



DECISION

IN THE MATTER OF an Application by New Brunswick Power Corporation pursuant to subsection 107(2) of the *Electricity Act*, S.N.B 2013, c. 7, for approval of an Advanced Metering Infrastructure capital project and a deferral account with respect to the amortization of the remaining book value of its currently installed electricity meters.

(Matter No. 452)

September 4, 2020

NEW BRUNSWICK ENERGY AND UTILITIES BOARD

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NEW BRUNSWICK ENERGY AND UTILITIES BOARD:

Acting Chairperson: François Beaulieu

Members: Michael Costello

Patrick Ervin

Counsel: Ellen Desmond, Q.C.

Chief Clerk: Kathleen Mitchell

APPLICANT:

New Brunswick Power Corporation: John Furey

INTERVENERS:

Atlantica Centre for Energy:	Colleen d'Entremont
Gerald Bourque:	Per se
J.D. Irving, Limited:	Christopher Stewart
James D. Lane:	Per se
Liberty Utilities (Gas New Brunswick) LP (formerly Enbridge Gas New Brunswick Limited Partnership):	Paul Volpé
Our Environment, Our Choice – Notre Environnement, Notre Choix:	Michael McKinley
Dr. Roger Richard:	Per se
T4G Limited:	Geoffrey Flood
Utilities Municipal:	Scott Stoll
PUBLIC INTERVENER:	Heather Black

A. Introduction

- [1] The New Brunswick Power Corporation (NB Power) applied on August 1, 2019 to the New Brunswick Energy and Utilities Board (Board) for approval of a capital project consisting of the procurement and deployment of Advanced Metering Infrastructure (AMI). The present value cost of this project is \$109.6 million. The application also seeks an order for the creation of a deferral account with respect to the write-off of existing meters, to be replaced by “smart meters” which comprise a key component of AMI.
- [2] The Board received pre-filed written evidence from NB Power, Dr. Roger Richard, the Public Intervener, and Board staff. The hearing took place between January 13 and January 20, 2020, with final submissions on January 22.
- [3] By motion dated March 19, NB Power requested that the Board adjourn this proceeding *sine die*. This was on the basis that NB Power had moved its operations to “mission critical” work as a result of the COVID-19 pandemic. On March 19, the Province of New Brunswick had declared a State of Emergency, with a Mandatory Order that all businesses in New Brunswick reduce operations to critical functions. The Board granted the adjournment on March 24.
- [4] On August 5, NB Power filed a Notice of Motion to lift the March 24 adjournment, requesting that the Board now render its decision in the current matter in the normal course. Although the State of Emergency was, and is still in effect, the terms of a revised Mandatory Order dated July 31 removed the critical functions requirement of the March 19 declaration. NB Power stated that it was at a “steady state of operations” in which normal business functions are being performed, subject to directives and policies aimed at minimizing transmission of the COVID-19 virus.
- [5] Following a motion hearing on September 2, which was open to the public, the Board rendered a decision which lifted the adjournment. The reasons for that decision may be found in the Board’s Ruling on Motion dated September 4.
- [6] NB Power had previously applied for approval of an AMI capital project in 2017 (Matter 375). In its decision dated July 20, 2018, the Board denied the application, concluding as follows:

[92] Given all of these considerations, the Board is not satisfied of the prudence of the AMI capital project. Consequently, it is not in the public interest. The fundamental reason behind this conclusion is the Board’s finding that no positive

business case was established in the evidence. The demonstrated benefits to ratepayers must outweigh the expected costs that ratepayers will bear.

[93] The application under section 107 of the Act is not approved. This does not preclude a future application by NB Power.

[7] NB Power presented a business case and supporting evidence, as reviewed below, to support its application. It submits that there are three fundamental reasons for this investment. First, is the transformational change of advancing technology. Second, customers expect more from their service suppliers, including the need for more information and ability to control costs. Third, climate change requires that energy suppliers consider better supply-side options to meet customer demands.

[8] NB Power also points out that AMI currently provides over 80% of metering in Canada.

1. Overview of the AMI Project

[9] NB Power's currently installed fleet of residential and commercial meters consists of analog meters (28%) and automated meter reading (AMR) meters (72%). To collect data, NB Power's meter reader workforce must, generally on a monthly basis, either observe meter data at the source, or drive by the area to collect the data electronically.

[10] Smart meters record and store energy consumption data as frequently as five-minute intervals. Data is transmitted between adjacent meters, then on to a network of local collectors, and then on to a head-end system. The system is integrated with a customer information and billing system, enabling customers to access daily consumption data.

[11] NB Power's project envisions the replacement of approximately 360,000 residential and commercial meters with smart meters. The AMI infrastructure includes data collectors, a wide-area network, system software, and a meter data management system (MDM). The project would begin in the 2020/21 fiscal year, with deployment over a three-year period.

[12] The AMI project also includes modifying business processes to integrate AMI technology with NB Power's customer information system, geographic information system and outage management system. Project costs also encompass the professional services of a system integrator, a customer engagement program, and the integration into NB Power's operations.

B. Legislation and the Prudence Threshold

[13] NB Power's application is in accordance with section 107 of the *Electricity Act* (Act). It provides that NB Power must obtain Board approval of any capital project with a projected capital cost of \$50 million or more. The following provisions apply:

107(1) Subject to subsections (4) and (6), if the total projected capital cost to the Corporation of a capital project is \$50 million or more, the Corporation shall not incur, in relation to the capital project, capital expenditures in excess of an amount equal to 10% of the total projected capital cost of the capital project before the capital project has been approved by the Board.

107(9) If satisfied as to the prudence of a capital project for which approval is applied for under this section, the Board shall approve the capital project.

107(11) In making a decision under subsection (9) or (10), the Board shall take into consideration

- (a) the policy set out in section 68,
- (b) the most recent integrated resource plan approved or deemed to be approved by the Executive Council under section 100,
- (c) the most recent strategic, financial and capital investment plan filed with the Board under section 101,
- (d) any requirements imposed by law on the Corporation that may be relevant to the application, including, without limitation, requirements regarding demand-side management and energy efficiency plans and renewable energy requirements,
- (e) any directive issued by the Executive Council under section 69 that may be relevant to the application,
- (f) any policy established by a regulation made under paragraph 142(1)(f) that may be relevant to the application, and
- (g) any other factors that the Board considers relevant.

[14] Subsection 107(9) requires the Board to approve a capital project for which an application is made under section 107, if the Board is satisfied as to its prudence, taking into consideration subsection 107(11) factors.

[15] The Board considered the section 107 prudence threshold in its 2018 decision in Matter 375:

[72] The Board must first consider the meaning of “prudence” as used in subsection 107(9). Within the context of the Act, the reference to prudence is unique. The word “prudence” is only used in sections 107 and 108, both of which relate to the approval of capital projects. The legislation does not provide specific guidance as to how “prudence” is to be interpreted.

[73] How the term “prudence” is to be applied by the Board in the current application was debated during the hearing. The Board heard a variety of interpretations of how this section should be applied.

[74] The Board is bound by the Act, including paragraphs 107(11) (a) to (g). These inform the Board of existing policies, future investments and forward-looking plans. The general rule of statutory interpretation is that words are to be interpreted in their entire context and in their ordinary sense, harmoniously with the object of the Act and legislative intent.

