BEFORE THE NOVA SCOTIA UTILITY AND REVIEW BOARD

In the Matter of The Public Utilities Act, R.S.N.S. 1989, c.380, as amended, and the application of Nova Scotia Power Inc. for Authorization to Overspend on Capital Work Order CI 47124 – Advanced Metering Infrastructure

(NSUARB M11003)

CLEAN VERSION

EVIDENCE OF
ALICE NAPOLEON

ON BEHALF OF

COUNSEL TO NOVA SCOTIA UTILITY AND REVIEW BOARD

JUNE 22, 2023

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1. INTRODUCTION AND PURPOSE OF TESTIMONY

Q Please state your name, title, and employer.

A My name is Alice Napoleon. I am a Principal Associate at Synapse Energy Economics ("Synapse"), located at 485 Massachusetts Avenue, Cambridge, MA 02139.

Q Please describe Synapse Energy Economics.

A Synapse is a research and consulting firm specializing in energy and environmental issues, including electric generation, transmission and distribution system reliability, ratemaking and rate design, electric industry restructuring and market power, electricity market prices, stranded costs, efficiency, renewable energy, environmental quality, and nuclear power.

Synapse's clients include state consumer advocates, public utilities commission staff, attorneys general, environmental organizations, federal government agencies, and utilities.

Q Please summarize your work experience and educational background.

A Since joining Synapse Energy Economics in 2005, I have provided economic and policy analysis of electric and gas systems and emissions regulations, with a focus on energy efficiency program design, administration, cost recovery, and benefit-cost analysis (BCA). In my 18 years at Synapse, I co-authored dozens of reports and led major projects for the U.S. Environmental Protection Agency on quantifying the benefits of clean energy resources and for the U.S. Department of Energy (DOE) on strategic energy management. I have provided testimony and testimony assistance before public utility commissions across the United States

and Canada, including in California, Delaware, Illinois, Kentucky, Missouri, New Jersey, New York, Nova Scotia, South Carolina and Virginia. In Nova Scotia, I provided expert witness services on advanced metering and demand side management.

Before joining Synapse, I worked at Resource Insight, Inc., where I supported investigations of electric, gas, steam, and water resource issues, primarily in the context of reviews by state utility regulatory commissions.

I hold a Master's in Public Administration from the University of Massachusetts at Amherst and a Bachelor's in Economics from Rutgers University. My resume is attached as Appendix 1.

Q On whose behalf are you testifying in this case?

A I am providing evidence on behalf of Counsel to the Nova Scotia Utility and Review Board ("Board Counsel").

Q Have you testified previously before the Board?

A Yes. I provided evidence in the Advanced Meter Infrastructure cases (Matter Nos. M07767 and M08349) and the Smart Grid proceeding (Matter No. M09519). I also provided evidence in Matter Nos. M06247, M08604, M09096, and M10473 regarding the 2015, 2019, 2020–2022, and 2023-2025 Demand Side Management plans on behalf of Board Counsel. Further, I supported Tim Woolf regarding EfficiencyOne's 2016 to 2018 DSM plan (Matter No. M06733) and Melissa Whited in the Solar Garden proceeding (Matter No. M10176).

Q What is the purpose of your evidence in this proceeding?

A The purpose of this evidence is to (1) assess Nova Scotia Power, Inc.'s (NS Power or the Company) request for an Authorization To Overspend (ATO) on capital work order CI #47124 regarding implementation of advanced metering infrastructure (AMI) in Nova Scotia, (2) describe and present my concerns with the proposal, and (3) provide recommendations to the Board.

Q How is your evidence structured?

A In Section 2, I provide an overview of my findings and recommendations. In Section 3, I provide a summary of the 2017 AMI proceeding and relevant Board Decisions. Section 4 describes considerations for the Board in evaluating the request for an ATO, and Section 5 discusses NS Power's approach to managing AMI project risk. Section 6 describes overages related to information technology systems and related concerns. Section 7 outlines my concerns regarding realization of NS Power's claimed net benefits from the AMI project.

2. FINDINGS AND RECOMMENDATIONS

Q Please summarize your findings.

A My primary findings are:

1. The Company's request to recover overages through the ATO process, if accepted, would amount to subjecting ratepayers to an unreasonable transfer of the consequences of risk and any cost overages to customers.

