REFERENCE:

Tab 6, Section 6.6, pg. 29.

PREAMBLE TO IR (IF ANY):

MH states that Strategy 2040 and its Information Technology Plan are inseparable.

QUESTION:

Please provide a copy of MH's current Information Technology Plan, which is consistent with Strategy 2040.

RESPONSE:

Please see Attachment 1 to this response for the D&T Roadmap Summary that was included in the original response filed on February 3, 2023. Some of the items included in the roadmap are IT investments, others are foundational initiatives to build business capabilities, such as recruitment for D&T positions.

Please see Attachment 2 to this response, which outlines the technology dependencies of Strategy 2040 initiatives and how the mandate and strategic imperatives for Digital & Technology are aligned to Strategy 2040. Within the Application, Tab 2, Section 2.7.5 and Figure 2.8 outline top organizational risks for Manitoba Hydro, of which three risks are technology related.

Please see Attachment 3 of this response for technology investment CIJs, where available, that were included on the D&T Roadmap Summary.

The response to COALITION/MH I-76 a) outlines the types of CCAs and the status of the planning of these potential investments. As discussed in Section 1.4.2 of Appendix 4.3 (Amended) of the Application, the most significant cloud computing related impact to O&A expenses is the forecasted spending for SAP S/4HANA. To address the impact of that significant investment, Manitoba Hydro has requested PUB approval to establish a regulatory

deferral. Subject to the PUB's ruling on the treatment of SAP S/4HANA, future regulatory deferrals may be requested for any future major IT investments that result in one-time significant increases in operating expenses.

Manitoba Hydro also identified that it is forecasting $13 million in 2023/24 and $8.5 million per year starting in 2024/25 for cloud computing arrangements related to the implementation of small software systems. Manitoba Hydro did not request that this expense be deferred (i.e., they will be expensed as costs are incurred) since the annual amount deferred will equally offset the annual amount amortized after several years.

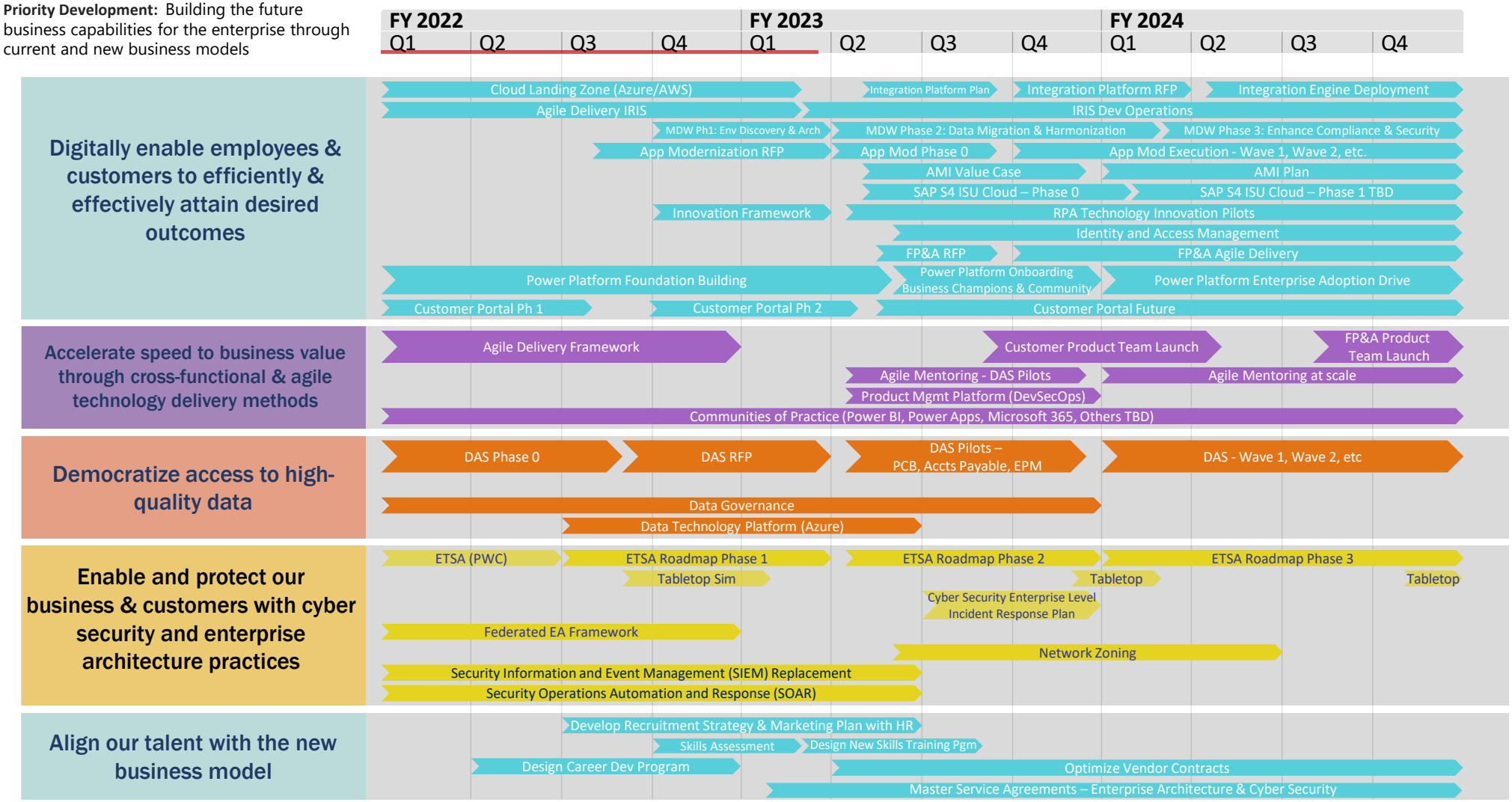
Manitoba Hydro's Digital & Technology plan is under development and has not yet been reviewed and approved by the Manitoba Hydro-Electric Board. As such, further details on each of these initiatives cannot be provided at this time.

D&T ROADMAP SUMMARY
Priority Development- Strategy 2040

June 2022

Manitoba Hydro

Priority Development: Building the future business capabilities for the enterprise through current and new business models



List of Acronyms (in order of appearance)

Acronyms	Meaning
AWS	Amazon Web Services
RFP	Request for Proposal
IRIS	Call Handling Technology
MDW	Modern Digital Workplace
AMI	Advanced Metering Infrastructure
ISU	Industry-Specific Solution
RPA	Robotic Process Automation
FP&A	Financial Planning & Analysis
DAS	Data & Analytic System
PCB	Polychlorinated Biphenyl
EPM	Enterprise Performance Management
ETSA	Enterprise Technology Security Assessment
EA	Enterprise Architecture
HR	Human Resources

Strategy 2040 Initiative Dependency on D&T

Much of Strategy 2040 involves direct D&T capabilities including program, change and process (CI), there are initiatives directly dependent upon digital & technical capabilities & delivery

5 Pillars of Strategy 2040

1	2	3	4	5
Provide safe reliable energy that meets the evolving energy needs of Manitobans	Serve customers efficiently, responsively, and digitally	Help all Manitobans understand their energy options and make informed choices	Ensure Manitobans get maximum value from their clean hydro generation dams and energy infrastructure	Keep energy prices as low as possible, while providing the level of service Manitobans **expect**

In addition to supporting change and program management for all strategy 2040 initiatives, the following initiatives will require Digital & Technology enablement:

Initiatives with a D&T Dependency

1	2	3	4	5
1.1.3 Develop and continuously refresh an Integrated Resource Plan (IRP) which incorporates the evolving energy landscape (considering on an equal basis all assets, new and existing, Manitoba Hydro-owned and other)	**2.2.1 Significantly expand digital customer service**	**3.2.4 Explore potential new product & services offerings**	**5.1.1 Create appropriate tools to manage and shape demand, and to minimize investment**	
1.3.1 Enhance the corporate social responsibility reporting framework	**2.3.1 Continuously improve customer responsiveness and satisfaction**		**5.1.2 Mature the asset management system to optimize lifecycle costs (capital + O&M)**	
			5.3.2 Ensure a safe, healthy, and engaged workforce with the capabilities required to deliver our strategy	
			5.3.3 Leverage automation and digital technologies to drive enterprise value including efficiency, safety, and effectiveness	

Alignment of D&T Mandate and Strategic Imperatives to Strategy 2040

D&T's mandate and strategic imperatives are aligned with and directly support Strategy 2040 initiatives.

D&T Mandate:

As a **catalyst** for jointly developing digital value and transformation, we **empower** and **enable** the Enterprise to achieve its strategic objectives by delivering secure and reliable **technologies**, and fostering an **innovative**, **agile,** and **insights-driven** culture.

D&T Strategic Imperatives:

A. Digitally enable employees & customers to efficiently attain desired outcomes
B. Accelerate speed to business value through cross-functional & agile technology delivery methods
C. Democratize access to high-quality data
D. Enable and protect our business & customers with cyber security and enterprise architecture practices
E. Align our talent with the new business model

The following strategic initiatives from Strategy 2040 rely on D&T involvement, are aligned with D&T's strategic imperatives as follows:

Alignment of D&T Strategic Imperatives with Strategy 2040 Initiatives	
Strategy 2040 Initiative	**D&T Strategic Imperative Supporting Strategy 2040 Initiative**
1.1.3 Develop and continuously refresh an Integrated Resource Plan (IRP) which incorporates the evolving energy landscape (considering on an equal basis all assets, new and existing, Manitoba Hydro-owned and other)	**C, E**
1.3.1 Enhance the corporate social responsibility reporting framework	**C**
2.2.1 Significantly expand digital customer service	**A, C, D, E**
2.3.1 Continuously improve customer responsiveness and satisfaction	**A, B, C, D, E**
3.2.4 Explore potential new product and services offerings	**A, B, C, D, E**
5.1.1 Create appropriate tools to manage and shape demand, and to minimize investment	**A, B, C, D**
5.1.2 Mature the asset management system to optimize lifecycle costs (capital + O&M)	**A, C**
5.3.2 Ensure a safe, healthy and engaged workforce with the capabilities required to deliver our strategy	**E**
5.3.3 Leverage automation and digital technologies to drive enterprise value including efficiency, safety, and effectiveness	**A, B, C, D, E**

C55-CIC-AD

CAPITAL INVESTMENT CONCEPT ADDENDUM FOR

Network Security Zoning: Corp Data Centr

Investment Type (Project)

Addendum Number 1

	PREVIOUSLY APPROVED	REVISED	INCREASE / (DECREASE)
SCOPE DEVELOPMENT:	$352	$534	$181
CONCEPT ESTIMATE (incl. Scope Development):	$352	$3,620	$3,268
CONTRIBUTIONS:	$0	$0	$0
NET CONCEPT ESTIMATE (incl. Scope Development):	$352	$3,620	$3,268
		(values listed above are in thousands of dollars)	
CORPORATE VALUE FRAMEWORK SCORE :	**Value:**	**Value:** 19,337	
	Value/$K:	**Value/$K:** 6.37	
		(CFV scores reflect the recommended alternative)	

DATE PREPARED: 2021-09-07

EC/MHEB APPROVAL MINUTE & DATE:

APPROVER	APPROVER TITLE	COMMENT	ORGANIZATIONAL UNIT	APPROVAL DATE
Fish, Ian	VP DIGITAL & TECHNOLOGY		VP Digital & Technology	2021-10-01
Zevena, Kyle	ACTING DIRECTOR INFORMATION TECHNOLOGY		Director - IT Services Dept	2021-09-29
Harrison, Glen	INFRASTRUCTURE & OPERATIONS DEPT MANAGER		Director - IT Services Dept	2021-09-14
Battistoni, Angelo	CHARTERED PROFESSIONAL ACCOUNTANT		Financial Advisory Services	2021-09-14
Funk, Michelle	BUSINESS SYSTEMS ANALYST		Portfolio Management	2021-09-13
Smilski, Sandra	PORTFOLIO MANAGEMENT SUPERVISOR		Portfolio Management	2021-09-07

ADDENDUM NUMBER	DATE	REVISION (Summary of change)
1	2021/09/07	Additional funds added for the completion of the gap analysis under an expanded scope development phase and the delivery of a second gap analysis for the implementation of

		Smallworld Office products.

CAPITAL INVESTMENT MASTER DATA

RESPONSIBLE OPERATING/CORPORATE GROUP:	Digital & Technology	**REQUESTING OPERATING/CORPORATE GROUP:**	Digital & Technology
RESPONSIBLE DIVISION:	Information Technology Services	**REQUESTING DIVISION:**	Information Technology Services
RESPONSIBLE DEPARTMENT:	IT Infrastructure Services	**ISD: (YYYY/MM/DD)**	2022/12/31
I.M. NODE NUMBER:	2.1.15.15.10.111	**W.B.S. NUMBERs:**	P:27514, P:30978
C55 INVESTMENT CODE:	13218		
SAP PROJECT TYPE:	24 - BOC-VP & Management	**C55 INVESTMENT SUB-CATEGORY**:	Shell
CORPORATE INVESTMENT CATEGORIZATION:	(Level 1) C6 / Business Operations Support (Level 2) CS / Information Technology		

CONTACTS

PREPARED BY:	Richmond, Bruce PROJECT LEADER 50841	**REQUESTOR:**	Harrison, Glen
PROJECT MANAGER:	Richmond, Bruce PROJECT LEADER 50841		

MANITOBA HYDRO
CAPITAL INVESTMENT CONCEPT ADDENDUM
Network Security Zoning: Corp Data Centr

RECOMMENDATION

Approve an additional $181k for the development of a Network Security Zoning solution for Manitoba resulting from:

- $140k for additional internal labour associated with the tender, evaluation and award process, and
- $41k for a third-party evaluation of the proposed solution

SCOPE

Additional effort under the scope development phase is required due to a change in the procurement approach.

Additional activities include the development of a five-stage tender evaluation process. The last stage will be an onsite Proof of Concept demonstration of the proposed solution within the network test lab to ensure the solution is compatible with existing infrastructure and system integrations.

A third-party evaluation has been secured to validate the firewall configuration and the overall network zoning approach before recommending the award.

BACKGROUND

This project is a result of the 2014 Technology Security Assessment recommendation which identified the internal Manitoba Hydro network as being an open network infrastructure. The recommendation was to increase Manitoba Hydro's maturity level in terms of network security by implementing a zoned networking strategy into our existing network.

An open network infrastructure implements a demilitarized zone (DMZ) to protect systems from the public internet but has no internal controls to protect systems within the corporate network. Modern threats like ransomware take advantage of open networks because there are no controls to limit access to critical data.

A zoned network will enable the following within the corporate network:
- The identification of malicious activity.
- Implementation of security controls.
- Classification and segmentation of network traffic.
- Increase visibility of network traffic flows between zones.

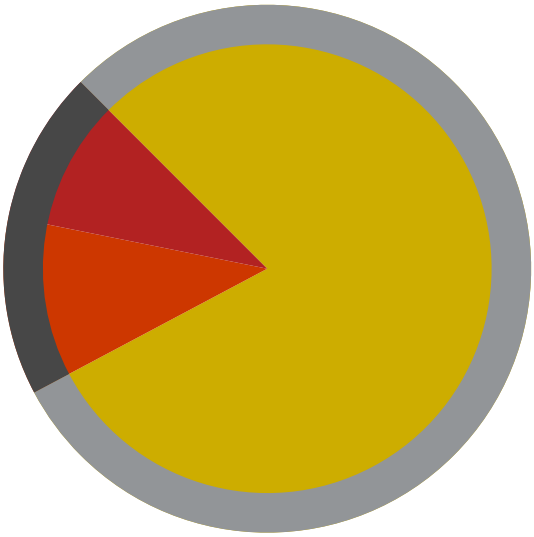
The strategy developed will leverage current investments in technology whenever possible and identify new technologies required, including a reference bill of materials required and cost estimates.

It is important to note that after the initial implementation of Network Security Zoning of the Corporate Data Centre there will be ongoing work to address new threats and increase and maintain traffic flow activities.

BACKGROUND

JUSTIFICATION – BUSINESS CASE ANALYSIS (SUMMARY):
JUSTIFICATION
Approving this Addendum will enable the Network Security Zoning project to fairly assess the alternatives and provide a supportable solution that meets Manitoba Hydro's security and infrastructure requirements.

CORPORATE VALUE FRAMEWORK (REVISED)



Value Measure	Value Points	% of Value
Security Risk	25,930	79.73%
Total Cost	-3,037	9.34%
O&M Costs	-3,556	10.93%
Total Value	**19,337**	
Value/$K	**6.37**	

OTHER ALTERNATIVES CONSIDERED
Not applicable.

INVESTMENT RISK ANALYSIS
None

MANITOBA HYDRO
CAPITAL INVESTMENT CONCEPT ADDENDUM
Network Security Zoning: Corp Data Centr

ESTIMATED COST FLOW

The annual projected cost flows are as follows (in thousands of dollars):

	PREVIOUSLY APPROVED			PROPOSED			INCREASE/ (DECREASE)		
Fiscal Year	Scope Development Funds	Concept Estimate	Total Estimated Investment (Net of Contrib.)	Scope Development Funds	Concept Estimate	Total Estimated Investment (Net of Contrib.)	Scope Development Funds	Concept Estimate	Total Estimated Investment (Net of Contrib.)
Prev. Actuals	$352	$352	$352	$453	$453	$453	$101	$101	$101
2021/2022	$0	$0	$0	$80	$2,610	$2,610	$80	$2,610	$2,610
2022/2023	$0	$0	$0	$0	$557	$557	$0	$557	$557
2023/2024	$0	$0	$0	$0	$0	$0	$0	$0	$0
2024/2025	$0	$0	$0	$0	$0	$0	$0	$0	$0
2025/2026	$0	$0	$0	$0	$0	$0	$0	$0	$0
2026/2027+	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$352**	**$352**	**$352**	**$534**	**$3,620**	**$3,620**	**$181**	**$3,268**	**$3,268**

IMPACT ON O&A COSTS

There are no costs associated with the scope development phase of this initiative; no change in O&A costs as a result of this addendum.