[75] An overarching factor is the Board’s role to make decisions in the public interest. Section 131 of the Act states that any decision of the Board is subject to any terms or conditions that it “...considers necessary in the public interest.”

[76] A prudent project must consider both short-term and long-term outcomes. The demonstrated benefits to ratepayers must outweigh the expected costs that ratepayers will be asked to bear. These can be both quantifiable and non-quantifiable. The Board must exercise its discretion to determine what is prudent, using the factors in subsection 107(11) and the specific evidentiary record.

C. NB Power’s Investment Rationale

[16] NB Power’s application relies primarily on its net present value business case (Business Case), which indicates AMI estimated costs and quantifiable benefits. The investment rationale also includes non-quantifiable benefits to customers and society, as well as potential quantifiable benefits, following deployment of AMI.

[17] NB Power engaged Navigant Consulting, Ltd. to perform an independent review and assessment of the investment rationale. Mr. Erik Gilbert, a director of Navigant, gave testimony on behalf of NB Power. He was declared an expert in benefit cost analysis for grid modernization and specifically for AMI.

- [18] Navigant validated NB Power's Business Case as follows: "NB Power's AMI business case is cost-effective with benefits of \$140.7 million and a cost of \$109.6 million, yielding an NPV of \$31.1 million."
- [19] During the hearing, NB Power revised its Business Case relating to the meter accuracy benefit to a more realistic scenario. This reduces the net present value (NPV) of the Business Case from \$31.1 million to \$28.0 million in 2019/20 dollars. NB Power submits that this yields a benefit-to-cost ratio of 1.25.
- [20] NB Power engaged additional consultants to review specific areas of its investment rationale, including specific aspects of its Business Case. Their evidence is reviewed below.
- [21] A review of the Business Case by Daymark Energy Advisors, Inc. (Daymark), filed as evidence by the Public Intervener, stated:
- Overall, the Company's Business Case and its supporting assumptions and documentation are consistent with industry experience, although some proposed modifications to the business case are introduced in this testimony.
- [22] Board staff engaged Synapse Energy Economics, Inc. (Synapse) to review, critique and make recommendations concerning NB Power's AMI proposal. Although Synapse raises several concerns, as reviewed below, it concludes that, under plausible conditions, the project would result in benefits to ratepayers.
- [23] Dr. Roger Richard engaged Dr. Didier Tatoutchoup, associate professor of economics at the Université de Moncton, to review the Business Case. The Board declared Dr. Tatoutchoup as an expert in economics. He recommends that NB Power's application not be approved, because the benefits are insufficient and it has not passed the profitability test. In addition, he states that, compared to other AMI business cases, the NB Power project is very weak.
- [24] The following sections will review preliminary issues in relation to the investment rationale, including the AMI project's capital and operating costs, and its quantifiable and non-quantifiable benefits.

D. Analysis

1. Preliminary Issues

[25] NB Power's Business Case relies on several underlying factors. These are reviewed below, before considering particular project costs and benefits.

a. Investment Analysis Period

[26] The Business Case uses an investment analysis period of 17 years, which includes the deployment period and the 15-year economic life of meters. Benefits are calculated proportionately to the number of meters installed during the deployment period.

[27] NB Power conducted an assessment, through Concentric Energy Advisors (Concentric), of the useful life of a smart meter. Concentric recommended 18 years as the useful life. NB Power chose to remain consistent with its earlier application to the Board, and used 15 years as the economic life.

[28] The Navigant report validated the time horizon based on a 15-year economic life, and considered it "appropriate and likely conservative" in its report. It pointed to other utilities which have used a 20-year economic life for smart meters. For example, the Nova Scotia regulator approved a 20-year life span for Nova Scotia Power's smart meters as "reasonable and appropriate." The Navigant report also cited BC Hydro and two US utilities as having used a 20-year life span in their AMI business cases.

[29] There was no challenge to NB Power's use of a 15-year economic life of the smart meters.

[30] The Board finds that NB Power's use of a 15-year economic life in its AMI business case is appropriate. Considering the Concentric report and the 20-year life used in several other jurisdictions, the Board considers NB Power's investment analysis period as conservative.

b. Discount Rate

[31] The Business Case uses a 5.25% discount rate in the determination of the NPV, based on a forecasted cost of borrowing of 4.6% plus a 0.65% debt portfolio management fee. In response to an undertaking, NB Power stated that the 4.6% cost of borrowing is based on an

estimated long-term interest rate forecast issued by the Conference Board of Canada of 3.7%, plus a credit spread of 0.9% for the Province of New Brunswick.

- [32] Navigant's review found the 5.25% rate to be lower than rates in the other business cases it reviewed (which ranged from 6.1% to 8.0%). The review states that each utility has unique characteristics that determine its cost of capital. Navigant did not see this as a cause for concern. As part of its review, Navigant did a sensitivity analysis, using a high-end discount rate of 6.5%. This would reduce the benefit to cost ratio from 1.28 (based on the original NPV of \$31.1 million) to 1.20.
- [33] In his written evidence, Dr. Tatoutchoup stated that the discount rate used by NB Power is too low, and recommended that it should use its weighted average cost of capital (WACC) of 5.9%. He referred to NB Power's current *Demand Side Management Plan* and its *2017 Integrated Resource Plan* (IRP), both of which refer to a WACC for NB Power of 5.9%.
- [34] On cross-examination by Mr. John Furey, Senior Legal Counsel for NB Power, Dr. Tatoutchoup acknowledged that the methodology of calculating WACC in the 2017 IRP is the same methodology used in calculating the discount rate of 5.25%. He also acknowledged that the credit risk spread of 100 basis points used in the 2017 IRP had been reduced to 90 basis points for the purposes of the Business Case.
- [35] No other intervener took issue with NB Power's use of 5.25% as the appropriate discount factor.
- [36] The Board is satisfied that the methodology used by NB Power in determining the discount rate for the Business Case is consistent with the method used in the 2017 IRP. There was no evidence presented to contest the factors used by NB Power in arriving at the discount rate. The Board therefore accepts 5.25% as the discount rate in determining the NPV of the AMI project.

c. Escalation Rates

- [37] The Business Case uses an annual 2% consumer price index (CPI) as an escalation rate on most costs and benefits (other than the marginal cost of power, as discussed below).
- [38] This was validated by Navigant as appropriate, being generally consistent with other business cases, and with recent CPI rates reported by Statistics Canada. Navigant performed

a sensitivity analysis on this variable, with a range of 1.5% to 2.5%. The resulting benefit-to-cost ratios were 1.26 and 1.31, respectively.

- [39] The Business Case also uses an escalation rate of 3.19% for the marginal cost of power. The cost of power is integral to the calculation of the quantifiable benefits relating to High Bill Alerts and Distribution Network Losses. Mr. Gilbert testified that different escalation rates can be used for different types of costs. He stated that Navigant did not attempt to analyze or deconstruct how NB Power arrived at the rate of 3.19%.
- [40] Dr. Tatoutchoup submits that, to be consistent, the Business Case should use the same 2% escalation rate for both the capital cost and the marginal cost of power. He added that using the same escalation rate for both benefits and costs “will ensure symmetry.”
- [41] On behalf of Utilities Municipal, Mr. Scott Stoll argued that the escalation of costs and benefits should be based on the best information available for specific costs.
- [42] The Board finds it appropriate to have different escalation rates for different costs items. The Board accepts the escalation rates as proposed by NB Power, as outlined above, for the purposes of the Business Case.

d. Contingency Factors

- [43] As part of a conservative approach, NB Power adds contingency factors to the AMI projected costs. Contingencies are in addition to inflationary factors in the Business Case.
- [44] NB Power applies a contingency factor of 2% on its fixed capital costs, including meters and hardware that are subject to the terms of fixed cost contracts. This applies to the meters and modules, network infrastructure, head-end system, and professional installation services. This represents roughly two-thirds of the total AMI project costs.
- [45] There is also a 2% contingency on Operations, Maintenance and Administration (OM&A) costs.
- [46] Variable capital costs have a 10% contingency rate, with a supplemental contingency of 15% on the Customer Information System (CIS), Work Force Management (WFM) and Enterprise Service Bus (ESB) for a total contingency of 26.5%.

