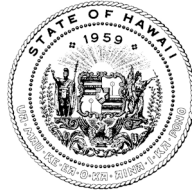


JOSH GREEN, M.D.  
GOVERNOR



DOUGLAS MURDOCK  
CHIEF INFORMATION  
OFFICER

## OFFICE OF ENTERPRISE TECHNOLOGY SERVICES

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November 6, 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 (Nov 6, 2023 12:05 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 (Last Reporting Period) - Final  
For Reporting Period: **September 2023**

*Draft Submitted: 10/13/2023*

*Final Submitted: 11/3/2023*

# 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 Project concluded its 90-day warranty period on September 19, 2023, and transitioned into a month-to-month, warranty extension (Extension) period to last no greater than one year. During the original warranty period, the Project resolved enhancements and defects on a priority basis. However, some outstanding defects (e.g., unrecognizable fonts impacting the accuracy of the Optical Character Recognition (OCR) search functionality) will be addressed during the Extension due to limited vendor support.

Despite the existing defects, the system fundamentally aligns with the Public Utilities Commission's (PUC) business needs. Recognizing the learning curve, users are largely able to perform their jobs. During the design and development stages, user visibility into functionality was limited, which impeded their level of understanding prior to system-launch. The Project anticipates users will need additional time to become fully proficient and comfortable with the system.

Looking ahead to the Extension period, it is important for the Extension period team to prioritize enhancing the system to better align with PUC's evolving needs. Furthermore, thorough testing (including rigorous regression testing), will be needed to ensure system stability and reliability. The Extension period must be adequately staffed with the right PUC and SI resources to proactively address potential challenges and enhance the overall effectiveness of the new system.



# Executive Summary

Sep '23	Category	IV&V Summary
L	Project Management	The Project has not secured a PUC Project Manager to facilitate and manage the Extension period. Additionally, PUC's dedication of resources during the Extension is unclear.

Sep '23	Category	IV&V Summary
M	Software Development	The Extension period budget is limited and PUC will prioritize which enhancements, defects, or process improvements it will address during this phase. It remains unclear if the Project will dedicate a resource focused on process improvement and analysis.

Sep '23	Category	IV&V Summary
M	Testing	As the Project enters the Extension period, testing improvements (including regression testing) to be implemented are unclear.

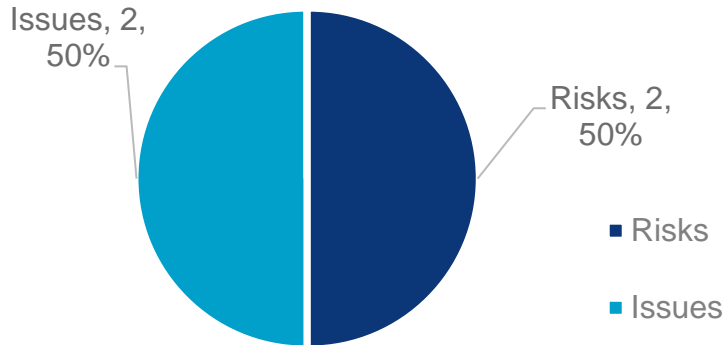
Sep '23	Category	IV&V Summary
L	Data Management	Bad data still exists in the new system and PUC cleans data on a case-by-case basis.