O&A costs will be assessed at the time of CIJ approval.

MANITOBA HYDRO
CAPITAL INVESTMENT CONCEPT ADDENDUM

Network Security Zoning: Corp Data Centr

RELATED INVESTMENTS
None

REFERENCE DOCUMENTS

C55-CIJ-PROJ

CAPITAL INVESTMENT JUSTIFICATION FOR

Network Security Zoning: Corp Data Centr

Investment Type (Project)

BUDGET:	$3,606
CONTRIBUTIONS:	$0
NET BUDGET:	$3,606
(values listed above are in thousands of dollars)	
CORPORATE VALUE FRAMEWORK SCORE:	**Value:** 32,938
	Value/$K: 11.00

DATE PREPARED: 2021-11-25

EC/MHEB APPROVAL MINUTE & DATE:

APPROVER	APPROVER TITLE	COMMENT	ORGANIZATIONAL UNIT	APPROVAL DATE
Fish, Ian	VP DIGITAL & TECHNOLOGY		VP Digital & Technology	2021-12-23
Shum, Gord	INFRASTRUCTURE & OPS SOL ARCHITECT		VP Digital & Technology	2021-12-21
Zevena, Kyle	DIRECTOR INFORMATION TECHNOLOGY		Director - IT Services Dept	2021-12-16
Harrison, Glen	INFRASTRUCTURE & OPERATIONS DEPT MANAGER		Director - IT Services Dept	2021-12-09
Battistoni, Angelo	CHARTERED PROFESSIONAL ACCOUNTANT		Financial Advisory Services	2021-12-09
Funk, Michelle	BUSINESS SYSTEMS ANALYST		Portfolio Management	2021-12-07
Smilski, Sandra	PORTFOLIO MANAGEMENT SUPERVISOR		Portfolio Management	2021-11-25

CAPITAL INVESTMENT MASTER DATA			
RESPONSIBLE OPERATING/CORPORATE GROUP:	Digital & Technology	**REQUESTING OPERATING/CORPORATE GROUP:**	Digital & Technology
RESPONSIBLE DIVISION:	Information Technology Services	**REQUESTING DIVISION:**	Information Technology Services
RESPONSIBLE DEPARTMENT:	IT Infrastructure Services	**ISD: (YYYY/MM/DD)**	2022-12-31
I.M. NODE NUMBER:	2.1.15.15.10.111	**W.B.S. NUMBERs:**	P:27514, P:30978
C55 INVESTMENT CODE:	13218		
SAP PROJECT TYPE:	24 - BOC-VP & Management	**C55 INVESTMENT SUB-CATEGORY**:	Shell
CORPORATE INVESTMENT CATEGORIES:	(Level 1) C6 / Business Operations Support (Level 2) CS / Information Technology		

CONTACTS			
PREPARED BY:	Richmond, Bruce PROJECT LEADER 50841	**REQUESTOR:**	Harrison, Glen
PROJECT MANAGER:	Richmond, Bruce PROJECT LEADER 50841		

MANITOBA HYDRO
CAPITAL INVESTMENT JUSTIFICATION
Network Security Zoning: Corp Data Centr

RECOMMENDATION

Approve a budget of $3.6M to mitigate the risk of an open network infrastructure by implementing a zoned network solution for the corporate Information Technology (IT) network data centres.

SCOPE

The project will implement the following zoned networking components as demonstrated in the proof of concept during the scope development phase:
- Software Defined Networking solution
- Next Generation firewalls
- Zoning for systems within the corporate IT network data centres

The scope for this project is limited to Network Security Zoning within the corporate IT network data centres. Further projects will need to be approved to address the corporate IT network outside the data centre and any operational technology (OT) / industrial control system (ICS) networks.

BACKGROUND

This project is a result of the 2014 Technology Security Assessment recommendation which identified the internal Manitoba Hydro network as being an open network infrastructure. The recommendation was to increase Manitoba Hydro's maturity level in terms of network security by implementing a zoned networking strategy into our existing network.

An open network infrastructure implements a demilitarized zone (DMZ) to protect systems from the public internet but has no internal controls to protect systems within the corporate network. Modern threats like ransomware take advantage of open networks because there are no controls to limit access to critical data.

There is an increasing need to integrate Manitoba Hydro's internal systems and data with external partners. Customer Self-Service Portal, Call Handling Technology, and Data Analytics are a few examples of current projects that will expose private IT systems to external partners. This project will provide a robust and repeatable set of security controls to mitigate the risk of exposing portions of Manitoba Hydro's private network to external partners without risking the breach of all systems on the IT network. This project is a key enabler and foundational component of meeting Manitoba Hydro's cloud first strategy.

Network Zoning will also provide an infrastructure that will enable the recovery of the IT network in the event of a breach and will be a critical component of Manitoba Hydro's disaster recovery capability. A segmented, scalable, software defined network will allow Manitoba Hydro to quickly create a safe, clean network for recovery purposes.

A zoned network will enable the following within the corporate network:
- The identification of malicious activity
- Implementation of security controls
- Classification and segmentation of network traffic

BACKGROUND

- Increase visibility of network traffic flows between zones

It is important to note that after the initial implementation of Network Security Zoning of the Corporate Data Centre there will be ongoing work to address new threats and increase and maintain traffic flow activities.

JUSTIFICATION – BUSINESS CASE ANALYSIS (SUMMARY):

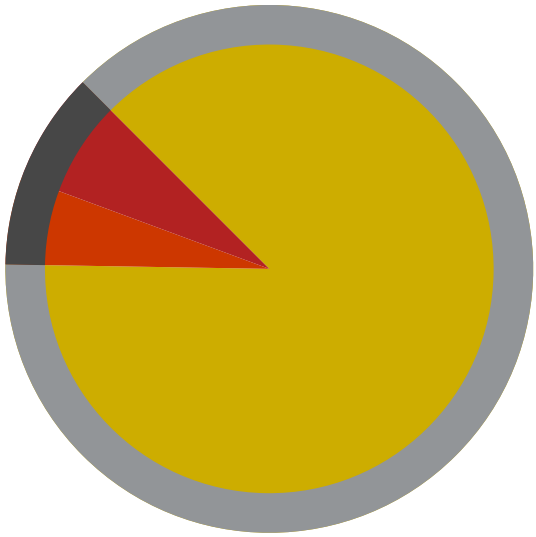
JUSTIFICATION

All business areas with applications that process sensitive data in the Manitoba Hydro data centres will benefit from Network Security Zoning. In addition to connecting users to IT systems the corporate network serves a critical function in protecting OT and ICS networks from threats.

Without a properly compartmentalized network, exposure to security breaches is increased, and the ability to contain incidents and mitigate the loss of service, availability of critical infrastructure, and unauthorized access to sensitive information is reduced.

This investment aligns to Strategy 2040 through D&T's Strategic Imperative to "Protect our business and customers through robust cybersecurity".

CORPORATE VALUE FRAMEWORK



Value Measure	Value Points	% of Value
Security Risk	38,273	87.77%
O&M Costs	-2,341	5.37%
Total Cost	-2,994	6.87%
Total Value	**32,938**	
Value/$K	**11.00**	

ANALYSIS OF ALTERNATIVES:

ECONOMIC ANALYSIS		
Discount Rate	**For current corporate rates see P911 5.5%**	

Active Option	NPV Benefits/(Costs)	CVF Score	Value/$K
Preferred		32,938	11.00

Other Alternatives	NPV Benefits/(Costs)	CVF Score	Value/$K

INVESTMENT RISK ANALYSIS

None.

ESTIMATED COST FLOW

The annual projected cost flows are as follows (in thousands of dollars):

Fiscal Year	Budget	Contributions	Net Budget
Prev. Actuals	$453	$0	$453
2021/2022	$2,371	$0	$2,371
2022/2023	$782	$0	$782
2023/2024	$0	$0	$0
2024/2025	$0	$0	$0
2025/2026	$0	$0	$0
2026/2027+	$0	$0	$0
Total	**$3,606**	**$0**	**$3,606**

IMPACT ON O&A COSTS

The impact on operating cost is estimated at $516,000 annually, broken down as follows:
- Hardware maintenance - $276k
- Software maintenance - $240k

PROPOSED SCHEDULE

Start Date: November 2021
In Service Date: December 2022

PROPOSED SCHEDULE

RELATED INVESTMENTS
None

OTHER ALTERNATIVES CONSIDERED
None

REFERENCE DOCUMENTS
13218_CIC_AD_Network Security Zoning_Corp_1.docx

C55-CIJ-PROJ-AD

CAPITAL INVESTMENT JUSTIFICATION ADDENDUM FOR

Network Security Zoning: Corp Data Centr

Investment Type (Project)

Addendum Number 1

	PREVIOUSLY APPROVED	REVISED	INCREASE/ (DECREASE)
BUDGET:	$3,606	$3,473	($133)
CONTRIBUTIONS:	$0	$0	$0
NET BUDGET:	$3,606	$3,473	($133)
		(values listed above are in thousands of dollars)	
CORPORATE VALUE FRAMEWORK SCORE:	**Value:** 32,938 **Value/$K:** 11.00	**Value:** 35,162 **Value/$K:** 22.60	

DATE PREPARED: 2022-09-09

EC/MHEB APPROVAL MINUTE & DATE:

APPROVER	APPROVER TITLE	COMMENT	ORGANIZATIONAL UNIT	APPROVAL DATE
Smilski, Sandra	VALUE MGMT OFFICE DEPARTMENT MANAGER		Portfolio Management	2022-09-12
Kyrzyk, Wayne	FINANCIAL SERVICES SUPERVISOR		Financial Advisory Services	2022-09-09
Battistoni, Angelo	CHARTERED PROFESSIONAL ACCOUNTANT		Financial Advisory Services	2022-09-09
Funk, Michelle	BUSINESS SYSTEMS ANALYST		Portfolio Management	2022-09-09
Hiebert, Rachelle	PORTFOLIO MANAGEMENT SUPERVISOR		Portfolio Management	2022-09-09

ADDENDUM NUMBER	DATE	REVISION (Summary of change)
1	September 9, 2022	Change due to new CCA guideline

CAPITAL INVESTMENT MASTER DATA			
RESPONSIBLE OPERATING/CORPORATE GROUP:	Digital & Technology	**REQUESTING OPERATING/CORPORATE GROUP:**	Digital & Technology
RESPONSIBLE DIVISION:	Information Technology Services	**REQUESTING DIVISION:**	Information Technology Services
RESPONSIBLE DEPARTMENT:	IT Infrastructure Services	**ISD: (YYYY/MM/DD)**	2022/12/31
I.M. NODE NUMBER:	2.1.15.15.10.111	**W.B.S. NUMBERs:**	P:27514, P:30978
C55 INVESTMENT CODE:	13218		
SAP PROJECT TYPE:	24 - BOC-VP & Management	**C55 INVESTMENT SUB-CATEGORY**:	Shell
CORPORATE INVESTMENT CATEGORIZATION:	(Level 1) C6 / Business Operations Support (Level 2) CS / Information Technology		

CONTACTS			
PREPARED BY:	Richmond, Bruce PROJECT LEADER 50841	**REQUESTOR:**	Harrison, Glen
PROJECT MANAGER:	Richmond, Bruce PROJECT LEADER 50841		

MANITOBA HYDRO
CAPITAL INVESTMENT JUSTIFICATION ADDENDUM
Network Security Zoning: Corp Data Centr

RECOMMENDATION

It is recommended that previously capitalized cost affected by the change in Cloud Computing Arrangement (CCA) guidelines be transferred to operating expense.

SCOPE

Expense all software development costs incurred during scope development phase for fiscal year 2021-2022.

BACKGROUND

In November 2018, the International Financial Reporting Standards (IFRS) issued an Accounting Standards Update to address accounting treatment of costs related to Software as a Service (SaaS) cloud computing arrangements. In this update it was recommended that if a SaaS arrangement does not provide control over the leased software, it is to be treated as a service contract and the cost are to be expensed.

Software as a Service (SaaS)
- A SaaS arrangement is a software distribution model that allows users to access applications or programs through the internet;
- The customer does not manage or control the cloud infrastructure or application capabilities and is not responsible for upgrades to the systems and software;
- The operator provides business applications via the internet;
- The customer typically purchases the application on a subscription basis with no upfront costs or installation fees.

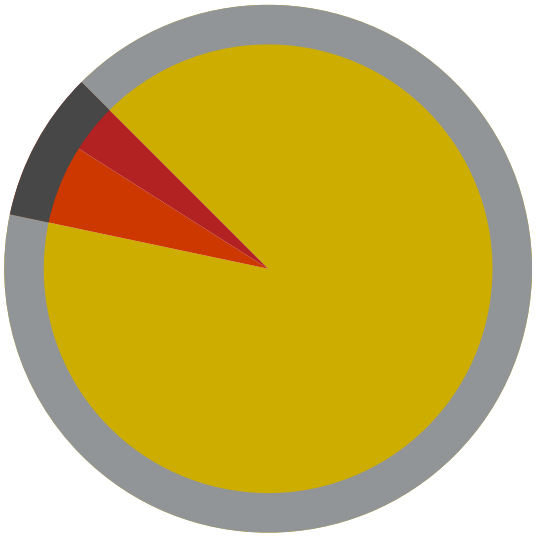
Cloud computing is a method for delivering information technology services in which resources are retrieved from the internet through web-based tools and applications, instead of a direct connection to a server. Rather than keeping the files on a proprietary hard drive or local server, cloud-based storage makes it possible to save them to a remote database.

JUSTIFICATION – BUSINESS CASE ANALYSIS (SUMMARY):

JUSTIFICATION

A portion of the scope development scope falls under System Need Identification/Analysis and As/Is Documentation and should be expensed.

CORPORATE VALUE FRAMEWORK (REVISED)



Value Measure	Value Points	% of Value
Security Risk	39,170	90.8%
Total Cost	-1,514	3.51%
O&M Costs	-2,452	5.69%
Total Value	**35,203**	
Value/$K	**23.25**	

ANALYSIS OF ALTERNATIVES:

ECONOMIC ANALYSIS		
Discount Rate	**For current corporate rates see P911** **6%**	

Active Option	**NPV Benefits/(Costs)**	**CVF Score**	**Value/$K**
Preferred		35,203	23.25

INVESTMENT RISK ANALYSIS
Not applicable

MANITOBA HYDRO
CAPITAL INVESTMENT JUSTIFICATION ADDENDUM
Network Security Zoning: Corp Data Centr

ESTIMATED COST FLOW

The annual projected cost flows are as follows (in thousands of dollars):

	PREVIOUSLY APPROVED			PROPOSED			INCREASE / (DECREASE)		
Fiscal Year	**Budget**	**Contributions**	**Net Budget**	**Budget**	**Contributions**	**Net Budget**	**Budget**	**Contributions**	**Net Budget**
Prev. Actuals	$2,825	$0	$2,825	$1,884	$0	$1,884	($940)	$0	($940)
2022/2023	$782	$0	$782	$1,589	$0	$1,589	$807	$0	$807
2023/2024	$0	$0	$0	$0	$0	$0	$0	$0	$0
2024/2025	$0	$0	$0	$0	$0	$0	$0	$0	$0
2025/2026	$0	$0	$0	$0	$0	$0	$0	$0	$0
2026/2027	$0	$0	$0	$0	$0	$0	$0	$0	$0
2027/2028+	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$3,606**	**$0**	**$3,606**	**$3,473**	**$0**	**$3,473**	**($133)**	**$0**	**($133)**

IMPACT ON O&A COSTS

The impact on operating cost is estimated at $516,000 annually, broken down as follows:

- Hardware maintenance - $276k
- Software maintenance - $240k

MANITOBA HYDRO
CAPITAL INVESTMENT JUSTIFICATION ADDENDUM
Network Security Zoning: Corp Data Centr

PROPOSED SCHEDULE
Not applicable

RELATED INVESTMENTS
None

OTHER ALTERNATIVES CONSIDERED
Not applicable

REFERENCE DOCUMENTS
13218_CIC_AD_Network Security Zoning_Corp_1.docx
13218_CIJ_Network Security Zoning_Corp .docx
13218_CIJ_AD_Network Security Zoning_Corp_1.docx

C55-CIJ-PROG-I

CAPITAL INVESTMENT JUSTIFICATION FOR

Enterprise SIEM

Investment Type (Program Item)

PROGRAM NAME - Emerging Information Technology

BUDGET:	$702
CONTRIBUTIONS:	$0
NET BUDGET:	$702
(values listed above are in thousands of dollars)	
CORPORATE VALUE FRAMEWORK SCORE:	**Value:** 17,153
	Value/$K: 26.33

DATE PREPARED: 2021-01-19

APPROVER	APPROVER TITLE	COMMENT	ORGANIZATIONAL UNIT	APPROVAL DATE
Brandao, Nelson	CHIEF INFORMATION SECURITY OFFICER		Technology Security Office	2021-01-20
Matieshin, Gwenda	CORPORATE INFO SYSTEMS DEPT MANAGER		Director - IT Services Dept	2021-01-19
Sam, Joanne	SENIOR PLANNER		Project Management Office	2021-01-19

CAPITAL INVESTMENT MASTER DATA			
RESPONSIBLE OPERATING/CORPORATE GROUP:	Digital & Transformation	**REQUESTING OPERATING/CORPORATE GROUP:**	Digital & Transformation
RESPONSIBLE DIVISION:	Information Technology Services	**REQUESTING DIVISION:**	Information Technology Services
RESPONSIBLE DEPARTMENT:	Director Information Technology Services		
I.M. NODE NUMBER:	2.1.15.25.01.1	**W.B.S. NUMBERs:**	P:34898
C55 INVESTMENT CODE:	23707	**W.B.S. NUMBER (PROGRAM):**	B:00325
SAP PROJECT TYPE:	24 - BOC-VP & Management		
CORPORATE INVESTMENT CATEGORIES:	(Level 1) C6 / Business Operations Support (Level 2) CS / Information Technology		

CONTACTS			
PREPARED BY:	Stepinski, Mark PROJECT LEADER 50841	**REQUESTOR:**	Brandao, Nelson
PROJECT MANAGER:	Stepinski, Mark PROJECT LEADER 50841		

MANITOBA HYDRO
CAPITAL INVESTMENT JUSTIFICATION
Enterprise SIEM

RECOMMENDATION

Approve a budget of $702k to implement a Security Information and Event Management (SIEM) solution. The solution will replace the hardware end-of-life of the existing McAfee SIEM and consolidate Manitoba Hydro's SIEM infrastructure into a single platform.

