementation in one of the two releases planned for September 2023.

Executive Summary

Aug '23	Category	IV&V Summary
L	Project Management	Overall, project deliverables and resource management remain low risk. Additionally, PUC and the SI resolved any confusion about what items will be addressed during the warranty period and have agreed on the remaining scope.

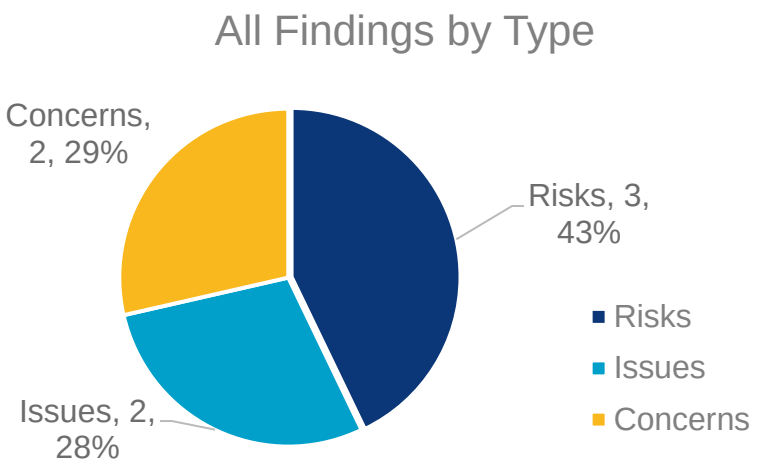
Aug '23	Category	IV&V Summary
L	Software Development	The Project continues to make progress addressing defects and enhancements. It remains unclear as to what level of effort and focus on process improvement the Project will conduct during the extended warranty period.

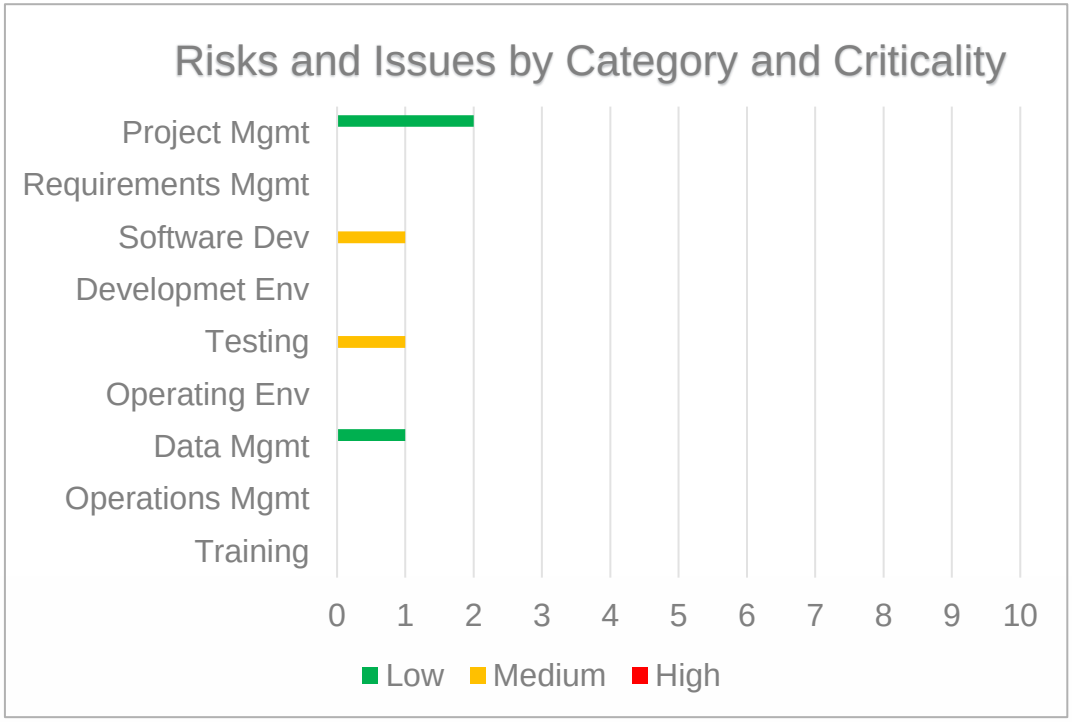
Aug '23	Category	IV&V Summary
M	Testing	The project is addressing the remaining bugs and issues found during the warranty period. However, IV&V remains concerned that the introduction of additional bugs due to inadequate regression testing could potentially impact the scope or duration of the warranty period.

