

2019 IRM Application EB-2018-0063
Response to Staff Interrogatories #2
January 31, 2019

1. Staff 25:

a. For the Almonte area, please provide:

i. A rate class breakdown of customers from 2019-2022, including actual customers in 2018.

Rate Class	2016 (Actual)	2017 (Actual)	2018 (Actual)	2019	2020	2021	2022
Residential	2606	2673	2810	2922	3039	3161	3287
GS <50kW	288	289	286	288	290	292	294
GS >50kW	22	22	22	22	22	22	22
Unmetered	10	10	10	10	10	10	10
Sentinel Lighting	15	16	16	16	16	16	16
Street Lighting	671	672	672	682	692	702	712

ii. A rate class breakdown of consumption from 2019-2022, including actual consumption in 2018.

Rate Class	2016 (Actual)	2017 (Actual)	2018 (Actual)	2019	2020	2021	2022
Residential	20,923,990	20,637,977	22,810,328	23,494,638	24,199,477	24,925,461	25,673,225
GS <50kW	5,549,208	5,313,888	5,325,186	5,365,000	5,400,000	5,450,000	5,500,000
GS >50kW	10,628,233	10,933,745	11,161,488	11,384,718	11,612,412	11,844,660	12,081,554
Unmetered	121,100	121,100	121,100	121,100	121,100	121,100	121,100
Sentinel Lighting	8,705	9,138	8,706	8,706	8,706	8,706	8,706
Street Lighting	420,405	417,811	272,873	272,873	272,873	272,873	272,873

b. Please indicate the number of new customers that Ottawa River Power is planning to serve with the new build of MS-4. Can you provide a table with projections of the load growth (in MW) in Almonte only?

Ottawa River Power will not only serve new customers, but will serve existing customers as well. This remains the primary issue in Almonte. There is not enough capacity should a 4.16 kV station fail, to serve the rest of the community.

- c. What is the assumption used for growth in housing starts or new subdivision growth for the residential load forecast?

The assumption for growth in housing starts or new subdivision growth is based on historical facts. When the utility amalgamated in 2000, there were 1837 residential customers. The current number of residential customers is 2810, as stated in the table above answering question Staff 25.a.i. This is a 60% growth over 18 years. Consumption increased from 17,823,044 kWh to 22,810,328 kWh, which is a 28% increase. GS > 50 kW also grew from 11 customers to its present 22, which is a 100% growth rate in 18 years. In 2000 this class consumed 5,711,060 kWh. In 2018 this had risen by 95% to 11,161,488 kWh.

This growth is also confirmed by the municipality and is expected to continue into the future.

- d. Given that actual consumption in Almonte has steadily decreased since 2015, please explain why new station capacity would be required to meet existing shortfall during a failure scenario (in the event one of the two 5 MVA substations fail).

Ottawa River Power acknowledges that there has been a decrease in consumption (kWh) since 2015. That however, is just a small picture in time, and may reflect conservation activities, like the 2018 street light conversion, during that period. Total consumption has increased by 30% since 2000 with no change in capacity at the substations.

The issue at hand for Ottawa River Power is meeting peak demand, which has been steadily growing since 2000. The coincidental peak demand for Almonte is approximately 10,775 kVA. With the unexpected loss of the MS-1 5,000 kVA or MS-2 5,000 kVA transformers, the remaining town capacity is only 8,000 kVA.

- e. Please show the supporting calculations or analysis to show that a new MS-4 needs to be built in 2019 rather than in 2020.

Given that the town's peak coincidental peak demand exceeds the emergency capacity rating of 8,000 kVA, the new station is required as soon as possible.

2. Staff 26:

- a. Please explain how the load of 10,775 kVA was calculated based on the information provided in the spreadsheet in Appendix M.

After investigation, it was determined that there was an error with the meter data for one 15 minute demand interval for January 2017. This has been corrected in our load

forecast and supporting information elsewhere in this response. The 2017 actual winter demand is 8.7 MVA, not 10.775 MVA.

- b. Please explain the definition of “aggregate station load”.

Aggregate station load is the total coincidental station load at all three municipal stations, inclusive of all customer classes.

- c. Please explain why the peak load was revised from 12,764 kVA to 10,775 kVA in the responses to the interrogatories.