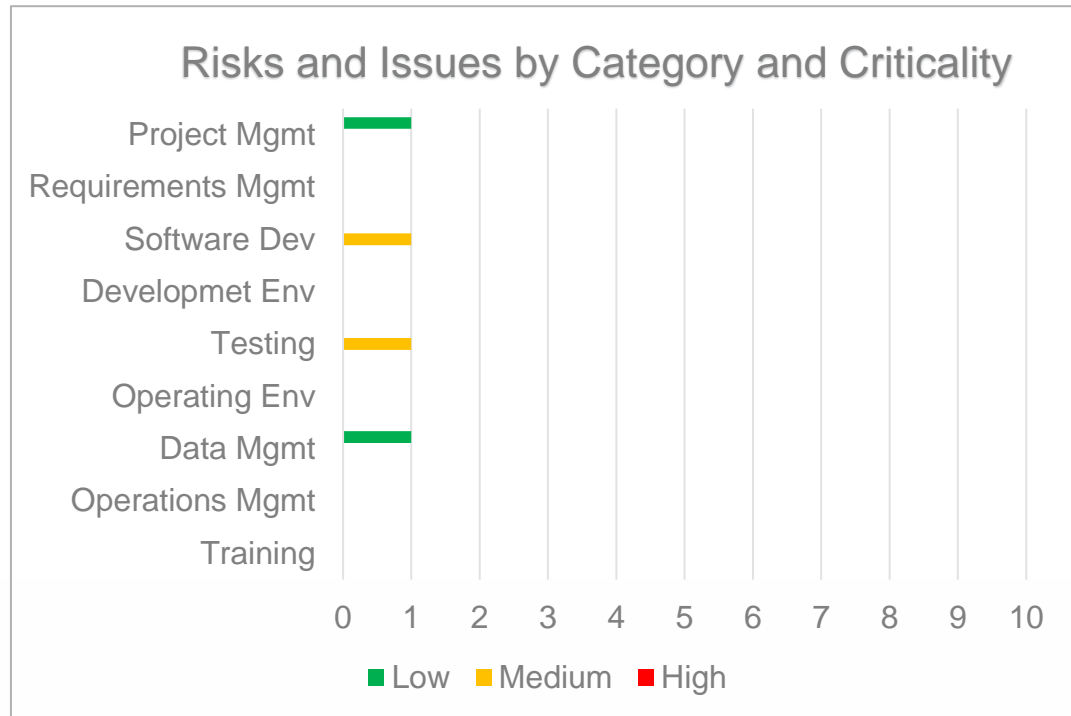
# Executive Summary

The Project is entering its Extension period. IV&V is closing 3 findings (#15 Deliverables, #27 Ticketing System, and #28 90-day Warranty scope), leaving 4 findings the Project should continue to monitor during the Extension. The 2 issues are medium criticality, related to process improvement and testing. The 2 risks are low criticality related to resource planning and data cleansing.

### All Findings by Type



### Risks and Issues by Category and Criticality



The background is a solid blue color with various abstract geometric shapes. On the left side, there are several overlapping squares and rectangles, some with white outlines and others as solid blue shapes. On the right side, there are more scattered squares and rectangles, some with white outlines and others as solid blue shapes. The overall aesthetic is clean and modern.

# **IV&V Findings and Recommendations**

# IV&V Findings and Recommendations

<b>IV&amp;V ID #15</b>	Type: Risk Rating: Low	Status: Closing	Category: Project Management Date Opened: September 30, 2021
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**Title:** Project deliverables and artifacts that lack sufficient detail could lead to project delays, misunderstandings, inefficient project execution, and rework.

**Observation:** Early SI submission 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

9/30/2023: The 90-day warranty period ended September 19, 2023, moving the Project into Extension period. All remaining deliverables were approved by PUC and IV&V is closing this finding.





# IV&V Findings and Recommendations

<b>IV&amp;V ID #15 (cont.)</b>	Type: Risk Rating: Low	Status: Closing	<b>Category: Project Management</b> <b>Date Opened: September 30, 2021</b>	
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
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**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

9/30/2023: The 90-day warranty period ended September 19, 2023, moving the Project into a month-to-month, warranty extension period. Faced with a limited Extension budget, the PUC plans to prioritize enhancements, defects, and/or process improvements to be addressed during this phase. IV&V continues to recommend that PUC identify a PUC resource that can lead and facilitate process improvement efforts.



# 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 the Extension.			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

9/30/2023: As the Project enters the Extension period, the Project has not secured a PUC Project Manager to facilitate and manage the Extension. Additionally, staffing assignments are unclear. Without a proper staffing strategy, existing Project resources could once again be over-allocated and productivity during the Extension could be negatively impacted.



# 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 Extension 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

<b>ID #20</b>	<b>Type: Risk</b> <b>Rating: Low</b>	<b>Status: In progress</b>	<b>Category: Data Management</b> <b>Date Opened: March 31, 2022</b>
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**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 goes 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

9/30/2023: As the Project enters the Extension period, bad data still exists in the new system. However, the Project has accepted this risk and continues to clean up data on a case-by-case basis.



# IV&V Findings and Recommendations

<b>IV&amp;V ID #20 (cont.)</b>	<b>Type: Risk</b> <b>Rating: Low</b>	<b>Status: In progress</b>	<b>Category: Data Management</b> <b>Date Opened: March 31, 2022</b>	
<b>Recommendations/Action Items</b>			<b>Period</b>	<b>Status</b>
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
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**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

9/30/2023: The 90-day warranty period ended September 19, 2023, moving the Project into an Extension period. Testing activities challenged this Project and contributed to some of the delays.





# 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

<b>IV&amp;V ID #27</b>	Type: Concern Rating: n/a	Status: Closing	Category: Project Management Date Opened: June 30, 2023
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**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 M&O.

**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

9/30/2023: The Project adopted an approach to managing tickets using both the vendor-provided ticketing system and the PUC-developed MS Planner Task system. The Project will continue to use these tools during the Extension; IV&V is closing this finding.



# IV&V Findings and Recommendations

<b>IV&amp;V ID #28</b>	Type: Concern Rating: n/a	Status: Closing	Category: Project Management Date Opened: July 31, 2023
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**Title:** Lack of agreement regarding scope of the 90-day warranty can lead to disagreement, missed fixes and additional cost.

**Observation:** There 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

9/30/2023: The Project completed the 90-day warranty period and implemented agreed upon scope with some items moving into the Extensiono period. IV&V is closing this concern.





# 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	Jul 23	Aug 23	Sep 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

The background is a solid blue color. It features several decorative elements: a cluster of overlapping squares and rounded rectangles in various shades of blue (light, medium, and dark) on the left side; a single large, light blue rounded square in the lower-left quadrant; and a series of overlapping squares and rounded rectangles in light and medium blue on the right side, some connected by thin white lines.

# 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	
Monthly check-ins with PP	
Weekly PM Meetings	
Final PM Meetings	
Final Steering Committee Meetings	
Project Close Out	
Lessons Learned Meetings	





# Appendix D – Recommendation Periods

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





**Solutions that Matter**