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March 22, 2021

VIA E-MAIL

Ms. Christine Long
Registrar and Board Secretary
Ontario Energy Board
2300 Yonge Street, 27th floor
P.O. Box 2319
Toronto, ON M4P 1E4

Dear Ms. Long:

Re: EB-2020-0249 – PUC Distribution Inc. ICM Application
Vulnerable Energy Consumers Coalition (VECC) Final Submissions

Please find enclosed the final submissions of VECC in the above-noted proceeding. We have also directed a copy of the same to the Applicant.

Yours truly,

(Original Signed By)

John Lawford
Counsel for VECC

Copy to: Pina Pacione, PUC Distribution Inc.

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EB-20-0249/EB-2018-0219

PUC Distribution Inc.

Application for electricity distribution rates and other charges
effective May 1, 2022

VECC Final Submissions March 22, 2021

PUC Distribution Inc. (PUC) filed its restated and amended Incremental Capital Module (ICM) application with the Ontario Energy Board (OEB) on October 29, 2020 seeking approval for rate riders to be effective May 1, 2022. PUC Distribution has requested OEB approval to recover incremental capital to implement a smart grid project, the Sault Smart Grid (SSG Project).

The key components of the SSG Project are a new Advanced Distribution Management System (ADMS) and a new Outage Management System (OMS), which will include the following functionality:

- Voltage / VAR Optimization (VVO)
- Distribution Automation (DA)
- AMI Integration

PUC previously filed an ICM application for this project on January 31, 2019 under EB-2018-0219. The total cost of the original project using a P3 financing structure was $34,389,046, with an annual net benefit to customers of $205,617 plus projected reliability benefits of $2,550,000. NRCan agreed to fund the lessor of 25% of total project costs incurred or $11,807,000. Table 1 below provide the Customer Benefit Summary from 2019.[1]

Cost of Power - estimate from 2018 CoS rate application less 35 kV customers	$72,877,427
Projected consumption due to SSG implementation	2.70%
Projected customer savings	$1,967,691
System Loss Reduction due to SSG implementation	$93,378
	$2,061,069
Additional Revenue request due to increased SSG asset base	$1,877,976
Benefit of reduced future capital expenditures due to SSG implementation	($342,708)
Operating Efficiency benefit due to SSG implementation	($30,816)
Additional O & M expenses due to SSG implentation	$351,000
	$1,855,452
Annual Net benefit to customers	**$205,617**
Annual projected reliability benefit	$2,550,000
Total projected benefit to customers due to implementation of SSG	$2,755,617

[1] 2019-01-31 EB-2018-0219 PUC Distribution Inc. ICM Application Page 11

On June 28, 2019, PUC notified the OEB it would file an amended application. The amended application filed in October 2020 has a revised total cost of $33,007,038 and is expected to achieve an annual net benefit of over $616,897 plus reliability benefits of $2,017,000. Based on the updated cost forecast, the 25% NRCan contribution is now $8,126,759.[2] The SSG Project's scheduled in-service date is December 31, 2022. The new amendment to the Contribution Agreement with NRCan stipulates the SSG Project will need to be completed by March 31, 2023. Table 2 below provides the Customer Benefit Summary from the amended application.

Cost of Power - updated to current estimate	$ 82,512,685	*App [AA15] -Cost of Power Spreadsheet*
Projected % energy savings with SSG implementation	2.70%	*App [AA14] -Energy Savings Spreadsheet*
Projected customer energy savings through SSG	$ 2,227,842	*App [AA14] -Energy Savings Spreadsheet*
Projected system loss energy savings through SSG	$ 105,111	*App [AA14] -Energy Savings Spreadsheet*
Total purchased power savings	$ 2,332,953	
ICM additional revenue from increased SSG asset base	$ 1,754,862	*ICM Model output*
Benefit of reduced capital expenditures witth SSG	($304,390)	*APP [AA17] CAPEX Deferral Spreadsheet*
Additional O & M expenses due to SSG implementation	$ 296,400	*App [AA13] -Project Benefit Estimate Memo*
Operating efficiency benefits due to SSG implementation	($30,816)	*App [AA13] -Project Benefit Estimate Memo*
	$ 1,716,056	
Annual net benefit to customers	$ 616,897	
Annual projected reliability benefit to customers	$ 2,017,000	*App [AA10] -Navigant Report #3 (NPV $33M)*
Total Annual projected benefit to customers w/reliability	$ 2,633,897	

VECC notes the actual net benefits calculation is largely dependant on the cost of power. The original estimate of customer benefits was based on 2018 data whereas the updated estimate is based on 2019 data. Purchased Power estimates are higher than the prior application due to increased purchased power cost prices from the IESO. The main input criteria driving the energy savings is based on 2.7% estimated energy savings[3] for the SGG Project reflecting findings from the preliminary design work. The potential change in the cost of power each year shows the volatility in the customers' projected energy savings and the customer net benefits calculation over time.

