



ATCO Electric Ltd.

Micro-Generation Determination

April 17, 2012



The Alberta Utilities Commission
Decision 2012-103: ATCO Electric Ltd.
Micro-Generation Determination
Application No. 1607742
Proceeding ID No. 1477

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Contents

| | | |
|------------|---|----------|
| 1 | Introduction and background | 1 |
| 2 | The regulation and its conditions for a “Micro-generation generating unit” | 2 |
| 3 | Commission findings | 3 |
| 3.1 | Renewable or alternative energy [Section (1)(1)(h)(i)] | 3 |
| 3.2 | The customer’s electricity needs [Section (1)(1)(h)(ii)] | 3 |
| 3.3 | Sizing of the proposed micro-generation generating unit [Section (1)(1)(h)(iii)] | 6 |
| 3.4 | One-megawatt limit [Section (1)(1)(h)(iv)] | 7 |
| 3.5 | Location of the proposed micro-generation generating unit [Section (1)(1)(h)(v)] | 8 |
| 4 | Other issues raised in the proceeding | 8 |
| 5 | Decision | 8 |
| | Appendix 1 – Proceeding participants | 9 |

1 Introduction and background

1. On September 19, 2011, Howell Mayhew Engineering Inc. (HME), on behalf of Andy Hildebrand, submitted a micro-generation application to ATCO Electric Ltd. (ATCO Electric). HME applied to ATCO Electric, on behalf of Mr. Hildebrand, to build a 20.9-kilowatt (kW) solar generation unit to be mounted on his house in a subdivision outside the town of Slave Lake.¹ ATCO Electric rejected the application stating that the proposed micro-generation generating unit exceeds the existing customer's load and, therefore, does not meet the definition of a micro-generation generating unit in accordance with Section 1(1)(h) of the *Micro-Generation Regulation*, AR 27/2008.

2. On October 5, 2011, in accordance with Section 2 of the *Micro-Generation Regulation*, ATCO Electric filed a notice of dispute with the Alberta Utilities Commission (AUC or the Commission) requesting that the Commission investigate and determine whether Mr. Hildebrand's proposed micro-generation generating unit is or will be a micro-generation generating unit. The Commission considers Mr. Hildebrand to be a customer of ATCO Electric and, therefore, the party that is applying for the proposed micro-generation generating unit, and that HME is representing Mr. Hildebrand in this proceeding.

3. On October 14, 2011, the Commission issued a notice of application requesting statements of intent to participate (SIPs) from interested parties and any additional information in support of its position by October 21, 2011.

4. The Commission received SIPs from the following parties:

- Howell Mayhew Engineering Inc. (on behalf of Andy Hildebrand)
- FortisAlberta Inc.

5. The Commission established the following written process to determine the application:

| | |
|--|-------------------|
| HME Evidence (round 1) | October 28, 2011 |
| Information Requests (IRs) to HME | November 4, 2011 |
| HME response to IRs | November 8, 2011 |
| Rebuttal evidence from ATCO Electric (round 1) | November 18, 2011 |
| IR to ATCO Electric | December 2, 2011 |
| IR Responses from ATCO Electric | December 23, 2011 |
| HME Evidence (round 2) | January 31, 2012 |
| Rebuttal evidence from ATCO Electric (round 2) | February 22, 2012 |
| Final Argument (simultaneous) | March 2, 2012 |
| Reply Argument (simultaneous) | March 19, 2012 |

¹ Exhibit 0008.01.HME-1477.

6. The Commission considers the record for this proceeding closed on March 19, 2012.

7. In reaching the determinations set out in this decision, the Commission considered all relevant materials comprising the record of this proceeding. Accordingly, references in this decision to specific parts of the record are intended to assist the reader in understanding the Commission's reasoning relating to a particular matter and should not be taken as an indication that the Commission did not consider all relevant portions of the record with respect to that matter.

2 The regulation and its conditions for a "Micro-generation generating unit"

8. For the purposes of this decision, the Commission must determine if the proposed micro-generation generating unit qualifies as a micro-generation generating unit in accordance with the requirements set out in the *Micro-Generation Regulation*.