2. The Company's treatment of the contingency included in the initial AMI budget is misleading and contradicts the Board's explicit position in the Decision in Matter No. M08349 that the Company must justify the use of contingency spending. The Company has

yet to secure Board approval for its past contingency spending. If the Board were to approve the ATO request, total overage spending on the AMI project including the initial contingency would be $24.5 million or approximately 21 percent.[1]

3. The budget for Information Technology (IT) System Integration represented a relatively small portion of the approved budget but had the greatest proportional and total overages. As requested in NS Power's ATO filing, this category has an overage of $12.9 million, which is almost twice (182 percent) its approved amount ($7.1 million) and is almost as much as the approved contingency for the entire project ($13.3 million).

4. NS Power had an incomplete understanding of the scope of the system integration work and made various assumptions that minimized projected costs when it submitted the original application. As initially proposed, the AMI project would appear to have higher net benefits because the Company used assumptions with unrealistically low costs related to internal and customer-facing business process changes and work to integrate the Customer Information System (CIS).

5. NS Power's claim of net benefits from AMI implementation, which clearly played a role in the Board's decision to approve the project, may not bear out in reality. If the Company's assumptions about benefits turn out to have been unduly optimistic, which seems likely for several of the benefit categories, the project may result in a net cost to ratepayers.

6. The additional IT work undertaken by NS Power might have been needed to implement AMI. However, a detailed audit would be necessary to make that determination, and such an audit has not been conducted.

[1] NS Power AMI ATO Application, p. 11.

Q Please summarize your recommendations.

A Based on my findings, I recommend that the Board should not approve the ATO requested by NS Power for overage costs associated with System Integration. Instead, the Board should deny the IT overages, at least in part. Given that the work was likely needed for AMI functionality, the Board should consider allowing NS Power to recover half of the costs of the IT overrun with its shareholders absorbing the other half of those overrun costs.

3. BACKGROUND OF AMI PROCEEDING AND BOARD'S DECISIONS

Q Please provide an overview of the history of AMI implementation in Nova Scotia.

A On October 19, 2017, NS Power filed with the Board its AMI Project Application (initial application), requesting approval of a capital work order (CI 47124) for $133.2 million to deploy AMI throughout its service area over the period 2018 to 2020. NS Power requested a contingency amount of $13.4 million, representing 11 percent of the pre-contingency capital cost. The contingency of 11 percent represents a blend of contingency rates for different individual project cost elements, including higher contingency rates (15 percent of costs) for some cost categories such as internal and external labor, customer engagement expenses and IT integration and installation.[2] Such contingencies were intended to recognize that some costs might not be anticipated at the time of NS Power's application for Board approval but will likely arise over the course of the project.[3] The Board approved CI 47124 for the company's requested amount ($133.2 M) in its June 11, 2018 decision in the matter (M08349), subject to directives requiring a

[2] Nova Scotia Utility and Review Board. Decision. June 11, 2018. M08349. Page 5.
[3] Ibid.

detailed accounting of the use of the contingency, compliance filings by NS Power, and other requirements.

Subsequently, NS Power requested approval of a capital work order for the Customer Energy Management (CEM) project, which among other things sought to transfer the web portal budget and scope from the initial AMI project under CI 47124 to a different work order, C0021839. The Board allowed this transfer and ordered that the corresponding contingency also be moved to the CEM work order.

On February 17, 2023, NS Power filed an application seeking an ATO for capital work order CI 47124, the initial AMI work order. In this filing, NS Power reported an 8 percent overage for the AMI project as a whole, as adjusted for the CEM scope and budget (modified initial budget). The Company noted key drivers for the overage, including the COVID-19 pandemic, meter and network equipment/installation, and system integration scope and complexity.[4]

This application described overages in certain cost categories and savings in other areas. As shown in Table 1, projected spending by category is as high as 182 percent of the modified initial budget for IT System Integration. NS Power reports cost savings in a few areas, most notably in the Customer Engagement and Experience Non-Labour Expense area, for which costs are projected to be 67 percent of the modified initial budget.

[4] NS Power AMI ATO Application, p. 14.