Aug '23	Category	IV&V Summary
L	Data Management	The Project continues cleaning up duplicate accounts and fiscal data. The Project does not anticipate any significant impact to the user experience with this bad data.

Executive Summary

IV&V is monitoring seven findings. Project Management accounts for two low risks and the two concerns. Data management is also a low risk. The two medium issues are Software Development and Testing Related (Insufficient Process Improvement #24 and Insufficient Testing #28).





IV&V Findings and Recommendations

IV&V Findings and Recommendations

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

8/31/2023: The SI delivered and is waiting for approval for the 7.1 As-Built System Documentation, the 7.2 Cutover Execution & Completion report and the 7.3 Production Support Report Templates. Except for some missing areas in Deliverable 7.1, PUC does not anticipate any major issues after conducting an initial review.

IV&V Findings and Recommendations

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	Complete
The SI should perform additional QA of deliverables prior to submission	Long term	Complete

IV&V Findings and Recommendations

IV&V ID #18	Type: Issue Rating: Medium	Status: In progress	Category: Software Development 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

8/31/2023: The project determined which enhancements, defects, and bugs will be addressed during the remaining warranty period and have addressed some of the suboptimal designs. However, it remains uncertain whether the project will prioritize process improvement as it transitions into the Maintenance and Operations (M&O) phase.

IV&V Findings and Recommendations

IV&V ID #18 (cont.)	Type: Issue Rating: Medium	Status: In progress	Category: Software Development Date Opened: October 28, 2021

Recommendations/Action Items	Period	Status
Communicate to users and stakeholders process improvement that may not be optimized upon go-live but may be addressed during M&O.	Medium Term	Complete
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
Formally track readily available details of out-of-scope requirements that could be beneficial to users so they are not forgotten and they can be easily revisited in future project phases or other organizational initiatives.	Long Term	In progress

IV&V Findings and Recommendations

ID #19	Type: Risk Rating: Low	Status: Open	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

8/31/2023: As the project approaches the end of the 90-day warranty, the PUC Project Manager and Technical Subject Matter Expert (SME) continue effectively supporting the project, even though they no longer have access to the Business Analyst resource. Although the Technical SME is occupied with help-desk tasks, the workload remains manageable. The project currently lacks a resource plan that outlines roles and responsibilities for the transition to Maintenance and Operations (M&O). It is unclear whether the current PUC PM will continue supporting the Project after the warranty period ends. Without such a plan, there is a risk that PUC resources may become overstretched, potentially leading to inefficiencies in the M&O phase.

IV&V Findings and Recommendations

IV&V ID #19 (con't)	Type: Risk Rating: Low	Status: Open	Category: Project Management Date Opened: November 30, 2021

Recommendations/Action Items	Period	Status
Develop a PUC resource plan for the M&O period	Long term	Not started
Continue to focus on high priority and critical items	Medium term	In progress
Continue to leverage analyst to relieve the demand on the PUC PM	Medium term	Complete
The Project should plan for different contingencies depending on when the third PM becomes available.	Medium term	Complete
The Project should plan for different contingencies depending on the role of the original PM moving forward.	Medium term	Complete
Consider temporary staff augmentation options to both augment the existing project team and augment the operations staff to offload operational responsibilities from key resources	Long term	Complete
Executive leadership regularly monitor the workload and job satisfaction of these key individuals as well as assist with workload management, clarification of priorities, and establishment of a sustainable pace.	Long term	Complete
Temporarily re-allocate operational responsibilities from key resources until project responsibilities are reduced.	Long Term	Complete

IV&V Findings and Recommendations

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

8/31/2023: The Project continues to clean up the remaining data and has not reported any data problems and issues impacting the user experience. However, the PUC reports finding some data discrepancies and may need to extend access to the legacy DMS system for users to compare legacy data to data in the CDMS.

IV&V Findings and Recommendations

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	Complete
Communicate to users and stakeholders the expected bad data and provide timelines and processes for fixing the bad data.	Medium term	In Progress
Develop additional automation / pre-go-live strategies to clean data	Medium term	Complete

IV&V Findings and Recommendations

IV&V ID #24	Type: Issue Rating: Medium	Status: Open	Category: Testing Date Opened: February 28, 2023

Title: Insufficient testing could lead to unexpected delays, increased burden on PUC testers, and reduced user buy-in.

Observation: The tests scripts the SI provided for system and user acceptance testing (UAT) were not comprehensive enough to assure full test coverage of the system. Given the significant number of defects (over 200) found in the first round of UAT, it remains unclear if SI system tests, prior to UAT, were comprehensive. The SI has yet to revise their test scripts to PUCs satisfaction. PUC has stated it appears SI regression testing efforts may be insufficient.