[47] The Navigant review did not provide a detailed analysis of the contingency factors used by NB Power. With respect to meter installation costs, system integration costs and AMI project team costs, it submits that the higher-than-2% contingency factors were sufficient to mitigate the risk of higher than expected costs.

[48] Daymark's review of the Business Case states that, given NB Power's historical internal project cost overruns, it should use a 15% contingency for all of the capital costs for which contracts have not yet been signed.

[49] The evidence provided by Synapse also expressed concerns that the contingencies on project costs may be too low. It states that the system integration cost contingency of 10% does not appear to adequately address the risk of cost overruns. In general, Synapse states:

While it is possible that the budgeted cost plus contingency would be adequate in a *likely* set of outcomes, it is easy to imagine outcomes in which the cost categories without signed contracts and contract caps could exceed budgets by large amounts - well more than the 26.5 percent maximum contingency on any one cost item...

[50] The Board concludes that the following contingency rates are acceptable:

(1) 2% on fixed capital costs, including meters and hardware that are subject to fixed price contracts;

(2) 2% on OM&A; and

(3) 15% for all other capital costs that are not subject to a fixed price contract.

2. AMI Project Costs

[51] The present value of NB Power's projected AMI costs of \$109.6 million consists of \$78.6 million in capital costs and \$31.0 million in OM&A. These are reviewed below.

a. Capital Costs

[52] The largest portion of the capital costs, \$50.1 million, is for AMI meters and modules (\$38.1 million), and related infrastructure and services (\$12.0 million). NB Power participated in a procurement process as part of a consortium with three other utilities, leading to a fixed

price contract for AMI meters, valid until June 2023. The contract is contingent upon NB Power receiving Board approval of this project.

[53] The balance of the capital costs consists of Meter Installation (\$9.9 million), CIS/WFM/ESB capital (\$8.4 million), MDM capital and AMI project team (\$7.3 million), Corporate Services & Other (\$2.8 million), and pre-engineering (\$0.1 million).

[54] In its review of AMI costs, Navigant notes that the above costs do not include historical spending on these areas, or sunk costs, as they are not appropriate for inclusion in a business case analysis. Navigant concluded that the AMI capital cost projections were based on appropriate methodologies.

b. Operating Costs

[55] The operating cost of \$31.0 million consists mainly of AMI operating costs, including meter base maintenance and infrastructure operating costs (\$11.5 million), MDM operating costs (\$10.1 million), CIS/ESB operating costs (\$6.0 million), utility tax (\$2.6 million) and corporate services and other operating costs (\$0.7 million).

[56] Navigant did not note any concerns with these projections.

[57] There were no issues raised concerning operating costs. The Board accepts the operating costs, as proposed by NB Power.

c. Conclusion – AMI Project Costs

[58] With the increase in the contingency factor for variable capital costs from 10% to 15%, the present value of all AMI project costs increases by \$1.24 million to \$110.8 million. This is used by the Board in its analysis of the project.

3. Quantifiable Benefits

a. Reduction in Meter Reading and Related Avoided Costs

[59] Because AMI automates many meter reading functions, there would be a reduced need for meter readers and service calls. With these reductions, a number of related costs would also be avoided, such as managerial and supervisory, vehicle and overtime expenses. The

claimed present value of these benefits totals \$39.9 million, as avoided costs of meter reading and service orders, and \$6.6 million for related meter reading savings. These are reviewed separately below.

(1) Reduced Manual Meter Reading and Service Orders

- [60] The benefit of reduced manual meter reading and service orders includes the avoided costs of labour and expenses associated with reading meters, including extended support for scheduling and billing. NB Power estimates that, of 36 meter services employees, 10 will be retained to manage service orders and troubleshoot non-communicating meters. Nineteen contractors would not be required. An additional 7 meter support positions will be eliminated. This represents a present value benefit of \$39.9 million.
- [61] Navigant's assessment of this benefit concludes that it is reasonable and aligns with comparable AMI business cases it reviewed. It noted that the benefit accrual is delayed by one year, to account for a delayed integration of meters with the head-end system and views this as reasonable and "likely conservative."
- [62] None of the interveners took issue with this benefit. The Board accepts \$39.9 million as the present value of this benefit.

(2) Related Meter Reading Savings

- [63] As a consequence of reduced manual meter reading, NB Power claims a related present value benefit of \$6.6 million. This includes the avoided costs of a meter services manager salary (\$1.8 million); replacement costs of meter reading vehicles (\$1.8 million); handheld system and hardware (\$1.4 million); a meter reading supervisor (\$1.0 million); and overtime for meter service orders (\$0.6 million).
- [64] Navigant's assessment generally found that the benefits calculation methodologies for the related meter reading savings were appropriate and that the avoided cost assumptions were reasonable.
- [65] Dr. Tatoutchoup's evidence suggests that these avoided costs should not be included in the Business Case unless the persons filling those roles are terminated from employment.
- [66] Ms. Lori Clark, Senior Vice-President of Operations for NB Power, was cross-examined by Dr. Richard on this issue. Ms. Clark testified that, considering the demographics and

potential future vacancies in other areas, there would be no added costs associated with the displacement of meter readers through AMI.

[67] None of the other interveners took issue with this item.

[68] The Board is satisfied with the explanation provided by Ms. Clark. The Board accepts \$6.6 million as the present value of these benefits.

b. Avoided Meter Replacements

[69] The benefit of avoided meter replacements has three aspects. First is the required annual replacement of meters, assumed to be at the rate of 4.41% of the fleet of residential and demand meters per year. This also captures scheduled meter replacements as required by Measurement Canada. Second is the avoided cost of demand meter seals, which must be broken and replaced monthly. Third is the avoided cost of damaged meter base repairs. The present values of these benefits total \$22.0 million.

[70] Navigant found the benefit calculation methodology to be appropriate.

[71] None of the interveners raised any issue with this benefit. The Board accepts \$22.0 million as the present value of this benefit.

c. High Bill Alert Service

[72] AMI permits customers to monitor energy consumption by receiving high bill alerts from the utility when a customer's energy consumption appears to be higher than normal. This would allow customers to view comparative consumption trends, permitting them to reduce their consumption.

[73] The details of this program have not been fully developed. NB Power, in an undertaking response, stated that the final design and functionality of the service had not been chosen.

[74] NB Power engaged Mr. Philippe Dunskey, President of Dunskey Energy Consulting (Dunskey), to investigate and report the potential benefits related to this service. Mr. Dunskey was declared as an expert in demand-side management strategies and regulation.