As stated in item A above, the metering values initially reported were raw numbers taken directly from the meter reports from the MSP. Ottawa River has reviewed all of the meter data with our engineering consultant, and corrected some meter data errors as well as the totalization table used to aggregate a number of meters.

The actual coincidental peak load for Almonte is 8.7 MVA.

- d. Please discuss how Ottawa River Power plans to ensure that future load will be accurately calculated going forward.

The issue has been addressed at the MSP and steps have been taken to prevent a similar error in the future.

3. Staff 27:

- a. Please explain the discrepancies in coincidental peak load in 2018 in MW and MVA in the Almonte area.

The Municipal Substation Planning Report was the peak in 2016. The interrogatory response was correct that the winter peak in 2018 was 8.716 MW. The original application of 9.45 MVA was not a coincidental peak. This was the sum of the individual feeder loading observed during routine station inspections.

- b. Please confirm the correct value of the Almonte coincidental peak load in 2018 in MW and MVA, and confirm whether the Staff-18 a) excel spreadsheet supersedes the peak load figures in the application.

Ottawa River Power confirms that the correct peak was 8.55 MW or approximately 9.1 MVA (based on a typical power factor of 94%) in 2018 and that the excel spreadsheet supersedes the peak load figures in the application.

4. Staff 28:

- a. Please discuss how the annual peaks are forecasted from 2019 and onwards. Please show calculations and assumptions.

Annual peaks are forecasted based upon historical trends and assumed load growth of 3%. The 3% growth rate is based upon the best available information from local authorities and developers.

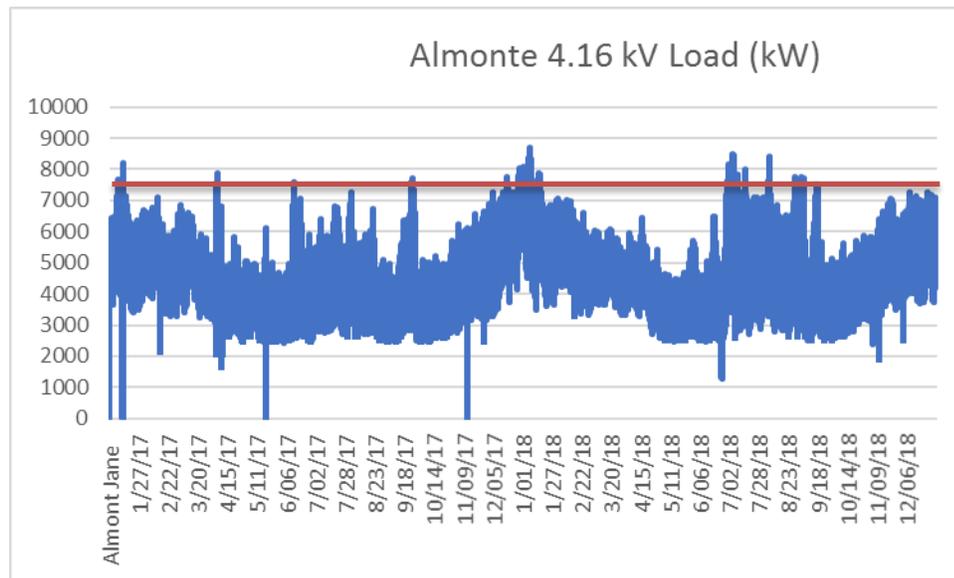
One of the challenges with historical data is that the aggregated meter data for periods prior to 2017 is not available. We have attempted to confirm the assumed growth rate by looking at historical peak station loads, however, it is difficult to verify.

Regardless of the methodology applied for forecasting beyond 2018, the current situation of inadequate capacity under failure contingency situations remains and is the immediate concern.

- b. Please specify the duration of the annual peaks for each station.

Individual loading on any of the three stations is not the determining factor for 4.16 kV capacity as a whole. We have considered the coincidental aggregate load for the entire town, such that we can supply all of the load at any time, even with the failure of one of the three stations. The graph below shows in particular that the summer loading exceeds the capacity of the system with a station failure.

The load data in the graph below is in kW. The horizontal red line represents the emergency capacity during the failure of one of the 5000 kVA stations. The remaining capacity is 8000 kVA, or approximately 7500 kW at a typical power factor of 0.94.



Note that the winter peak around December 2017 is similar to the summer 2018 peak. There are more summer days that exceed the emergency capacity than winter days, and the station transformer capacity is fixed at the nameplate rating when considering a 30 degree ambient temperature.

