ADVANCED METERING INFRASTRUCTURE (AMI) PROJECT

Project Status Report to NBEUB

For Quarterly Period ending September 30, 2022

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Background

New Brunswick Power Corporation (NB Power) is continuing to leverage technology advancements that will improve its ability to respond to changing customer expectations, address climate change, modernize the grid, and focus on continuous process improvement. New technologies such as Advanced Metering Infrastructure (AMI) will enable NB Power to improve its service to customers and help them better understand their electricity usage and use energy more wisely. AMI will help NB Power better manage the rising demand on the electricity system well into the future, while laying the groundwork for a wide range of new customer benefits.

AMI is foundational to the grid modernization program and involves three key technologies:

1. Advanced Meters
2. Head-End System (HES)
3. Meter Data Management System (MDMS)

These three AMI technologies, in combination with the associated communications network, are critical components of NB Power's overall grid modernization program.

The many benefits of AMI include providing tools and programs to give customers more control over their electricity consumption and costs and laying the groundwork for new customer-focused programs and services. Within NB Power's day-to-day operations, AMI will also increase efficiency of meter data collection, billing, and disconnects/reconnects. Power restoration will be improved as a result of quicker notification of outages which could reduce response time.

NB Power filed an application for AMI with the New Brunswick Energy and Utilities Board (NBEUB) on August 1, 2019, and the matter was heard by the NBEUB January 13-22, 2020. As a result of the requested and Board-approved delay due to the COVID-19 pandemic, on September 4, 2020, the NBEUB approved NB Power's AMI capital project application and work is underway with the project team and third-party vendors.

The NBEUB decision directed NB Power "to propose, at the next general rate application, a set of metrics or progress indicators to track the project. This should include progress indicators to track the roll-out of the project, as well as its timeline, costs, and the realization of its quantified and non-quantified benefits. The proposal should also include a reporting and review schedule, and a communication plan for stakeholders and ratepayers."

NB Power proposed a reporting format in response to the directive. The format was reviewed and approved by the NBEUB on May 27, 2021 on a preliminary basis with specific conditions. This report complies with the approved format and conditions, which requires NB Power to provide this report electronically on a quarterly basis to the NBEUB and share the report on www.nbpower.com for public access in both official languages.