- [75] NB Power has email addresses for roughly 60% of its 341,184 residential customers and Mr. Dunsky assumes that 10% of those will opt out of the service. This would result in approximately 183,000 residential customers who would receive high bill alerts, or a participation rate of 90% of that 60%.
- [76] The report compares the 10% opt-out rate with other residential programs, such as NB Power's current Home Energy Reports, which have opt-out rates in the range of 1-3%. The report also assumes that no customers (for whom NB Power has no email address) will opt into the service.
- [77] Mr. Dunsky also assumed a 0.7% per year energy consumption savings for participating customers, which represents 109.08 kilowatt-hours per year on an average residential consumption. On cross-examination by the Public Intervener, Ms. Heather Black, Mr. Dunsky acknowledged that if other jurisdictions use an "opt-in" model for their high bill alert programs, the level of savings is likely to be higher.
- [78] Mr. Dunsky states that there is limited information available regarding energy savings from similar programs in other jurisdictions. He cites however, a decision of the Nova Scotia Utility and Review Board, which approved Nova Scotia Power's estimate of 0.75% energy savings per year from its own AMI-based high bill alert program.
- [79] Because New Brunswick residences have a much higher penetration of electric space heating, compared to Nova Scotia, Mr. Dunsky believes that the potential for similar energy reductions, particularly in winter, may be challenging. Conversely, because household incomes in New Brunswick are significantly lower than in Nova Scotia, there would be greater incentive to respond to high bill alerts. Mr. Dunsky assumed that these two opposing factors would cancel each other out.
- [80] Based on these assumptions and the marginal cost of power, Mr. Dunsky concludes that a high bill alerts program has a present value benefit of \$15.4 million.
- [81] Navigant's assessment of the Dunsky report states that the 90% response rate among email-enabled customers is "potentially high." If, however, program messaging to customers is handled appropriately, or NB Power's share of customers' emails is increased, Navigant believes this would be a credible assumption.

- [82] The Navigant assessment concludes that the 0.7% energy reduction is reasonable and in line with comparable cases. Navigant’s sensitivity analysis of this benefit uses a low-end participation rate of 60%. This would reduce the present value of the benefit by \$5.1 million to \$10.3 million.
- [83] Ms. Alice Napoleon, Senior Associate, appeared as a witness on behalf of Synapse at the hearing. Ms. Napoleon was declared an expert in the areas of energy efficiency planning and program design, advanced metering infrastructure planning and cost effectiveness in utility regulation and performance metrics.
- [84] In its pre-filed evidence, Synapse states that the “overall benefit value asserted by NB Power is highly sensitive to the utility’s assumptions about program participation and energy savings.” It also cites Dunsky’s note that there is limited information regarding verified energy savings from similar programs.
- [85] In relation to Dunsky’s comparison with the Nova Scotia program, Synapse states:
- ... there is no basis for concluding that these factors [NB’s greater penetration of electric heating and its comparatively lower affluence level] are in fact operating in equal and opposite directions. Indeed, it is not even clear that the New Brunswick’s less affluent population is likely to be more responsive to high bill alerts than Nova Scotia’s.
- [86] Citing the lack of detail on how NB Power plans to educate customers on the program, and other program details, Synapse concludes: “It is incumbent on NB Power to provide this necessary detail so that the Board can properly evaluate the projected costs and benefits of this program along with other AMI functionalities.”
- [87] Daymark’s consultants, Ms. Kathleen Kelly, Vice President and Principal Consultant, and Mr. Philip DiDomenico, Managing Consultant, appeared as witnesses. Ms. Kelly was qualified as an expert in grid modernization, benefit cost analysis and program tracking and recording. Mr. DiDomenico was qualified as an expert in AMI and assessment of the benefits of AMI, delivery of operations and planning.
- [88] Daymark’s pre-filed evidence views the 90% participation rate as “potentially high”, and based on certain studies, only 63% to 74% of customers will open the email to review the

alert. Based on a 70% response rate, Daymark estimated that the present value of this benefit would be reduced to \$10.8 million.

- [89] In NB Power's final argument, Mr. Furey, submitted that Daymark's analysis is based on the incorrect assumption that the 0.7% energy savings applies only to those customers who open a high bill alert email and take action on it. Instead, he submitted, the energy savings is based on the 90% participation rate, meaning those who have not opted out of the program.
- [90] The Public Intervener acknowledged this point in her final argument. However, Ms. Black submitted that the "most conservative approach" would be to use the 63% participation rate calculation mentioned in Daymark's evidence.
- [91] The Board does not accept the \$15.4 million value of the benefit proposed by NB Power in relation to a high bill alert service, as the underlying factors are too speculative.
- [92] Firstly, NB Power acknowledges that its details are not fully developed, including its final design and functionality. Secondly, energy saving comparisons with other jurisdictions do not provide the Board with any confidence that the rate of 0.7% would apply to its yet-to-be developed program. Finally, the notion that there would be greater incentive to respond to high bill alerts among low-income participants in the program is speculative and is not quantified.
- [93] The Board accepts that high bill alerts will likely import energy consumption savings among program participants. Certain conservative assumptions, such as a 0% opt-in rate, and a lag period for accrual of benefits, were included in NB Power's analysis. Given the uncertainty stated above however, a more conservative estimate of this benefit is required.
- [94] As stated above, Navigant performed a sensitivity analysis to assess the impact of high bill alerts on the Business Case. The low case of 60% used in its analysis represented a more conservative assumption.
- [95] The Board will use a 60% participation rate as a proxy to account for this uncertainty. NB Power confirmed this would reduce this benefit to \$10.2 million. The Board accepts this as the present value of the High Bill Alert service.

d. Meter Accuracy Losses

- [96] NB Power's installed meter fleet of analog meters are known to slow down over time. As stated above, they make up about 28% of the installed meter fleet for residential and commercial customers. This results in under-measuring customers' energy consumption by an estimated 0.5% to 1.0%. NB Power submits that replacing analog meters will eliminate this under-measuring of electricity usage, resulting in increased revenue. NB Power assumed an increase of 0.5% in billed consumption. During the hearing, it submitted a revised estimate that the additional revenue represents a present value of \$8.3 million.
- [97] Navigant's assessment of this benefit stated that the assumed improvement in meter accuracy of 0.5% from the replacement of analog meters is a reasonable and conservative estimate.
- [98] Synapse states that, while the elimination of under-reporting of consumption may result in greater revenue with AMI, this is likely to be a temporary benefit.
- [99] Synapse submits that current rates effectively provide the utility with its full revenue requirement, despite under-measurement by some meters. In that sense, the issue is one of rate equity, in that customers with slow meters are underpaying and those with AMR meters are over-paying for consumption.
- [100] In its rebuttal evidence, Navigant states in part:
- ...using the current retail rate forecast to value this benefit stream over the entire analysis period is in keeping with the accepted practice, and considering this to be a temporary benefit would be outside of accepted practice.
- [101] During cross-examination of Mr. Gilbert concerning Navigant's rebuttal evidence, Mr. Stoll asked:
- Q. - ... if some of us in this room have under-registering meters and we are not fully paying our bill, aren't the rest of us in the room making up for that so that NB Power is made whole?
- A. I suppose at the end of the day after ratemaking and so on, that would be the case.

[102] The Board finds that the introduction of smart meters would effectively eliminate the problem of under-measuring energy by analog meters. It does not accept however, that this is a quantifiable benefit. Accordingly, the Board will not include the \$8.3 million proposed benefit in its assessment of the Business Case.

