



ADVANCED METERING INFRASTRUCTURE (AMI) PROJECT

Project Status Report to NBEUB

For Quarterly Period ending March 31, 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, including 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, 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 the 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 the multiple elements requiring interfaces with NB Power's SAP enterprise asset management system and the AMI related systems
- **Itron** - Meters and Head End System
- **Siemens EnergyIP** – Meter Data Management System
- **Olameter** – deployment of new meters across the province

- Work continues to prepare and plan for meter deployment, which is dependent upon meter availability. The availability of meters has been impacted by a shortage of semi-conductors, the on-going COVID shutdowns in China and the recent war in Ukraine, all of which is beyond our control and is impacting the meter deployment plan.
- To maximize efficiency and to ensure customer benefits are realized, NB Power will begin the meter deployment when we have a supply of meters sufficient to complete the upgrades for the first area scheduled (about 120,000 meters). This is forecasted to result in an increased unplanned cost of approximately \$200K related to safely storing the meters. Itron has also raised concerns about significant cost increases due to the above noted items and supply chain challenges. We continue to work with Itron to understand this issue and any project impacts.
- Based on our meter vendor's forecast, we anticipate that meter upgrades will begin in the latter part of 2022. This activity was previously planned for March 2022.

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 will not be 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 in 2023/24. 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	\$4.5	\$53.3	8.4%
3.2.2 AMI Operating	0.4	5.9	6.8%
3.2.3 MDM Operating	1.3	2.9	45.2%
3.2.4 Meter Installation Capital	0.0	11.5	0.0%
3.2.5 CIS/WFM/ESB Capital	5.4	8.8	61.4%
3.2.6 MDM Capital and AMI Project Team	6.1	8.0	76.6%
3.2.7 CIS/WFM/ESB Operating	1.5	3.5	43.2%
3.2.8 Corp Services & Other Capital	1.8	3.1	58%
3.2.9 Utility Tax	0.0	0.0	0.0%
3.2.10 Corp Services & Other Ops	0.0	0.3	0%
3.2.11 Pre-Engineering Capital	0.1	0.1	90.9%
Total	\$21.1	\$97.2	21.7%

Note to Reader: Financial tables reflect differences due to rounding

Variance explanation:

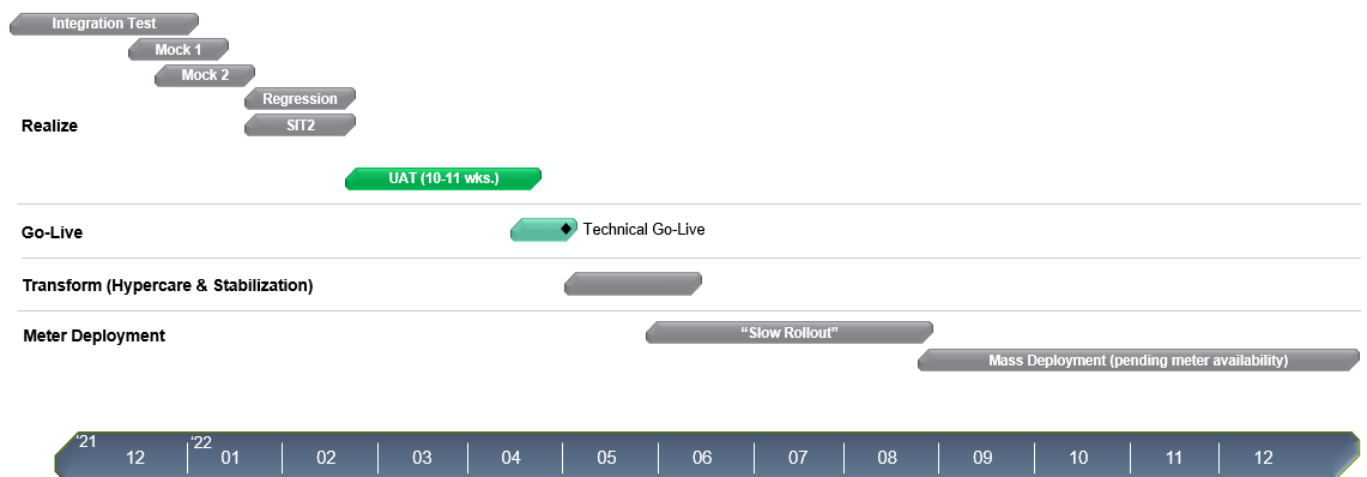
- 3.2.1 AMI Capital – the bulk of this spending is related to the purchase of meters. The first significant spend is expected in 2022/23 and will continue through 2023/24 as meters are received and deployed.
- 3.2.4 Meter Installation Capital – there will be minimal spending in this category until 2022/23 and 2023/24 when mass meter deployment begins.
- 3.2.5 CIS/WFM/ESB Capital – the work in this category is related to system integration. This work will be ongoing until May of 2022. The main driver of the variance is the fact that there are still three months of work left to complete this portion of the project.
- 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 the MDM work will be ongoing until May 2022 and portions of the project team will remain in place until after meter deployment is complete.
- All other project spending is on track and aligned to the scheduled work. Approximately \$1.2 million in contingency related to system integration is forecasted to be spent by May 2022.
- To date there have been a few costs that would not have been anticipated at the time of the development of the AMI business case. NB Power has built a meter farm and there are also some materials that were identified that would be required during meter installation that are net new. Also, as explained in other sections of the report due to the current shortage

