![AMPCO logo]

August 16, 2019

Ms. Kirsten Walli
Board Secretary
Ontario Energy Board
P.O. Box 2319, 27th Floor
2300 Yonge Street
Toronto, ON M4P 1E4

Re: Alectra Utilities Corporation (Alectra) - 2020 Electricity Distribution Rate Application
        AMPCO Interrogatories
        Board File No. EB-2019-0018

Dear Ms. Walli:

Attached please find AMPCO's interrogatories in the above proceeding.

Please do not hesitate to contact me if you have any questions or require further information.

Sincerely yours,

(Original Signed By)

Colin Anderson
President
Association of Major Power Consumers in Ontario

Copy to: Alectra Utilities Corporation

EB-2019-0018

Alectra Utilities Corporation (Alectra)

Application for electricity distribution rates and other

charges effective January 1, 2020

AMPCO Interrogatories

AMPCO-1

Ref: Ex 1 T3 S1 P1

Alectra indicates the investments that are contemplated in the DSP are not based on historical expenditures of the utilities that together have formed Alectra. Rather, they are based on a data-driven asset management framework.

a) Did the historical expenditures of the legacy utilities inform the development and level of spending in the DSP in any way? If yes, please explain.

b) Did the historical Asset Condition Assessments (ACAs) of the legacy utilities inform the development and level of spending in the DSP in any way? Please explain.

AMPCO-2

Ref: Ex 1 T3 S1 P3

Alectra Utilities is entering a period of heightened capital asset renewal, as a large population of deteriorating assets are reaching their end-of-life.

a) Please provide Alectra's definition of end-of-life.

b) Please provide the total number of Alectra's assets and the corresponding total percentage that are beyond end-of-life at the end of 2018.

c) Please provide the percentage at end-of-life at the end of 2013.

d) Please provide the total number of assets by operational area and the percentage in each area that are beyond end-of-life.

AMPCO-3

Ref: Ex 1 T3 S1 P5

Alectra indicates that Figure 2 shows that the level of system renewal investment proposed in the DSP (i.e., the green line) is already significantly below the level dictated by the condition of the utility's assets.

Please show the underlying calculation and provide the numerical values for each year and the calculation of the level dictated by the condition of the utility's assets (Blue Bars- Condition Base Required – Planed SR $MM).

AMPCO-4

Ref: Ex 1 T3 S1 P5

In order to ensure that customers pay no more than is necessary to fund prudent capital expenditures over the DSP period, Alectra Utilities proposes to establish a Capital Investment Variance Account to track the difference between the capital funding provided through M-factor riders and the utility's actual capital investments. This account will operate symmetrically, such that customers will be refunded for overall under-investment and any prudent spending above the level funded through M-factor riders will be recovered by Alectra Utilities.

a) From Alectra's perspective, what are the circumstances/factors that would drive an overspend above the level funded through the M-factor, taking into consideration any historical capital overspending?

b) Please reconcile potential M-factor overspending recovery with Alectra's desire to provide rate certainty.[1]

AMPCO-5

Ref: Ex 2 T1 S3 P7

Alectra indicates a rate rider will be established by rate zone based on the investments planned in each of Alectra Utilities operational areas.

Please provide a list of the investments planned by operational area.

AMPCO-6

Ref: Ex 2 T1 S3 P14 Table 5

Table 5 provides M-factor needs totalling $265 million.

Please provide a further breakdown of Table 5 by rate zone.

AMPCO-7

Ref: Ex 4 T1 S1 P13

Should Alectra Utilities not receive sufficient funds to implement the renewal as proposed in this DSP, Alectra Utilities will have to defer essential system renewal investments which are projected to have a significant negative impact on reliability. Under the partial funding scenario reflected in Figure 5.0 - 8 (i.e., purple line), Alectra Utilities' customers would experience a projected worsening of reliability by

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[1] Transcript Presentation Day August 7, 2019 P4

50% over the next five years, and a further deterioration of 112% over the next ten years, relative to the most recent five-year outage duration average.

Please provide the calculations that underpin the above worsening of reliability projections and provide all assumptions.

AMPCO-8

Ref: Ex 4 T1 S1 P20

Alectra Utilities' investment planning process has been guided by its Corporate Strategy, which was established by Alectra Utilities' Executive Management Team on March 1, 2017 and endorsed by its Board of Directors.

Please provide a copy of the Corporate Strategy that was approved by Alectra's Board of Directors.

AMPCO-9

Ref: Ex 4 T1 S1 P49 Table 5.2.1-4

Please provide Table 5.2.1-4 for the years 2015 to 2019.