[103] The Board accepts, however, that there would be a non-quantified benefit by the elimination of energy billings either over-charging or under-charging for actual energy consumption.

e. Avoided Cost of Load Research Program

[104] NB Power states that it lacks current load research data suitable for class cost allocations and rate design. Load research permits a utility to estimate load and coincident factors and to design customer class rates that reflect a proper allocation of costs. Load research also provides better demand-side management program planning.

[105] In its July 16, 2019 decision in Matter 430, the Board stated:

[103] The load data for the distribution classes is stale and should be refreshed. The Board directs NB Power to provide a detailed proposal as soon as practicable on how the load research program can be reinvigorated.

[106] NB Power engaged the firm of DNV GL to explore metering and data collection options to support a load research effort. Its report analyzed the requirements and costs of a load research program, with and without AMI in place.

[107] Mr. Claude Godin, Director of Energy Data Analytics and a Senior Consultant with DNV GL was qualified as an expert in advanced metering infrastructure, product development and delivery, specializing in meter data acquisition, meter data management and energy analytics.

[108] DNV GL states that, in order to have current load research data in the absence of AMI, 1,061 load research meters would initially be required. Additional requirements would include staff to manage and validate the data, and cellular fees to transmit the data to head office.

[109] DNV GL also states that, in a non-AMI scenario, the load research sample would need to be refreshed annually with the installation of 20% of the original sample, beginning in the fifth

year of the planning horizon. This would be to ensure that the load research sample remains representative of the relevant customer class populations. It recommended a 20% annual growth in load research meter population in order to expand and improve the statistical performance.

[110] DNV GL notes that, with AMI, load profile data for the full population of customers would be available to NB Power, enabling traditional cost of service analysis as well as a full range of beneficial advanced analytics.

[111] DNV GL concludes that the present value of the avoided costs of load research, with AMI in place, is \$5.2 million. This accounts for the avoided meters and installation costs, operating costs and cellular charge costs.

[112] None of the interveners challenged DNV GL's analysis and conclusion.

[113] Navigant assessed the avoided cost methodology used by DNV GL as appropriate.

[114] Accurate and current load research is essential to a fair allocation of costs. The Board finds that the costs of load research meters and associated staff and training costs can be avoided by AMI. The Board accepts the avoided present value cost of \$5.2 million as the amount of this benefit.

f. Distribution Network Losses

[115] The Business Case states that AMI provides an opportunity for NB Power to create programs to reduce distribution system losses (other than meter accuracy losses), including the ability to monitor transformers to identify over and under-sized assets. There is also the opportunity to detect theft of electricity.

[116] Simply put, distribution losses are the differences between the energy that enters the distribution system and the end-use consumption. The Business Case states that the present value of this benefit is \$15.0 million. This benefit captures the opportunities and programs to use AMI data to reduce overall distribution losses that impact revenue.

[117] NB Power assumes that losses will be reduced by a factor of 0.25%. This is applied to the total load forecast for residential, industrial and general service customer classes, multiplied by the marginal cost of power.

- [118] In its assessment, Navigant states that the calculation methodology for this benefit is appropriate, and that the factor of 0.25% is reasonable. As an example, it cites Nova Scotia Power's use of a 0.33% assumption and National Grid's use of 0.25%.
- [119] In a response to an undertaking, NB Power states that it does not have historical data related to distribution system losses resulting from over and under-sized assets. Further, it states that there are no current means to provide this data. It cites other jurisdictions using a similar or more aggressive factor for reduced distribution losses. It is also apparent from the evidence that a number of utilities see this as a benefit.
- [120] NB Power provided data concerning known occurrences of theft, which averaged roughly \$37,000 per year from 2012/13 to 2018/19.
- [121] Synapse states that NB Power's reliance on the experience of other jurisdictions is problematic, because of the lack of historical data related to distribution losses from over and under-sized assets. It also states that this element accounts for roughly 97% of the claimed benefit, with theft losses comprising the balance. It presented an illustrative alternate scenario whereby the claimed net benefit would be reduced by 50%, or a present value of \$7.5 million.
- [122] Synapse does not provide, however, an alternative proposed amount for this benefit. Its alternative is equally problematic, as any other amount would also rely on experiences from other jurisdictions. This benefit was not challenged by any other intervener.
- [123] There can be no doubt that the reduction of network losses through AMI is a benefit. The 0.25% factor used by NB Power is a conservative estimate. The Board accordingly accepts \$15.0 million as the present value of this benefit.

g. Conservation Voltage Reduction

- [124] Conservation Voltage Reduction (CVR) is a technology employed to control customer load to reduce energy and peak demand by optimizing the voltage at the substation and feeder level. This operates the distribution feeders at the lowest acceptable voltage levels. Through CVR, a utility can generate electricity at slightly lower voltages, thereby saving energy supply costs.

- [125] The benefit consists of three components: (a) avoided costs of installing end-point sensors on transformers; (b) avoided cost of communications; and (c) incremental energy savings with an AMI-enabled CVR system. To calculate this benefit, NB Power compares the estimated avoided costs and energy savings of CVR with and without AMI. The systems would differ in that an AMI-based system would receive voltage inputs from smart meters. NB Power estimates that an AMI-enabled CVR program will provide a present value benefit of \$16.2 million.
- [126] In a non-AMI system, voltage data would come from a set of dedicated monitors at distribution transformers, rather than at each customer location. Based on a need to install more than three thousand sensors and a communications system, the avoided cost is more than \$7.2 million, plus annual operating costs.
- [127] Without AMI, CVR can reduce energy use by 48 gigawatt hours (GWh). With an AMI-enabled CVR system, NB Power estimates that it can reduce energy by an additional 12 GWh. This is due to improved information upon which to regulate substation feeder voltage.
- [128] Kinectrics Inc. was engaged by NB Power to comment on estimates it had prepared for the energy savings that could be gained from a CVR system. As part of their assessment, Kinectrics evaluated both AMI-based CVR systems and non-AMI based CVR systems.
- [129] Mr. Stephen Cress is an associate engineer of Kinectrics. Mr. Cress was qualified as an expert in distribution and power system analysis, distribution system voltage regulation and losses and distribution feeder monitoring and automation. Mr. Arend Koert is a Principal engineer with Kinectrics. Mr. Koert was qualified as an expert in distribution power system analysis, customer metering, asset management and equipment end of life.
- [130] Kinectrics filed reports that review NB Power's plan for CVR savings and whether AMI would increase CVR-based energy savings over a non-AMI system. The reports evaluate different methods to calculate potential voltage reductions and energy savings. Kinectrics also compared NB Power's proposed CVR program to those existing in other jurisdictions.
- [131] Approximately one third of the estimated CVR avoided cost is related to the purchase and installation of required voltage sensors in a non-AMI environment. Another 20% of the savings are related to required communications equipment and software. Roughly 45% of

the savings are related to the additional energy savings that an AMI-based CVR system would produce, compared to a non-AMI system.