SCOPE

The project scope includes the following:

- Procure professional services required to implement Splunk Enterprise Security (ES) SIEM to replace the existing McAfee hardware and software
- Retention of NERC CIP compliance logs
- Cutover log sources from McAfee log receivers to Splunk forwarders
- Configure SIEM Watchlists, Events and Alerts in Splunk ES

BACKGROUND

The first McAfee SIEM infrastructure was implemented in 2012 to support security operations monitoring of Manitoba Hydro's IT infrastructure. The SIEM provides critical capability to the technology security operations business function.

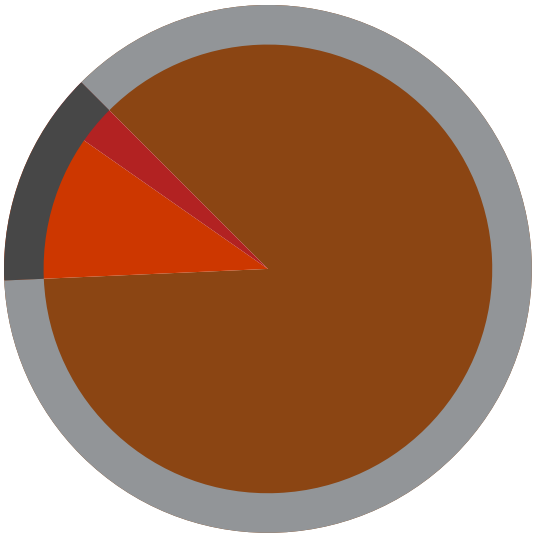
Monitoring of indicators of compromise looks for any ongoing activity related to threat intelligence. Additionally, the ability to perform historical log searches on threat intelligence indicators ensures that Manitoba Hydro is not an early victim of a particular malware campaign.

JUSTIFICATION – BUSINESS CASE ANALYSIS (SUMMARY):

JUSTIFICATION

A SIEM is critical to Manitoba Hydro technology security operations. The current McAfee SIEM infrastructure is reaching its hardware end-of-life in 2021 and needs to be replaced. As this solution provides enterprise-wide cyber security monitoring it is necessary to ensure continuity of the established business and security processes that rely on the technology.

CORPORATE VALUE FRAMEWORK



Value Measure	Value Points	% of Value
Technology Obsolescence Risk	20,229	86.8%
Total Cost	-652	2.8%
O&M Costs	-2,424	10.4%
Total Value	**17,153**	
Value/$K	**26.33**	

ANALYSIS OF ALTERNATIVES:

ECONOMIC ANALYSIS		
Discount Rate	**For current corporate rates see P911** **5.5%**	

Active Option	NPV Benefits/(Costs)	CVF Score	Value/$K
Prefered		17,153	26.33
Other Alternatives	**NPV Benefits/(Costs)**	**CVF Score**	**Value/$K**

INVESTMENT RISK ANALYSIS

Potential risks include:

Impact from parallel SIEM-related and SOAR-related initiatives that may require re-work or delay the project.

- Probability: High
- Impact: Medium
- Mitigation: Work closely with the TSO solution architects.

Other ongoing projects may hinder the availability of staff to participate in this project.

- Probability: High
- Impact: High
- Mitigation: As this is a professional services procurement, Manitoba Hydro staff will be augmented with external resources.

ESTIMATED COST FLOW

The annual projected cost flows are as follows (in thousands of dollars):

Fiscal Year	Budget	Contributions	Net Budget
Prev. Actuals	$0	$0	$0
2020/2021	$70	$0	$70
2021/2022	$632	$0	$632
2022/2023	$0	$0	$0
2023/2024	$0	$0	$0
2024/2025	$0	$0	$0
2025/2026+	$0	$0	$0
Total	**$702**	**$0**	**$702**

IMPACT ON O&A COSTS

Estimate of $200,000 CDN$/year for Splunk software (subscription model) which includes:

- Splunk Enterprise at 100GB/day
- Splunk Enterprise Security at 100GB/day

Estimate of $200,000 CDN$/year for Mandiant Advantage Threat Intelligence (subscription model)

Please note: The current McAfee maintenance is $105,000 CDN$/year and will end once Splunk is implemented.~$100,000 USD

PROPOSED SCHEDULE

Start: January 2021
In Service Date: December 2021

RELATED INVESTMENTS

RELATED INVESTMENTS
Security Orchestration, Automation and Response (SOAR) project

OTHER ALTERNATIVES CONSIDERED

The established threat intelligence program has been evaluating SIEM alternatives since the maintenance contract renewal of the McAfee SIEM and Managed Security Service (MSS) in 2019. The following alternatives were evaluated:

1. Engage the market with a RFP for a new Enterprise SIEM solution.

Considerations against pursuing this alternative:

- Manitoba Hydro went through a SIEM procurement and implementation for the Energy Management System (EMS) network in 2020
- Splunk Enterprise Security was selected and implemented for EMS
- Splunk Enterprise Security is currently the Garner market leader for SIEM
- Consolidating SIEM technology aligns people process and technology required for security operations across the enterprise

2. Refresh McAfee hardware and continue with McAfee's SIEM solution.

Considerations against pursuing this alternative:

- TeCannot integrate M365 security logs into existing McAfee SIEM soliution
- Vendor performance has not met required service levels
- McAfee SIEM is no longer a market leader and does not meet security operations requirements for SIEM

REFERENCE DOCUMENTS
P100 Opportunity document

C55-CIJ-PROG-I-AD

CAPITAL INVESTMENT JUSTIFICATION ADDENDUM FOR

Enterprise SIEM

Investment Type (Program Item)

PROGRAM NAME - Emerging Information Technology

Addendum Number 1

	PREVIOUSLY APPROVED	REVISED	INCREASE (DECREASE)
BUDGET:	$702	$176	($526)
CONTRIBUTIONS:	$0	$0	$0
NET BUDGET:	$702	$176	($526)
			(values listed above are in thousands of dollars)
CORPORATE VALUE FRAMEWORK SCORE:	**Value:** 17,153	**Value:** 18,197	
	Value/$K: 26.33	**Value/$K:** 0.00	

DATE PREPARED: 2022-11-08

APPROVER	APPROVER TITLE	COMMENT	ORGANIZATIONAL UNIT	APPROVAL DATE
Smilski, Sandra	VALUE MGMT OFFICE DEPARTMENT MANAGER		Portfolio Management	2022-11-09
Kyrzyk, Wayne	FINANCIAL SERVICES SUPERVISOR		Financial Advisory Services	2022-11-08
Funk, Michelle	BUSINESS SYSTEMS ANALYST		Portfolio Management	2022-11-08

ADDENDUM NUMBER	DATE	REVISION (Summary of change)

CAPITAL INVESTMENT MASTER DATA

RESPONSIBLE OPERATING/CORPORATE GROUP:	Digital & Technology	**REQUESTING OPERATING/CORPORATE GROUP:**	Digital & Technology
RESPONSIBLE DIVISION:	Information Technology Services	**REQUESTING DIVISION:**	Information Technology Services
RESPONSIBLE DEPARTMENT:	Technology Security Office		
I.M. NODE NUMBER:	2.1.15.25.01.1	**W.B.S. NUMBERs:**	P:34898
C55 INVESTMENT CODE:	23707	**W.B.S. NUMBER (PROGRAM):**	B:00325
SAP PROJECT TYPE:	24 - BOC-VP & Management		
CORPORATE INVESTMENT CATEGORIZATION:	(Level 1) C6 / Business Operations Support (Level 2) CS / Information Technology		

CONTACTS

PREPARED BY:	Stepinski, Mark PROJECT LEADER 50841	**REQUESTOR:**	Brandao, Nelson
PROJECT MANAGER:	Stepinski, Mark PROJECT LEADER 50841		

MANITOBA HYDRO
CAPITAL INVESTMENT JUSTIFICATION ADDENDUM
Enterprise SIEM

RECOMMENDATION

Approve a decrease of $526k from a previously approved amount of $702k under Cloud Computing Arrangements (CCA) guidance.

SCOPE

Under Cloud Computing Arrangement (CCA) guidance, it recommends reducing $526k of budget in the project, of which previously capitalized costs of $25k for this investment have been transferred to operating. The $176k budget for purchasing hardware and material (tangible assets) will remain a capital expense.

BACKGROUND

In November 2018, the International Financial Reporting Standards (IFRS) issued an Accounting Standards Update to address accounting treatment of costs related to Software as a Service (SaaS) cloud computing arrangements. In this update it was recommended that if a SaaS arrangement does not provide control over the leased software, it is to be treated as a service contract and the cost are to be expensed.

Software as a Service (SaaS)

A SaaS arrangement is a software distribution model that allows users to access applications or programs through the internet;

The customer does not manage or control the cloud infrastructure or application capabilities and is not responsible for upgrades to the systems and software;

The operator provides business applications via the internet;

The customer typically purchases the application on a subscription basis with no upfront costs or installation fees.

Cloud computing is a method for delivering information technology services in which resources are retrieved from the internet through web-based tools and applications, instead of a direct connection to a server. Rather than keeping the files on a proprietary hard drive or local server, cloud-based storage makes it possible to save them to a remote database.

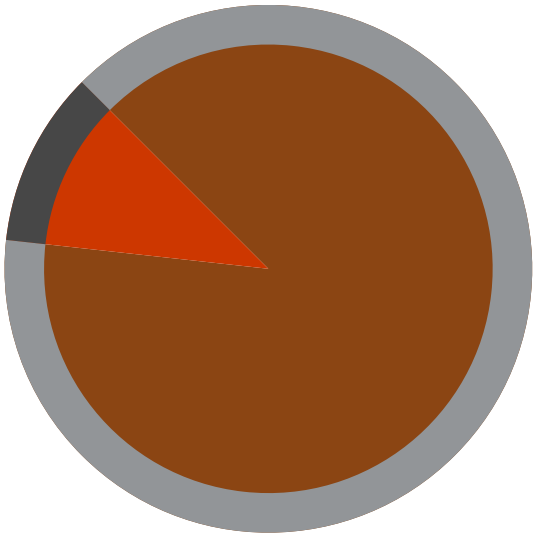
JUSTIFICATION – BUSINESS CASE ANALYSIS (SUMMARY):

JUSTIFICATION

The implementation of Enterprise SIEM falls under a SaaS arrangement that does not provide Manitoba Hydro with control over the leased software and is therefore treated as a service contract and the cost are to be expensed.

JUSTIFICATION – BUSINESS CASE ANALYSIS (SUMMARY):

CORPORATE VALUE FRAMEWORK (REVISED)



Value Measure	Value Points	% of Value
Technology Obsolescence Risk	20,690	89.25%
O&M Costs	-2,492	10.75%
Total Value	**18,197**	
Value/$K	**0.00**	

ANALYSIS OF ALTERNATIVES:

ECONOMIC ANALYSIS		
Discount Rate	**For current corporate rates see P911** **6%**	

Active Option	**NPV Benefits/(Costs)**	**CVF Score**	**Value/$K**
Prefered		18,197	0.00

INVESTMENT RISK ANALYSIS
Not Applicable

MANITOBA HYDRO
CAPITAL INVESTMENT JUSTIFICATION ADDENDUM
Enterprise SIEM

ESTIMATED COST FLOW

The annual projected cost flows are as follows (in thousands of dollars):

	PREVIOUSLY APPROVED			PROPOSED			INCREASE / (DECREASE)		
Fiscal Year	**Budget**	**Contributions**	**Net Budget**	**Budget**	**Contributions**	**Net Budget**	**Budget**	**Contributions**	**Net Budget**
Prev. Actuals	$702	$0	$702	$176	$0	$176	($526)	$0	($526)
2022/2023	$0	$0	$0	$0	$0	$0	$0	$0	$0
2023/2024	$0	$0	$0	$0	$0	$0	$0	$0	$0
2024/2025	$0	$0	$0	$0	$0	$0	$0	$0	$0
2025/2026	$0	$0	$0	$0	$0	$0	$0	$0	$0
2026/2027	$0	$0	$0	$0	$0	$0	$0	$0	$0
2027/2028+	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$702**	**$0**	**$702**	**$176**	**$0**	**$176**	**($526)**	**$0**	**($526)**

IMPACT ON O&A COSTS

$25k costs associated with this investment will be incurred under operating.

MANITOBA HYDRO
CAPITAL INVESTMENT JUSTIFICATION ADDENDUM
Enterprise SIEM

PROPOSED SCHEDULE
Not Applicable

RELATED INVESTMENTS
Not Applicable

OTHER ALTERNATIVES CONSIDERED
Not Applicable

REFERENCE DOCUMENTS
P100 Opportunity document
23707_CIJ_PI_Enterprise SIEM.docx
23707_CIJ_PI_AD_Enterprise SIEM_1.docx

C55-CIJ-PROG-I

CAPITAL INVESTMENT JUSTIFICATION FOR

SOAR

Investment Type (Program Item)

PROGRAM NAME - Emerging Information Technology

BUDGET:	$580
CONTRIBUTIONS:	$0
NET BUDGET:	$580
(values listed above are in thousands of dollars)	
CORPORATE VALUE FRAMEWORK SCORE:	**Value:** 59,089
	Value/$K: 109.62

DATE PREPARED: 2021-01-19

APPROVER	APPROVER TITLE	COMMENT	ORGANIZATIONAL UNIT	APPROVAL DATE
Brandao, Nelson	CHIEF INFORMATION SECURITY OFFICER		Technology Security Office	2021-01-20
Matieshin, Gwenda	CORPORATE INFO SYSTEMS DEPT MANAGER		Director - IT Services Dept	2021-01-19
Sam, Joanne	SENIOR PLANNER		Project Management Office	2021-01-19

CAPITAL INVESTMENT MASTER DATA			
RESPONSIBLE OPERATING/CORPORATE GROUP:	Digital & Transformation	**REQUESTING OPERATING/CORPORATE GROUP:**	Digital & Transformation
RESPONSIBLE DIVISION:	Information Technology Services	**REQUESTING DIVISION:**	Information Technology Services
RESPONSIBLE DEPARTMENT:	Director Information Technology Services		
I.M. NODE NUMBER:	2.1.15.25.01.1	**W.B.S. NUMBERs:**	P:34882
C55 INVESTMENT CODE:	26813	**W.B.S. NUMBER (PROGRAM):**	B:00325
SAP PROJECT TYPE:	24 - BOC-VP & Management		
CORPORATE INVESTMENT CATEGORIES:	(Level 1) C6 / Business Operations Support (Level 2) CS / Information Technology		

CONTACTS			
PREPARED BY:	Stepinski, Mark PROJECT LEADER 50841	**REQUESTOR:**	Nelson Brandao
PROJECT MANAGER:	Stepinski, Mark PROJECT LEADER 50841		

MANITOBA HYDRO
CAPITAL INVESTMENT JUSTIFICATION
SOAR

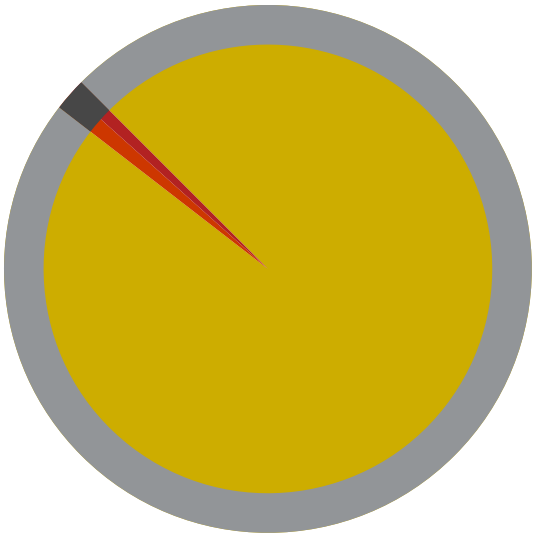
RECOMMENDATION
Approve a budget of $580k to implement a Security Orchestration, Automation and Response (SOAR) solution.

SCOPE
The project scope includes the following: • Procure a Managed Security Service (MSS) that will also provide a managed on-premises SOAR solution • Consolidate Security Events from on-premises Splunk SIEM and M365 Azure Sentil SIEM to create a single view of Cyber Security events that may trigger a Cyber Security Incident • Subscribe to a threat feed to supply indicators-of-compromise (IoC) used to trigger alerts • Support Manitoba Hydro Technology Security Operations • Maintain Manitoba Hydro NERC CIP compliance

BACKGROUND
Cyber security controls require people, process and technology. This project will engage the market for a Managed Security Service (people/process), and SOAR (technology) solution to replace the existing McAfee Managed Security Service and supplement the Manitoba Hydro Technology Security Office Security Operations Team A SOAR solution will sit on top of Manitoba Hydro's Security Information and Event Management (SIEM) solutions and provide a single platform for security event monitoring and incident response and single interface for a managed security service.

JUSTIFICATION – BUSINESS CASE ANALYSIS (SUMMARY):
JUSTIFICATION
Currently, Security Operations is supported by a Managed Security Service (MSS) providing Tier 1 analysis of security threats and automation support. The current MSS is restricted to supporting only McAfee SIEM. With the rapid adoption of Microsoft's M365 Cloud Services, Tier 1 cyber security monitoring does not extend to M365. M365 has a proprietary Security Information and Event Management (SIEM), Microsoft Sentinel, that is required to identify security events in the M365 service. Integration with Manitoba Hydro's on-premises SIEM is not a feasible or sustainable long-term solution. A Security Operations Automation and Response (SOAR) solution will consolidate security event monitoring across on-premises and cloud SIEM solutions and provide long term, sustainable technical solution to enable tier 1 Security Operations monitoring and cyber security incident response.