9. Section 1(1)(h) of the *Micro-Generation Regulation* defines a "micro-generation generating unit" to be one that:

- (i) exclusively uses sources of renewable or alternative energy;
- (ii) is intended to meet all or a portion of the customer's electricity needs;
- (iii) is, at the time of construction or installation of the generating unit, sized to the customer's load or anticipated load or a portion of it, as evidenced by a total nominal capacity of the generating unit that does not exceed the rating of the customer's service;
- (iv) has a total nominal capacity not exceeding 1 MW; and
- (v) is located on the customer's site, on a site owned by, or leased to the customer that is adjacent to the customer's site.

10. To qualify as a "micro-generation generating unit", a customer must satisfy the five conditions listed above.

11. In its submissions, HME cited various acts and regulations in support of its position. In this regard, the Commission is mindful of the principles of statutory interpretation. Specifically, in order to determine whether the proposed micro-generation generating unit is a micro-generation generating unit, the Commission will focus on the requirements established in the *Micro-Generation Regulation*. If there are provisions in the *Micro-Generation Regulation* that are unclear, the Commission will turn to extrinsic materials, including other relevant legislation, to aid in its understanding of the *Micro-Generation Regulation*. For the purposes of this application, the Commission focused solely on the *Micro-Generation Regulation* and did not consider it necessary to rely on the other acts and regulations cited by HME to further understand or clarify the *Micro-Generation Regulation*.

3 Commission findings

12. The notice of dispute filed by ATCO Electric requires the Commission to determine whether Mr. Hildebrand's proposed micro-generation generating unit meets the definition of a micro-generation generating unit as set out in the *Micro-Generation Regulation*. Specifically, ATCO Electric submitted that the proposed micro-generation generating unit does not meet the requirements set out in sections 1(1)(h)(ii) and 1(1)(h)(iii) of the *Micro-Generation Regulation*. Although the notice of dispute does not address whether the proposed micro-generation generating unit meets the other conditions set out Section 1(1)(h) of the *Micro-Generation Regulation*, the Commission must, nonetheless, ensure that proposed micro-generation generating unit meets all five conditions.

3.1 Renewable or alternative energy [Section (1)(1)(h)(i)]

13. Section (1)(1)(h)(i) of the *Micro-Generation Regulation* requires the micro-generation generating unit to be one that exclusively uses sources of renewable or alternative energy.

14. Section 1(1)(l) of the *Micro-Generation Regulation* defines "renewable or alternative energy" as follows:

- (l) "renewable or alternative energy" means electric energy generated from
 - (i) products having current EcoLogo certification, or
 - (ii) solar, wind, hydro, fuel cell, geothermal, biomass or other generation sources, if the greenhouse gas intensity of
 - (A) the electric energy produced, or
 - (B) the total energy produced from the simultaneous generation of electric energy and production of thermal energy from the same fuel sourceis less than or equal to 418 kg per MWh.

15. Both parties agreed that the proposed micro-generation generating unit exclusively uses sources of renewable or alternative energy. Specifically, both ATCO Electric and HME² stated that the proposed micro-generation generating unit is a 20.9-kW solar photo-voltaic generator.

16. For these reasons, the Commission finds that the proposed micro-generation generating unit falls within the definition of "renewable or alternative energy" and that the proposed micro-generation generating unit complies with Section (1)(1)(h)(i) of the *Micro-Generation Regulation*.

3.2 The customer's electricity needs [Section (1)(1)(h)(ii)]

17. Section (1)(1)(h)(ii) of the *Micro-Generation Regulation* requires the micro-generation generating unit to be one that is intended to meet all or a portion of the customer's electricity needs.

² Exhibit 0013.02.AE-1477, page 3 and Exhibit No. 0008.01.HME-1477, page 2.

18. ATCO Electric rejected Mr. Hildebrand's proposed micro-generation generating unit under Section (1)(1)(h)(ii) of the *Micro-Generation Regulation* stating that the proposed micro-generation generating unit is oversized because the nominal capacity of the proposed micro-generation generating unit is 20.9 kW which exceeds the customer's average annual power consumption of two kW.

19. ATCO Electric submitted that there is a "rationale for using average demand [in kW], in the absence of interval metering at the customer's site, [as it] provides an indication of the customer's electricity needs in terms of average electrical draw and a comparison to the proposed nominal size of the micro-generator (MG) being installed. Demand can also have a direct impact to ATCO Electric's installed distribution facilities."³ ATCO Electric also submitted, in its information request response to HME, that "Electric Power Requirements and Electrical Needs – refers to all aspects of the use of electricity by the customer, including power, energy, reliability, and the quality of the voltage and current waveforms."⁴

20. In response to ATCO Electric's assertion that the customer's electricity needs should be measured in kW (or, in other words, power), HME stated:

[A]t a general level, ATCO Electric Limited's definition of "Electric Power Requirements and Electrical Needs" in [noted above], is a fine technical definition for electrical needs (and by way of inference: "electricity needs"), but that this definition is not suitable for the practical application of section (1)(1)(h)(ii) of the *Micro-Generation Regulation*.