AMPCO-10

Ref: Ex 4 T1 S1 P52-53

Please provide the Terms of Reference for the Kinectrics Inc. Review (Appendix E) and the Vanry & Associates Review (Appendix G).

AMPCO-11

Ref: Ex 4 T1 S1 P52

Kinectrics Inc. ("Kinectrics") was retained to undertake an independent, third-party review of Alectra Utilities' Asset Condition Assessment ("ACA").

For each of the legacy utilities, please provide the results of their most recent ACA prior to this combined ACA and identify the party that undertook the ACA.

AMPCO-12

Ref: Ex 4 T1 S1 P101

Underground Cable and cable accessory failures are the leading cause of outages, both in terms of frequency and duration. Over the last five years, Alectra Utilities has experienced an increasing year-over-year trend of underground cable failures. Alectra Utilities has determined that an increasing rate of underground cable failure over this period is an indication that the deterioration of cables is exceeding the historical renewal rate.

a) Please explain if Alectra investigates the root cause of cable failures.

b) Please provide the cable renewal rate for each of the years 2014 to 2018 and forecast 2019 to 2024 and show the calculation.

c) Please provide the cable failure rate for each of the years 2014 to 2018 and show the calculation.

d) Please identify the operational areas with the highest cable failure rates and provide the data.

AMPCO-13

Ref: Ex 4 T1 S1

a) Does Alectra track asset removals and the age the asset is removed from service? If yes, please describe the process.

b) Does Alectra track the age an asset fails? If yes, please describe the process.

AMPCO-14

Ref: Ex 4 T1 S1 P102

Alectra indicates that once the cable has reached end of life, the failure rate increases and cables can no longer be repaired and the only option is to replace the cable.

Please confirm Alectra tracks and records the age of cable failures?

AMPCO-15

Ref: Ex 4 T1 S1 P108 Table 5.2.3-5

a) Please explain the reasons for the increase in SAIDI in 2018.

b) Please add a row to the Table to show SAIDI results for the years 2014 to 2018 excluding MEDs and LOS and Scheduled Outages.

AMPCO-16

Ref: Ex 4 T1 S1 P110 Table 5.2.3-7

a) Please explain the reasons for the increase in SAIFI in 2018.

b) Please add a row to the Table to show SAIFI results for the years 2014 to 2018 excluding MEDs and LOS and Scheduled Outages.

AMPCO-17

Ref: Ex 4 T1 S1 P110 Figure 5.2.3-4

a) Please provide Figure 5.2.3-4 including Scheduled Outages.

b) Please provide Figure 5.2.3-4 for each of the years 2014 to 2018 including Scheduled Outages.

AMPCO-18

Ref: Ex 4 T1 S1 P113 Figure 5.2.3-5

c) Please provide Figure 5.2.3-5 including Scheduled Outages.

d) Please provide Figure 5.2.3-5 for each of the years 2014 to 2018 including Scheduled Outages.

AMPCO-19

Ref: Ex 4 T1 S1 P113

Please discuss if Alectra has changed its methodology of how it records outage events by cause code in the last two years.

AMPCO-20

Ref: Ex 4 T1 S1 P114

a) Please explain how Alectra differentiates between adverse weather and tree contacts to record outage events.

b) Please provide the percentage of tree contact outages that are not weather related.

AMPCO-21

Ref: Ex 4 T1 S1 P112

Alectra indicates that although scheduled outages are necessary for Alectra Utilities to safely and effectively maintain and renew the distribution system equipment, Alectra Utilities has incorporated practices to minimize the duration and inconvenience of customers caused by such outages.

a) Please describe the practices referred to above.

b) Does Alectra track forecast versus actual events and hours of interruption due to Scheduled Outages? If yes, please provide the data for each of the years 2014 to 2018.

AMPCO-22

Ref: Ex 4 T1 S1 P112

Defective Equipment is the leading contributor in both duration and frequency of outages over the last five years.

a) Please provide a breakdown of Defective Equipment events by Cause for each of the years 2014 to 2018.

b) Please provide a breakdown of Defective Equipment hours of interruption by Cause for each of the years 2014 to 2018.

AMPCO-23

Ref: Ex 4 T1 S1 P118 Table 5.2.3-9

a) Please provide the number of hours by year for each of the years 2014 to 2018 due to Defective Equipment.

b) Please provide the number of outage events by year for each of the years 2014 to 2018 due to Defective Equipment.