CORPORATE VALUE FRAMEWORK



Value Measure	Value Points	% of Value
Security Risk	60,332	97.98%
Total Cost	-539	0.88%
O&M Costs	-704	1.14%
Total Value	**59,089**	
Value/$K	**109.62**	

ANALYSIS OF ALTERNATIVES:

ECONOMIC ANALYSIS		
Discount Rate	**For current corporate rates see P911** **5.5%**	

Active Option	NPV Benefits/(Costs)	CVF Score	Value/$K
Preferred		59,089	109.62
Other Alternatives	**NPV Benefits/(Costs)**	**CVF Score**	**Value/$K**

INVESTMENT RISK ANALYSIS

Potential risks include:

Impact from parallel SIEM-related and SOAR-related initiatives that may require re-work or delay the project.

- Probability: High
- Impact: Medium
- Mitigation: Work closely with the TSO solution architects.

Other ongoing projects may hinder the availability of staff to participate in this project

- Probability: High
- Impact: High
- Mitigation: As this is a professional services procurement and technology procurement, Manitoba Hydro staff will be augmented with external resources to implement the project and provide on-going support for the SOAR tool as well as managed security services.

ESTIMATED COST FLOW

The annual projected cost flows are as follows (in thousands of dollars):

Fiscal Year	Budget	Contributions	Net Budget
Prev. Actuals	$0	$0	$0
2020/2021	$80	$0	$80
2021/2022	$500	$0	$500
2022/2023	$0	$0	$0
2023/2024	$0	$0	$0
2024/2025	$0	$0	$0
2025/2026+	$0	$0	$0
Total	**$580**	**$0**	**$580**

IMPACT ON O&A COSTS	
Estimate of SOAR solution license maintenance fee: $55,000 CDN$/year Estimate of Managed Security Service (MSS): $120,000 CDN$/year o Please note: the current MSS (vendor is SRG) is $90,000 CDN$/year	

PROPOSED SCHEDULE
Start: January 2021 In service date: December 2021

RELATED INVESTMENTS
Security Information and Event Management project

OTHER ALTERNATIVES CONSIDERED
The established threat intelligence program has been evaluating SOAR alternatives since the maintenance contract renewal of the McAfee SIEM and Managed Security Service (MSS) in 2019. The following alternatives were evaluated: 1. Acquire separate MSS services for each environment (Corporate, industrial control system (ICS), Microsoft 365) and attempt to coordinate them manually. Considerations against pursuing this alternative: • Even with a single SIEM solution for Corporate and ICS environments, Manitoba Hydro needs to address monitoring multiple SIEM environments with the addition of Microsoft Sentinel in M365 • Creating separate security operations functions for each environment is disjointed and would make cyber security incident response slow and ineffective.

REFERENCE DOCUMENTS
P100 - Opportunity Documnent

C55-CIC

CAPITAL INVESTMENT CONCEPT
FOR

Customer Experience Portal

Investment Type (Project)

SCOPE DEVELOPMENT FUNDS:	$96
CONCEPT ESTIMATE (incl. Scope Development):	$1,403
CONTRIBUTIONS:	$0
NET CONCEPT ESTIMATE (incl. Scope Development):	$1,403
(values listed above are in thousands of dollars)	
CORPORATE VALUE FRAMEWORK SCORE :	**Value:** 8,093
	Value/$K: 5.96

DATE PREPARED: 2018/04/12

EC/MHEB APPROVAL MINUTE & DATE:

APPROVER	APPROVER TITLE	COMMENT	ORGANIZATIONAL UNIT	APPROVAL DATE
PELLEGRINO, Domenic	ENERGY INFORMATION SYSTEMS DEPT MANAGER		Director - IT Services Dept	2018/04/17
Thievin, Joe	STRATEGIC TRANSFORMATION DEPT MANAGER		Strategic Transformation Office	2018/04/17
BATTISTONI, ANGELO	CHARTERED PROFESSIONAL ACCOUNTANT		Financial Advisory Services	2018/04/17
DESMEDT, Devon	IT BUSINESS PARTNER		Portfolio Management	2018/04/13
SMILSKI, Sandra	PORTFOLIO MANAGEMENT SUPERVISOR		Portfolio Management	2018/04/12

CAPITAL INVESTMENT MASTER DATA			
RESPONSIBLE OPERATING/CORPORATE GROUP:	Human Resources & Corporate Services	**REQUESTING OPERATING/CORPORATE GROUP:**	Marketing & Customer Service
RESPONSIBLE DIVISION:	Information Technology Services	**REQUESTING DIVISION:**	Customer Care
RESPONSIBLE DEPARTMENT:	Energy Information Systems	**ISD: (YYYY/MM/DD)**	
I.M. NODE NUMBER:	2.1.10.15.20.172	**W.B.S. NUMBERs:**	P:30146
C55 INVESTMENT CODE:	14861		
SAP PROJECT TYPE:	24 - BOC-VP & Management	**C55 INVESTMENT SUB-CATEGORY**:	
CORPORATE INVESTMENT CATEGORIES:	(Level 1) C6 / Business Operations Support (Level 2) CT / Corporate Infrastructure Sustainment		

CONTACTS			
PREPARED BY:	ROSS, Donna CUSTOMER CARE APPLICATIONS SUPERVISOR 50865	**REQUESTOR:**	Chard, Paul
PROJECT MANAGER:	FERNANDEZ, Tara PROJECT LEADER 50841		

MANITOBA HYDRO
CAPITAL INVESTMENT CONCEPT
Customer Experience Portal

RECOMMENDATION

Proceed with the scoping and RFP development of a mobile customer self-service portal that will provide Manitoba Hydro customers with a centralised platform for self-service tools and transactions.

SCOPE

The scope development phase is scheduled for April - August 2018 at the cost of $92 000. During the scope development phase an RFP will be developed to procure an off-the-shelf portal solution. Once the RFP has closed and has been evaluated Manitoba Hydro will have a better understanding of costs and implementation timeline.

Implementation of a chosen solution is expected to commence September 1, 2018 at an estimated budget of $1.2 million, with a target completion date of April 1, 2019. The implementation budget and timeline will be confirmed and/or adjusted once the scope development phase is complete.

BACKGROUND

With the recent development of Manitoba Hydro's new Corporate Strategic Plan, two strategic priorities have been identified in restoring financial sustainability and delivering an excellent customer experience. The Marketing and Customer Service (M&CS) operating group has identified that to be able to contribute to the above two key strategic priorities Manitoba Hydro needs to transform how it serves its customers, specifically increasing the ability to self-serve. M&CS staff have identified one key transformation tool is a mobile customer self-service portal that will directly and positively impact financial sustainability and customer experience.

Manitoba Hydro offers some self-service functionality to customers through decentralized forms and/or platforms. Over the past several years, there has been a strong shift in the marketplace for providing customers with control in how they transact with a business. A centralized location (i.e. the portal) for all self-service transactions should provide a clear and easy to use experience that simplifies how a customer would do business with Manitoba Hydro.

A mobile customer self-service portal is defined as either a mobile app or mobile website where the customer authenticates themselves with a username and password that would then allow them to self-serve with the utility.

JUSTIFICATION – BUSINESS CASE ANALYSIS (SUMMARY):

JUSTIFICATION

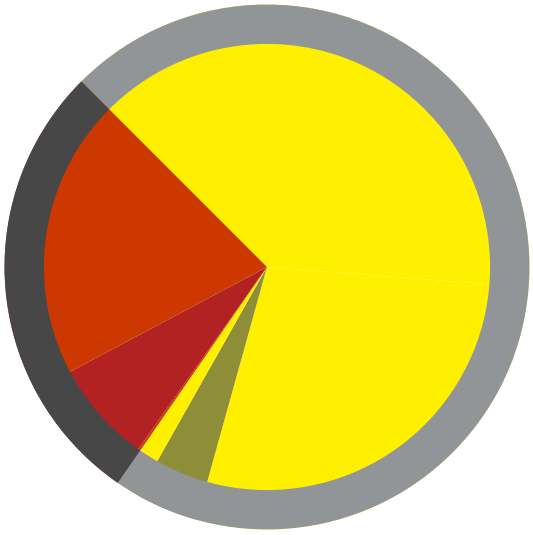
Proceed with implementing a mobile customer self-service portal solution will directly contribute to the corporate strategic pillars of restoring financial sustainability and delivering and excellent customer experience. Manitoba Hydro anticipates the following benefits directly related to implementing the portal solution that will support the

JUSTIFICATION – BUSINESS CASE ANALYSIS (SUMMARY):

above identified strategic pillars:

- E-billing savings in excess of $300,000 in fiscal year 2020 growing to $1 million in fiscal 2024
- Call deflection efficiency gains of 7,883 hours
- An increase in customer satisfaction scores by 2% as customers who self-serve tend to be more satisfied than customers who transact by traditional means (i.e. in person or over the phone).

CORPORATE VALUE FRAMEWORK



Value Measure	Value Points	% of Value
O&M Financial Benefits	12,481	68.24%
Customer Service Benefit	708	3.87%
Environmental Benefit	2	0.01%
O&M Costs	-3,740	20.45%
Total Cost	-1,358	7.42%
Total Value	**8,093**	
Value/$K	**5.96**	

OTHER ALTERNATIVES CONSIDERED

M&CS has decided that it is more beneficial to procure an off-the-shelf mobile customer self-service portal solution rather than continuing to augment and update the existing custom online billing platform MyBill. MyBill was developed over a decade ago when digital self-service tools were in their infant stages. The market has evolved significantly since then and there are several industry leading companies that specialize in digital self-service portals. By implementing an off-the-shelf portal solution rather than building in-house allows Manitoba Hydro to stay current with market trends and evolving customer demands as the companies in the portal solution space will regularly update their products as the market evolves.

INVESTMENT RISK ANALYSIS

ESTIMATED COST FLOW

The annual projected cost flows are as follows (in thousands of dollars):

Fiscal Year	Scope Development Funds	Concept Estimate	Total Estimated Investment (Net of Contrib.)
Prev. Actuals	$0	$0	$0
2018/2019	$96	$1,403	$1,403
2019/2020	$0	$0	$0
2020/2021	$0	$0	$0
2021/2022	$0	$0	$0
2022/2023	$0	$0	$0
2023/2024+	$0	$0	$0
Total	**$96**	**$1,403**	**$1,403**

IMPACT ON O&A COSTS
The impact on operating cost is estimated at $328,000 annually and is expected to grow to $528,000 annually over five years. This estimate will be revisited once the scope development phase is complete.

RELATED INVESTMENTS
None

REFERENCE DOCUMENTS
P100S

C55-CIJ-PROJ

CAPITAL INVESTMENT JUSTIFICATION FOR

Customer Self-Service Portal (CSSP)

Investment Type (Project)

BUDGET:	$1,677
CONTRIBUTIONS:	$0
NET BUDGET:	$1,677
(values listed above are in thousands of dollars)	
CORPORATE VALUE FRAMEWORK SCORE:	**Value:** 6,067
	Value/$K: 3.83

DATE PREPARED: 2018/09/14

EC/MHEB APPROVAL MINUTE & DATE:

APPROVER	APPROVER TITLE	COMMENT	ORGANIZATIONAL UNIT	APPROVAL DATE
LANYON, Rob	DIRECTOR INFORMATION TECHNOLOGY SERVICES		Director - IT Services Dept	2018/09/14
Chard, Paul	DIRECTOR CUSTOMER CARE		Director - Customer Care	2018/09/14
PELLEGRINO, Domenic	ENERGY INFORMATION SYSTEMS DEPT MANAGER		Director - IT Services Dept	2018/09/14
Sinclair, Trevor	CUSTOMER BILLING DEPARTMENT MANAGER		Customer Billing	2018/09/14
BATTISTONI, ANGELO	CHARTERED PROFESSIONAL ACCOUNTANT		Financial Advisory Services	2018/09/14
FUNK, Michelle	BUSINESS SYSTEMS ANALYST		Portfolio Management	2018/09/14
SAM, Joanne	SENIOR PLANNER	On behalf Of SMILSKI, Sandra (slsmilski).	Portfolio Management	2018/09/14

CAPITAL INVESTMENT MASTER DATA			
RESPONSIBLE OPERATING/CORPORATE GROUP:	Human Resources & Corporate Services	**REQUESTING OPERATING/CORPORATE GROUP:**	Marketing & Customer Service
RESPONSIBLE DIVISION:	Information Technology Services	**REQUESTING DIVISION:**	Customer Care
RESPONSIBLE DEPARTMENT:	Energy Information Systems	**ISD: (YYYY/MM/DD)**	
I.M. NODE NUMBER:	2.1.10.15.20.172	**W.B.S. NUMBERs:**	P:30146, P:30686
C55 INVESTMENT CODE:	14861		
SAP PROJECT TYPE:	24 - BOC-VP & Management	**C55 INVESTMENT SUB-CATEGORY**:	Shell
CORPORATE INVESTMENT CATEGORIES:	(Level 1) C6 / Business Operations Support (Level 2) CT / Corporate Infrastructure Sustainment		

CONTACTS			
PREPARED BY:	ROSS, Donna CUSTOMER CARE APPLICATIONS SUPERVISOR 50865	**REQUESTOR:**	Chard, Paul
PROJECT MANAGER:	FERNANDEZ, Tara PROJECT LEADER 50841		

MANITOBA HYDRO
CAPITAL INVESTMENT JUSTIFICATION
Customer Self-Service Portal (CSSP)

RECOMMENDATION

Implement the SAP Self Service Accelerator for Utilities customer portal from Smart Energy Systems, LLC (SES), which will provide Manitoba Hydro customers with a modern centralized platform for self-service tools and transactions.

Proceed with the Customer Self-Service Portal (CSSP) Project at a cost not to exceed $1.677M with a project start date of September 11, 2018, with the first release of functionality to customers April 1, 2019, and the second release April 1, 2020.

SCOPE

The scope of the CSSP project is to implement and set up the required support for a cloud-hosted and Software-as-a-Service (SaaS) customer self-service portal solution from SES, which will be integrated with our existing backend systems. The first release of the customer self-service portal will include the following functionality;

- Online enrolment
- Registering for paperless billing
- Managing multiple accounts
- Making a payment
- Viewing current bills, account balances and historical billing and consumption information
- Submitting meter readings
- Generating a Statement of Account
- Reporting electric outages
- Viewing outages on an outage map
- Updating account information
- Registering for billing programs (e.g., Equal Payment Plan, Pre-authorized Payment Plan)
- Managing notification preferences.
- Viewing usage reporting and analytics.
- Viewing a portal dashboard.
- Viewing weather overlay usage data.
- Viewing bill inserts and key messages
- Create Payment Arrangements

The second release of the customer portal will include the following functionality:

- Processing Move In/Out service requests
- Reporting a streetlight outage
- Submitting non-urgent service requests and scheduling of service appointments
- Viewing a Statement of Loans, loan balances and payment schedules
- Updating financial institution information

BACKGROUND

With the recent development of Manitoba Hydro's new Corporate Strategic Plan, two strategic priorities have been identified in restoring financial sustainability and delivering an excellent customer experience. The Marketing and Customer Service (M&CS) operating group has identified that to be able to contribute to the above two key strategic priorities Manitoba Hydro needs to transform how it serves its customers, specifically increasing the ability to self-serve. M&CS staff have identified one key transformation tool is a mobile customer self-service portal that will directly and positively impact financial sustainability and customer experience.

Manitoba Hydro offers some self-service functionality to customers through decentralized forms and platforms. Over the past several years, there has been a strong shift in the marketplace for providing customers with control in how they transact with a business. A centralized location (i.e. the portal) for all self-service transactions should provide a clear and easy to use experience that simplifies how a customer would do business with Manitoba Hydro.

A mobile customer self-service portal is defined as either a mobile app or mobile website where the customer authenticates themselves with a username and password that would then allow them to self-serve with the utility.

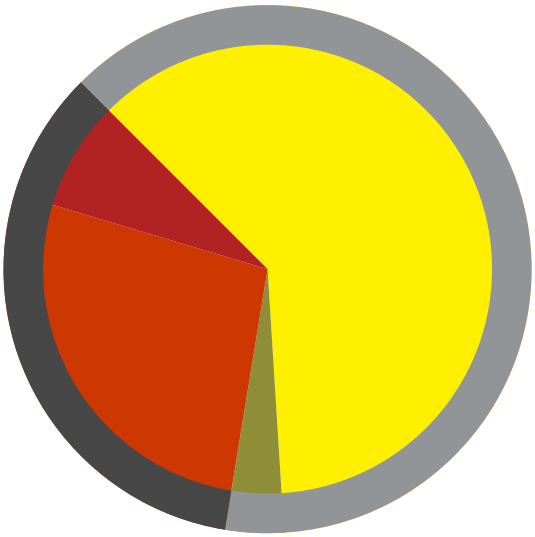
JUSTIFICATION – BUSINESS CASE ANALYSIS (SUMMARY):

JUSTIFICATION

Implementing a mobile customer self-service portal solution will directly contribute to the corporate strategic priorities of restoring financial sustainability and delivering an excellent customer experience. Manitoba Hydro anticipates the following benefits directly related to implementing the portal solution that will support the above identified strategic pillars;

- E-billing savings in excess of $300,000 in fiscal year 2020 growing to $1 million in fiscal 2024 through a reduction in paper, printing and postage.
- Call deflection efficiency gains of 7,883 hours annually due to customer choosing to self-serve through the portal rather than calling Manitoba Hydro
- An increase in customer satisfaction scores by 2% as customers who self-serve tend to be more satisfied than customers who transact by traditional means (i.e. in person or over the phone).