Table 1. Variance of AMI Project Costs by Major Project Scope Item

Scope Item	Modified Initial Budget* $M	ATO Requested Budget $M	Variance** Higher/ (Lower)	Percent change
AMI Meter Equipment	$59.0	$59.5	$0.5	0.8%
AMI Communications Network Equipment	$4.8	$6.2	$1.4	29.2%
AMI Meter and Network Installation	$19.2	$23.5	$4.3	22.4%
AMI Head End System	$7.9	$7.7	$(0.2)	-2.5%
Meter Data Management System (MDM)	$1.5	$0.9	$(0.6)	-40.0%
IT System Integration	$7.1	$20.0	$12.9	181.7%
Internal Labour	$6.1	$12.0	$5.9	96.7%
External Labour – Contractors/Consultants	$7.3	$8.1	$0.8	11.0%
Customer Engagement and Experience Non-Labour Expense	$2.7	$0.9	$(1.8)	-66.7%
Administrative Overhead (AO)	$0.9	$0.7	$(0.2)	-22.2%
Rent, Meals, Travel, and Other Goods and Services	$1.1	$2.0	$1.0	81.8%
AFUDC	$1.5	$2.0	$0.5	33.3%
Subtotal Project Costs before Contingency	$118.9	$143.5	$24.5	20.7%
Contingency as a Percent of Project Costs before Contingency	11%			
Contingency	$13.3		$(13.3)	
Total**	$132.3	$143.5	$11.2	8.5%

**The budget has been adjusted to remove web portal scope (and associated contingency and AFUDC).*

*** As figures in the table are rounded to the nearest $100,000, calculations may differ by $0.1 million due to rounding.*

Source: NS Power AMI ATO Application, p. 10.

4. CONSIDERATIONS FOR THE BOARD IN EVALUATING ATO APPLICATION

Q What considerations are relevant for the Board in determining whether to grant the Company's overage request?

A There are several relevant considerations for the Board in evaluating the ATO request. Principally, these include the following:

- Whether the overage costs were reasonable[5] and unavoidable.
- Whether the Company has appropriately managed project risk.

The Board may also wish to consider whether the AMI project continues to be in the public interest, and whether the Company has been appropriately transparent and otherwise followed best practices and other applicable standards and guidelines in formulating and executing its project plans to date.

Q Why is it important for the Board to consider whether overage costs are unavoidable?

A The Company's customers should not be required to fund overages that could have been avoided. It is generally understood that utilities operate under a foundational requirement to provide service at just and reasonable rates, which would be contravened by ratepayer funding for utility inefficiency. The Board recognized the need for the Company to justify any overages in its decision approving AMI, where the Board found that "final project costs, including the use of contingency, are subject to scrutiny by the Board."[6] The Company uses a similar but somewhat narrower framing in its application, stating that "the

[5] By reasonableness, I mean that utility investment decisions are informed by consideration of (1) all relevant costs and benefits; (2) all information reasonably known or knowable at the time that decisions are made; (3) all relevant risks; and (4) a comprehensive set of technologies and options to identify and prioritize solutions before commitments to invest are made. In addition, reasonable rates ensure the utility remains solvent without reaping excess profits.

[6] Nova Scotia Utility and Review Board. Decision. June 11, 2018. M08349. Page 8.

circumstances driving the Project cost increases and schedule delays were reasonably unforeseen at the time of the Application."[7]

Q Why should the Board evaluate the Company's management of project risks?

A All capital projects have risks related to cost overages, and the Board must seek to ensure that the Company bears the appropriate share of this risk. Like other for-profit enterprises, the Company earns a return on investment in part as compensation for taking on risk. Furthermore, some of the risk inherent in the AMI project may already have been underwritten by customers through the contingency adder to the budget. However, the contingency mechanism and the possibility of recovering overages through the ATO process should not result in undue transfer of risk and associated cost overages to customers.

Q Please explain further how contingency relates to project risks.

A Contingency is included in the budget to cover the risk of overages. This budget item is critical in providing transparency to the Board and to other stakeholders about the level of risk associated with a given project. The Company indicates that the general expectation is for contingency funds to be depleted;[8] yet this position contradicts the Board's explicit position in the Decision in Matter No. M08349 that the Company must justify the use of contingency spending. Though NS Power is filing this ATO petition precisely because it has already spent its initial contingency allowance, the Company has yet to secure Board approval for its past contingency spending.