[...]

[A]t an engineering level, "customer's electricity needs" include a number of technical characteristics of electricity: safety, reliability, cost, energy flow (active, reactive and apparent), energy (active, reactive and apparent), voltage (with CSA-approved specifications), charge flow, harmonics, waveform (voltage and charge flow), frequency, phase (single, split and three), power factor, black start, reserve, line losses and likely more.

[...]

[B]ased on HME's considerable experience with the development of solar PV generating units, that the intent of customers who purchase a solar PV generating unit is to generate all or a portion of their annual electric energy consumption for the purpose of the [sic] reducing the cost of their electricity bills (amidst their confusion as to how their bills are actually determined) rather than evaluating the technical electricity characteristics referenced [above].⁵

21. In light of these submissions the Commission must determine, for the purposes of this decision, whether to consider measuring the customer's needs and generating capacity of the proposed micro-generation generating unit using either power (in kW) or energy (in annual kilowatt-hour (kWh)).

³ Exhibit 0022.01.AE-1477, page 2.

⁴ Exhibit 0023.01.AE-1477, page 2.

⁵ Exhibit 0028.01.HME-1477, page 51-52.

22. Unlike traditional generation sources using fuel that is controllable by the generation operator, it is understood that the generation sources listed in the *Micro-Generation Regulation* can be intermittent or operate at less than maximum capacity due to the utilization of energy that is often not controlled by the generation operator. For example, wind turbines, solar cells and waste heat recapture devices all rely on energy sources that are not in the complete control of the operator of the generating unit.⁶

23. The nature of certain sources, such as wind and solar, of renewable energy included in Section (1)(1)(h)(i) of the *Micro-Generation Regulation* necessitate the consideration of a comparison between the proposed micro-generation generating unit's annual energy production and the customer's annual electricity consumption (both measured in kWh). In the case of Mr. Hildebrand's proposed micro-generation generating unit, the solar energy captured by the solar photo-voltaic generating unit fluctuates depending on variables such as daylight-hours at any given latitude, cloud coverage and snow cover on the solar panels.⁷

24. The Commission agrees with HME that one of the reasons a customer purchases a solar photo-voltaic generating unit is to generate all or a portion of their annual electric energy consumption for the purpose of reducing the cost of their electricity bills.

25. For these reasons the Commission will measure the customer's needs and generating capacity of the proposed micro-generation generating unit in energy (in annual kWh). In other words, to determine compliance with Section 1(1)(h)(ii) of the *Micro-Generation Regulation* the Commission will compare the expected annual energy production of the proposed micro-generation generating unit and the expected annual energy consumption of the customer.

26. Both ATCO Electric and HME submitted that the customer's annual electricity consumption is approximately 19,000 kWh⁸ based on historical usage at the customer's site. However, ATCO Electric submitted that the potential annual generation of the generating unit is 27,000 kWh and that this far exceeds the customer's actual usage.⁹ HME argued that the generating capacity of the proposed micro-generation generating unit is between 14,013 kWh and 18,309 kWh based on RETScreen¹⁰ performance assessments from Natural Resources Canada.¹¹

27. Both ATCO Electric and HME calculated the annual generating capacity of the proposed micro-generation generating unit based on guidelines from Natural Resources Canada's website. However, HME collected energy performance data from a number of photo-voltaic systems in the Edmonton area and data from the PVsyst¹² from the University of Geneva.¹³

⁶ AUC Decision 2010-274: *FortisAlberta Inc. Micro-Generation Determination*, page 7, paragraph 23.

⁷ Exhibit 0028.01.HME-1477, page 30.

⁸ Exhibit 0028.01.HME-1477, page 30. Exhibit No. 0030.02.AE-1477, page 3.

⁹ Exhibit 0034.02.AE-1477, page 3.

¹⁰ <http://www.retscreen.net/ang/home.php>. RETScreen is an Excel-based clean energy project analysis software tool that helps decision makers quickly and inexpensively determine the technical and financial viability of potential renewable energy, energy efficiency and cogeneration projects.