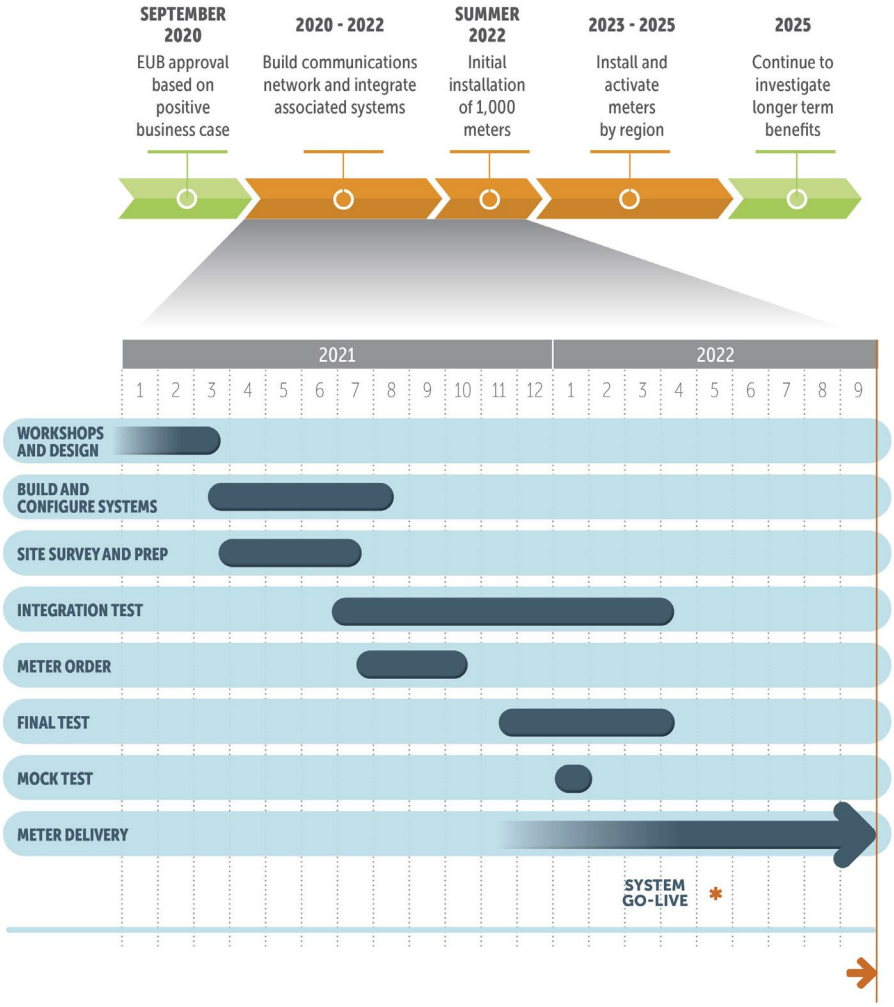
Objective

The objective of this report is to provide a quarterly status update to the NBEUB on the AMI Project. This includes progress indicators tracking the project roll-out, as well as its timeline, costs, and the realization of its quantified and non-quantified benefits, as compared to the AMI business case filed with the NBEUB in Matter 452. Updates on customer engagement and project risks are also provided in this report.

NB Power's AMI Project involves several key vendors to deliver on various aspects of the project, with NB Power project management providing oversight over the entirety of the project. The main vendors and their contributions are as follows:

- **Utegration** – experienced System Integrator providing technical oversight to themultiple elements requiring interfaces with NB Power's SAP enterprise asset management system and AMI related systems
- **Itron** - Meters and Head End System
- **Siemens EnergyIP** – Meter Data Management System
- **Olameter** – deployment of new meters across the province

Summary of Results as of Quarter ending September 30, 2022



Project Timeline

- Key activities in the last quarter focused on monitoring and stabilizing the system post production and initial deployment of ~ 1000 customer meters.
- Network infrastructure deployment is on-going with 254 out of 259 Cisco Connected Grid Routers (CGRs) installed.
- The project team continuously monitors for internal or external challenges that could impact the project timeline and/or budget and ensures mitigation plans are in place. Mitigation actions have been utilized to minimize the impacts on schedule and costs; and to date cost impacts related to delays have been managed within the overall project

budget.

- Multiple global events (pandemic, war in Ukraine, multiple weather events) are contributing to the shortage of semiconductor chips causing the delay of smart meter deliveries. A decision has been made to expand the initial deployment of meter areas to recover legacy meters to meet on-going demand. To maximize efficiency and to ensure customer benefits are realized, NB Power plans to begin mass meter deployment once a sufficient supply of meters to complete the upgrades for the first area scheduled (about 120,000 meters) is available. We continue to pursue all avenues of resolution with Itron and other vendors to secure the meters as soon as possible and mitigate cost pressures.
- Based on the current forecast of meter shipments, mass deployment is now anticipated to begin in the spring of 2023, which is approximately one year later than the original plan.

Financial Results

The business case detailed the net present value of the lifecycle costs and benefits of AMI. NB Power will be reporting on AMI project costs presented in Matter 452 evidence, Table 2.3.1, lines 4-8. The sunk costs to the end of fiscal year 2018/19 are not included because they were not included in the costs in the business case or Table 3.2. Table 2.3.1 has been restated below to break out the costs into the categories presented in Matter 452 evidence Table 3.2. This includes all costs incurred in fiscal year 2019/20 to the completion of system-wide coverage of AMI that remains dependent on the receipt of meters. The table below represents project costs incurred to date.

Costs	Actuals to date ($M)	AMI Project Costs Budget ($M)	% of Total
3.2.1 AMI Capital	$6.3	$53.3	11.9%
3.2.2 AMI Operating	0.3	5.9	5.6%
3.2.3 MDM Operating	1.5	2.9	53.1%
3.2.4 Meter Installation Capital	0.0	11.5	0.0%
3.2.5 CIS/WFM/ESB Capital	7.1	8.8	80.3%
3.2.6 MDM Capital and AMI Project Team	7.3	8.0	91.8%
3.2.7 CIS/WFM/ESB Operating	1.2	3.5	33.4%
3.2.8 Corp Services & Other Capital	2.1	3.1	67.8%
3.2.9 Utility Tax	0.0	0.0	0.0%
3.2.10 Corp Services & Other Ops	0.1	0.3	21.3%
3.2.11 Pre-Engineering Capital	0.1	0.1	90.9%
Total	**$26.0**	**$97.2**	**26.7%**

Note to Reader: Financial tables reflect differences due to rounding

Variance explanation:

- 3.2.1 AMI Capital – the bulk of this spending to date is for the installation of the network hardware. The remaining budget is related to the cost of the meters. Much of the spending will only start once mass deployment begins and will continue through the mass deployment period.
- 3.2.4 Meter Installation Capital – there will be minimal spending in this category until mass meter deployment begins.