- c. Please provide in excel format the monthly peak (MVA) values for summer and winter peak load for the years 2017 and 2022.

As per b. above, the issue is not the individual station loading, it is the coincident system load. The 2019 through 2022 forecast is based on a typical 3% annual increase as supplied in Appendix M. The table below was converted to MVA using a 94% power factor.

Year	Summer Peak (MVA)	Winter Peak (MVA)
2017	8.2	8.7
2018	8.9	9.1
2019	9.2	9.4
2020	9.5	9.7
2021	9.8	10.0
2022	10.1	10.3

However, the peak demands for the period of 2017 through 2022 are irrelevant to the current situation of inadequate capacity under failure contingency situations.

5. Staff 29:

- a. Please explain why the nameplate image on drawing DSC_2412 contradicts the assertion that Almonte MS-1 has a 5 MVA rating.

The Almonte MS-1 site has both the MS-1 5,000 kVA distribution station, and a generating station that also has a 5,000 kVA transformer connected to the 44 kV sub-transmission system. The generating station and its 5,000 kVA transformer are completely independent of the 4.16 kV station capacity discussion for Almonte. Both transformers were shown on a drawing that pre-dated the separation of the generation and distribution assets at the opening of the electricity market in 2002.

- b. If the nameplate rating does not depict accurately the transformer capacity of MS-1, please clarify what the nameplate image in drawing DSC_2412 was intended to illustrate. If the evidence is not updated, please provide an image of the MS-1 transformer nameplate.