¹¹ Exhibit 0028.01.HME-1477, page 30, Exhibit No. 0028.03.HME-1477, Exhibit No. 0028.04.HME-1477 and Exhibit 0028.05.HME-1477.

¹² <http://www.pvsyst.com/>

¹³ Exhibit 0028.01.HME-1477, page 30.

28. In considering the qualification of the proposed micro-generation generating unit under Section (1)(1)(h)(ii) of the *Micro-Generation Regulation*, the Commission accepts the data provided by HME because of the detailed site specific analysis provided by HME. As well, the Commission accepts HME's analysis because HME is the designer and installer of the proposed micro-generation generating unit and the Commission considers HME to be in the best position to analyze its own equipment.

29. For these reasons, the Commission finds that the proposed micro-generation generating unit to be one that is intended to meet all or a portion of the customer's electricity needs and, therefore, qualifies under Section (1)(1)(h)(ii) of the *Micro-Generation Regulation*.

30. In its submissions, HME requested that the Commission rule that, for all instances brought before an owner of an electric distribution system or the Commission related to Section (1)(1)(h)(ii) of the *Micro-Generation Regulation*, the definition of a customer's electricity needs and the generating capacity of a proposed micro-generation generating unit be defined in energy and measured in kWh.¹⁴ The Commission considers that such a ruling is not required at this time. For the purposes of this decision, ATCO Electric has only asked the Commission to make a determination on the notice of its dispute. As well, the Commission considers that micro-generation technologies should be evaluated on a case-by-case basis given the relative uncertainty about the nature of these technologies and their effect on the distribution system.

3.3 Sizing of the proposed micro-generation generating unit [Section (1)(1)(h)(iii)]

31. Section (1)(1)(h)(iii) of the *Micro-Generation Regulation* requires the micro-generation generating unit to be one that is, at the time of construction or installation of the generating unit, sized to the customer's load or anticipated load or a portion of it, as evidenced by a total nominal capacity of the generating unit that does not exceed the rating of the customer's service.

32. In the original notice of dispute dated October 27, 2011, ATCO Electric submitted that the rating of the customer's service was only a 10-kilovolt-ampere (kVA) (9kW) transformer¹⁵ and was exceeded by the proposed micro-generation generating unit's capacity of 20.9 kW. Further, in response to information request AUC-AE-2(5), ATCO Electric stated that the nominal capacity of the proposed micro-generation generating unit be limited to no more than 130 per cent of the transformer that it is connected to.¹⁶

33. HME submitted that the definition of a customer's service rating should be calculated by multiplying the amperage of the customer's main panelboard of 160 amps by a standard 240 volts (V) to equal a potential 38.4 kW of power that could enter into the customer's home. HME submitted that, by using this definition, the rating of the customer's service is 38.4 kW and, therefore, the customer's proposed micro-generation generating unit meets Section (1)(1)(h)(iii) of the *Micro-Generation Regulation*.¹⁷

34. On December 12, 2011, ATCO Electric submitted a letter to the Commission stating that it had since conducted a further detailed field check and determined that the distribution service transformer currently installed to serve the proposed micro-generation installation is rated at

¹⁴ Exhibit 0008.01.HME-1477, page 4 and Exhibit No. 0028.01.HME-1477, page 48.

¹⁵ Exhibit 0002.02.AUC-1477, page 2.

¹⁶ Exhibit 0022.02.AE-1477, page 8.

¹⁷ Exhibit 0028.01.HME-1477, page 44.

25 kVA instead of 10 kVA as previously noted from the preliminary field check.¹⁸

ATCO Electric added that although the transformer is currently of sufficient size to handle the revised generator capacity, upgrades to the service conductors are nonetheless required and that extraordinary costs related to increasing the size of its service conductors will be incurred as a result of the installation of the proposed micro-generation generating unit. ATCO Electric requested that if the Commission approves the micro-generation generating unit it should rule on the assignment of the costs of the required upgrades to ATCO Electric's service conductors.¹⁹

35. Despite its concerns about extraordinary costs, ATCO Electric, in its notice of dispute dated October 4, 2011, referred to the rating of the customer's service as the transformer capacity.²⁰ The Commission is willing to accept this approach, as it has in previous decisions, of using the transformer rating to determine the rating of the customer's service on the basis that ATCO Electric is the owner and operator of its electric distribution systems and is best able to comment on the operating limits of its own equipment. Given that the transformer rating is 25 kVA and the generating capacity of the proposed micro-generation generating unit is 20.9 kW, the Commission finds that the micro-generation generating unit meets the requirement of Section (1)(1)(h)(iii) of the *Micro-Generation Regulation*.