- 3.2.5 CIS/WFM/ESB Capital – the work in this category is related to system integration, specifically the contract with Utegration. There are a few small costs remaining for this item related to project management that will be completed at the end of October 2022. Due to COVID and travel restrictions this vendor worked remotely for the duration of the project except for two trips to New Brunswick. Although there were several change orders during the integration phase that added costs for this vendor, the travel savings coupled with more favourable exchange rates than had been budgeted will result in this contract being completed under the budgeted contingency.
- 3.2.6 MDM Capital and AMI Project Team covers the work to implement the MDM as well as the budget for the project team for the duration of the project. The current variance is driven by the fact that portions of the project team will remain in place until after meter deployment is complete.
- 3.2.8 Corp Services & Other Operating is trending higher to date than budgeted due to the delays in the project resulting in increased interest and overhead carrying costs.

All other project spending is on track and aligned to the scheduled work.

Fiscal Year Project Schedule

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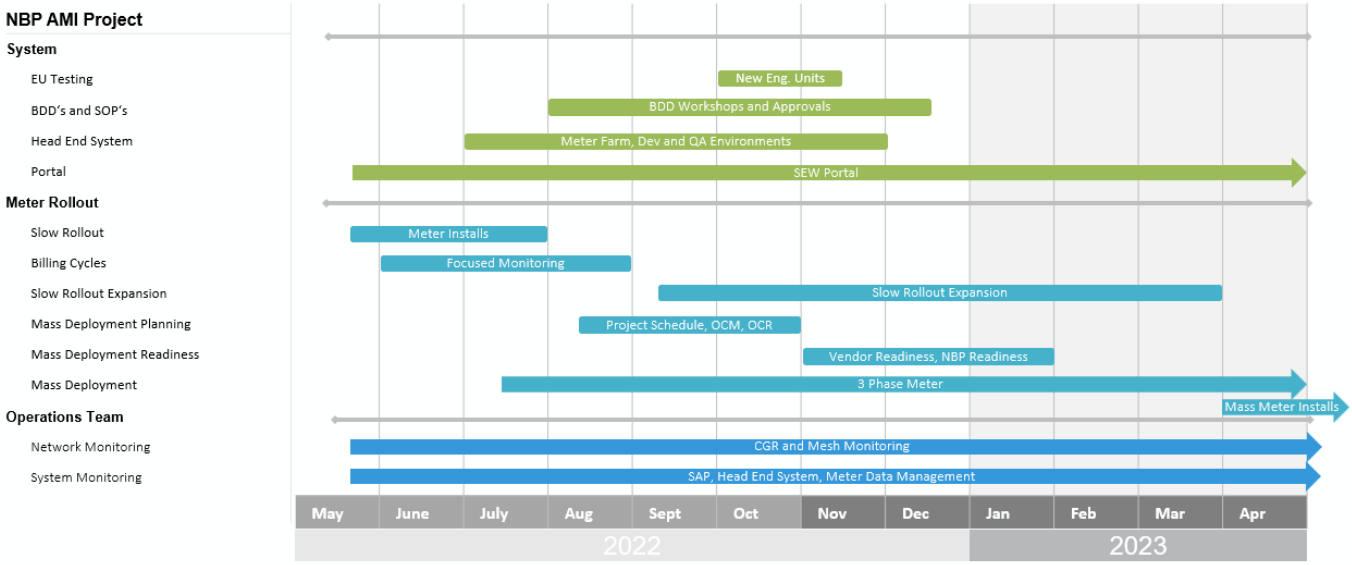
High Level Project Timeline



Update:

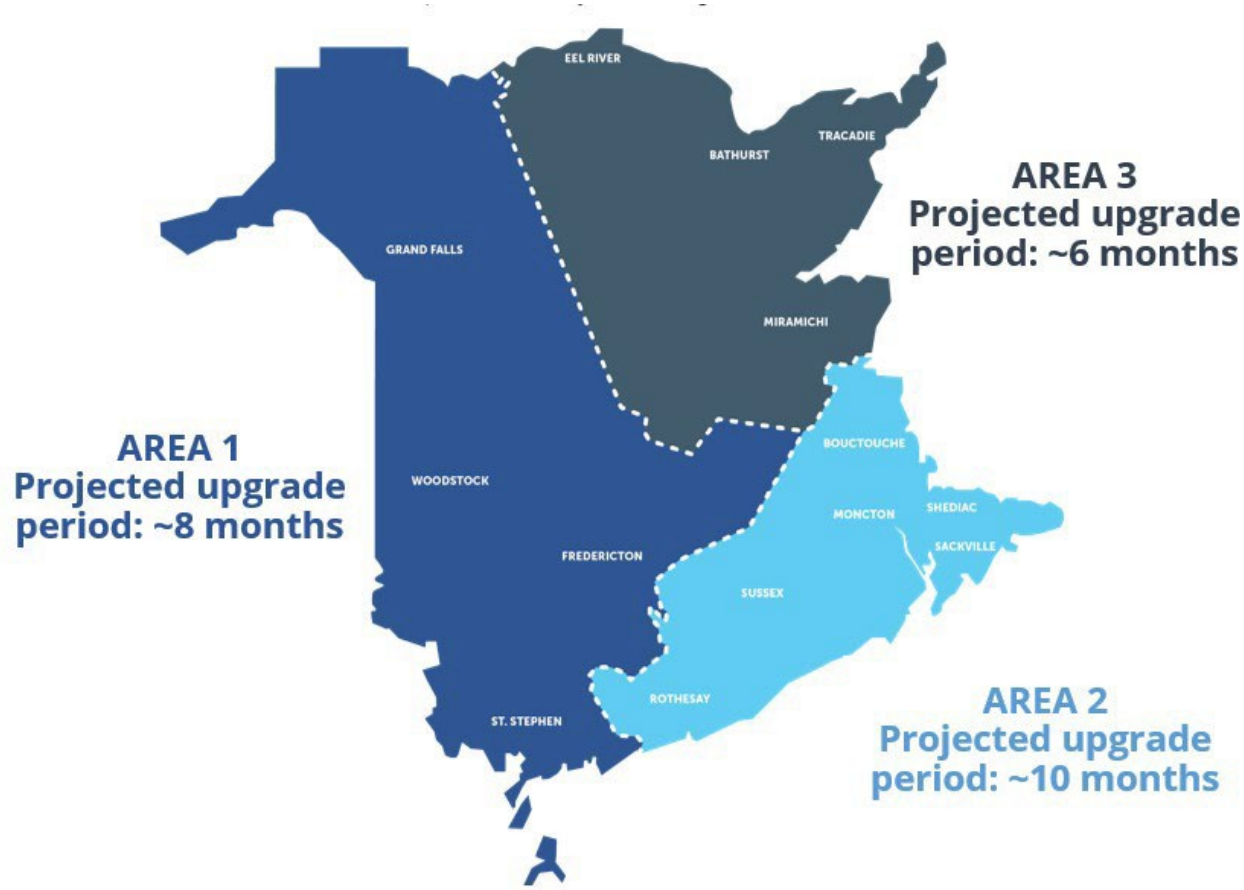
- Vendor Post-production support was completed for the System Integrator and EnergyIP MDM
- No critical defects were identified in production post go-live
- Between June and July ~1000 meters were installed with customers in the Fredericton region to further test the system end-to-end, validate communications, and monitor the overall install experience with real customers.
- Mass Deployment is still delayed until the spring of 2023. We continue to monitor inventory and pursue all options to minimize costs and schedule impacts on Mass Deployment.
- Decision to expand the slow roll-out areas with smart meters to recover legacy meters; an additional 4000 meters to the original 1000.

Meter Deployment

- As part of the initial rollout, approximately 1000 meters have been installed in the Fredericton area to provide NB Power understanding of the functionality of the operational state of AMI systems including the end-to-end integrations and validation of the customer experience. This deployment was successful.
- NB Power has decided to expand slow rollout starting mid-November to recover legacy meters as part of the deployment. The objective is to install up to an additional 4000 smart meters and recover the replaced meters to be reused provincially. This was required to avoid purchasing legacy meters and to meet the operational obligations.
- As part of deployment of the three-phase transformer rated meter upgrades, we have 722 meters installed out approximately 5700. These upgrades are taking place separately from mass deployment due to the complexity of installation and will take approximately 2 years to complete installations provincially.
- NB Power currently has 40,000 meters in inventory, which represents only 20% of our forecasted meter delivery plan. This is due primarily to the global semiconductor shortage.
- Mass deployment of smart meters to NB Power customers is now scheduled to begin in spring of 2023, starting with Area 1 (see below map) and to conclude within a 24-month period. This is pending delivery of a sufficient quantity of meters and assumes no further delays due to the global semiconductor shortage.