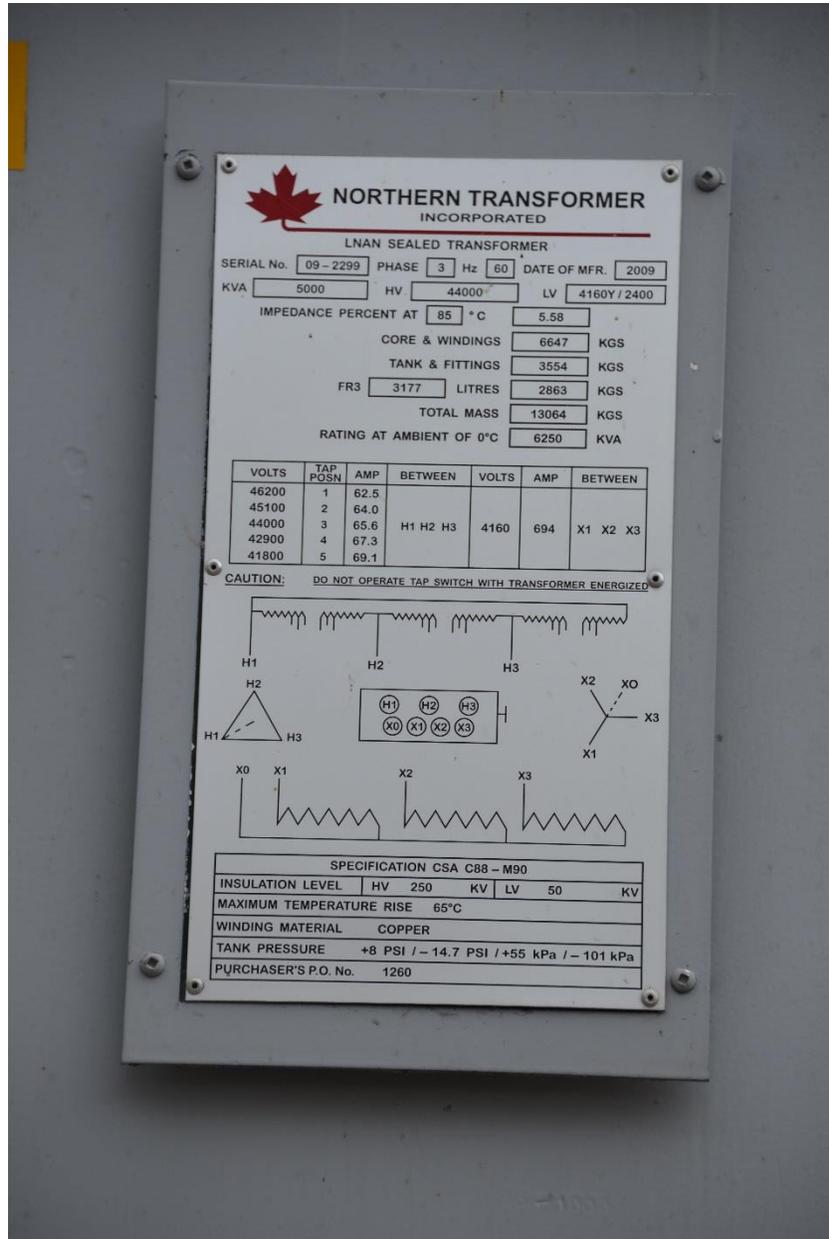


Figure 1 – MS-1 Transformer Nameplate

- c. What are the emergency summer and winter ratings for all of the Almonte MS transformers?

The substation transformers are built according to CSA standards, and do not have emergency summer and winter ratings. Large power transformers used in Ontario 115/230 kV transformer stations have special designs that have emergency summer and winter ratings. These units do not. The CSA C88 Standard for Power Transformers and Reactors does allow an increase in capacity for lower ambient temperature conditions. Note that this does not help the Almonte capacity for summer conditions.

6. Staff 30:

- a. Please discuss why Ottawa River Power did not to implement the recommendation by Barkley Technologies Inc. to replace the 3 MVA transformer at Almonte MS-3 with a 5 MVA transformer.

Following the construction of MS-4, the entire Almonte MS-3 station will be replaced. As stated in the Costello station report, all of the equipment at MS-3 is operating beyond its useful life. It was constructed in 1965 and there are several age-related issues with this station, including obsolete switchgear. New station capacity was required to be built in advance of rebuilding MS-3 to ensure the security of supply during the MS-3 construction project.

- b. Please provide the analysis to demonstrate that Ottawa River has exhausted all other options prior to making the decision to build a new substation.

ORPC staff and its consultants reviewed all possible options to provide security to existing customers and provide new capacity for new customers. ORPC has also consulted with other Ontario LDCs to make sure that our emergency planning criteria (maintaining loss of service with one station down) is consistent and considered “good utility practice”.

If we consider the base capacity to be the minimum capacity with the loss of the largest station, it is clear that there is presently a shortfall of capacity. The addition of fans is not possible on two out of three of the existing station transformers (the original designs did not include provisions for fans). In addition, two of the stations in Almonte are also operating near or past the end of their useful life.

We are confident that the construction of a new 4.16 kV station in Almonte is the best alternative.

8. Staff 31:

- a. Please discuss in greater detail how MS-2 is expected to reach capacity in 2019, while MS-3 could reach capacity in 2020.

Peak 2018 demand for MS-2 was at 87% of nameplate capacity, however, this peak is weather dependent and one year is not necessarily a good representation. There is planned residential growth in the area supplied by MS-2, and we are working with the municipality and developers to quantify this.

MS-3 is in a similar situation, with a 2017 and 2018 peak at 86% of nameplate capacity.

Again, the issue is not necessarily the individual loading on individual stations, but the aggregate loading on the 4.16 kV system as a whole.

- b. Please provide the analysis showing when the forecasted replacement of all Almonte and Pembroke stations would occur.

The ICM for station upgrades in Almonte is independent of upgrades in Pembroke. The two towns are separated by both geography and on separate, disconnected distribution systems.

The Costello report from 2017 identified several age-related issues with MS-2 and MS-3, these stations are functioning at or past their useful lives at 43 and 53 years. The fourth station is required for emergency loading, as well as to allow for enough capacity to refurbish one of the other stations and maintain system reliability. MS-3 is forecasted to be replaced in 2021, and MS-2's forecasted refurbishment date will be calculated with the next cost of service application in 2021.

Ottawa River Power is currently assessing the Pembroke long range capital planning, and this will be included in our next Cost of Service application.

9. Staff 32:

- a. Please describe what caused the last station outage in 2014 and what was done to restore supply to customers.

We understand there was a conductor burn off at MS-1. The entire MS-1 station was taken out of service to make repairs, which was repaired over the next few days. Fortunately, there was enough capacity at the remaining two stations in November 2014 to be able to pick up all of the MS-1 load from the other two stations. The customers were restored in approximately three hours in this case. This could not happen today under certain peak loading conditions.