PUC's preliminary forecasts for operation management of the smart grid systems is in the range of 2.5 to 4.5 FTEs. PUC has included incremental hires of net 2.5 full-time employees (FTEs) in additional O&M expenses in the above table. Incremental hires greater than 2.5 FTEs will negatively impact the customer benefits calculation. The impact of 4.5 FTEs is to increase the forecast O&M expenses by approximately $218,000, thereby reducing the annual net benefits from $616,897 to approximately $398,000.[4]

[2] P10 25% of $33,007,038 less $500,000
[3] CVR factor of 0.9 and voltage savings of 3 volts
[4] VECC-15

The benefit of reduced future capital expenditures is estimated at $304,390. PUC indicates this was forecast over a long-term plan based on reduced expenditures on station renewal and power transformer upgrades which is difficult to quantify.[5] VECC submits there is a significant risk that the net benefits to customers may not materialize as planned which changes the economics of the project.

Early in the concept of the SSG project, PUC's objective is to aim for an average "no net bill increase". This objective was specifically directed to the residential and under 50kW customer groups.[6] As the analysis for the project cost/benefit has been further developed, PUC's updated customer bill impacts show that lower volume residential customers (367 kWh) experience a net bill increase with energy consumption savings as projected.[7] If the energy consumption savings are not achieved, residential customers at all consumption levels experience a net bill increase.[8]

Background

In the first quarter of 2014, the City of Sault Ste. Marie City Council passed a resolution supporting the concept of developing a smart grid in PUC Distribution's service area.

In 2014, Leidos Engineering LLC (Leidos) was retained and instructed to prepare preliminary design reports for the various smart grid components and to quantify the benefits of smart grid. Leidos prepared three preliminary design reports:

- Utility Distribution Microgrid: Volt/VAR Management (VVM) – October 17, 2014
- Utility Distribution Microgrid: Distribution Automation – November 20, 2014
- Utility Distribution Microgrid: AMI Integration – November 20, 2014

In 2015, Navigant Consulting Ltd. delivered the following two reports:

- Review of Business Case for Smart Grid Project for PUC Distribution – April 15, 2015
- Review of Project Costs for Smart Grid Project - June 23, 2015

Leidos provided the original 30% engineering design work for the project. Following the Navigant Reviews, PUC Distribution concluded it needed to de-scope the smart grid project to lower costs. PUC modified the project scope by eliminating station upgrades. The date of the Project Cost Estimate of $33,007,038 is dated October 7, 2020.[9] Leidos' original 30% engineering design work is being used as the base level for the current project estimate.

The scope of the SSG Project involves the coordinated rapid implementation of a combination of smart grid technologies across PUC's entire distribution system, all at once. PUC currently has 0% DA and 0% VVM coverage in its service territory.

[5] P21
[6] P54
[7] VECC-12
[8] P57
[9] VECC-27

Traditionally, a utility would introduce these technology-based improvements gradually over time into their system to help reduce the impact of incremental costs associated with these improvements on ratepayers. The amended application is proposed to cover all feeders for VVM and DA.

Navigant notes in its review that the proposed smart grid solution for PUC is a very comprehensive solution. Relative to PUC's service territory the proposed feeder coverage for DA and VVM, 84% and 68% at that time, is higher than many other systems Navigant has encountered.[10] In VECC's view, PUC's innovative approach for the scope of work (100% coverage) reflects a First-Of-A-Kind (FOAK) project which by nature carries inherent risk.