36. With respect to the issue of the assignment of the costs of the required upgrades to ATCO Electric's service conductors, Section (4)(3) of the *Micro-Generation Regulation* states:

Where in the opinion of the owner, concurred in by the Commission on application by the owner, the costs of connecting a particular micro-generation generating unit to the interconnected electric system are extraordinary, due to safety considerations, technological complexity or any other reason, the owner may require that the micro-generator directly reimburse the owner for the extraordinary portion of the costs.

37. The issue of extraordinary costs was raised by ATCO Electric late in the proceeding and very limited information was provided regarding the scope and nature of the extraordinary costs. As such, the Commission will limit its determinations to those matters that were raised in ATCO Electric's notice of dispute, specifically whether the proposed micro-generation generating unit meets the requirements under Section 1(1)(h) of the *Micro-Generation Regulation*. If ATCO Electric determines that connecting the proposed micro-generation generating unit to the Alberta Interconnected Electric System will result in costs that are extraordinary due to safety considerations, technological complexity or any other reason, ATCO Electric should file a separate application with the Commission.

3.4 One-megawatt limit [Section (1)(1)(h)(iv)]

38. Section (1)(1)(h)(iv) of the *Micro-Generation Regulation* requires the micro-generation generating unit to be one that has a total nominal capacity not exceeding one MW. Both ATCO Electric and HME submitted that the proposed micro-generation generating unit is a 20.9-kW solar generation unit.²¹

39. For these reasons, the Commission finds that the proposed micro-generation generating unit falls within the one-MW capacity limit and that the unit complies with Section (1)(1)(h)(iv) of the *Micro-Generation Regulation*.

¹⁸ Exhibit 0012.01.AE-1477, page 1.

¹⁹ Exhibit 0034.02.AE-1477, page 4.

²¹ Exhibit 0013.02.AE-1477, page 3 and Exhibit No. 0008.01.HME-1477, page 2.

3.5 Location of the proposed micro-generation generating unit [Section (1)(1)(h)(v)]

40. Section (1)(1)(h)(v) of the *Micro-Generation Regulation* requires the micro-generation generating unit to be one that is located on the customer's site, on a site owned by, or leased to the customer that is adjacent to the customer's site. HME submitted that the 20.9-kW solar generation unit is to be mounted on Mr. Hildebrand's house in a subdivision outside the town of Slave Lake.²² ATCO Electric did not dispute this matter.

41. For these reasons, the Commission finds that the proposed micro-generation generating unit to be on the customer's site and that the unit complies with Section (1)(1)(h)(v) of the *Micro-Generation Regulation*.

4 Other issues raised in the proceeding

42. In its argument,²³ HME requested that the Commission assess whether ATCO Electric's documents filed in this proceeding are in violation of the *Engineering, Geological, and Geophysical Professions Act*, R.S.A. 2000, C.E-11, on the basis that the documents were not authenticated by a professional engineer.

43. In response, ATCO Electric submitted that it is a licensed permit holder to carry on the practices of engineering in accordance with the *Engineering, Geological, and Geophysical Act*.²⁴

44. A determination on this matter is outside the scope of this proceeding. Nonetheless the Commission does not generally require that owners of electric distribution systems submit evidence authenticating their documents by a professional engineer and finds no reason to depart from this approach in the present circumstances..

5 Decision

45. For the foregoing reasons the Commission finds that Mr. Hildebrand's proposed micro-generation generating unit meets the definition "micro-generation generating unit" as provided for in the *Micro-Generation Regulation*.

Dated on April 17, 2012.

The Alberta Utilities Commission

(original signed by)

Anne Michaud
Panel Chair

²² Exhibit 0008.01.HME-1477, page 2.

²³ Exhibit 0033.01.HME-1477, page 38.

²⁴ Exhibit 0035.1.AE-1477.

Appendix 1 – Proceeding participants

| Name of organization counsel or representative |
|---|
| ATCO Electric Ltd. D. Pattison K. Koenig S. Parhar B. Yee |
| Howell Mayhew Engineering Inc. G. Howell |
| FortisAlberta Inc. G. Snow |

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