- b. What was the Almonte area peak in 2014 and what was the load on November 22, 2014 (the outage date)?

The aggregated peak data is not available before 2017. However, we understand the entire load was able to be picked up without exceeding any feeder or transformer ratings. There is no SCADA installed at MS-2 or MS-3, and therefore no detailed records are available for that event.

- c. Please explain the basis for the concerns over prolonged outages and rolling blackouts without a new substation. This claim does not appear to be consistent with historical data as an outage has not occurred at MS-1 and MS-2 over the last four years.

ORPC has a preventative maintenance program, consistent with good utility practices. However, unplanned failures do occur. Past performance is no guarantee of future reliability. ORPC designs and operates stations and distribution systems to be tolerant of the failure of any single component and must ensure that unplanned outages can be restored in a reasonable time frame. This is consistent with Ontario LDC practices.

- d. Please explain why Ottawa River Power expects the performance of transformer station equipment to deteriorate, particularly when the test results and inspection records identified no concerns with the station equipment condition.

ORPC does not expect performance to deteriorate, rather is following typical utility practice to be tolerate of the failure of any single major component to prevent prolonged outages. Substation transformers do fail, often without warning, and ORPC has a responsibility to be able to restore power in that circumstance in a reasonable time. Typically, this means within an hour or so. If there is no spare capacity in the system, outages could last days or longer.

10. Staff 33:

- a. What is the current 2019 CAPEX excluding the ICM project? What is the total CAPEX for 2019 including the ICM project?

The CAPEX for 2019 excluding the ICM is \$1,001,150.

The CAPEX for 2019 including the ICM is \$1,698,850.

- b. Please reconcile the response to a) to the \$2,700,000 (per ICM model) or \$2,887,500 (per VECC Appendix 1).

The Capex budget in the ICM includes contributed capital of \$187,500. VECC Appendix A has been revised to include this as well.

- c. If necessary, please update the ICM model to correspond to any corrected information above.

No revision is necessary

12. Staff 34:

- a. Ottawa River Power has identified the land costs for the purchase of the land in 2018 as part of the MS-4 costs. Please confirm that this land is solely for the siting of the MS-4 station.

Ottawa River Power confirms that the land is solely for the siting of MS-4 substation.

- b. Please confirm that Ottawa River Power is not applying for recovery of the land, which cost was incurred in 2018, for recovery through the 2019 ICM rate riders, as the recovery of incremental capital is based on the maximum eligible incremental capital amount for 2019 project costs.

Ottawa River Power is not applying for the recovery of the land.

- c. If Ottawa River Power is also seeking recovery of the land costs, please provide Ottawa River Power's proposal for this.

N/A

13. Staff 35:

- a. Please confirm that Ottawa River Power's achieved Return on Equity on a deemed regulatory basis for 2017 per its filed Scorecard is 11.82%, versus an allowed ROE of 9.19%. Please confirm that Ottawa River Power does not exceed the Means Test based on the most recent actual information, per the 2017 Scorecard.

Ottawa River did not exceed the Means Test. The increase from 9.19% versus 11.82% can be explained by the recovery of smart meters. Ottawa River Power applied for disposition of these in its 2016 COS. In 2017 the rate rider added an additional \$241,069. Without this the actual ROE would have been 6.87%.

14. Staff 36:

- a. Please explain how current base rates include amounts for this project. Are these all costs? If not, what (estimated) costs for the project are recovered through current rates as opposed to what Ottawa River Power is seeking recovery through ICM rate riders?

Ottawa River apologizes. The current rate base does NOT include amounts for this project.

16. Staff 37:

- a. Based on the response to Staff-20 vii), please provide the analysis undertaken to show that the new build of MS-4 was the most cost-effective option, in comparison to the two alternatives considered (1) expanding existing stations and (2) the purchase of a spare transformer.

The expansion of the stations is not a practical alternative. The MS-3 station has a capacity of 3,000 kVA, and would be a candidate for capacity expansion. The entire station, including transformer, metalclad switchgear, and feeder cables are operating beyond its useful life and it is intended to be completely replaced once the MS-4 capacity comes online.

The MS-1 and MS-2 transformers are 5,000 kVA, which is the typical maximum size for 4.16 kV systems. This is a technical limitation due to the 4.16 kV short circuit fault levels.