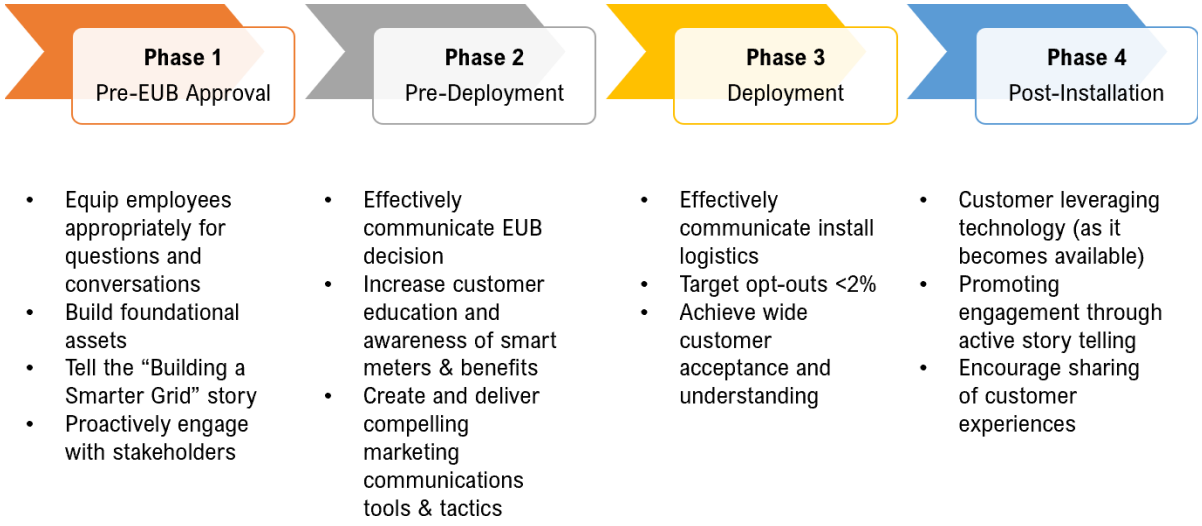
Tentative Smart Meter Installation Map

This is based on initial plans and is subject to change.



Stakeholder Engagement

The customer communications and engagement strategy includes four phases as illustrated by the diagram below. NB Power is currently focused on lessons learned from the small initial rollout conducted in the previous quarter and preparing for full deployment. These activities include information sessions for employees, updates to key stakeholder groups, and providing information related to NB Power's grid modernization efforts through www.nbpower.com.



Update:

- To date, 135 customers, which represents 0.04% of our eligible customer base, have requested to be placed on the "Do Not Install" list, far below NB Power's target of less than 2%.
- NB Power surveyed customers who received a smart meter as part of the small initial rollout in the previous quarter. Its purpose was to gauge customer satisfaction with the communication they received prior to the meter upgrade and their experience with the installation. The response rate was 19%, consistent with other transactional surveys NB Power has conducted.
    - Of the 88% who recalled receiving information prior to the upgrade, 90% said it was helpful in preparing them for what to expect.
    - 98% said their experience during the upgrade was positive (82%) or neutral (16%).
    - 100% said they felt satisfied (94%) or neutral (6%) toward the meter installer.

These results, combined with the continued low rate of opt-out requests, indicates that the communication and installation protocols worked well and accomplished NB Power's goal of a neutral to positive customer experience.

Following is a summary of the stakeholder outreach activities conducted between July 1, 2022, and September 30, 2022:

- An update was provided at three Community Liaison Community meetings: Belledune/Dalhousie CLC, Lower Saint John River Hydro (Mactaquac) CLC, and Milltown Generating Station CLC.
- Internally, the AMI project team conducted monthly updates for employees working in areas of the business affected by AMI. News and information are also provided regularly to all employees.

- There were 856 visits to the smart meter section of the website, a decrease of about 18% over the previous quarter.

Risks

NB Power's Enterprise Risk Management framework and process takes a strategic view of risk in all aspects of business management and is applied consistently at the strategic, business unit, program and project level. NB Power manages risks, within its risk tolerance, consistently and comprehensively through a continuous, proactive and dynamic process that identifies, understands, manages and communicates risks that may impact NB Power's strategic goals.