[7] NS Power AMI ATO Application, p. 6.
[8] In the response to Synapse IR-6, Attachment 1 at p. 20, in M11003, NS Power states, "Contingency is generally included in most estimates and is expected to be expended."

Q Why is the Company's past contingency spending relevant to its ATO filing?

A The Company submits that the overage at issue in its ATO petition is 8.5 percent of the AMI budget.[9] However, this ignores the initial contingency allowance (11 percent of the pre-contingency budget), which the Company has already exhausted. NS Power's presentation of the overage as only 8.5 percent is highly misleading and erroneous, because it effectively treats the initial 11 percent contingency as a part of the base AMI project budget rather than as an overage component in its own right. The Company should instead include the initial contingency as part of the total project overage. If the Board were to approve the ATO request, total overage spending on the AMI project including the initial contingency would be $24.5 million or 20.7 percent.[10]

Furthermore, the Company's calculation of overages for the AMI project excludes the costs and cost overages of the CEM project, which was migrated to a separate proceeding. Yet, the Board effectively reached this finding concerning CEM project costs, writing in its decision letter on the Company's CEM application that, "the scope and costs originally budgeted for the CEM in the AMI application (M08349) and the 2021 ACE plan were significantly underestimated…it is surprising to the Board to see these costs escalate as much as they have in the current application."[11] If CEM costs were to be included, the total overage on AMI would grow still larger.

[9] NS Power AMI ATO Application, p. 10.
[10] NS Power AMI ATO Application, p. 11.
[11] Nova Scotia Utility and Review Board. Decision Letter. October 21, 2021. M10164. Page 7.

5. COMPANY'S APPROACH TO MANAGING AMI PROJECT RISK

Q How did the Company assess contingency for the AMI project budget?

A The Company assessed contingency at the budget category level, using the Decision Gate and American Association of Cost Engineers (AACE) frameworks for guidance. Per the Company, the project budget when submitted was between Decision Gate 3 and Decision Gate 5 in its maturity/development, which is equivalent to an AACE Class 3 estimate. The Company references its recent contingency estimation guidelines to support a contingency range of 10 percent to 30 percent for AACE Class 3 estimates.[12] As I noted before, the overall contingency applied to this project budget was 11 percent.

Q Did the Company include sufficient contingency in its initial project budget?

A No. While it is apparent in retrospect that the included contingency was not adequate, the insufficiency of the initial contingency amount could likely have been noted *prospectively*. The Company selected a relatively low value for contingency (11 percent from a suitable range of 10 percent to 30 percent) in spite of the lack of development in its budget/procurement/planning and in spite of the Company's past cost estimation issues.[13] As discussed further below, the Company had a limited understanding of the costs of IT integration work; thus, for this category of costs, it should have used a higher contingency level.

[12] NS Power AMI ATO Application, p. 12-14.
[13] Nova Scotia Utility and Review Board. Decision Letter. October 21, 2021. M10164. Page 7.

6. IT SYSTEM INTEGRATION OVERAGES

Q Why are the IT System Integration overages of special concern?

A The budget for this category was $7.1 million, only representing 6 percent of the full budget. However, it had the greatest proportional and total overages. As requested in this ATO filing, the final amount for the IT category is $20.0 million, representing an overage of $12.9 million.[14] That overage is almost twice the approved IT System Integration category budget amount ($7.1 million). The overrun in the IT category is by itself almost as much as the approved contingency of $13.3 million.

Q Was the additional IT work that NS Power performed necessary to properly implement AMI?

A Possibly, however a detailed audit would be necessary to make that determination. Such an audit has not been conducted.

Q Did NS Power incur overages in other categories?

A Yes, there were overages in other areas, but they were proportionally less than the overage in the IT category. NS Power overspent the approved budgets for the other expense categories for various reasons, as discussed in NS Power's ATO filing. In some categories, such as for the AMI Head End System and Meter Data Management, spending was less than budget. On net, the total additional requested amount is $11.2 million, which is less than the IT overrun of $12.9 million.

[14] NS Power AMI ATO Application, p. 10-11.

Q How much larger would the contingency amount need to be to cover the IT overages?