In the OEB's decision to hold the application in abeyance until PUC files an amended application the OEB states:

"The OEB expects the amended application to show that the approval of the amended application by the OEB is independent of any OEB decision in a future application. The OEB also expects PUC Distribution to demonstrate that the scope of the project, for which approval is being sought, has tangible benefits to ratepayers commensurate with the proposed cost. Furthermore, the OEB expects PUC Distribution to update information related to project cost certainty, percentage of completed design work, structure and status of contracts, and associated risk allocation."[11]

VECC has some concerns regarding the project cost certainty and the current percentage of completed design work. PUC indicates the 30% engineering design completed by Leidos and their scope of work developed is currently the starting base, and this information will be supplemented by additional engineering work by the EPC provider to cover the full distribution system and the creation of a new 30% design stage of the project.[12] The preliminary design work of the VVO and DA systems undertaken by Leidos is over six years old.[13] VECC has concerns this preliminary 30% engineering design work that PUC is relying on is not a maturity level that reflects an accurate cost estimate.

Industry best practices with respect to cost estimate ranges are reflected in the Association for the Advancement of Cost Engineering (AACE) Estimate Class guidance. Estimate Class is a cost estimate classification system which defines the "quality" of the estimate based on the input information used and the project's stage of development. AACE uses five estimate classes with Class 5 being the least accurate, and Class 1 being the most accurate. A summary of the Estimate Class and expected accuracy range is provided in Figure 1 below.

[10] Appendix AA8 Navigant Report #1 – Review of Business Case for Smart Grid Project for PUC Distribution P1
[11] EB-2018-0219 – Decision and Procedural Order No. 5 dated July 16, 2019 at page 2
[12] VECC-19
[13] P26

AACE Estimate Class and Accuracy Range

ESTIMATE CLASS	MATURITY LEVEL OF PROJECT DEFINITION DELIVERABLES Expressed as % of complete definition	EXPECTED ACCURACY RANGE Typical variation in low and high ranges
Class 5	0% to 2%	L: -20% to -50% H: +30% to +100%
Class 4	1% to 15%	L: -15% to -30% H: +20% to +50%
Class 3	10% to 40%	L: -10% to -20% H: +10% to +30%
Class 2	30% to 75%	L: -5% to -15% H: +5% to +20%
Class 1	65% to 100%	L: -3% to -10% H: +3% to +15%

Step 1 of the EPC contract is to develop an engineering package to a level of detail (~30%) that would provide enough information to estimate the price for Step 2. Specifically, Step 1 involves the upfront engineering. An engineering package will be developed to a level of detail (~30%) to provide enough information to estimate the Balance of the Work (Engineering, Purchase equipment, Construction) for a firm price. A project execution plan would also be finalized during Step 1. Step 2 - Balance of the Work - uses the engineering package from Step 1 consisting of full design drawings & specifications, equipment pricing, to develop a firm scope of work and a fixed price for the Balance of Work using an open-to-close book process to negotiate any adjustment in accordance with the EPC Contract maximum price.

Given that the detailed design phase has not been undertaken, it is unlikely that PUC's current cost estimate has reached a Class 3 level. On average, Class 3 has an accuracy range of -20% and +30%.

With a FOAK project, cost variances from estimates are expected. In order to maintain the capital cost limit, set for the SSG project, PUC indicates scope reduction is required and the scope of the DA may be reduced. If this occurs, the reliability improvements will be less and the overall benefit to customers will be less.

VECC Submissions

In general, VECC supports the advancement and implementation of smart grid technologies by utilities. However, as noted above VECC has some concerns regarding the cost certainty for this project given that it is FOAK and an updated 30% completed design will not be available until July 2021.[14] VECC is also concerned that the economics of the project, although clearly reliant on the NRCan funding, are unstable given the fluctuation in the cost of power year over year and the unpredictability of the capital reductions and O&M expenses. PUC's capital budget forecast for 2022 is $8.708 million. The SSG project cost is close to four times PUC's 2022 capital budget which underscores the size and complexity of this project for PUC and its customers. Further, PUC is asking its customers to bear 100% of the risk

[14] Appendix AA3-5: Project Schedule

for this project. There is a real risk that the benefits for the project may not materialize as planned and customers will not receive the net benefits promised. VECC submits it is not appropriate that the Shareholder be absolved of these risks.

In considering the above, VECC does not support the SSG Project as structured. If the OEB decides to approve PUC's ICM request, VECC submits conditions should be applied that include the Shareholder being at risk along with PUC's customers if the net benefits are not achieved.

All of which is respectfully submitted.