of meter parts NB Power will be stock piling meters as they become available to have a critical number of them before we begin deployment to ensure we do not incur any unnecessary penalties from the meter installation company. There will be new storage costs associated with stockpiling meters. NB Power has also had to add approximately 15,000 additional meters to the deployment due to the number of new builds in the province since the time the business case was developed. At the present time NB Power is forecasting that these additional costs can be covered within the 15% contingency on variable costs that the EUB approved as part of their decision in Matter 458.

System Integration - Implementation Schedule

The system integration schedule includes six phases:

- **Assessment** – establish a level of understanding on implementation methodology, standard SAP solution, vendor and client culture, and potential gaps
- **Prepare** – mobilize project and team; lock-in project scope and expectations
- **Validate** – conduct design workshops and agree on design decisions, workflows and business processes to be implemented for the project
- **Realize** – solution build and configuration, integration testing, user acceptance testing, and final acceptance of system
- **Deploy** – establish business readiness and achieve systems go-live
- **Transform** – transition to steady-state production support and stabilized business operations



Update:

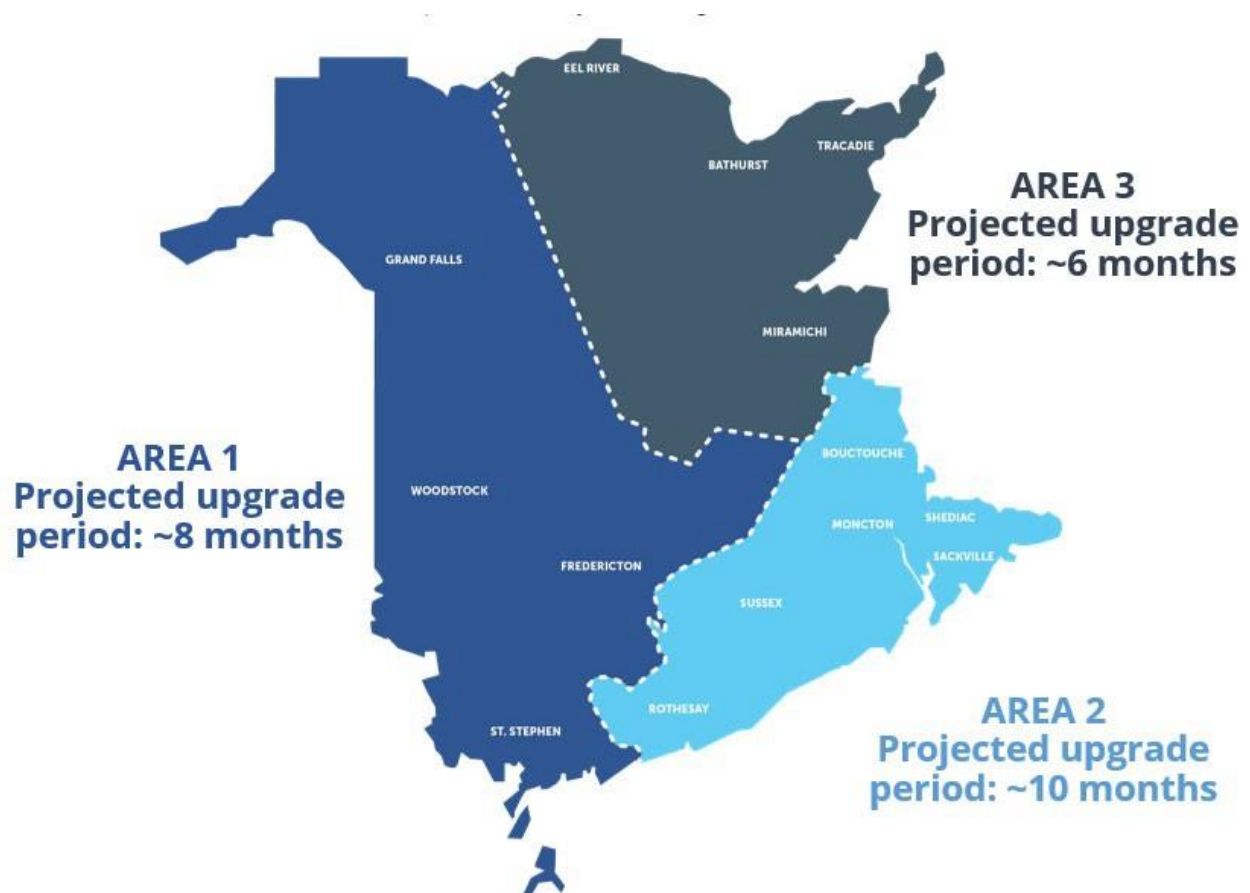
- Two System Integration Testing phases were completed, the first phase completing 2021/12/31 and the second phase completed on 2021/02/11.
- User Acceptance Testing started at the beginning of February 2022 and is projected to be completed in May 2022.
- The system go-live originally planned for late February is now projected to occur in May 2022. The change in start date is primarily due integration testing taking longer than estimated. The revised start date remains in advance of the planned mass meter deployment effort forecasted to begin in the latter part of 2022 (dependent on availability of meters and other materials due to semi-conductor shortages).
- A slow rollout of approximately 1000 meters is planned for June 2022 to allow for additional end to end testing of the billing process and meter network infrastructure. It also allows for validation of the customer experience prior to mass deployment.