The purchase of a spare transformer is also worth consideration, but would not allow timely restoration of power following a failure at one of the existing stations. Each of the existing stations in Almonte has different physical configurations, and it would be challenging to find a spare transformer that could be installed quickly without major modifications to the station. It is estimated that changing a transformer could take one to two days minimum, which would result in a prolonged outage. Further, if there was a major failure in the 4.16 kV metalclad switchgear, a spare transformer would not help. In our experience, faults in switchgear can take many days to repair.

- b. Please provide estimated cost for each individual alternatives other than building MS4:

- Install cooling fans at MS-2

Approximately \$30,000. Does not provide any additional capacity to the Almonte 4.16 kV system if the MS-2 transformer fails.

- Replacing existing transformer at Almonte MS-3 with 5 MVA transformer

Approximately \$400,000 installed, including civil works and secondary oil containment. The rest of the MS-3 switchgear is past its useful life, and the switchgear manufacture is long out of business. No spare parts are available. Completely obsolete.

- Use mobile back up

A new MUS could cost between \$750k - \$1.5M depending on configuration and options. There is no guarantee that ORPC could rent one from HONI or another LDC. In any case, time to find a rental unit, even if it was available, and then install would be several days.

- Purchase a spare transformer

A spare transformer is approximately \$275k. This does not address switchgear failures, and could take several days to install. The stations also have different physical arrangements, which would lengthen the outage times to adapt to different arrangements.

- CDM initiatives

There is a present shortfall in emergency capacity of about 2.8 MVA, about 26% of the existing Almonte coincidental peak load. This does not include any new loads expected to come onto the system. CDM alone would not solve this.

- Real time monitoring in conjunction with utilizing emergency ratings

As mentioned, there are no emergency ratings. Additional capacity due to low ambient conditions has no benefit when temperatures are greater than 25°C. Real-time monitoring is always beneficial, but would not solve this capacity shortfall.

17. Staff 38:

- a. Please advise of the specific actions that Ottawa River Power will take, in the event the OEB does not approve of the ICM project.

Ottawa River Power has begun the process of building the MS-4 station, and ordered long delivery items such as the transformer and switchgear.

- b. Please discuss the significance of the cash shortfall and the actions that Ottawa River Power might take to deal with above noted financial hardship in the event the ICM project is not approved.

In the absence of ICM funding Ottawa River Power will independently finance the project and come back to the OEB during the next Cost of Service application for the capital cost of the station and all of the carrying costs.

18. Staff 39:

- a. Please confirm accuracy of the updated ICM rate riders by rate class in tab 12 of the ICM model updated by Staff.

Ottawa River Power confirms the rate riders updated by Staff.

- b. Please provide a table that compares the bill impact with and without the ICM project.

Please refer to Appendix Q.

Continuity Schedule Adjustments

19. Staff-40

Ref: IRRs to Staff-2 b) / Appendix C – Summary / Revised IRM Rate Generator Model

Pre-amble

Ottawa River Power provided a summary table (Appendix C – Summary) that presents the significant components in Account 1588 as of December 31, 2017. Two of those components are described as:

1. Unbilled revenues totaling \$326,313, and
2. Settlement differences totaling (\$181,389)

The sum of these amounts has also been reflected as a principal adjustment in Account 1588 as a credit entry of (\$144,925).

In response to Staff-2 b), Ottawa River Power stated:

“The effect of unbilled revenues had an estimated impact on Account 1588 of \$326,313.46 receivable from customers whereas the impact of settlement differences had an estimated impact of \$181,388.73 owing to customers. Due to the uncovered settlement differences, Ottawa River Power Corporation is filing a revised DVA Continuity Schedule to reflect the adjustment related to settlement differences and the difference in unbilled. The difference in unbilled revenues should not be disposed as this balance was entirely settled in 2018.”

Questions

- a. Please confirm that, although described as two different impacts (unbilled revenues and settlement differences), both are in fact RPP settlement differences. If this is not the case, please explain or differentiate between the effects that the two adjustments have either on Account 1588, or with Hydro One.

Ottawa River Power Corporation confirms that both unbilled revenues and settlement differences are RPP settlement differences.

- b. Please confirm that the only difference between the two items is that “Unbilled revenues” are the RPP revenue-related differences from December of each fiscal year from 2015 to 2017, while “Settlement Differences” represent the RPP revenue-related differences for every month other than December of each fiscal year from 2015 to 2017, as well as the total Weighted Average Price differences from 2015 to 2017. If this is not correct, please provide additional detail on what these items represent.