Context: One of the goals of testing is to reduce the number of defects found in subsequent project phases. For example, prior to UAT, system test should be conducted to minimize the number of defect introduced into the UAT environment so that UAT users can concentrate on determining if the system meet their needs instead of defects that should have been caught earlier.

Impact: Insufficient SI testing could increase the UAT level of effort if they are left with the additional burden of discovering defects missed by the SI, resulting in further Project delays. Further, overall impressions of the system and the improvements it will bring could be overshadowed by negative opinions voiced by PUC testers and thereby reduce user buy-in. If testing is not completed in a timely manner and/or if the SI is unable to assure each requirement has been fully met and comprehensively tested, system go-live could be delayed.

Updates

8/31/2023: The project is nearing the end of the 90-day warranty period and intends to address the majority of defects, bugs, and enhancements that were identified during this period. However, the Independent Verification and Validation (IV&V) team remains concerned that the introduction of additional bugs due to inadequate testing or regression testing could potentially impact the scope or duration of the warranty period, and during the extended warranty period.

IV&V Findings and Recommendations

IV&V ID #24 (cont.)	Type: Issue Rating: Medium	Status: Open	Category: Testing Date Opened: February 28, 2023

Recommendations/Action Items	Period	Status
Implement more structured regression testing methodologies to ensure system defects are not introduced after addressing other defects and enhancements.	Medium Term	Not Started
As UAT is the last phase before production extend UAT as long as necessary to ensure the system is ready for go-live to PUC's satisfaction.	Medium term	Complete
PUC and the SI perform significant ad-hoc testing	Medium term	Complete
PUC could consider pushing the May 15, 2023 go-live date further out to provide more time to complete all Project activities satisfactorily. PUC reported no significant business impact if go-live is further delayed.	Medium term	Complete

IV&V Findings and Recommendations

IV&V ID #27	Type: Concern Rating: n/a	Status: Open	Category: Project Management Date Opened: June 30, 2023

Title: Upon its implementation, the SI failed to introduce a ticketing system, potentially leading to missed opportunities for enhancements and delays in addressing user needs.

Observation: The SI did not deliver its Help Desk Ticketing System upon go-live to track user feedback post-go-live. To mitigate this, PUC created an interim Task System utilizing an existing enterprise tool, Microsoft Planner, to track feedback and internal and external user requests.

Context: A help desk ticketing system is helpful to track user feedback and support items during Maintenance & Operations

Impact: Without a sufficient Ticketing System, it becomes challenging to track and manage issues which could result in missed opportunities, limited visibility into the system and inability to prioritize issues. This can cause user confusion and delays in addressing user needs.

Updates

8/31/2023: Although lacking a robust vendor-provided ticketing system (HUI), the PUC addressed this concern by maintaining the use of their MS Planner Task System to track tasks for both internal and external requests, as well as those forwarded to the HUI ticketing system

IV&V Findings and Recommendations

IV&V ID #28	Type: Concern Rating: n/a	Status: Open	Category: Project Management Date Opened: July 31, 2023

Title: Lack of agreement regarding scope of the 90-day warranty can lead to disagreement, missed fixes and additional cost.

Observation: There a appears to be a misunderstanding between PUC and the SI as to what items are considered warranty items to be addressed as part of the 90-day warranty period.

Context: Typically, all system bugs and enhancements from bad designs that are identified during the warranty period are addressed as these are typically items that were missed during the design and development phases. This helps ensure the system meets customer needs and performs as expected.

Impact: If the warranty period is not effectively used, items that ought to be addressed may not be addressed during the warranty and will require additional cost to fix at a later date. Additionally, items that may impact the user experience may be delayed if not resolved during the warranty.

Updates

8/31/2023: The project implemented triage meetings to discuss identified bugs, defects, and enhancements in order to assist with prioritization. Consequently, the project was able to tentatively agree which items will be included as part of the 90-day warranty and which items will not be.

IV&V Scope and Approach

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	Jun 23	July 23	Aug 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.

Appendices

Appendix A – IV&V Criticality Ratings

See definitions of Criticality Ratings below:

Criticality Rating	Definition
H	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	Training Materials
Monthly check-ins with PP	
Weekly PM Meetings	
Go, No-Go Meetings	
Training Sessions	

Appendix C – Upcoming IV&V Activities

Anticipated meetings to attend next period	Anticipated artifacts to review next period
Weekly check-ins with PUC	
Monthly check-ins with PP	
Weekly PM Meetings	
CDMS – Risk Management Meeting	
Deliverable Review 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