Meter Deployment

- NB Power currently has 7000 meters in inventory.
- Approximately 1000 meters will be installed in the Fredericton area starting the first week of June 2022. This will provide NB Power understanding of the functionality of the operational state of AMI systems including the end-to-end integrations and also validation of the customer experience.
- The installation of three-phase transformer rated meter upgrades is also scheduled to begin in May 2022 and will take approximately two years to complete as planned. These upgrades will take place separately from mass deployment due to the complexity of installation.
- Mass deployment of smart meters to NB Power customers is scheduled to begin in the latter part of 2022, starting with Area 1 and concluding 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.

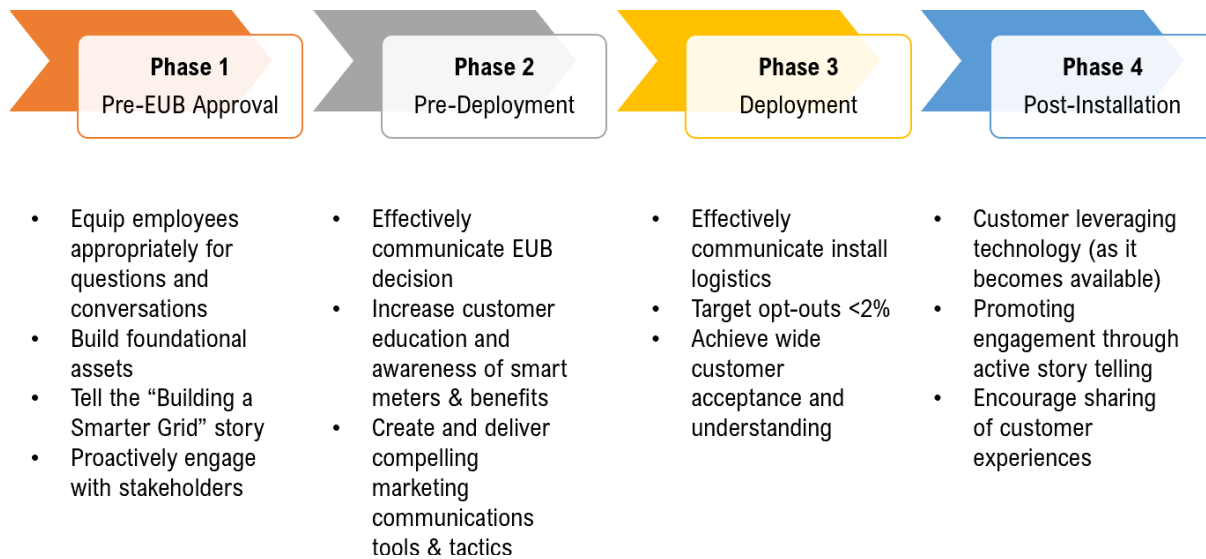
Tentative Smart Meter Installation Map

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 Phase 2 Pre-Deployment-related activities, which includes information sessions for employees, updates to key stakeholder groups, and providing information related to NB Power’s grid modernization efforts through www.nbpower.com. Customers will be surveyed after installation to test their satisfaction with the notification and installation processes. In addition, surveys will be conducted at the beginning of deployment and every six months thereafter to measure awareness and acceptance and test effectiveness of messaging and communications.



Update:

- An AMI Customer Journey Map has been completed. The feedback gained from customers during this exercise will be used to ensure NB Power is taking a customer-centric approach to the meter rollout and can provide a positive experience to New Brunswickers.
- NB Power remains focused on internal communication, training and process work to prepare customer-facing departments to support customers through the upgrade.
- NB Power continues to engage with Nova Scotia Power and other utilities implementing AMI to stay abreast of any issues, challenges and lessons learned.

The following is a summary of the stakeholder outreach activities conducted between January 1, 2022 to March 31, 2022. These activities were curtailed from what was originally planned due to restrictions related to COVID-19.

- Five meetings were conducted with Community Liaison Committees: all included updates on the AMI project.
- 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 931 visits to the smart meter section of the website, an increase 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	Clear roles and responsibilities between NBP and multiple vendors	Y ↔	Roles and responsibilities are defined amongst project team participants and refined as new participants and processes are added. Escalations regarding specific activities are conducted with the concerned participants.
2	Adequate resourcing	Y ↔	Regular weekly updates with project team and Human Resources; project team and vendor teams. Positions and time commitments have been extended due to the delay of system go-live.
3	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.

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 needs of ensuring that a sufficient supply of meters are 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 March 31, 2022