A Even if a contingency of 20 percent were applied to the system integration category (increasing the budget for IT System Integration plus related contingency to $8.5 million) the overrun would still be $10.8 million.[15]

Q Were the IT System Integration costs well known when the original budget was approved?

A No. The company proceeded with the project with an incomplete understanding of the system integration scope and complexity. NS Power indicated that the system integration budget was not based on a request for proposals (RFP), but rather on company estimates of the work expected at the time. As stated in the current application in this matter,

> "An RFP for System Integration was not completed prior to filing the Company's original Application. The system integration budget included in the application was based on Company's estimates of the system integration work it had projected would be required at that time. It also included assumptions that minimized internal and customer facing business process changes and limited CIS-integration work."[16]

NS Power also states that it used assumptions that minimized internal and customer facing business process changes and that reflected limited CIS-integration work.

[15] $10.8 million equals $11.2 million (NS Power's reported total project overage) minus $0.4 million, which is the 5% additional contingency beyond the 15% that NS Power assumed in the initial AMI application.
[16] NS Power AMI ATO Application, p. 20-21.

Q What do you conclude from this statement?

A It appears that the company (1) had a very incomplete understanding of the scope of the system integration work and (2) made various assumptions that minimized projected costs when it submitted the original application.

Q Is NS Power's use of company estimates of the work as the basis for the system integration work budget problematic?

A Possibly. An RFP would provide a more robust basis since NS Power planned to outsource the work. However, given the absence of a completed RFP and related lack of solid basis for cost estimates, NS Power should have increased the requested contingency in the original application. A larger contingency would have reduced the cost effectiveness of the proposed investment, and Board approval of the investment would have been less likely.

Q What is the impact of NS Power's use of cost-minimizing assumptions?

A It increased the apparent net benefits for the proposed AMI project. Had the Company instead chosen to use realistic cost assumptions for internal and customer-facing business process changes and CIS-integration work, then the AMI project would have appeared less cost effective. The use of realistic cost assumptions is similar in effect to utilizing larger contingency – both reduce the apparent net benefits for the AMI project.

7. NET BENEFITS OF AMI DEPLOYMENT MAY NOT BE REALIZED

Q Please explain the extent to which the Board relied on NS Power's economic analysis, and its finding of net benefits, to approve expenditures for AMI deployment.

A A significant focus of the Board decision discussed assumptions and calculations the Company used to support its application for AMI expenditures. After a detailed discussion of each benefit quantified in the Company's economic analysis, the Board found:

> While the Board, as noted in the Decision, has concerns with some of NSPI's assumptions, on balance the Board finds that the AMI technology is proven and will deliver many of the benefits claimed by NSPI.[17]

NS Power acknowledges the significance of the economic modeling, stating "[t]he Project was originally justified on positive economics."[18]

Q Are net benefits now expected to be lower than when NS Power's application was approved?

A Yes. The Company's Economic Analysis Model (EAM) forecast $38.1 million in benefits to customers on a net present value basis in the original application relied upon by the Board for approval of AMI costs. The Company now expects net benefits to total just $14.6 million on a present value basis, $23.5 million less than what was originally filed, due to cost overruns and delays.[19] This represents a 62 percent decrease in expected net benefits since the original filing.

[17] M08349 Decision, June 11, 2018.
[18] *Application for ATO Capital Work Order*, February 17, 2023, p. 27.
[19] 2023 ATO Application, pp. 28-29.

Q What does this mean for the realization of net benefits from deployment of AMI?

A As discussed further below, the significant decrease in net benefits means there is very little room for error in the utility's forecast of benefits if the project is to provide net benefits consistent with the Board's expectations regarding the AMI investment. While the Company emphasizes that its original AMI application "provided a comprehensive sensitivity analysis" which "confirmed that even with adjusted assumptions, the Project continued to result in a positive economic benefit to customers," this sensitivity analysis did not include capital expenditures above contingency or project delays, which are primary reasons for the reduction in expected net benefits to-date.[20] Therefore, the sensitivity analysis cannot be used to support the notion that there will be robust net benefits from AMI implementation.

Q What did the Company's original sensitivity analysis show?