- [132] In its review of this benefit, Navigant concludes that NB Power uses an appropriate calculation methodology, and that it is aligned with common utility practices.
- [133] Synapse raises two issues with respect to this benefit. First, it submits that the incremental costs related to a non-AMI system were not adequately supported, and could be overstated. It states that the inclusion of the avoided costs of an AMI-based system lacks a complete benefit-cost analysis. Without such an analysis, it concludes that it is difficult to validate the full benefits of an AMI-based CVR program.
- [134] A second issue is that any increase in distributed energy resources could negatively impact CVR-associated savings. During cross-examination, Mr. Cress acknowledged that the benefit of CVR would erode with the increase of distributed generation. He added, however, that an AMI-based system would be able to avoid this erosion, and the benefit would remain.
- [135] The Synapse evidence raised only general concerns about a lack of support for the inclusion of this benefit. No other interveners, however, raised any issues with this benefit.
- [136] The Board finds that NB Power's evidence provides a detailed analysis of this benefit, supported by the validations of Navigant and Kinectrics. The Board accepts the present value CVR benefit of \$16.2 million.

h. Unbilled and Uncollectable Accounts

- [137] The Business Case states that AMI provides the ability to remotely disconnect power to customers, or to limit the load to assist customers to manage their energy usage, thus avoiding disconnection. According to NB Power, this would result in reducing the amount of accounts that are written-off, with a present value of \$1.2 million.
- [138] Navigant states that NB Power's methodology for calculating the benefit is appropriate and the load limiting assumption is reasonable. It also found the magnitude of the benefit aligns with comparable AMI business cases.

[139] NB Power confirmed in a response to an interrogatory, that the calculation of this benefit is for illustrative purposes only, and that there is no policy or program in place to facilitate this benefit. Further, it would require changes to NB Power's customer services policies and procedures.

[140] Synapse outlines a number of concerns in relation to this issue. For example, it is not clear in its illustration, whether a limited load would provide sufficient heat in winter for those affected.

[141] The Board does not regard this item as currently quantifiable. Although there are potential benefits, a review by the Board of a program proposal, following any AMI implementation, would be required. The Board accordingly does not accept \$1.2 million as a quantifiable benefit.

i. Avoided Cost of Net Metering Program

[142] NB Power's current net metering program provides customers with the option to connect their own sustainable generation to the distribution system. This requires replacing the existing meter with a bi-directional meter to measure energy both delivered to and received from the distribution system. Costs include \$66 per meter for residential customers and \$300 per meter for commercial customers, plus \$109 for each installation. Costs also include back office support. The utility currently covers these costs.

[143] AMI meters support net metering, which avoids the costs of purchasing bi-directional meters and related costs to support the program. The present value of the avoided costs in the Business Case is \$4.8 million.

[144] The program costs were estimated using a 2017 study of projected solar adoption in New Brunswick, prepared by Mr. Dunsky (Solar Study). This projects the cumulative growth of solar generation adoption in New Brunswick out to 2040. This would lead to a corresponding growth in the number of bi-directional meter systems.

[145] In his testimony, Mr. Dunsky identified an anomaly in the Solar Study. He stated that there was a lack of smoothing of the forecasted adoption of solar generation in that report, which effectively resulted in over-forecasting. Mr. Dunsky stated that a correction of this anomaly would reduce his original calculation of the benefit by \$0.5 million.

[146] Navigant found the rationale and methodology for the benefit to be reasonable. It did not assess Dunsky's underlying net metering forecast. Navigant found, however, that it was comparable to Nova Scotia Power's forecast of distributed generation sites out to 2014, as used in its own AMI business case.

[147] Synapse states that NB Power's assumptions in the growth of net metering customers has not been adequately justified, and that several distributed generation initiatives are in development, or planned to be developed. It also pointed out an "unexplained spike" in the Solar Study, but as outlined above, this was corrected by Mr. Dunsky in his testimony.

[148] Although the evidence by Synapse cast some doubt on the growth assumptions of the Solar Study, it did not provide a viable alternative growth scenario. The Board accepts that this benefit has a present value of \$4.3 million, which incorporates the \$0.5 million reduction noted above.

j. Outage Restoration

[149] NB Power experiences a number of "false positive" reports of power outages every year. Associated service requests in recent years have averaged 36 per month, at an annual labour cost of \$162,000.

[150] AMI provides control room operators with the visibility to the power status of customers in a geographic area, and in particular, when power is disrupted or restored to a property. With this ability, work orders for false positive reports will be reduced. The present value of this benefit is \$1.6 million.

[151] Navigant validates this benefit, finding that the false positive assumptions were reasonable and based on historical data and costs.

[152] Neither Synapse nor Daymark provided any critique or recommendations in relation to this benefit.

[153] The Board accepts \$1.6 million as the present value of this benefit.

k. Reduced Customer Inquiries

[154] NB Power employs customer care staff to field calls about billing concerns. With AMI, customers will have the tools to access their accounts to review their consumption with more granular data. This would reduce the number of calls to the customer care centre.

[155] The Business Case estimates that, with AMI, two full-time equivalent (FTE) positions (comprising both customer care staff and Energy Advisor time) can be eliminated. The present value of this benefit is \$1.4 million.

[156] Navigant's review of this benefit found the methodology and FTE reductions estimate to be reasonable. It noted that call volume may be expected to increase as a function of the AMI roll-out, but could be handled within the staffing model assumptions.

[157] Neither Synapse nor Daymark provided any critique of this benefit.

[158] The Board accepts \$1.4 million as its present value.

l. Summary of Estimated Net Present Value

[159] The following table presents the Board's conclusions in relation to the Business Case:

Benefit	Business Case	Board Accepted
Reduction in Meter Reading (\$39.9 + \$6.6)	\$46.5	\$46.5
Avoided Meter Replacements	\$22.0	\$22.0
High Bill Alert Service	\$15.4	\$10.3
Meter Accuracy Losses	\$8.3	\$ 0
Avoided Cost – Load Research Program	\$5.2	\$5.2
Distribution Network Losses	\$15.0	\$15.0
Conservation Voltage Reduction	\$16.2	\$16.2
Unbilled / Uncollectable Accounts	\$1.2	\$0
Avoided Costs of Net Metering Program	\$4.8	\$4.3

Outage Restoration	\$1.6	\$1.6
Reduced Customer Inquiries	\$1.4	\$1.4
Total:	\$137.6	\$122.5
Estimated NPV (with \$110.8 million PV costs):	\$26.8	\$11.7
Benefit-to-Cost Ratio:	1.24	1.11

Note: All figures are subject to rounding and dollar amounts are in millions

[160] The Board concludes that, accounting for the above adjustments to the quantified benefits, the proposed AMI project Business Case presents a positive net present value, with a benefit-to-cost ratio of 1.11.

4. Non-Quantified Benefits

[161] NB Power also engaged Dunsky to review non-quantified benefits that may result from AMI.

[162] AMI may provide customer benefits such as increased control and choices, and reduced outage frequency and durations. Societal benefits include greenhouse gas emission reductions, improved air quality and economic development. These add non-quantified value to the investment analysis.

[163] Synapse acknowledges that there are non-quantified benefits that are likely to result from AMI implementation that may more than offset AMI costs. Although its conclusion is that NB Power's Business Case is not well documented or justified, it states that there are future scenarios where AMI might provide net benefits to ratepayers. In an undertaking response, Synapse acknowledged that all of the non-quantified benefits could be material over the course of a post-AMI 17-year period.

[164] In the Board's view, non-quantified benefits only serve to enhance a positive Business Case.