AMPCO-24

Ref: Ex 4 T1 S1 P121 Table 5.2.3-11

Please recast the table with the following adjustments:

a) Separate cable and accessories for PILC cable.

b) Separate cable and accessories for XLPE cable.

c) Please provide a breakdown of assets under Overhead Line Hardware.

d) Please explain TX.

AMPCO-25

Ref: Ex 4 T1 S1 P168

a) Please provide the CPI ratio results for 2014 to 2018.

b) Please provide the SPI ratio results for 2014 to 2018.

AMPCO-26

Ref: Ex 4 T1 S1 P231 Table 5.3.3 -1

a) Please add a column before HI % that shows the population of each asset class.

b) Please add the asset quantities that correspond to the HI percentages for each asset class to the table.

c) Please provide the percentage of total assets included in the ACA.

d) Please provide an excel version of the table that includes (a) and (b).

AMPCO-27

Ref: Ex 4 T1 S1 P353

a) Please provide the total number of candidate projects compared to the final number of projects for 2020 to 2024.

b) Please provide the number of projects not selected for the optimized portfolio that were deferred by the CopperLeaf C55 beyond 2024.

AMPCO-28

Ref: Ex 4 T1 S1 P358 Table 5.4.2-1

a) Please add Capital Contributions to the Table.

b) Please provide an excel version of the Table.

AMPCO-29

Ref: Ex 4 T1 S1 P370 Table 5.4.2-7 (Appendix 2-AA).

a) Please add capital contributions to Table 5.4.2-7 and provide an excel version of the table.

b) Note 1 at the bottom of the table states "As discussed in this exhibit, historical expenditures information is provided for the sole purpose to comply with the OEB Filing Requirements (i.e. Section 5.4.2 of Chapter 2 of the Filing Requirement) and should not be relied upon.

Please explain why historical expenditures information should not be relied upon.

AMPCO-30

Ref: Ex 4 T1 S1 Table 5.4.3-5 P402 & P175

a) Please provide a breakdown of the investments in Table 5.4.3 – 5 by operating area (P175).

b) Please provide a breakdown of the investments in Table 5.4.3 -5 by operating area for the years 2015 to 2019.

AMPCO-31

Ref: Ex 4

a) Please provide Alectra's total asset population at the end of 2018.

b) Please provide the % of total assets to be replaced over the period 2020 to 2024 compared to the period 2015 to 2018.

AMPCO-32

Ref: Ex 4 T1 S1 Appendix A05 P7

a) Please provide the number of poles reinforced for each of the years 2015 to 2018 and forecast for 2019 to 2024 and the corresponding cost per year.

b) Please provide the number of poles replaced for each of the years 2015 to 2018 and forecast for 2019 to 2024 and the corresponding cost per year.

AMPCO-33

Ref: Ex 4 T1 S1 Appendix A06 P4

a) Page 4: Please provide the number of deficiencies for each of the years 2014 to 2018.

b) Page 10: Please provide the volume of work for each of the years 2014 to 2019.

c) Please provide the Reactive Capital costs to date in 2019.

AMPCO-34

Ref: Ex 4 T1 S1 Appendix A08

Please provide the total number of substation renewals for each of the years 2015 to 2018.

AMPCO-35

Ref: Ex 4 T1 S1 Appendix A10

a) Page 12 Figure A10-5: Please provide the numerical values for each year. Please confirm what data is excluded from outage data (i.e. Major Event Days).

b) Page 12 Figure A10-6: Please provide the numerical values for each year. Please confirm what is excluded from customer interruption data (i.e. Major Event Days).

c) Please explain the increase in outages and Hours of Interruption in 2018.

AMPCO-36

Ref: Ex 4 T1 S1 Appendix A19

Please discuss how Alectra took into account vehicle utilization rates in right sizing the fleet and investment levels for the test period.

AMPCO-37

Ref: Ex 4 Appendix D P10

Alectra indicates it consolidated and harmonized the ACA for the legacy utilities.

Please summarize any significant changes to the ACA methodology compared to the ACA methodologies of the legacy utilities and the resulting impact on the results.

AMPCO-38

Ref: Ex 4 Appendix D P15

Alectra indicates age is represented as a percentage score based on a continuous function given by the Gompertz-Makeham Model described by a set of equations, where the constants are calculated so as to yield an age score of 80% at the Typical Useful Life (TUL) and 1% at the End of Useful Life (EUL) of an asset. Use of the Gompertz-Makeham Model is a widely accepted industry practice for assessing asset condition.

a) Please discuss if representing age as a percentage score and using the Gompertz-Makeham Model was used by any of the legacy utilities. If yes, please discuss if the same constants described above were used.

b) Are the age scores of 80% at the TUL and 1% at the EUL of an asset set by the Gompertz-Makeham Model or Alectra?