CORPORATE VALUE FRAMEWORK



Value Measure	Value Points	% of Value
O&M Financial Benefits	12,372	61.51%
Customer Service Benefit	717	3.56%
Environmental Benefit	3	0.01%
O&M Costs	-5,439	27.04%
Total Cost	-1,585	7.88%
Total Value	**6,067**	
Value/$K	**3.83**	

ANALYSIS OF ALTERNATIVES:

ECONOMIC ANALYSIS		
Discount Rate	**For current corporate rates see P911 6%**	

Active Option	NPV Benefits/(Costs)	CVF Score	Value/$K
Preferred - Customer Experience Portal		6,067	3.83

Other Alternatives	NPV Benefits/(Costs)	CVF Score	Value/$K

INVESTMENT RISK ANALYSIS

ESTIMATED COST FLOW

The annual projected cost flows are as follows (in thousands of dollars):

Fiscal Year	Budget	Contributions	Net Budget
Prev. Actuals	$0	$0	$0
2018/2019	$971	$0	$971
2019/2020	$706	$0	$706
2020/2021	$0	$0	$0
2021/2022	$0	$0	$0
2022/2023	$0	$0	$0
2023/2024+	$0	$0	$0
Total	**$1,677**	**$0**	**$1,677**

IMPACT ON O&A COSTS

The impact on operating cost is estimated at $620,000 annually, broken down as follows:

- SaaS subscription - $550,000
- Variable communication costs - $70,000 (such as text messages sent and received).

PROPOSED SCHEDULE

Outlined below is the project schedule:

Kickoff: September 11, 2018

- Architecture & Design: September 11 – November 2, 2018
- Build, Test and Deploy Release 1: November 5, 2018 – April 1, 2019
- Build, Test and Deploy Release 2: March 18, 2019 – April 1, 2020
- Stabilization: April 29, 2020

RELATED INVESTMENTS

None

OTHER ALTERNATIVES CONSIDERED

M&CS has decided that it is more beneficial to procure an off-the-shelf mobile customer self-service portal solution rather than continuing to augment and update the existing custom online billing platform MyBill. MyBill was developed over a decade ago when digital self-service tools were in their infant stages. The market has evolved significantly since then and there are several industry leading companies that specialize in digital self-service portals. By implementing an off-the-shelf portal solution rather than building in-house allows Manitoba Hydro to stay current with market trends and evolving customer demands as the companies in the portal solution space will regularly update their products as the market evolves.

REFERENCE DOCUMENTS

P100S

14861_CIC_Customer Experience Portal.docx

14861_CIJ_Customer Self-Service Portal (.docx

C55-CIJ-PROJ-AD

CAPITAL INVESTMENT JUSTIFICATION ADDENDUM FOR

Customer Self-Service Portal (CSSP)

Investment Type (Project)

Addendum Number 1

	PREVIOUSLY APPROVED	REVISED	INCREASE/ (DECREASE)
BUDGET:	$1,677	$2,433	$756
CONTRIBUTIONS:	$0	$0	$0
NET BUDGET:	$1,677	$2,433	$756
		(values listed above are in thousands of dollars)	
CORPORATE VALUE FRAMEWORK SCORE:	**Value:** 6,067 **Value/$K:** 3.83	**Value:** 6,450 **Value/$K:** 4.36	

DATE PREPARED: 2021-01-20

EC/MHEB APPROVAL MINUTE & DATE:

APPROVER	APPROVER TITLE	COMMENT	ORGANIZATIONAL UNIT	APPROVAL DATE
Fish, Ian	VP DIGITAL & TRANSFORMATION		VP Digital & Transformation	2021-02-12
Chiang, Alex	VP CUSTOMER SOLUTIONS & EXPERIENCE		VP Customer Solutions & Experience	2021-02-11
Lanyon, Rob	DIRECTOR INFORMATION TECHNOLOGY SERVICES		Director - IT Services Dept	2021-02-05
Chard, Paul	DIRECTOR CUSTOMER CARE		Director - Customer Care	2021-02-05
Pellegrino, Domenic	ENERGY INFORMATION SYSTEMS DEPT MANAGER		Director - IT Services Dept	2021-02-05
Sinclair, Trevor	CUSTOMER BILLING DEPARTMENT MANAGER		Customer Billing	2021-02-04
Battistoni, Angelo	CHARTERED PROFESSIONAL ACCOUNTANT		Financial Advisory Services	2021-02-04
Funk, Michelle	BUSINESS SYSTEMS ANALYST		Project Management Office	2021-02-02
Smilski, Sandra	PORTFOLIO MANAGEMENT SUPERVISOR		Project Management Office	2021-01-20

ADDENDUM NUMBER	DATE	REVISION (Summary of change)
1	February 2, 2021	Addendum is due to increased internal labour and vendor cost.

CAPITAL INVESTMENT MASTER DATA			
RESPONSIBLE OPERATING/CORPORATE GROUP:	Digital & Transformation	**REQUESTING OPERATING/CORPORATE GROUP:**	Marketing & Customer Service
RESPONSIBLE DIVISION:	Information Technology Services	**REQUESTING DIVISION:**	Customer Care
RESPONSIBLE DEPARTMENT:	Energy Information Systems	**ISD: (YYYY/MM/DD)**	2021/06/30
I.M. NODE NUMBER:	2.1.15.15.10.117	**W.B.S. NUMBERs:**	P:30146, P:30686
C55 INVESTMENT CODE:	14861		
SAP PROJECT TYPE:	24 - BOC-VP & Management	**C55 INVESTMENT SUB-CATEGORY**:	Shell
CORPORATE INVESTMENT CATEGORIZATION:	(Level 1) C6 / Business Operations Support (Level 2) CS / Information Technology		

CONTACTS			
PREPARED BY:	Fernandez, Tara PROJECT LEADER 50841	**REQUESTOR:**	Chard, Paul
PROJECT MANAGER:	Fernandez, Tara PROJECT LEADER 50841		

MANITOBA HYDRO
CAPITAL INVESTMENT JUSTIFICATION ADDENDUM
Customer Self-Service Portal (CSSP)

RECOMMENDATION

Approve an increase of $756K from a previously approved amount of $1.677M resulting from increased internal labour and vendor services required to implement Phase 1 of the CSSP project.

SCOPE

The scope of the work remains the same as previously approved. However, the functionality included in each phase of the project has been redistributed as recommended by the vendor and approved by the steering committee. The remaining functionality to be implemented includes the following:

- Mobile App deployment
- Scheduling of service appointments

BACKGROUND

Phase 1 of the CSSP project started in September 2018 when the internal project team began initial project activities with the vendor, Smart Energy Water (SEW), to implement the Smart Customer Mobile (SCM) solution for Manitoba Hydro's CSSP.

After five (5) months of detailed design and documentation, it was determined that additional funding would be needed to develop and configure the CSSP to meet the business needs, within the required infrastructure and security requirements. It was also determined that the sequence in which functionality would be developed and released should be updated to provide the majority of the functionality in Phase 1 and the remaining functionality in Phase 2.

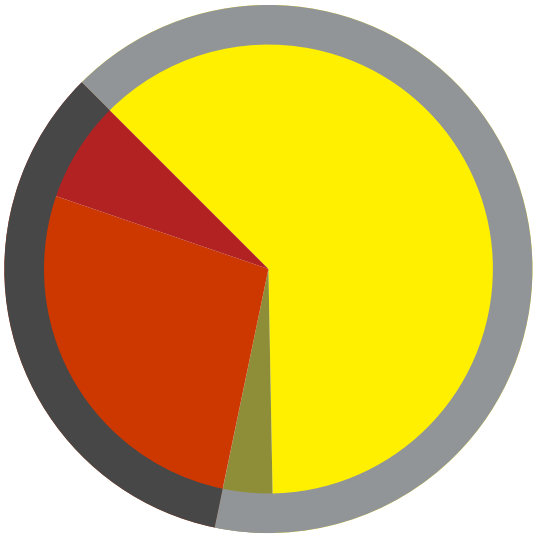
This additional funding was required to fund both internal labour and vendor services costs. These additional funds and the updated sequence were approved by the steering committee in February 2019. This approval also included the decision to defer the updates for the project budget until the project was further along, thereby allowing the team to verify the appropriate amount of additional funds required once Phase 1 was completed.

JUSTIFICATION – BUSINESS CASE ANALYSIS (SUMMARY):

JUSTIFICATION

This addendum is intended to cover the additional labour effort incurred by the project team and the vendor to complete CSSP Phase 1 and Phase 2 activities.

CORPORATE VALUE FRAMEWORK (REVISED)



Value Measure	Value Points	% of Value
O&M Financial Benefits	12,724	62.21%
Customer Service Benefit	726	3.55%
Environmental Benefit	3	0.01%
Total Cost	-1,481	7.24%
O&M Costs	-5,522	26.99%
Total Value	**6,450**	
Value/$K	**4.36**	

ANALYSIS OF ALTERNATIVES:

ECONOMIC ANALYSIS		
Discount Rate	**For current corporate rates see P911 5.5%**	

Active Option	**NPV Benefits/(Costs)**	**CVF Score**	**Value/$K**
Preferred - Customer Experience Portal		6,450	4.36

INVESTMENT RISK ANALYSIS
none

MANITOBA HYDRO
CAPITAL INVESTMENT JUSTIFICATION ADDENDUM
Customer Self-Service Portal (CSSP)

ESTIMATED COST FLOW

The annual projected cost flows are as follows (in thousands of dollars):

	PREVIOUSLY APPROVED			PROPOSED			INCREASE / (DECREASE)		
Fiscal Year	**Budget**	**Contributions**	**Net Budget**	**Budget**	**Contributions**	**Net Budget**	**Budget**	**Contributions**	**Net Budget**
Prev. Actuals	$1,677	$0	$1,677	$927	$0	$927	($750)	$0	($750)
2020/2021	$0	$0	$0	$1,311	$0	$1,311	$1,311	$0	$1,311
2021/2022	$0	$0	$0	$196	$0	$196	$196	$0	$196
2022/2023	$0	$0	$0	$0	$0	$0	$0	$0	$0
2023/2024	$0	$0	$0	$0	$0	$0	$0	$0	$0
2024/2025	$0	$0	$0	$0	$0	$0	$0	$0	$0
2025/2026+	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$1,677**	**$0**	**$1,677**	**$2,433**	**$0**	**$2,433**	**$756**	**$0**	**$756**

IMPACT ON O&A COSTS

The annual maintenance cost is not expected to change as a result of this addendum.

The impact on operating cost is estimated at $620,000 annually, broken down as follows:

- SaaS subscription - $550,000
- Variable communication costs - $70,000 (such as text messages sent and received).

MANITOBA HYDRO
CAPITAL INVESTMENT JUSTIFICATION ADDENDUM
Customer Self-Service Portal (CSSP)

PROPOSED SCHEDULE

Outlined below is the schedule for remaining project activities:

- February 2021: Release mobile app
- June 2021: Release scheduling service appointments functionality
- June 2021: Project completion

RELATED INVESTMENTS

n/a

OTHER ALTERNATIVES CONSIDERED

M&CS has decided that it is more beneficial to procure an off-the-shelf mobile customer self-service portal solution rather than continuing to augment and update the existing custom online billing platform MyBill. MyBill was developed over a decade ago when digital self-service tools were in their infant stages. The market has evolved significantly since then and there are several industry leading companies that specialize in digital self-service portals. By implementing an off-the-shelf portal solution rather than building in-house allows Manitoba Hydro to stay current with market trends and evolving customer demands as the companies in the portal solution space will regularly update their products as the market evolves.

REFERENCE DOCUMENTS

P100S

14861_CIC_Customer Experience Portal.docx

14861_CIJ_Customer Self-Service Portal (.docx

C55-CIJ-PROJ-AD

CAPITAL INVESTMENT JUSTIFICATION ADDENDUM FOR

Customer Self-Service Portal (CSSP)

Investment Type (Project)

Addendum Number 2

	PREVIOUSLY APPROVED	REVISED	INCREASE/ (DECREASE)
BUDGET:	$2,433	$0	**($2,433)**
CONTRIBUTIONS:	$0	$0	**($2,433)**
NET BUDGET:	$2,433	$0	**($2,433)**
		(values listed above are in thousands of dollars)	
CORPORATE VALUE FRAMEWORK SCORE:	**Value:**	**Value:**	
	Value/$K:	**Value/$K:**	

DATE PREPARED: 2022-07-21

EC/MHEB APPROVAL MINUTE & DATE:

APPROVER	APPROVER TITLE	COMMENT	ORGANIZATIONAL UNIT	APPROVAL DATE
Hiebert, Rachelle	PORTFOLIO MANAGEMENT SUPERVISOR	On behalf Of Smilski, Sandra (slsmilski).	Portfolio Management	2022-08-17
Kyrzyk, Wayne	FINANCIAL SERVICES SUPERVISOR		Financial Advisory Services	2022-08-15
Battistoni, Angelo	CHARTERED PROFESSIONAL ACCOUNTANT		Financial Advisory Services	2022-08-09
Battistoni, Angelo	CHARTERED PROFESSIONAL ACCOUNTANT		Financial Advisory Services	2022-07-27
Funk, Michelle	BUSINESS SYSTEMS ANALYST		Portfolio Management	2022-07-26
Smilski, Sandra	VALUE MGMT OFFICE DEPARTMENT MANAGER		Portfolio Management	2022-07-21

ADDENDUM NUMBER	DATE	REVISION (Summary of change)
1	July 26, 2022	Addendum to expense capital cost incurred that falls under new Accounting Guidelines

CAPITAL INVESTMENT MASTER DATA			
RESPONSIBLE OPERATING/CORPORATE GROUP:	Digital & Technology	**REQUESTING OPERATING/CORPORATE GROUP:**	Marketing & Customer Service
RESPONSIBLE DIVISION:	Information Technology Services	**REQUESTING DIVISION:**	Customer Care
RESPONSIBLE DEPARTMENT:	Energy Information Systems	**ISD: (YYYY/MM/DD)**	Not Applicable
I.M. NODE NUMBER:	2.1.15.15.10.117	**W.B.S. NUMBERs:**	P:30146, P:30686
C55 INVESTMENT CODE:	14861		
SAP PROJECT TYPE:	24 - BOC-VP & Management	**C55 INVESTMENT SUB-CATEGORY**:	Shell
CORPORATE INVESTMENT CATEGORIZATION:	(Level 1) C6 / Business Operations Support (Level 2) CS / Information Technology		

CONTACTS			
PREPARED BY:	Fernandez, Tara PROJECT LEADER 50841	**REQUESTOR:**	Chard, Paul
PROJECT MANAGER:	Fernandez, Tara PROJECT LEADER 50841		

MANITOBA HYDRO
CAPITAL INVESTMENT JUSTIFICATION ADDENDUM
Customer Self-Service Portal (CSSP)

RECOMMENDATION

In accordance with Cloud Computing Arrangement (CCA) guidance, it has been recommended that previously capitalized costs for this investment be transferred to operating expense.

$2.1M incurred capital funds to implement a Customer Self-Serve Portal, are to be expensed in line with the change in accounting for cloud computing arrangements.

SCOPE

Transfer capitalized costs to be expensed as operating costs (for past and future costs incurred).

BACKGROUND

In November 2018, the International Financial Reporting Standards (IFRS) issued an Accounting Standards Update to address accounting treatment of costs related to Software as a Service (SaaS) cloud computing arrangements. In this update it was recommended that if a SaaS arrangement does not provide control over the leased software, it is to be treated as a service contract and the cost are to be expensed.

Software as a Service (SaaS)
- A SaaS arrangement is a software distribution model that allows users to access applications or programs through the internet;
- The customer does not manage or control the cloud infrastructure or application capabilities and is not responsible for upgrades to the systems and software;
- The operator provides business applications via the internet;
- The customer typically purchases the application on a subscription basis with no upfront costs or installation fees.

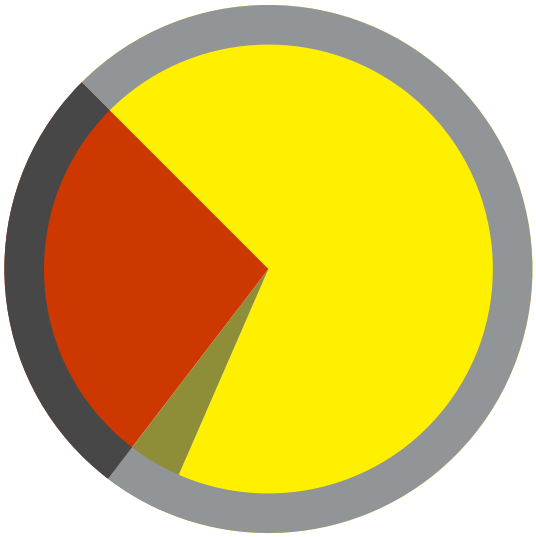
Cloud computing is a method for delivering information technology services in which resources are retrieved from the internet through web-based tools and applications, instead of a direct connection to a server. Rather than keeping the files on a proprietary hard drive or local server, cloud-based storage makes it possible to save them to a remote database.

JUSTIFICATION – BUSINESS CASE ANALYSIS (SUMMARY):

JUSTIFICATION

The implementation of CSSP falls under a SaaS arrangement that does not provide Manitoba Hydro with control over the leased software and is therefore treated as a service contract and the cost are to be expensed.

CORPORATE VALUE FRAMEWORK (REVISED)



Value Measure	Value Points	% of Value
O&M Financial Benefits		%
Customer Service Benefit		%
Environmental Benefit		%
O&M Costs		%
Total Value		
Value/$K		

ANALYSIS OF ALTERNATIVES:

ECONOMIC ANALYSIS		
Discount Rate	**For current corporate rates see P911 6%**	

Active Option	**NPV Benefits/(Costs)**	**CVF Score**	**Value/$K**
Preferred - Customer Experience Portal			

INVESTMENT RISK ANALYSIS
Not applicable

MANITOBA HYDRO
CAPITAL INVESTMENT JUSTIFICATION ADDENDUM
Customer Self-Service Portal (CSSP)

ESTIMATED COST FLOW

The annual projected cost flows are as follows (in thousands of dollars):

	PREVIOUSLY APPROVED			PROPOSED			INCREASE / (DECREASE)		
Fiscal Year	**Budget**	**Contributions**	**Net Budget**	**Budget**	**Contributions**	**Net Budget**	**Budget**	**Contributions**	**Net Budget**
Prev. Actuals	$2,433	$0	$2,433	$0	$0	$0	($2,433)	$0	($2,433)
2022/2023	$0	$0	$0	$0	$0	$0	$0	$0	$0
2023/2024	$0	$0	$0	$0	$0	$0	$0	$0	$0
2024/2025	$0	$0	$0	$0	$0	$0	$0	$0	$0
2025/2026	$0	$0	$0	$0	$0	$0	$0	$0	$0
2026/2027	$0	$0	$0	$0	$0	$0	$0	$0	$0
2027/2028+	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$2,433**	**$0**	**$2,433**	**$0**	**$0**	**$0**	**($2,433)**	**$0**	**($2,433)**

IMPACT ON O&A COSTS

All costs associated with this investment will be incurred under operating.