A The Company found that, just for the benefits that were questioned by intervenors, "if all of the pessimistic assumptions occur simultaneously," then benefits would be "approximately $12 million smaller than was projected in the Application."[21],[22] Given that NS Power now only expects $14.6 million in net benefits, if these "pessimistic" scenarios were to occur, the net benefit to ratepayers would approach zero, as shown in Table 2. For context, a $2.9 million dollar net benefit ($14.6 million - $11.7 million) over 20 years represents a

[20] NS Power Reply Evidence on AMI Application (M08349), March 1, 2018, Table 2, pp. 51-52.
[21] NS Power Reply Evidence on AMI Application (M08349), March 1, 2018, p. 50.
[22] According to NS Power's Reply Evidence, Table 2, the change in the net present value of the revenue requirement from the application with base case assumptions and pessimistic assumptions is $11.7 million (i.e., $61.3 million minus $49.6 million).

benefit to ratepayers of just 32 cents per year per residential customer, or a 0.017 percent decrease to the average annual bill.[23]

Table 2. Impact of Sensitivity Analysis Conditions on Realization of Net Benefits due to AMI Deployment[24]

Description	Adjustment to Net Benefits ($M)	Adjusted Total Net Benefits ($M)
Original Application (Total)	N/A	38.1
Current Application	(23.5)	14.6
NS Power Sensitivity Analysis (2018 Reply Evidence, multiple benefit categories)	(11.7)	2.9

Q Are there other examples of expected economic benefits that may not materialize?

A There may be several, but I will discuss two examples here. The first is the assumption that AMI meters will be used and useful for 20 years, rather than a common assumption of 15 years. The second is the number of customers assumed to participate in critical peak pricing (CPP) rates that results in load shifting benefits.

[23] Average annual bill calculated from Appendix C, "AMI Economic Analysis Model ATO Update," (Appendix C), tab "ReducedPeakGenerationCosts." The fixed and energy charge are from NS Power domestic service tariff, https://www.nspower.ca/docs/default-source/pdf-to-upload/20220301-tariff-book.pdf?sfvrsn=bec40b2c_4, applied to average annual residential usage in Appendix C. Does not include estimates for the fuel adjustment mechanism, DSM cost recovery rider, and storm cost recovery rider. If positive these additional costs would decrease percentage savings of customers.

[24] NS Power AMI ATO Application, p. 28-29 (original and current application net benefits); NS Power Reply Evidence on AMI Application, March 1, 2018, p. 50 (NS Power sensitivity analysis).

i. Useful Life of AMI Meters

Q What is the useful life of the meters assumed in NS Power's economic analysis?

A NS Power assumes a useful life of 20 years.[25]

Q Did the Board agree with this assumption in NS Power's AMI application?

A Yes, the Board found that 20 years is a reasonable planning assumption. However, in discussing the 15 year planning assumption described as potentially more reasonable by the Consumer Advocate and Synapse,[26] the Board noted that "even when a 15-year meter life is assumed in NSPI's EAM (and all other EAM assumptions remain the same as the 20-year meter life scenario), the Company's response to Board IR-49 shows that there would still be a net benefit to ratepayers of $17.7 million in NPV of revenue requirement saving over the life of the project."[27]

Q What are the implications of this finding for net benefits of AMI deployment?

A Now that net benefits are expected to be significantly less robust than in the original Application, this means that if AMI meters must be replaced in 15 years, net benefits will be much less robust. For example, in the Company's sensitivity analysis of its original application described above, net benefits dropped by 54 percent, from $38.1 million to $17.7 million. A roughly similar percentage reduction from the latest (lower) net benefit estimate of $14.6 million is plausible.

[25] NSUARB staff IR-22.
[26] M08349 Decision Approving AMI, June 11, 2018, p. 37.
[27] M08349 Decision Approving AMI, June 11, 2018, p. 40.

Given the multiple uncertainties inherent in this type of economic analysis, the Board can no longer have the assurance that, with an assumed 15-year life, net benefits will accrue to ratepayers due to deployment of AMI.

ii. Critical peak pricing pilot enrollment does not support the Company's economic modeling assumptions

Q Has more information regarding critical peak pricing assumptions been gathered since the Company filed its original application?