AMPCO-39

Ref: Ex 4 Appendix D P18

For each asset class, the average DAI is presented as part of the Health Index results section. DAI is used by SMEs when evaluating the completeness of, and confidence in the HI results (relative to the HI model inputs) and applicable sustainment strategies. As Alectra harmonizes its inspection, maintenance, testing and data collection practices, it is expected that the DAI will increase in the future.

Please provide the DAI threshold level where completeness of HI results would be a concern to SMEs.

AMPCO-40

Ref: Ex 4 Appendix D P50

Alectra indicates the average DAI for wood poles is 68.7%.

a) Please explain how the average DAI for wood poles is derived and provide the calculation.

b) Please provide the data needed to be collected to take the DAI for wood poles to 100%.

AMPCO-41

Ref: Ex 4 Appendix D P50

Alectra indicates the average DAI for Power Transformers is 77%.

Please provide the data needed to be collected to take the DAI for Power Transformers to 100%.

AMPCO-42

Ref: Ex 4 Appendix D P78

Alectra indicates the average DAI for Circuit Breakers is 72.6%.

Please provide the data needed to be collected to take the DAI for Circuit Breakers to 100%.

AMPCO-43

Ref: Ex 4 Appendix E

Kinectrics reviewed Alectra's ACA processes and methodology.

a) Does Kinectrics consider its assessment to be an ACA gap analysis? If not, why not.

b) Please identify the leading or industry best practice standard that Kinectrics compared Alectra's ACA process and methodology to.

c) Please provide the set of criteria Kinectrics used to assess Alectra's ACA.

d) Please discuss how asset age is used in the current ACA model.

e) Please confirm Alectra's harmonized ACA follows the current Kinectrics methodology.

 AMPCO-44

Ref: Ex 4 Appendix E P4

The data sources for the 'inputs' to the HI calculation include service record information, GIS data, maintenance and visual inspection records, test results, and subject matter expert (SME) input. These are a common source of asset condition information in electric utilities.

Please discuss any data quality limitations observed by Kinectrics related to the data sources identified.

AMPCO-45

Ref: Ex 4 Appendix E P5

Kinectrics indicates Alectra does not currently have asset degradation curves.

a) Please explain why Alectra does not have asset degradation curves.

b) Please describe industry best practice with respect to the desire to have utility specific asset degradation curves.

c) Would Kinectrics describe Alectra as a utility with limited failure statistics?

AMPCO-46

Ref: Ex 4 Appendix E P5

Alectra applied a Condition Multiplier.

a) Did any of the legacy utilities apply a Condition Multiplier?

b) Please explain the origin of the Condition Multiplier?

AMPCO-47

Ref: Ex 4 Appendix E P6

a) With respect to HI Categorization, please provide Kinectrics' recommended timeline for action against each category.

b) Please discuss if timelines for action have changed in the new Aca compared to the ACA's of the legacy utilities.

AMPCO-48

Ref: Ex 4 Appendix E P8

a) Please explain why Kinectrics did not validate the inputs.

b) Please provide the list of supporting information reviewed by Kinectrics.

c) Please provide Kinectrics' opinion of the maturity level of Alectra's ACA.

AMPCO-49

Ref: Ex 4 Appendix E P9

Kinectrics provides four recommendations.

a) What additional information would Alectra need to develop Alectra-specific degradation curves based on failure statistics.

b) Please provide Kinectric's assessment of the maturity level of Alectra's ACA if the four recommendations were implemented.

c) Did Kinectrics compare Alectra's ACA to other Ontario utilities? If not, why not? If yes, please provide the findings.

AMPCO-50

Ref: Ex 4 Appendix E P9

With respect to model improvements, Kinectrics indicates the sustainment pacing for distribution assets

focuses on addressing poor and very poor units. A future improvement to the pacing strategy would be to consider all HI bands while taking into account the probabilistic nature of failures.

Please explain further what is meant by "consider all HI bands while taking into account the probabilistic nature of failures" and how this would inform and impact the pacing strategy.

AMPCO-51

Ref: DSP Appendix G P3

Vanry & Associates Inc. provides an opinion of the alignment of Alectra's Assessment Management processes and ACA methodology to established industry best practices.

Please identify the industry standards used.

AMPCO-52

Ref: DSP Appendix G P5

Vanry indicates it is concerned that Akectra may not have allocated sufficient funding required to keep up with the cable failure rates.