MANITOBA HYDRO
CAPITAL INVESTMENT JUSTIFICATION ADDENDUM
Customer Self-Service Portal (CSSP)

PROPOSED SCHEDULE
Not applicable

RELATED INVESTMENTS
Not applicable

OTHER ALTERNATIVES CONSIDERED
Not applicable

REFERENCE DOCUMENTS
P100S
14861_CIC_Customer Experience Portal.docx
14861_CIJ_Customer Self-Service Portal (.docx
14861_CIJ_AD_Customer Self-Service Portal (_1.docx

C55-CIC

CAPITAL INVESTMENT CONCEPT
FOR

Call Handling Technology

Investment Type (Project)

SCOPE DEVELOPMENT FUNDS:	$123
CONCEPT ESTIMATE (incl. Scope Development):	$1,623
CONTRIBUTIONS:	$0
NET CONCEPT ESTIMATE (incl. Scope Development):	$1,623
(values listed above are in thousands of dollars)	
CORPORATE VALUE FRAMEWORK SCORE :	**Value:** -2,438
	Value/$K: (1.69)

DATE PREPARED: 2018/11/02

EC/MHEB APPROVAL MINUTE & DATE:

APPROVER	APPROVER TITLE	COMMENT	ORGANIZATIONAL UNIT	APPROVAL DATE
LANYON, Rob	DIRECTOR INFORMATION TECHNOLOGY SERVICES		Director - IT Services Dept	2018/11/07
Chard, Paul	DIRECTOR CUSTOMER CARE		Director - Customer Care	2018/11/07
PELLEGRINO, Domenic	ENERGY INFORMATION SYSTEMS DEPT MANAGER		Director - IT Services Dept	2018/11/07
BROWN, KAREN	CUST CONTACT CENTRE DEPARTMENT MGR		Customer Contact Centre	2018/11/07
BATTISTONI, ANGELO	CHARTERED PROFESSIONAL ACCOUNTANT		Financial Advisory Services	2018/11/06
FUNK, Michelle	BUSINESS SYSTEMS ANALYST		Portfolio Management	2018/11/02
SMILSKI, Sandra	PORTFOLIO MANAGEMENT SUPERVISOR		Portfolio Management	2018/11/02

CAPITAL INVESTMENT MASTER DATA			
RESPONSIBLE OPERATING/CORPORATE GROUP:	Human Resources & Corporate Services	**REQUESTING OPERATING/CORPORATE GROUP:**	Marketing & Customer Service
RESPONSIBLE DIVISION:	Information Technology Services	**REQUESTING DIVISION:**	Customer Care
RESPONSIBLE DEPARTMENT:	Energy Information Systems	**ISD: (YYYY/MM/DD)**	
I.M. NODE NUMBER:	2.1.10.15.20.176	**W.B.S. NUMBERs:**	P:31145
C55 INVESTMENT CODE:	20969		
SAP PROJECT TYPE:	24 - BOC-VP & Management	**C55 INVESTMENT SUB-CATEGORY**:	Shell
CORPORATE INVESTMENT CATEGORIES:	(Level 1) C6 / Business Operations Support (Level 2) CT / Corporate Infrastructure Sustainment		

CONTACTS			
PREPARED BY:	ROSS, Donna CUSTOMER CARE APPLICATIONS SUPERVISOR 50865	**REQUESTOR:**	Brown, Karen
PROJECT MANAGER:			

MANITOBA HYDRO
CAPITAL INVESTMENT CONCEPT
Call Handling Technology

RECOMMENDATION

To proceed with the Call Handling Technology project that will investigate and potentially implement new call handling technology in the Contact Centre that will enhance the customer experience and utilize resources more efficiently through the enablement of modern call features, routing options and enhanced reporting.

For scope development, the schedule is November 2018 to May 2019 at a cost of $122,000. The scoping dollars included $37,000 for internal labour and $85,000 for the procurement of a Call Handling Technology Consultant to assist in investigating different technologies and designs that will meet the Business' objectives.

The implementation budget is estimated at $1,500,000 to commence in Q2 of FY2020, project completion will be known once a better understanding of the potential design solutions are scoped out. The implementation budget will be revisited once the scope development phase is complete.

SCOPE

The scope development phase of the project will involve hiring a consultant to identify, design, evaluate, and recommend call handling solutions that meet Manitoba Hydro's customer and business needs. It also includes the development of a call handling technology technical specification by the consultant that can be utilized in a subsequent procurement document for the purchase of new technology.

BACKGROUND

When Manitoba Hydro customers call the Contact Centre, they expect features like call back options, estimated wait times, and customer service reps that have information available immediately. Manitoba Hydro's existing call handling technology is over ten years old and is nearing the end of its life-cycle. Telecommunication staff have communicated that if Manitoba Hydro was to attain new customer experience features as listed above a complete upgrade of the system would be required. For the purposes of this document, the Contact Centre is defined as areas of the Corporation where customers may call into Manitoba Hydro, specifically the Customer Contact Centre, Credit and Recovery Services and the various Customer Service Centres throughout the Province.

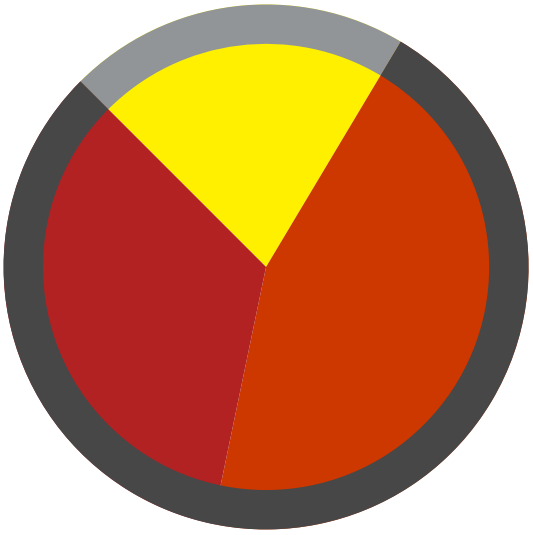
Customer Service Representatives have very limited information when calls come in. Staff has to manually bring up access customer information and in many cases are not well prepared to handle specific calls before the call comes in resulting in longer call times and a reduced customer experience. The current call handling technology has limited reporting functionality that can prevent management from making the best decisions as it relates to resourcing. Many new call handling systems have advanced analytics that can assist the business with allocating resources to best meet the customer's needs.

With the multitude of call handling technology options (i.e. on premise versus cloud, hardware phones versus virtual phones, advanced features and reporting), hiring a call handling technology design consultant and properly scoping a long-term solution will ensure Manitoba Hydro has a full understanding of its options to make the most informed decision when investing in new technology for the long-term.

BACKGROUND

JUSTIFICATION – BUSINESS CASE ANALYSIS (SUMMARY):
JUSTIFICATION
The overall outcome of the project will be new call handling technology for the Contact Centre – including the phone system and IVR – which will enhance the customer experience, reduce call times and increase self-service through automation. IVR automation would result in a reduction in operational costs and an anticipated increase in overall customer satisfaction for customers that use the telephone as their preferred communication channel. Delivering an excellent customer experience is a "Strategic Priority," and senior management are interested in obtaining a recommendation regarding new Contact Centre technology options and costs. Many options are available in the market that improves the customer experience, increases productivity, enhances reporting, provides analytical data, and modernize the Contact Centre to potentially deliver an Omni-channel experience. The Contact Centre technology at Manitoba Hydro is over ten years old and to attain any new functionality (i.e. estimated wait times and call back options), Manitoba Hydro will be required to make a significant financial investment to accommodate that functionality. The requirement of new contact centre technology is also being driven by customer expectations of dealing with other businesses and service providers who have additional features and functionalities.

CORPORATE VALUE FRAMEWORK



Value Measure	Value Points	% of Value
O&M Financial Benefits	888	21.07%
O&M Costs	-1,884	44.69%
Total Cost	-1,443	34.23%
Total Value	**-2,438**	
Value/$K	**(1.69)**	

OTHER ALTERNATIVES CONSIDERED

INVESTMENT RISK ANALYSIS
Potential risks include: - Lack of strong support from stakeholders; - Probability: Medium - Impact: High - Mitigation: The scope of the project will be detailed requirements of stakeholders. - Financial constraints, resource constraints, competing business and/or IT initiatives may cause a delay in project delivery; - Probability: Medium - Impact: High - Mitigation: The scope of the project has been well defined and scheduling commitments can be adjusted, which will increase the probability of the project's success. - External consultant recommended blueprint may not fit the needs of all stakeholders; - Probability: Medium - Impact: High - Mitigation: Establishing detailed requirements and changes to business processes. Approval is required as soon as possible in order to build on efforts spent and knowledge gained during the entire process to date.

ESTIMATED COST FLOW

The annual projected cost flows are as follows (in thousands of dollars):

Fiscal Year	Scope Development Funds	Concept Estimate	Total Estimated Investment (Net of Contrib.)
Prev. Actuals	$0	$0	$0
2018/2019	$123	$123	$123
2019/2020	$0	$500	$500
2020/2021	$0	$1,000	$1,000
2021/2022	$0	$0	$0
2022/2023	$0	$0	$0
2023/2024+	$0	$0	$0
Total	**$123**	**$1,623**	**$1,623**

IMPACT ON O&A COSTS

There is a possibility of increase in software costs and software maintenance/licensing fees that will be outlined once the scope development is completed.

RELATED INVESTMENTS

None

REFERENCE DOCUMENTS

C55-CIC-AD

CAPITAL INVESTMENT CONCEPT ADDENDUM
FOR

Call Handling Technology

Investment Type (Project)

Addendum Number 1

	PREVIOUSLY APPROVED	REVISED	INCREASE / (DECREASE)
SCOPE DEVELOPMENT:	$123	$243	$120
CONCEPT ESTIMATE (incl. Scope Development):	$1,623	$1,743	$120
CONTRIBUTIONS:	$0	$0	$0
NET CONCEPT ESTIMATE (incl. Scope Development):	$1,623	$1,743	$120
		(values listed above are in thousands of dollars)	
CORPORATE VALUE FRAMEWORK SCORE :		**Value:** -2,438	**Value:** 34,134
		Value/$K: -1.69	**Value/$K:** 21.99

DATE PREPARED: 2019/05/09

EC/MHEB APPROVAL MINUTE & DATE:

APPROVER	APPROVER TITLE	COMMENT	ORGANIZATIONAL UNIT	APPROVAL DATE
Lanyon, Rob	DIRECTOR INFORMATION TECHNOLOGY SERVICES		Director - IT Services Dept	2019/05/13
Chard, Paul	DIRECTOR CUSTOMER CARE		Director - Customer Care	2019/05/13
Pellegrino, Domenic	ENERGY INFORMATION SYSTEMS DEPT MANAGER		Director - IT Services Dept	2019/05/10
BROWN, KAREN	CUST CONTACT CENTRE DEPARTMENT MGR		Customer Contact Centre	2019/05/10
Battistoni, Angelo	CHARTERED PROFESSIONAL ACCOUNTANT		Financial Advisory Services	2019/05/10
Funk, Michelle	BUSINESS SYSTEMS ANALYST		Portfolio Management	2019/05/09
Smilski, Sandra	PORTFOLIO MANAGEMENT SUPERVISOR		Portfolio Management	2019/05/09

ADDENDUM NUMBER	DATE	REVISION (Summary of change)
	April 22, 2019	Additional funds added for the development of the call handling technology solution RFP and the retention of ForwardVu Consulting to provide consulting services during the RFP phase.

CAPITAL INVESTMENT MASTER DATA			
RESPONSIBLE OPERATING/CORPORATE GROUP:	Human Resources & Corporate Services	**REQUESTING OPERATING/CORPORATE GROUP:**	Marketing & Customer Service
RESPONSIBLE DIVISION:	Information Technology Services	**REQUESTING DIVISION:**	Customer Care
RESPONSIBLE DEPARTMENT:	Energy Information Systems	**ISD: (YYYY/MM/DD)**	2021/01/29
I.M. NODE NUMBER:	2.1.10.15.20.176	**W.B.S. NUMBERs:**	P:31145
C55 INVESTMENT CODE:	20969		
SAP PROJECT TYPE:	24 - BOC-VP & Management	**C55 INVESTMENT SUB-CATEGORY**:	Shell
CORPORATE INVESTMENT CATEGORIZATION:	(Level 1) C6 / Business Operations Support (Level 2) CT / Corporate Infrastructure Sustainment		

CONTACTS			
PREPARED BY:	Ross, Donna CUSTOMER CARE APPLICATIONS SUPERVISOR 50865	**REQUESTOR:**	Brown, Karen
PROJECT MANAGER:	Stepinski, Mark PROJECT LEADER 50841		

MANITOBA HYDRO
CAPITAL INVESTMENT CONCEPT ADDENDUM
Call Handling Technology

RECOMMENDATION

Approve an additional $120,000 for the development of the call handling technology solution RFP and the retention of ForwardVu Consulting to provide consulting services during the RFP phase. The previously approved amount of $123,000 was limited to the budget for procuring the consultant to assist in investigating different technologies and designs that will meet the Business' objectives.

SCOPE

This phase of scope development includes the creation and issuing of the RFP to procure new call handling technology. To assist with the procurement process of new call handling technology, consulting services from industry experts (ForwardVu Consulting) are required to ensure Manitoba Hydro gets the best possible system to meet its current and future business objectives.

The additional scoping dollars will include $50,000 for internal labour and $70,000 for the hiring of ForwardVu Consulting to assist with the development of the call handling technology solution RFP, evaluation matrix and assist in contract negotiations.

Eform 0662 accompanies this Addendum seeking the approval of a single source contract to ForwardVu Consulting for the above mentioned services.

BACKGROUND

Manitoba Hydro, through this CIC, engaged ForwardVu Consulting to assist the Corporation in analyzing various call handling technology designs that could meet its current and future business objectives. At the culmination of the consulting engagement, a report was provided by ForwardVu with recommended call handling technology designs. Based on the information gathered during the first phase of scoping, it is recommended that Manitoba Hydro now go to market and procure a new call handling technology solution to replace the existing system.

Manitoba Hydro needs to replace its existing systems as they are over ten years old, at the end of their useful life and are no longer supported by their vendors. Current mitigation strategies for failure of the system are the engagement of third party support and keeping an inventory of spare parts on site. The current call handling systems are running on Windows 2008 servers and the existing call handling system cannot function on new Windows 2016 servers requiring a complete system upgrade when the Corporation migrates to these new servers. Replacing the existing system will also improve the customer experience and resource management through the enablement of modern call features, routing options, workforce management and enhanced reporting.

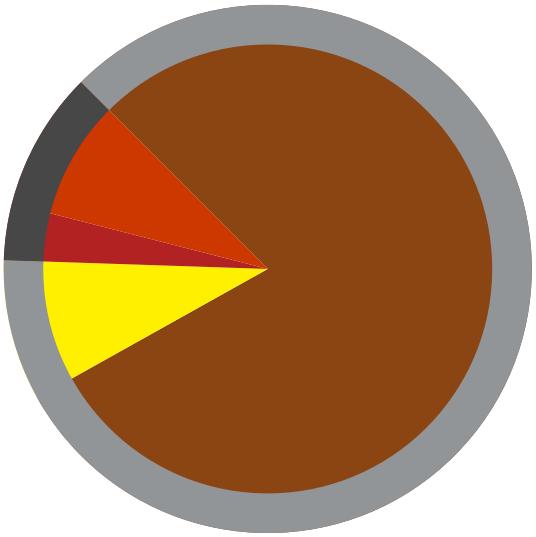
JUSTIFICATION – BUSINESS CASE ANALYSIS (SUMMARY):

JUSTIFICATION

Approving this Addendum will enable the Call Handling Technology project to procure a new call handling system to replace its existing end of life system that needs to be replaced.

Call handling technology is a unique solution and Manitoba Hydro does not have industry expert resources internally to ensure the system chosen is the right one from a long term perspective. By not utilizing ForwardVu Consulting during the procurement process, creates a risk that Manitoba Hydro may not select a system that best meets its needs for its current and future business requirements.

CORPORATE VALUE FRAMEWORK (REVISED)



Value Measure	Value Points	% of Value
Technology Obsolescence Risk	35,628	79.39%
O&M Financial Benefits	3,878	8.64%
Total Cost	-1,552	3.46%
O&M Costs	-3,820	8.51%
Total Value	**34,134**	
Value/$K	**21.99**	

OTHER ALTERNATIVES CONSIDERED
The only other alternative is to not procure a new call handling solution which increases the likelihood of a call handling technology outages which could have a significant impact on customer service and emergency response. Also, with the Corporation migrating to Windows 2016 servers the current call handling is at increased risk of not functioning after 2023 when extended support from Microsoft is assumed to be no longer available.

INVESTMENT RISK ANALYSIS
Potential risks include: - Lack of strong support from stakeholders; - Probability: Medium - Impact: High - Mitigation: The scope of the project will be detailed requirements of stakeholders. - Financial constraints, resource constraints, competing business and/or IT initiatives may cause a delay in project delivery; - Probability: Medium - Impact: High - Mitigation: The scope of the project has been well defined and scheduling commitments can be adjusted, which will increase the probability of the project's success. - External consultant recommended blueprint may not fit the needs of all stakeholders; - Probability: Medium - Impact: High - Mitigation: Establishing detailed requirements and changes to business processes. Approval is required as soon as possible in order to build on efforts spent and knowledge gained during the entire process to date.