5. Health and Safety Considerations

[165] Dr. Roger Richard raised health concerns with respect to radio frequency (RF) radiation as an issue in the current matter. These are addressed below.

a. Safety Code 6

[166] The Board addressed health and safety considerations in Matter 375. In that case, the Board stated:

[70] The Board accepts that Safety Code 6 is the applicable industry safety standard in relation to RF emissions with respect to the smart meters proposed by NB Power. Further, the Board accepts the evidence that the smart meters proposed by NB Power fall well within federal government standards, as set out in Safety Code 6.

[167] The report of Dr. Paul Héroux, submitted as evidence by Dr. Richard, seeks to cast doubt upon the reliability of Safety Code 6. His report refers to “controversies undermining Safety Code 6”, and “the crumbling edifice of SC6.” The Board does not find this evidence to be convincing. There is no basis for the Board to reject Safety Code 6 as the authoritative Canadian standard in relation to RF radiation safety limits.

[168] The Board concludes that Safety Code 6 is the governing Canadian standard in relation to radio frequency emissions. The issue then, is whether there is evidence in this proceeding that establishes that RF radiation emitted by smart meters, such as those proposed by NB Power, exceeds the limits set out in Safety Code 6.

b. Health Impacts of Smart Meters

(1) NB Power Evidence

[169] NB Power submitted into evidence the report of Dr. Michel Plante, a physician consultant who is often employed by the Health and Safety division of Hydro Quebec. Dr. Plante was qualified as an expert in medical science and health risk assessment, in particular in the field of ionizing and non-ionizing radiation, which includes radio frequency radiation.

[170] Dr. Plante assessed the possible health risks related to the presence of smart meters in a residential environment, based on technical data provided by NB Power. He explains that RF radiation is an electromagnetic wave within a spectrum of waves such as infrared

radiation, visible light and X-rays. Dr. Plante testified that radio frequency is a form of light that is invisible, and is a very weak form of energy radiation.

[171] The frequency used by smart meters, 915 megahertz (MHz), does not, according to Dr. Plante, cause any chemical damage to living cells, but rather, generates heat. The power level of smart meters is comparable to other common sources of RF radiation, such as cell phones and wi-fi. However, unlike such sources, smart meters do not emit RF radiation continuously, but only at intervals totalling a few minutes per day – in some cases, a total of about 3 minutes. Given such intervals, Dr. Plante states the average power output of a smart meter is between 1 to 5 milliwatts.

[172] Dr. Plante also states that the intensity of radiation at a given location is referred to as “power density”, measured in watts per square metre (W/m^2). For the 915 MHz smart meter, a person located at a distance of one meter from a smart meter would be exposed to a power density of $0.00035 \text{ W}/\text{m}^2$. At a distance of two meters, the power density is four times lower; at a distance of three meters, the power density is nine times lower.

[173] Dr. Plante’s evidence, which he corrected during his testimony, states that, according to Safety Code 6, the public exposure limit for a RF of 915 MHz is $2.7 \text{ W}/\text{m}^2$. Depending on the daily intervals of transmission, this is at least 8,000 times lower than the Safety Code 6 standard.

[174] Dr. Plante concludes:

Radiofrequency radiation emitted by smart meters are a negligible source among all those already present in the environment, such as radio, television and cellular telephone networks. The radiofrequency radiation emitted by the meters is far too low to have any effect on human physiology and health. I am of the opinion that the smart meter radiofrequency emissions do not present any health risks.

(2) Dr. Héroux Evidence

[175] Dr. Paul Héroux was qualified as an expert in medical research of the technology of radio waves.

[176] He submits that the deployment of smart meters system would add to existing sources of RF radiation. Dr. Héroux did not provide any supported evidence that RF emissions from smart meters exceed the standards established by Safety Code 6.

(3) Dr. Miller Evidence

[177] Dr. Richard's evidence also included the report of Dr. Anthony B. Miller, who did not appear as a witness at the hearing.

[178] Dr. Miller's report expresses concerns over the ubiquity of the population's exposure to RF radiation. It suggests that all RF radiation should be categorized as a carcinogen, in the same category as cigarette smoking and X-rays. There is no specific mention in his report of the impact of smart meters.

[179] The report includes references to various studies generally in relation to the health impacts of RF radiation. Copies of these studies were filed as evidence. The Board notes that none of the filed studies relate to smart meters.

c. Board Conclusion

[180] As stated above, Safety Code 6 is the applicable standard. The Board finds that the RF radiation from smart meters does not exceed, and in fact is substantially lower than Health Canada's limit set out in Safety Code 6.

[181] There was no evidence presented in the current matter that would cause the Board to change its view. Neither the evidence of Dr. Héroux nor Dr. Miller's report persuaded the Board that smart meters pose a health risk.

[182] The Board acknowledges that there may be customers who, for health and safety or any other reason, do not wish to have smart meters installed on their premises. NB Power confirmed that customers may opt out of smart meter installation. NB Power is directed to propose an opt-out policy for Board approval.

6. Fire Safety Concerns

[183] During his cross-examination of the NB Power's first witness panel, Mr. Gerald Bourque asked whether NB Power had reviewed an experience in Saskatchewan where, following the installation of smart meters, some fires had resulted.

[184] In response, Ms. Jill Doucett, Director of Smart Customer Services at NB Power, testified that there had been a report following the incident, and that NB Power had adhered to all of

the recommendations applicable to the current application and the contracts. Since then, she explained, the standard has been modified and improved.

[185] Ms. Doucett stated that the currently proposed meters meet that standard. Although the meter installation process was not found to be an issue in the Saskatchewan case, she stated that NB Power's meter installation process will ensure that any safety issues are addressed at the time of installation. In addition, meter installers will be trained to address any concerns that property owners have, and there will be an escalation process to address any further questions.

[186] The Board accepts the explanation provided by Ms. Doucett.

E. Summary and Conclusions

1. Subsection 107(11)

[187] As stated earlier, the Board must take into consideration any relevant matters set out in subsection 107(11) in determining whether to approve the current application. The following outlines the Board's considerations in relation to those matters.

[188] Paragraph 107(11)(a) refers to the policy set out in section 68 of the Act. Subsection 68(b) is relevant. It requires that NB Power's facilities for the distribution of electricity be managed in a manner consistent with reliable, safe and economically sustainable service that will result in the most efficient distribution of electricity and result in the lowest cost of service to consumers.

[189] The Board considers that the introduction of AMI, as part of the facilities for the distribution of electricity, will result in greater efficiencies. Because the AMI application presents a positive Business Case, it will have a positive impact on the cost of service over the economic life of the project.

[190] Paragraphs 107(11)(b) and (c) refer to the IRP and the 10-Year Plan. The 2017 IRP states that an important part of the process of integrated resource planning is demand-side management, as a "potential low-cost alternative to developing new power plants." Energy Smart NB is an approach designed to help customers manage their electricity consumption.

“Smart Grid” is one of three major elements in that approach. This includes grid modernization. AMI is stated in the IRP as a means of reducing and shifting demand.

[191] NB Power’s most recent 10-Year Plan, issued in September 2019, covers fiscal years 2021 to 2030. In that document, NB Power states that its financial projections, as set out in the plan, are subject to change, based on the assumed approval of the current AMI application. The Board views the introduction of AMI as consistent with the strategies set out in the 10-Year Plan.