A Yes. In July 2022, the Company filed an interim report on its Time Varying Pricing Pilot Program (TVPP), which includes TOU and CPP opt-in rate offerings and initial findings.[28]

Q What data does the Company's report provide that could inform the reasonableness of the Company's economic model?

A There are two primary assumptions in the Company's model that can be examined with recent pilot data related to CPP load shifting. The first is the degree of peak load shift – NS Power's economic model assumes an average 12.5 percent load shift during peak times from 2024 onward.[29] The second is the number of customers expected to enroll on CPP rates – NS Power assumes 15 percent from 2025 onward.[30]

[28] Time Varying Pricing Pilot Program, Interim Report, filed in M09777, July 29, 2022.
[29] NS Power AMI ATO Application, Appendix C, tab "ReducedPeakGenerationCosts."
[30] In 2024, the Company assumes 7.5 percent. NS Power AMI ATO Application, Appendix C, tab "ReducedPeakGenerationCosts."

Q How do the Company's assumptions compare with initial CPP pilot findings?

A The load shifting that has been realized in the pilot (18 percent according to the report's calculations) is higher than the Company's modeling assumption of 12.5 percent.[31] However, customer enrollment in the pilot has not met the Company's target. Though the pilot sought to enroll just 500 customers, which represents approximately just 0.1 percent of NS Power's total residential customers (458,875), the pilot only enrolled 275 customers, or 60 percent of the goal. By contrast, to reach 15 percent of customers as assumed in NS Power's economic model, 68,831 customers will need to enroll in the rate.[32]

Q What implications does this have for net benefits?

A The first implication is that if the number of customers forecast to enroll in CPP is significantly below the Company's forecast, total forecasted load shifting benefits will likely not be realized. It is concerning that the Company was unable to enroll just 500 customers in its pilot through June of 2022, and at best it is uncertain whether the Company will be able to enroll 15 percent of its residential customers. Second, the Company assumes marketing costs to recruit customers of $75 per customer in 2024 and 2025.[33] These costs may be higher, or incurred for longer, if customer recruitment is more difficult than anticipated, which would also reduce the net benefits of the program. The impact of lower customer enrollment and peak load shift than projected by NS Power in its initial AMI application is shown in Table .

[31] Time Varying Pricing Pilot Program, Interim Report, filed in M09777, July 29, 2022, p. 10.
[32] NS Power AMI ATO Application, Appendix C, tab "ReducedPeakGenerationCosts," row 6. This number may have changed somewhat as the Company includes its 2016 residential customer count rather than a more recent figure.
[33] Appendix C, tab "ReducedPeakGenerationCosts," cells M19 and M20.

Table 3. Impact of Alternative Critical Peak Pricing Assumptions on Realization of Net Benefits due to AMI Deployment [34, 35]

Description	Adjustment to Net Benefits ($M)	Adjusted Total Net Benefits ($M)
Original Application (Total)	N/A	38.1
Current Application	(23.5)	14.6
Critical Peak Pricing Customer Enrollment and Peak Load Shift	0 to (21.5)	14.6 to (6.9)

iii. Conclusions based on utility net benefits analysis

Q Please summarize your conclusions from the analysis of the Company's EAM discussed above.

A In its approval of AMI, the Board was assured that even with some uncertainty in certain benefits, net benefits from AMI deployment would accrue to ratepayers. Yet the Company's assumptions about benefits may have been unduly optimistic, and as a consequence the project may result in a net cost to ratepayers. Given the significant reduction in net benefits presented in this application, and ongoing uncertainties for various key benefits, the Board cannot assume that meaningful, positive net benefits will accrue to ratepayers due to the deployment of AMI.

Given the importance of these economic benefits to the Board's original decision approving AMI, these findings should further dis-incline the Board from approving cost overruns for deployment of AMI, particularly if they could have been avoided with better planning at the outset of the project.

[34] NS Power AMI ATO Application, p. 28-29 (original and current application net benefits); CPP net benefits are estimated by NS Power as $21.5 million, as shown in Appendix C, tab "AnnualCashFlows," cells F45:F47.

[35] Note that the CPP net benefit reduction is a maximum potential impact – while I present data above that shows realization of these benefits is uncertain, I cannot quantify this specific uncertainty at this time.

Q Does this conclude your evidence?

A Yes.