The following risks have been identified as items specific to the success of the overall AMI Project and are monitored and reported on monthly to the Strategic Portfolio Management – Executive Oversight Committee which is comprised of NB Power senior leadership including members of the executive team.

#	Risk		Mitigation Activity
1	Deliver timely customer benefits	**O** ↑	Monitoring alignment of benefits as committed to project plan execution; impacts of scope requirements coupled with global supply issue being analyzed and evaluated, including meetings with senior managers from the related vendors. a. Global semiconductor shortage – due to the high demand for microchips and semiconductors, the risk associated with the confident supply of meters as planned during the project is being monitored and discussed at senior levels with the key vendor to determine the best course of action to mitigate risk to NB Power and its customers.
2	Schedule Accuracy	**Y** ↔	The team and SPMO is currently going through an exercise to review and update all activities in the project schedule. The end result of this activity is a reconciliation of scope and budget to ensure alignment with the schedule.
3	Adequate resourcing	**Y** ↔	Staffing requests have been filled or are in the process of being filled. Positions and time commitments have been extended to finalize outstanding documentations.

Legend for Risk Indicator Results		
Green	Potential impact and/or probability of the risk occurring is low. Issues that have arisen or may arise are considered manageable in the normal course of operations.	≤ 59% of Key Risk Indicator targets are occurring
Yellow	Potential impact and/or probability of the risk occurring is medium. Issues have surfaced or remain present requiring focus.	≥ 60% of Key Risk Indicator targets are occurring
Orange	Potential impact and/or probability of the risk occurring is high. Serious issues exist which require close senior management attention.	≥ 75% of Key Risk Indicator targets are occurring
Red	Potential impact and/or probability of the risk occurring is very high or critical. Serious issues exist which require immediate senior management attention.	≥ 85% of Key Risk Indicator targets are occurring

Trend Indicator Legend					
↑	Significance is increasing	↔	Remaining the same	↓	Significance is decreasing

Update:

- Concerns regarding activities that have the potential to impact the project schedule and/or budget continue to be escalated to the appropriate vendor and management level.
- Implementation risks and issues are identified and managed weekly amongst the project team participants.
- Action plans for each of the above-noted risks are reviewed and updated monthly.
- A global supply issue related to the availability of semiconductors impacts the availability of meters to align to the current project plan. This risk has been analyzed and is monitored weekly to understand the impact and to consider options to mitigate the risk to the project.
- NB Power Management continues to review and discuss potential meter surcharges due to increasing costs identified by Itron. NB Power Management are reviewing options to mitigate the potential of increased costs, while balancing the need to ensure a sufficient supply of meters is secured for deployment.

Quantified Benefits Realized

The following table represents the benefits of AMI that were accepted by the Board in the decision of Matter 452. The majority of these benefits will be realized post full deployment of AMI.

The benefits are shown in present value and real dollars to provide a correlation between the accepted present value in the decision and the real dollar value that is targeted that NB Power will be tracking against over the life of the AMI meters.

Benefit	(PV $ millions)	Target (Real $ millions)	Actual	% Realized
Reduced Manual Meter Reading and Meter Service Order Benefits	39.9	65.9		
Avoided Cost of Meter Replacements	22.0	35.4		
Conservation Voltage Reduction	16.2	25.7		
Distribution Network Losses	15.0	25		
High Bill Alert	10.3	17.1		
Load Research Meters	5.2	8.5		
Net Metering	4.3	8.0		
Meter Services Manager Salary	1.8	3.0	0.3	10%
Avoided Cost of Meter Reading Vehicles	1.8	2.8		
Outage Restoration (Crew Management)	1.6	2.6		
Reduced Customer Inquiries	1.4	2.4		
Avoided Cost of Handheld System	1.4	2.2		
Avoided Cost of Meter Reading Supervisor	1.0	1.6		
Reduced Overtime for Meter Service Orders	0.6	1.0		
Total Benefits	**$122.4**	**$201.1**		

Update:

All benefits will be realized post implementation of the smart meters except for the Meter Services Manager Salary. NB Power began realizing this benefit in fiscal year 2020/21 when the position was eliminated.

Non-quantified Benefits

Non-quantified benefits will be measured and reported as they are realized throughout the meters' lifetime. Currently there is nothing to report.

AMI PROJECT UPDATE

Period Ending September 30, 2022

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