2. General Submissions

[192] Of the seven interveners (including the Public Intervener) who presented closing submissions in this proceeding, five were in support of NB Power’s application and two were opposed. The following outlines closing submissions that are not otherwise reviewed above.

a. Atlantica Centre for Energy

[193] Ms. Colleen d’Entremont, President of Atlantica Centre for Energy, expressed support for NB Power’s application. She stated that AMI will result in empowered customers with access to real time data and information, allowing them to make informed decisions. Ms. d’Entremont added that it will also “result in enhanced grid resiliency and reliability, including the ability for NB Power to more effectively manage storm disruption events and peak load adjustments.”

b. Gerald Bourque

[194] Mr. Bourque recommended that the Board deny NB Power’s application. He submitted that the health and safety concerns are not adequately addressed by Health Canada, which is not keeping up with modern information. Mr. Bourque also expressed concerns that NB Power has had cost over-runs on other projects in the past.

c. J.D. Irving, Limited

[195] Mr. Christopher Stewart, counsel for J.D. Irving, Limited, submitted that the Business Case appears to meet the threshold of prudence as set out in the Act. He stated that the benefits and costs are reasonable and independently supported, and that the Business Case is a

positive one. Mr. Stewart also stated that NB Power has addressed the deficiencies that existed in the former application.

d. Dr. Roger Richard

[196] On the issue of financial impacts, Dr. Richard stated that the Board must balance the rights of consumers to reasonable rates with the right of the utility to a fair return on its investments. After hearing the evidence and testimony during the hearing, he is convinced that the AMI project will not solve the issues faced by NB Power and will only serve to pass those costs on to future generations.

[197] Dr. Richard submits that NB Power has over-valued the benefits of AMI and under-valued its costs. He concluded by submitting that the AMI proposal does not meet the prudence test.

e. T4G Limited

[198] Mr. Geoffrey Flood presented the final submission of T4G Limited, which supports NB Power's application. Mr. Flood stressed that the Business Case presents a positive return, based on an extremely conservative assessment of its benefits. He submitted that this alone provides the Board with an adequate basis for approving the application.

f. Utilities Municipal

[199] Mr. Stoll addressed the issues of quantified benefits, non-quantified benefits and the health concerns raised in this proceeding. His clients support the current application.

[200] In terms of quantified benefits, Mr. Stoll stated that NB Power has provided detailed evidence, backed up by expert review. This was in support of the benefits and cost analysis, which arrived at a net present value of \$28.0 million, according to NB Power's submission.

[201] In terms of non-quantified benefits, Mr. Stoll referred to the decision in Matter 375, where the Board stated that such benefits are relevant to the Board's consideration of both short-term and long-term outcomes. Mr. Stoll stated that, even in the most pessimistic case put forward, the non-quantified benefits would still make the AMI project beneficial from an overall perspective.

[202] In conclusion, Mr. Stoll submitted that AMI is “the way of the future.” He stated that NB Power has provided a positive business case that has stood up to the review and scrutiny of several experts.

g. The Public Intervener

[203] Ms. Black submitted that it is generally in the public interest for utilities to pursue grid modernization to prepare for future customer expectations, changes in technology and to address the threat of climate change. A positive business case, she stated, is a necessary part of demonstrating the prudence of a project.

[204] Ms. Black argued that the Board should evaluate the Business Case using a conservative approach in order to give due consideration to the statutory factors under subsection 107(11) of the Act. In her view, NB Power has proven that it has a positive business case, even by applying as conservative an approach as can be reasonably supported by the evidence. In Ms. Black’s submission, NB Power has demonstrated that the proposed AMI project passes the prudence test under section 107 of the Act.

3. Public Letters of Comment

[205] Although the Board did not solicit public comments in relation to this matter, it received comments from twenty-five individuals and organizations prior to the conclusion of the hearing. Ten submissions opposed the implementation of AMI in this matter. Fifteen supported it, including two that gave qualified support. All such comments form part of the public record in this proceeding, and are considered by the Board in its deliberations.

[206] The submissions that expressed opposition to NB Power’s application were on the basis of the financial and rate impacts and safety and privacy concerns. Those in favour generally viewed the introduction of AMI as a progressive step towards modernization.

[207] One submission that was conditionally in favour of AMI stated that there must be provisions to ensure that workers are not detrimentally affected by the project. The other stated that privacy protection and data security measures must be a condition of acceptance.

[208] The Board understands the contentious nature of this matter, and appreciates the efforts made by those who expressed their views.

4. Approval of Project

[209] As stated earlier in this decision, the Board is bound by section 107 of the Act in its consideration of NB Power's application for approval of the AMI project. The Board finds that the short-term and long-term outcomes and the demonstrated benefits to ratepayers outweigh the expected costs that ratepayers will bear.

[210] In particular, NB Power's application presents a positive Business Case, in terms of the quantified costs and benefits, as measured by its net present value. Beyond that, the Board recognizes that there are potential quantifiable benefits that may result from the project, as well as non-quantifiable benefits to ratepayers and to the public generally.

[211] Having considered all of the evidence and submissions in this matter, the Board is satisfied that the AMI capital project is prudent and that it is in the public interest. In arriving at this decision, the Board has taken into considered those matters that are outlined in subsection 107(11) of the Act.

[212] NB Power's application under section 107 of the Act is approved.

5. Creation of Deferral Account – Replaced Meters

[213] NB Power's application includes a request to approve a regulatory deferral account to amortize the remaining book value of the meters, to be replaced by smart meters. The \$15.6 million book value is based on a three-year installation plan, beginning in fiscal 2021/22.

[214] NB Power proposes to amortize the write-off over five years. By way of example, Mr. Furey stated that the Nova Scotia regulator used a five-year deferral in a comparable case. In his final argument, Mr. Furey stated that this deferral will have a positive impact, and will provide a reasonable balance in relation to rates, earnings and the debt to equity ratio.

[215] There was no opposition to this request.

[216] Without a deferral account, the net book value of replaced meters would be written down in accordance with standard accounting practice, and recovered in the year in which they are removed from service.

[217] The Board views a five-year amortization period as beneficial. The deferral will smooth the financial impact of the write-off of the replaced meters in any single year during the deferral period. In light of the current circumstances, the Board approves the creation of a regulatory deferral account, as requested.

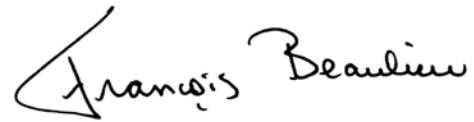
6. Monitoring and Metrics

[218] In his closing argument, Mr. Stewart stated that NB Power should be required to report to the Board and to ratepayers on its progress and whether its long-term benefits are being realized through the implementation of the AMI project. He suggested that NB Power be directed to propose a set of metrics or progress indicators to track the roll-out of the project. This would include its time-line, costs, and quantified and non-quantified benefits, and that it be established at the earliest stage of the AMI project.

[219] NB Power agreed that tracking and monitoring metrics throughout the AMI deployment and continued operations are critical to success. Mr. Furey indicated that NB Power plans to monitor the deployment of the project against key performance indicators, including the achievement of quantifiable benefits outlined in its Business Case. He stated that NB Power would, if directed by the Board, be able to provide a proposal with respect to proposed metrics within 60 days of the date of the Board's decision.

[220] It is in the public interest that the ultimate costs and benefits of AMI are transparent. The Board therefore directs 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 time-line, 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.

Dated at Saint John, New Brunswick, this 4th day of September, 2020.



François Beaulieu
Acting Chairperson



Michael Costello
Member



Patrick Ervin
Member