MANITOBA HYDRO
CAPITAL INVESTMENT CONCEPT ADDENDUM
Call Handling Technology

ESTIMATED COST FLOW

The annual projected cost flows are as follows (in thousands of dollars):

	PREVIOUSLY APPROVED			PROPOSED			INCREASE/ (DECREASE)		
Fiscal Year	Scope Development Funds	Concept Estimate	Total Estimated Investment (Net of Contrib.)	Scope Development Funds	Concept Estimate	Total Estimated Investment (Net of Contrib.)	Scope Development Funds	Concept Estimate	Total Estimated Investment (Net of Contrib.)
Prev. Actuals	$123	$123	$123	$94	$94	$94	($29)	($29)	($29)
2019/2020	$0	$500	$500	$148	$648	$648	$148	$148	$148
2020/2021	$0	$1,000	$1,000	$0	$1,000	$1,000	$0	$0	$0
2021/2022	$0	$0	$0	$0	$0	$0	$0	$0	$0
2022/2023	$0	$0	$0	$0	$0	$0	$0	$0	$0
2023/2024	$0	$0	$0	$0	$0	$0	$0	$0	$0
2024/2025+	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$123**	**$1,623**	**$1,623**	**$243**	**$1,743**	**$1,743**	**$120**	**$120**	**$120**

IMPACT ON O&A COSTS

If Manitoba Hydro proceeds with a cloud Software as a Solution call handling technology design there is a potential annual operating impact of $430,000. The annual operating impacts will not be known until the culmination of the RFP phase and a potential solution and vendor are chosen.

MANITOBA HYDRO
CAPITAL INVESTMENT CONCEPT ADDENDUM
Call Handling Technology

RELATED INVESTMENTS
None

REFERENCE DOCUMENTS
20969_CIC_Call Handling Technology.docx
Eform 0662 Consulting Services.PDF
20969_CIC_AD_Call Handling Technology_1.docx

C55-CIJ-PROJ

CAPITAL INVESTMENT JUSTIFICATION FOR

Contact Handling Technology

Investment Type (Project)

BUDGET:	$1,628
CONTRIBUTIONS:	$0
NET BUDGET:	$1,628
(values listed above are in thousands of dollars)	
CORPORATE VALUE	**Value:** 36,632
FRAMEWORK SCORE:	**Value/$K:** 30.84

DATE PREPARED: 2021-06-09

EC/MHEB APPROVAL MINUTE & DATE:

APPROVER	APPROVER TITLE	COMMENT	ORGANIZATIONAL UNIT	APPROVAL DATE
Fish, Ian	VP DIGITAL & TRANSFORMATION		VP Digital & Transformation	2021-06-18
Chiang, Alex	VP CUSTOMER SOLUTIONS & EXPERIENCE		VP Customer Solutions & Experience	2021-06-18
Pellegrino, Domenic	ENERGY INFORMATION SYSTEMS DEPT MANAGER		Director - IT Services Dept	2021-06-16
Sinclair, Trevor	CUSTOMER BILLING DEPARTMENT MANAGER		Customer Billing	2021-06-16
Battistoni, Angelo	CHARTERED PROFESSIONAL ACCOUNTANT		Financial Advisory Services	2021-06-16
Funk, Michelle	BUSINESS SYSTEMS ANALYST		Portfolio Management	2021-06-15
Smilski, Sandra	PORTFOLIO MANAGEMENT SUPERVISOR		Portfolio Management	2021-06-09

CAPITAL INVESTMENT MASTER DATA			
RESPONSIBLE OPERATING/CORPORATE GROUP:	Digital & Transformation	**REQUESTING OPERATING/CORPORATE GROUP:**	Customer Solutions & Experience
RESPONSIBLE DIVISION:	Information Technology Services	**REQUESTING DIVISION:**	Customer Care
RESPONSIBLE DEPARTMENT:	Energy Information Systems	**ISD: (YYYY/MM/DD)**	2022/09/30
I.M. NODE NUMBER:	2.1.15.15.10.120	**W.B.S. NUMBERs:**	P:31145, P:35526
C55 INVESTMENT CODE:	20969		
SAP PROJECT TYPE:	24 - BOC-VP & Management	**C55 INVESTMENT SUB-CATEGORY**:	Shell
CORPORATE INVESTMENT CATEGORIES:	(Level 1) C6 / Business Operations Support (Level 2) CS / Information Technology		

CONTACTS			
PREPARED BY:	Fernandez, Tara PROJECT LEADER 50841	**REQUESTOR:**	Trevor Sinclair
PROJECT MANAGER:	Fernandez, Tara PROJECT LEADER 50841		

MANITOBA HYDRO
CAPITAL INVESTMENT JUSTIFICATION
Contact Handling Technology

RECOMMENDATION

Proceed with the Contact Handling Technology (CHT) project at a cost of $1.6 M with a project start date in July 2021, first release of functionality to the Customer Contact Centre in December 2021 and multiple releases to add incremental functionality until project completion in September 2022.

SCOPE

To implement and set up the required support for a fully managed, off-premise contact handling solution from Star Telecom, which will be integrated with our existing backend systems. The first release of the contact handling solution will include the following functionality:

- Basic IVR functionality
- Self-service and dynamic in-queue changes within the IVR functionality
- Dynamic IVR routing and configuration
- Data management
- Self-serve authentication
- Scheduled callbacks
- Integration with backend systems
- Custom dashboards for customer service representatives
- Email, SMS and web chat communication channels
- Workforce management tools for forecasting and scheduling

BACKGROUND

There are three primary drivers for the CHT project: technology obsolescence, providing a better more modern customer experience, and providing better contact handling tools for staff to serve customers.

Technology Obsolescence

The current contact handling system is over twelve years old and at the end of its useful life. The current on-premise system only runs on Windows 2008 servers which are on extended support until early 2023. In 2023 the Windows 2008 servers will no longer be supported which creates a security vulnerability, and if the servers fail, they will not be able to be fixed which would cause an emergency replacement. Current mitigation strategies for failure of the system are the engagement of third party support and keeping an inventory of spare parts on site. In 2018 Manitoba Hydro investigated the possibility of upgrading the existing system to a newer version but as the system was so old the upgrade costs were similar to acquiring a new system.

Modernize the Customer Experience

Since Manitoba Hydro purchased the existing system over twelve years ago the contact handling technology market has substantially shifted with a greater focus on the customer experience. The current system does not have multi-channel capabilities and is voice only. It does not have the ability to offer estimated call wait times or the call-back feature, which are now industry standards. The current system does not have visibility into the overall customer experience as access to operational customer experience data is challenging to get with a lot of manual work required. The result is it makes it difficult to identify customer experience operational improvements.

BACKGROUND

Improved Tools for Staff
The existing solution has extremely limited workforce management, reporting, and forecasting capabilities. Much of the reporting and forecasting is done manually. As forecasting is done manually it makes it challenging to forecast for various unforeseen fluctuations ("what-if" scenarios). The existing solution is a voice only solution and therefore the resourcing of the email contact channel is done outside of the contact handling system making scheduling challenging, especially when there is a spike in emails.

The existing solution has a limited number of voice lines for calls to come in. When call volumes spike customers can receive a busy signal or the call can be dropped. New Contact Centre as a Service solutions on the market can expand the number of voice channels on short notice to meet the call demand. The existing solution doesn't have customer pre-validation capabilities. When a customer speaks with a live agent the agent must first go through a validation process which takes time on each call. New solutions can have the customer validate themselves in the self-service IVR and then "pop-up" the customer's profile when the agent answers the call. This better prepares the agent and can reduce the talk time.

JUSTIFICATION – BUSINESS CASE ANALYSIS (SUMMARY):

JUSTIFICATION

Implementing a new CHT solution will allow Manitoba Hydro to better meet its customers' expectations while leveraging customer service representatives' skills more efficiently, contributing to both strategic priorities of delivering an excellent customer experience and restoring financial sustainability. The project will also provide an updated and vendor supported core business system to Manitoba Hydro to ensure service continuity in a secure and reliable manner.

The new CHT will benefit the Corporation and its customers as follows:

- Improved customer experience. By providing customers with an omni-channel experience (the ability to contact Manitoba Hydro via voice, text, chat and email) along with providing other modern tools such as call wait times and the call back feature.

- Modern tools for our frontline staff. The new CHT uses a modern and holistic interface. Staff will use one main tool when interacting with customers regardless of the customer channel of choice. The new CHT also provides the ability to integrate with other Manitoba Hydro systems to bring up customer information quicker.

- Improved tools for Supervisory and Management staff. The new CHT provides a complete and robust Contact Centre workforce management system to provide Management with better contact handling forecasting tools to make better resourcing decisions.

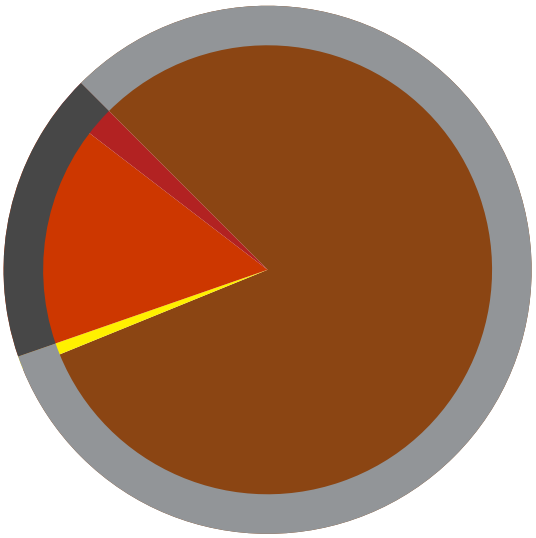
- A robust technology platform for long term support and growth. The existing CHT solution is an on-premise solution that is over eleven years old and at the end of its useful life. For any major functional enhancements a complete upgrade of the system is required. The new CHT platform is a cloud based Contact Centre as a Service (CCaaS) solution. There is very little technology infrastructure that Manitoba Hydro must own and support. As customer preferences and expectations evolve Manitoba Hydro will be well positioned to "turn on" features as required rather than making large upgrades to the system.

JUSTIFICATION – BUSINESS CASE ANALYSIS (SUMMARY):

- This improved technology platform positions Manitoba Hydro to deliver on the strategy initiative of expanding digital customer service as well as transforming into a more customer centric organization. The technology platform will enable live and a-synchronous chat as well as social media channels for customers. The platform also allows for the integration of digital assistants (Artificial Intelligence) in both customer-facing and non-customer-facing roles.

CORPORATE VALUE FRAMEWORK

Value Measure	Value Points	% of Value
Technology Obsolescence Risk	46,301	81.35%
O&M Financial Benefits	474	0.83%
Total Cost	-1,188	2.09%
O&M Costs	-8,955	15.73%
Total Value	**36,632**	
Value/$K	**30.84**	



ANALYSIS OF ALTERNATIVES:

ECONOMIC ANALYSIS		
Discount Rate	**For current corporate rates see P911 5.5%**	

Active Option	**NPV Benefits/(Costs)**	**CVF Score**	**Value/$K**
Enter Alternative Name Here		36,632	30.84

Other Alternatives	**NPV Benefits/(Costs)**	**CVF Score**	**Value/$K**

INVESTMENT RISK ANALYSIS

Potential risks include:

- Lack of acceptance from staff related to significant business process change and change management that will be required so that employees transition smoothly to the new system and love their new tools.
  - Probability: Low
  - Impact: High
  - Mitigation: A new resource on an 18-month term is being allocated, the Contact Handling Technology Digital Product Lead. The responsibility of this role is to manage all aspects of this strategic implementation with focus on change management and operational excellence.

- Adequate resourcing for the project - The project will follow an agile methodology which requires dedicated resources to the project.
  - Probability: Medium
  - Impact: High
  - Mitigation: Project planning is currently taking place to ensure the correct resources are identified, dedicated and supported by Management to be successful.

- IT architecture - The new CHT system must be redundant, secure and have high availability to provide service to Manitoba Hydro customers. The new CHT system will integrate with our backend systems using existing architecture. This architecture may introduce latency issues that will have to be assessed and addressed during the project.
  - Probability: Medium
  - Impact: High
  - Mitigation: Supply Chain Management, Legal and the Technology Security Office ensured the correct clauses are in the contract from a service level and technology security perspective. The project team will work with the vendor to design the required redundancies, assess problem areas, and develop solutions to reduce latency and any performance issues. Business continuity planning is underway to plan and document the contingency plans, in addition to what the vendor will provide during any potential outages.

ESTIMATED COST FLOW

The annual projected cost flows are as follows (in thousands of dollars):

Fiscal Year	Budget	Contributions	Net Budget
Prev. Actuals	$382	$0	$382
2021/2022	$731	$0	$731
2022/2023	$515	$0	$515
2023/2024	$0	$0	$0
2024/2025	$0	$0	$0
2025/2026	$0	$0	$0
2026/2027+	$0	$0	$0
Total	**$1,628**	**$0**	**$1,628**

IMPACT ON O&A COSTS

The annual impact on operating costs to implement the new CHT is as follows:

- A subscription cost of $565,488.
- A data connection cost of $54,030.
- Average variable communication costs of $139,000.
- External supports costs of $27,000.

The annual reduction in operating costs as a result of decommissioning the existing CHT is as follows:

- A reduction of $133,000 for voice and SMS costs.
- A reduction of $47,000 for support costs.

PROPOSED SCHEDULE

Outlined below is the project schedule:

- Kickoff: July, 2021
- Initial MVP Release: December, 2021
- Seven (7) Additional Releases: January 2022 – August 2022.
- Project Completion: September, 2022

RELATED INVESTMENTS

None.

OTHER ALTERNATIVES CONSIDERED

The only other alternative is to not procure a new CHT which increases the likelihood of a CHT outage and could have a significant impact on customer service and emergency responsiveness. Also, with the Corporation migrating

OTHER ALTERNATIVES CONSIDERED
to Windows 2016 servers the current CHT is at increased risk of not functioning after 2023 when extended support from Microsoft is assumed to be no longer available.

REFERENCE DOCUMENTS
20969_CIC_Call Handling Technology.docx
Eform 0662 Consulting Services.PDF
20969_CIC_AD_Call Handling Technology_1.docx

C55-CIJ-PROJ-AD

CAPITAL INVESTMENT JUSTIFICATION ADDENDUM FOR

Contact Handling Technology

Investment Type (Project)

Addendum Number 1

	PREVIOUSLY APPROVED	REVISED	INCREASE/ (DECREASE)
BUDGET:	$1,628	$0	($1,628)
CONTRIBUTIONS:	$0	$0	$0
NET BUDGET:	$1,628	$0	($1,628)
		(values listed above are in thousands of dollars)	
CORPORATE VALUE FRAMEWORK SCORE:	**Value:**	**Value:**	
	Value/$K:	**Value/$K:**	

DATE PREPARED: 2022-07-21

EC/MHEB APPROVAL MINUTE & DATE:

APPROVER	APPROVER TITLE	COMMENT	ORGANIZATIONAL UNIT	APPROVAL DATE
Hiebert, Rachelle	PORTFOLIO MANAGEMENT SUPERVISOR	On behalf Of Smilski, Sandra (slsmilski).	Portfolio Management	2022-08-17
Kyrzyk, Wayne	FINANCIAL SERVICES SUPERVISOR		Financial Advisory Services	2022-08-15
Battistoni, Angelo	CHARTERED PROFESSIONAL ACCOUNTANT		Financial Advisory Services	2022-08-09
Battistoni, Angelo	CHARTERED PROFESSIONAL ACCOUNTANT		Financial Advisory Services	2022-08-09
Funk, Michelle	BUSINESS SYSTEMS ANALYST		Portfolio Management	2022-07-26
Smilski, Sandra	VALUE MGMT OFFICE DEPARTMENT MANAGER		Portfolio Management	2022-07-21

ADDENDUM NUMBER	DATE	REVISION (Summary of change)
1	July 26, 2022	Addendum to expense capital cost incurred that falls under new Accounting Guidelines

CAPITAL INVESTMENT MASTER DATA			
RESPONSIBLE OPERATING/CORPORATE GROUP:	Digital & Technology	**REQUESTING OPERATING/CORPORATE GROUP:**	Customer Solutions & Experience
RESPONSIBLE DIVISION:	Information Technology Services	**REQUESTING DIVISION:**	Customer Care
RESPONSIBLE DEPARTMENT:	Energy Information Systems	**ISD: (YYYY/MM/DD)**	Not Applicable
I.M. NODE NUMBER:	2.1.15.15.10.120	**W.B.S. NUMBERs:**	P:31145, P:35526
C55 INVESTMENT CODE:	20969		
SAP PROJECT TYPE:	24 - BOC-VP & Management	**C55 INVESTMENT SUB-CATEGORY**:	Shell
CORPORATE INVESTMENT CATEGORIZATION:	(Level 1) C6 / Business Operations Support (Level 2) CS / Information Technology		

CONTACTS			
PREPARED BY:	Fernandez, Tara PROJECT LEADER 50841	**REQUESTOR:**	Trevor Sinclair
PROJECT MANAGER:	Fernandez, Tara PROJECT LEADER 50841		

MANITOBA HYDRO
CAPITAL INVESTMENT JUSTIFICATION ADDENDUM
Contact Handling Technology

RECOMMENDATION

In accordance with Cloud Computing Arrangement (CCA) guidance, it has been recommended that previously capitalized costs for this investment be transferred to operating expense.

Approved capital funds of $1628k to implement a Contact Handling Solution, are to be expensed in line with the change in accounting for cloud computing arrangements.

SCOPE

Transfer capitalized costs to be expensed as operating costs (for past and future costs incurred).

BACKGROUND

In November 2018, the International Financial Reporting Standards (IFRS) issued an Accounting Standards Update to address accounting treatment of costs related to Software as a Service (SaaS) cloud computing arrangements. In this update it was recommended that if a SaaS arrangement does not provide control over the leased software, it is to be treated as a service contract and the cost are to be expensed.