Did Vanry undertake a review and analysis of Alectra's cable failure data? If yes, please explain.

AMPCO-53

Ref: DSP Appendix G P15

Historically Alectra used an external consultant to carry out its ACA. Alectra has now moved its ACA in-house.

Please provide Vanry's opinion on the advantages and disadvantages of bringing the ACA in-house versus continuing to use an external consultant.

AMPCO-54

Ref: DSP Appendix G P17

Alectra has removed failure projections from its ACA, which Vanry regards as an improvement.

Please explain how this is seen as an improvement over what was done historically.

AMPCO-55

Ref: DSP Appendix G P21

Vanry indicates Alectra has a strong business case using C55. Their only concern is the way projects are identified for inclusion in the business case process.

What specifically are Vanry's concerns regarding the way projects are identified.

AMPCO-56

Ref: DSP Appendix G

Please list all of Vanry's engagements with Alectra and the legacy utilities in the past 10 years.

AMPCO-57

Ref: DSP Appendix P

Please provide an excel version of Tables P01-1, P01-2, PO1-3 and PO1-4 combined as one table.

AMPCO-58

Ref: EB-2016-0025 LDC Co_Business Plan Appendix 9-B P4 (Filed as Appendix A)

As part of the Merger, Vanry + Associates, Inc. (VAI) was engaged to undertake an independent, third-party review in support of the due diligence process related to the potential merger of four Local Distribution Companies (LDCs). The scope of the review was to evaluate the respective Asset Condition Assessment (ACA) methodologies and resulting capital investment planning processes, as well as to assess the overall asset health and subsequent 20-year investment for each of the four LDCs.

A finding from Vanry's review is provided below:

In our review, we did not identify any aspects of an individual LDC's approach, or anything in the potential combination of LDC's that we would expect to result in dramatic changes in overall spending levels in a combined LDC. We do believe that certain approaches among the LDCs are sufficiently different that combining the four could lead to the potential for reductions in overall spending. We also see a distinct possibility that a merged LDC, adopting a common set of leading practices, could lead to the overall capital investment program being redistributed among the respective systems in proportions that are different than the current allocations. This is due in part from different assessments of criticality and in part in recognition of the current variations in system performance and failure rates among the four LDCs. In short a merged entity would expect to see funding flowing to the areas of greatest value, or greatest risk potential. We observed from the reports that the range of need among the systems varies sufficiently that spending might flow to the portions of the combined system with the greatest need.

a) Please summarize how the needs of the systems of the legacy utilities varies.

b) Please explain how Alectra has directed 2020 to 2024 funding to the areas of greatest value, greatest risk potential or greatest need.

AMPCO-59

Ref: EB-2016-0025 LDC Co_Business Plan Appendix 9-B P15

With respect to Condition Assessment for the former Powerstream, the following assessment by Vanry was compared against the Criterion Definition of Condition Assessment (first column).

Condition Assessment	Health Indices are based on major degradation processes and end of life criteria. The formulations are generally within the range of best practice, although recent improvements in the industry (e.g. multiplicative formulation) have not been applied. PowerStream has a strong testing and inspection program with good data availability.
Asset conditions are assessed relative to end-of-life failure criteria (i.e. Health Index). Health Index includes relevant parameters for predicting failure based on known degradation processes, and excludes other factors such as those related to criticality or obsolescence. Age is not included as a condition criterion.	The multiplicative approach to health indexing is in contrast to the additive approach used by all four utilities in this review. It is a recent industry innovation wherein condition parameters are multiplied together rather than added. It avoids some of the common problems: "masking," where a bad test result is hidden amid several good ones, and validity, where there are not enough data available to calculate a valid health index.
	Age is excluded from most formulations.
	Factors related to obsolescence or consequences (e.g. oil circuit breakers, PCB transformers) are excluded from the formulations.

a) Please confirm the source of the recent industry improvements.

b) Please discuss if the recent improvements in the industry not applied have now been applied in Alectra's harmonized ACA. i.e. does Alectra's current HI model follows a multiplicative approach or an additive approach? If not, why not.

c) If now a multiplicative approach, please discuss the key changes in the model and the impact on the results.

d) Please discuss what is meant by "Age is excluded from most formulations" and whether that is a best practice.

e) Please confirm criticality and obsolescence are excluded from the formulations in the Alectra harmonized ACA.

AMPCO-60

Ref: Ex 4 T1 S1

Please complete the attached spreadsheet (Attachment #1).

AMPCO-61

Ref: Ex 4 T1 S1

Please complete the attached spreadsheet (Attachment #1).