Ottawa River Power Corporation confirms that the above statement is true.

- c. With reference to that the last sentence in the quoted statement above: “the difference in unbilled revenues should not be disposed as this balance was entirely settled in 2018”, please confirm that both amounts (the \$(326,313) for unbilled revenues and the \$181,389 for settlement differences) should not be disposed as both amounts were entirely settled with Hydro One in 2018, and thus, have been recorded as principal adjustments in Account 1588 in the Revised IRM Rate Generator Model dated December 21, 2018.

Ottawa River Power Corporation confirms that the \$(326,313) and \$181,389 should not be disposed as both amounts were entirely settled with Hydro One in 2018 and have been recorded as principal adjustments in Account 1588 in the Revised IRM Rate Generator Model dated December 21, 2018.

20. Staff-41

Ref: IRRs to Staff-11 a / Appendix B – Account 1589 / Revised GA Analysis Workform / Revised IRM Rate Generator Model

Pre-amble

An analysis of Account 1589 is provided that reconciles the account’s closing balance with a series of adjustments (rows 44 to 50 in Appendix B – Account 1589). Included in those adjustments is an amount of \$174,549 described as “2015 RPP True Up included in 2017 GL and settled with HONE in 2018”. This amount is also included as a principal adjustment in Account 1589 in the revised IRM Rate Generator Model dated December 21, 2018.

In response to Staff-11 a), Ottawa River Power states:

“This adjustment pertains to 2016 and was journalized in 2017. The adjustment was calculated by comparing the daily consumption values and global adjustment charges against what was settled with Hydro One... A revised GA Analysis Workform has been submitted to reflect necessary revisions.”

In the revised GA Analysis Workform, a reconciling item of (\$174,549) is shown in 2016 and a reconciling item of \$174,549 is shown in 2017.

Questions

- a. Please confirm that the “settlement with Hydro One in 2018”, as indicated in Ottawa River Power’s description of the transaction, is the actual cash payment/receipt between Ottawa River Power and Hydro One (transfer between cash accounts and accounts receivable/payable). If this is not the case, please elaborate further on what the 2018 entry is. Specifically, please provide the GL entries made in 2017 for this adjustment versus the GL entries made in 2018.

Ottawa River Power Corporation confirms that the “settlement with Hydro One in 2018” is the actual cash payment/receipt between Ottawa River Power Corporation and Hydro One.

- b. If this GA-related settlement difference pertains to 2016 and was recorded in the GL in 2017 (as indicated in both the GA Analysis Workform and in response to Staff-11 a), please explain why this amount is included in the principal adjustments column in the revised Rate Generator Model, as the adjusting entry would have already been reflected in the 2017 transactions (column BD of the Rate Generator Model).

Ottawa River Power Corporation confirms that the principal adjustments column for 2017 in Account 1589 should not include the \$174,549 true up or the \$59,952 billing adjustment as the amounts were already included in the general ledger in 2017. The IRM continuity schedule has been revised accordingly. Appendix B has also been revised to exclude these figures as these amounts were already journalized by December 31, 2017. Certain figures in the “Non-RPP GA Claimed from HONE” were adjusted as they erroneously included amounts to settle GA on embedded generation.

- c. Please confirm that the principal adjustments column for 2017 in Account 1589 should not include the amount of \$174,549 (provided that Ottawa River Power confirms that the effect of this adjustment on Account 1589 was already reflected in the GL as of December 31, 2017). If Ottawa River Power disagrees with this statement, please explain its position on the matter.

As indicated above, Ottawa River Power Corporation agrees that the principal adjustments column for 2017 in Account 1589 should not include the \$174,549 or \$59,952. The IRM and Appendix B have been revised accordingly.

- d. Please confirm that, in addition to 2016, the GA-related settlement true-ups in Account 1589 for 2015 and 2017 were recorded, and explain how they are reflected in the DVA Continuity Schedule.

GA-related settlement true-ups, if required, are recorded and reflected as principal adjustments in the DVA Continuity Schedule. Ottawa River Power Corporation deemed that no such adjustments were required for 2015 or 2017.

- e. Please provide a revised Rate Generator Model that reflects these updated changes, if applicable.

Please see revised IRM and Appendix B.