Software as a Service (SaaS)
- A SaaS arrangement is a software distribution model that allows users to access applications or programs through the internet;
- The customer does not manage or control the cloud infrastructure or application capabilities and is not responsible for upgrades to the systems and software;
- The operator provides business applications via the internet;
- The customer typically purchases the application on a subscription basis with no upfront costs or installation fees.

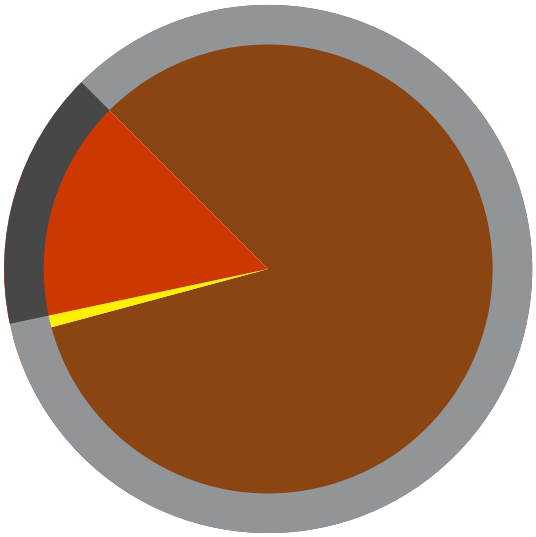
Cloud computing is a method for delivering information technology services in which resources are retrieved from the internet through web-based tools and applications, instead of a direct connection to a server. Rather than keeping the files on a proprietary hard drive or local server, cloud-based storage makes it possible to save them to a remote database.

JUSTIFICATION – BUSINESS CASE ANALYSIS (SUMMARY):

JUSTIFICATION

The implementation of Contact Handling Solution falls under a SaaS arrangement that does not provide Manitoba Hydro with control over the leased software and is therefore treated as a service contract and the cost are to be expensed.

CORPORATE VALUE FRAMEWORK (REVISED)



Value Measure	Value Points	% of Value
Technology Obsolescence Risk		%
O&M Financial Benefits		%
O&M Costs		%
Total Value		
Value/$K		

ANALYSIS OF ALTERNATIVES:

ECONOMIC ANALYSIS		
Discount Rate	**For current corporate rates see P911** **6%**	

Active Option	**NPV Benefits/(Costs)**	**CVF Score**	**Value/$K**
Enter Alternative Name Here			0.00

INVESTMENT RISK ANALYSIS
Not applicable

MANITOBA HYDRO
CAPITAL INVESTMENT JUSTIFICATION ADDENDUM
Contact Handling Technology

ESTIMATED COST FLOW

The annual projected cost flows are as follows (in thousands of dollars):

	PREVIOUSLY APPROVED			PROPOSED			INCREASE / (DECREASE)		
Fiscal Year	Budget	Contributions	Net Budget	Budget	Contributions	Net Budget	Budget	Contributions	Net Budget
Total	$1,628	$0	$1,628	$0	$0	$0	($1,628)	$0	($1,628)

IMPACT ON O&A COSTS

All costs associated with this investment will be incurred under operating.

MANITOBA HYDRO
CAPITAL INVESTMENT JUSTIFICATION ADDENDUM
Contact Handling Technology

PROPOSED SCHEDULE
Not applicable

RELATED INVESTMENTS
None.

OTHER ALTERNATIVES CONSIDERED
Not applicable

REFERENCE DOCUMENTS
20969_CIC_Call Handling Technology.docx
Eform 0662 Consulting Services.PDF
20969_CIC_AD_Call Handling Technology_1.docx
20969_CIJ_Contact Handling Technology.docx

C55-CIC

CAPITAL INVESTMENT CONCEPT FOR

Data and Analytics System

Investment Type (Project)

SCOPE DEVELOPMENT FUNDS:	$412
CONCEPT ESTIMATE (incl. Scope Development):	$2,405
CONTRIBUTIONS:	$0
NET CONCEPT ESTIMATE (incl. Scope Development):	$2,405
(values listed above are in thousands of dollars)	
CORPORATE VALUE FRAMEWORK SCORE :	**Value:** -1,707
	Value/$K: (0.77)
(CFV scores reflect the recommended alternative)	

DATE PREPARED: 2021-07-23

EC/MHEB APPROVAL MINUTE & DATE:

APPROVER	APPROVER TITLE	COMMENT	ORGANIZATIONAL UNIT	APPROVAL DATE
Rheault, Michelle	DIRECTOR DIGITAL		Director – Digital	2021/07/30
Battistoni, Angelo	CHARTERED PROFESSIONAL ACCOUNTANT		Financial Advisory Services	2021/07/30
Funk, Michelle	BUSINESS SYSTEMS ANALYST		Portfolio Management	2021/07/29
Smilski, Sandra	PORTFOLIO MANAGEMENT SUPERVISOR		Portfolio Management	2021/07/23

CAPITAL INVESTMENT MASTER DATA			
RESPONSIBLE OPERATING/CORPORATE GROUP:	Digital & Transformation	**REQUESTING OPERATING/CORPORATE GROUP:**	Digital & Transformation
RESPONSIBLE DIVISION:	Digital	**REQUESTING DIVISION:**	Digital
RESPONSIBLE DEPARTMENT:	Business Data & Analytics Platform	**ISD: (YYYY/MM/DD)**	2022/03/15
I.M. NODE NUMBER:	2.1.15.15.10.125	**W.B.S. NUMBERs:**	P:35772
C55 INVESTMENT CODE:	26460		
SAP PROJECT TYPE:	24 - BOC-VP & Management	**C55 INVESTMENT SUB-CATEGORY**:	Shell
CORPORATE INVESTMENT CATEGORIES:	(Level 1) C6 / Business Operations Support (Level 2) CS / Information Technology		

CONTACTS			
PREPARED BY:	Baker, Paul PROJECT MANAGEMENT OFFICE SUPERVISOR 50841	**REQUESTOR:**	Michelle Rheault
PROJECT MANAGER:	Baker, Paul PROJECT MANAGEMENT OFFICE SUPERVISOR 50841		

MANITOBA HYDRO
CAPITAL INVESTMENT CONCEPT
Data and Analytics System

RECOMMENDATION

Approve a budget of $412K for the scope development stage of the Data and Analytics System project to define/refine the architecture and governance of our digital landscape which must be in place to prior to implementing analytics capabilities across the enterprise

SCOPE

The Capital Investment Concept (CIC) project scope includes defining/ refining the following through an advisory services engagement:

- Data & Analytics Vision and Strategy at an enterprise level;
- Solution Architecture and Roadmap for the Data & Analytics Platform (integrated suite of technology capabilities);
- Operating Model (which defines how the numerous participants with various roles interact with the processes, data, and technology);
- Data Governance framework;
- Data Architecture principles; and Security principles.

Capital Investment Justifications (CIJs) will be developed for subsequent solution implementations for priority capabilities.

The advisory services will recommend the priority analytics capability to implement for the corporation; the project will procure the tool(s) and implementation services necessary.

BACKGROUND

Hydro has a long history of reporting against siloed data sources across the organization. Over the past decade, improvements have been made to begin centralizing certain datasets into data warehouse solutions. This has been effective; however, it is a very time-consuming effort on both the part of Hydro's information consumers and IT, who are building data models in the warehousing solutions. Lines of business need greater access to accurate and consistent data structured in enterprise views, with an ability to visualize that data with less reliance on IT. Hydro has already begun its journey for an architecture to satisfy the access to data challenges and empower lines of business with solutions that will enable self-service analytics (ease of use access to data and reports with business focused structure and context).

In general, to satisfy the access to data requirements, Hydro is pursuing a logical data warehouse (LDW) architecture to provide flexibility and extensibility that will accommodate its data needs of today and the foreseeable future. Hydro's LDW with its analytic tools is referred to as Manitoba Hydro's Data & Analytics Platform.

Implementation of an enterprise Data & Analytics System (DAS) is a foundational component to Hydro's data and analytics capabilities and overall maturity.

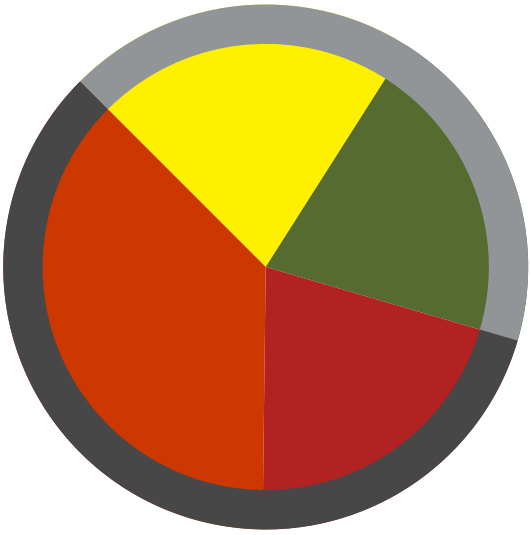
JUSTIFICATION – BUSINESS CASE ANALYSIS (SUMMARY):

JUSTIFICATION

The Data and Analytics System (DAS) is an integrated system of people, processes, data, and technology that supports the achievement of Analytics and Data Science objectives. The DAS will enable data & analytics capabilities for business requirements across the enterprise. It will support data and information producers and facilitate consumers' access to data and information to enable evidence-based decision making. The Data & Analytics System project is the first step to building out the DAS for the corporation.

It is acknowledged that the efforts to build out the foundational elements and stand up the initial use cases of the enterprise DAS do not result in a positive valuation. Initiation phases for large scale enterprise systems are - unavoidable. Rarely do these phases result in positive valuations given their focus on foundational system structures. Although positive business value will be derived from the initial use cases, it is not anticipated to be enough to offset the foundational costs. The build out of further analytics capabilities within the DAS over and above the initial use cases will ultimately be the drivers of overall positive business value for the system in its entirety. Future use cases will not bear the weight of foundational costs offsetting their business value, as these costs are being absorbed in the system initiation phase.

CORPORATE VALUE FRAMEWORK



Value Measure	Value Points	% of Value
O&M Financial Benefits	2,304	21.52%
Capital Financial Benefits	2,197	20.51%
Total Cost	-2,212	20.66%
O&M Costs	-3,995	37.31%
Total Value	**-1,707**	
Value/$K	**(0.77)**	

OTHER ALTERNATIVES CONSIDERED

INVESTMENT RISK ANALYSIS

External finance engagement to provide guidance on x"aaS" implementations which may impact accounting treatment of investment and could result in costs being allocated to operations rather than capital.

ESTIMATED COST FLOW

The annual projected cost flows are as follows (in thousands of dollars):

Fiscal Year	Scope Development Funds	Concept Estimate	Total Estimated Investment (Net of Contrib.)
Prev. Actuals	$0	$0	$0
2021/2022	$412	$633	$633
2022/2023	$0	$1,149	$1,149
2023/2024	$0	$623	$623
2024/2025	$0	$0	$0
2025/2026	$0	$0	$0
2026/2027+	$0	$0	$0
Total	**$412**	**$2,405**	**$2,405**

IMPACT ON O&A COSTS

To be determined. Unable to fully assess impact until Finance completes an external engagement re operating vs capital cloud cost allocation.

RELATED INVESTMENTS

None

REFERENCE DOCUMENTS

C55-CIC-AD

CAPITAL INVESTMENT CONCEPT ADDENDUM
FOR

Data and Analytics System

Investment Type (Project)

Addendum Number 1

	PREVIOUSLY APPROVED	REVISED	INCREASE / (DECREASE)
SCOPE DEVELOPMENT:	$412	$0	($412)
CONCEPT ESTIMATE (incl. Scope Development):	$0	$0	$0
CONTRIBUTIONS:	$0	$0	$0
NET CONCEPT ESTIMATE (incl. Scope Development):	$2405	$0	($2405)
			(values listed above are in thousands of dollars)
CORPORATE VALUE FRAMEWORK SCORE :	**Value:**	**Value:**	
	Value/$K:	**Value/$K:**	
			(CFV scores reflect the recommended alternative)

DATE PREPARED: 2022-07-21

EC/MHEB APPROVAL MINUTE & DATE:

APPROVER	APPROVER TITLE	COMMENT	ORGANIZATIONAL UNIT	APPROVAL DATE
Smilski, Sandra	VALUE MGMT OFFICE DEPARTMENT MANAGER		Portfolio Management	2022-07-27
Kyrzyk, Wayne	FINANCIAL SERVICES SUPERVISOR		Financial Advisory Services	2022-07-26
Battistoni, Angelo	CHARTERED PROFESSIONAL ACCOUNTANT		Financial Advisory Services	2022-07-26
Battistoni, Angelo	CHARTERED PROFESSIONAL ACCOUNTANT		Financial Advisory Services	2022-07-26
Funk, Michelle	BUSINESS SYSTEMS ANALYST		Portfolio Management	2022-07-26
Smilski, Sandra	VALUE MGMT OFFICE DEPARTMENT MANAGER		Portfolio Management	2022-07-21

ADDENDUM NUMBER	DATE	REVISION (Summary of change)
1	July 26, 2022	To expense capital costs incurred that fall under new accounting guideline.

CAPITAL INVESTMENT MASTER DATA			
RESPONSIBLE OPERATING/CORPORATE GROUP:	Digital & Technology	**REQUESTING OPERATING/CORPORATE GROUP:**	Digital & Technology
RESPONSIBLE DIVISION:	Digital	**REQUESTING DIVISION:**	Digital
RESPONSIBLE DEPARTMENT:	Energy Information Systems	**ISD: (YYYY/MM/DD)**	
I.M. NODE NUMBER:	2.1.15.15.10.125	**W.B.S. NUMBERs:**	P:36246, P:35772
C55 INVESTMENT CODE:	26460		
SAP PROJECT TYPE:	24 - BOC-VP & Management	**C55 INVESTMENT SUB-CATEGORY**:	Shell
CORPORATE INVESTMENT CATEGORIZATION:	(Level 1) C6 / Business Operations Support (Level 2) CS / Information Technology		

CONTACTS			
PREPARED BY:	Edkins, Scott PROJECT LEADER 50841	**REQUESTOR:**	Michelle Rheault
PROJECT MANAGER:	Edkins, Scott PROJECT LEADER 50841		

MANITOBA HYDRO
CAPITAL INVESTMENT CONCEPT ADDENDUM
Data and Analytics System

RECOMMENDATION

In accordance with Cloud Computing Arrangement (CCA) guidance, it has been recommended that previously capitalized costs for this investment be transferred to operating expense.

Approved scope funds of $412k to develop an Enterprise Data & Analytics Vision and Strategy are to be expensed in line with the change in accounting for cloud computing arrangements.

SCOPE

Transfer capitalized costs to be expensed as operating costs (for past and future costs incurred).

BACKGROUND

In November 2018, the International Financial Reporting Standards (IFRS) issued an Accounting Standards Update to address accounting treatment of costs related to Software as a Service (SaaS) cloud computing arrangements. In this update it was recommended that if a SaaS arrangement does not provide control over the leased software, it is to be treated as a service contract and the cost are to be expensed.

Software as a Service (SaaS)
- A SaaS arrangement is a software distribution model that allows users to access applications or programs through the internet;
- The customer does not manage or control the cloud infrastructure or application capabilities and is not responsible for upgrades to the systems and software;
- The operator provides business applications via the internet;
- The customer typically purchases the application on a subscription basis with no upfront costs or installation fees.

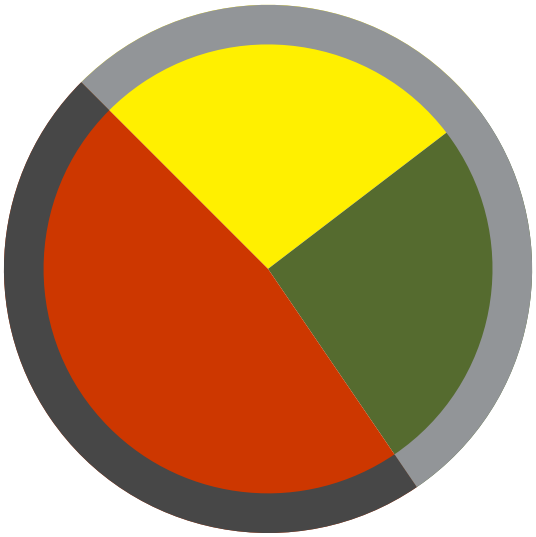
Cloud computing is a method for delivering information technology services in which resources are retrieved from the internet through web-based tools and applications, instead of a direct connection to a server. Rather than keeping the files on a proprietary hard drive or local server, cloud-based storage makes it possible to save them to a remote database.

JUSTIFICATION – BUSINESS CASE ANALYSIS (SUMMARY):

JUSTIFICATION

The implementation of Data and Analytics System falls under a SaaS arrangement that does not provide Manitoba Hydro with control over the leased software and is therefore treated as a service contract and the cost are to be expensed.

CORPORATE VALUE FRAMEWORK (REVISED)



Value Measure	Value Points	% of Value
O&M Financial Benefits		%
Capital Financial Benefits		%
O&M Costs		%
Total Value		
Value/$K		

OTHER ALTERNATIVES CONSIDERED
Not applicable

INVESTMENT RISK ANALYSIS
Not applicable

MANITOBA HYDRO
CAPITAL INVESTMENT CONCEPT ADDENDUM
Data and Analytics System

ESTIMATED COST FLOW

The annual projected cost flows are as follows (in thousands of dollars):

	PREVIOUSLY APPROVED			PROPOSED			INCREASE/ (DECREASE)		
Fiscal Year	Scope Development Funds	Concept Estimate	Total Estimated Investment (Net of Contrib.)	Scope Development Funds	Concept Estimate	Total Estimated Investment (Net of Contrib.)	Scope Development Funds	Concept Estimate	Total Estimated Investment (Net of Contrib.)
Total	$412	$2,405	$2,405	$0	$0	$0	($412)	($2405)	($2405)

IMPACT ON O&A COSTS

All costs associated with this investment will be incurred under operating.

MANITOBA HYDRO
CAPITAL INVESTMENT CONCEPT ADDENDUM
Data and Analytics System

RELATED INVESTMENTS
None

REFERENCE DOCUMENTS
26460_CIC_Data and Analytics System.docx