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August 4, 2022

British Columbia Utilities Commission
Suite 410, 900 Howe Street
Vancouver, B.C.
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Attention: Ms. Sara Hardgrave, Acting Commission Secretary

Dear Ms. Hardgrave:

Re: FortisBC Energy Inc. (FEI)

Project No. 1599211

Application for a Certificate of Public Convenience and Necessity (CPCN) for Approval of the Advanced Metering Infrastructure (AMI) Project (Application)

Response to the British Columbia Utilities Commission (BCUC) Information Request (IR) No. 3 on Rebuttal Evidence

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On May 5, 2021, FEI filed the Application referenced above. In accordance with the regulatory timetable as amended in BCUC Order G-206-22 for the review of the Application, FEI respectfully submits the attached response to BCUC IR No. 3 on Rebuttal Evidence.

For convenience and efficiency, FEI has occasionally provided an internet address for referenced reports instead of attaching lengthy documents to its IR responses. FEI intends for the referenced documents to form part of its IR responses and the evidentiary record in this proceeding.

If further information is required, please contact the undersigned.

Sincerely,

FORTISBC ENERGY INC.

Original signed:

Diane Roy

Attachments

cc (email only): Registered Parties

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A. REBUTTAL EVIDENCE OF FEI

1.0 Reference: REBUTTAL EVIDENCE OF FEI

Exhibit B-1 (Application), pp. 72–73; Exhibit B-6, BCUC IR 13.2; Exhibit B-26, Part 1, Q4, pp. 4–6

Remote Disconnect and Re-starting of Gas Flows

On pages 4-5 of Part 1 to FEI's Rebuttal Evidence, FEI states:

> These potential safety issues are addressed pursuant to BC's, Gas Safety Regulation, B.C. Reg. 103/2004 (GSR), which is enforced by Technical Safety BC. Section 53 of the 27 GSR states as follows:
>
> > 53 (1) A person must not turn off a gas supply unless there is an imminent safety hazard and the person notifies all affected consumers.
> >
> > (2) If a gas supply has been turned off, a person must not turn the supply on again until the person
> >
> > (a) notifies all affected consumers, and
> >
> > (b) carefully checks all outlets and pilots to ascertain that they are relighted or turned off.
>
> FEI always follows the requirements of GSR section 53(2). At present, to meet the 7 requirements of GSR section 53(2)(b), FEI never opens the meter set valve after the valve has been closed during a service visit without also performing a dial check.

Further on page 5, FEI outlines the possible steps under consideration for the AMI remote reconnect process that has not yet been finalized.

On page 6 of Part 1 to FEI's Rebuttal Evidence, FEI states:

> With the implementation of AMI, FEI will continue to meet its responsibilities under section 53(2) of the GSR by having the advanced meter perform a dial check and automatically close its internal vale if an unexpected flow occurs as a result of a defective gas safety valve or a gas cooktop (or similar appliance) being left in the 'on' position.

On pages 72-73 of the Application, FEI explains its natural gas pilot project.

In response to BCUC information request (IR) 13.2, FEI stated:

> The primary difference between FEI's AMI Pilot and the proposed AMI Project was the use of diaphragm meters together with an AMI metering and communications module for the Pilot as compared to the planned digital ultrasonic meters that will comprise the majority of FEI's meter deployments for the Project. This difference was due to the Sensus Sonix IQ solid-state meters being not yet accredited for use in Canada at the time of the Pilot in 2017/18.

1.1 Please explain whether FEI has tested or will test the remote shut-off of AMI meters before implementation, including whether remote shut-off was tested during the pilot program. If testing is planned in the future, please explain when.

1.1.1 If yes, please explain the procedure used to restore the gas flow following the remote shut-off and any complications that arose. In the response, please explain any lessons learned.

Response:

As discussed in the response to BCUC IR1 13.2, the AMI meters to be deployed as part of the AMI Project were not available during the FEI AMI Pilot; consequently, the remote shutoff feature was not tested as part of the pilot project.

FEI has observed the AMI meter's remote shutoff functionality at the Sensus product development facility and will also test the remote shutoff functionality of the AMI meters before deployment. As stated in the response to BCSEA IR1 18.1, if the Application is approved, the details of the remote shutoff operating procedure will be finalized during the Define and Design phases of the Project.

1.2 Please explain whether any of the proposed AMI remote reconnect process steps have financial cost impacts different from the costs in the Application.

Response:

The financial benefits of remotely disconnecting customers for nonpayment have been captured in the AMI financial analysis under Operations O&M (Section 6.2.2.4 of the Application). While the AMI Project also provides the opportunity to remotely reconnect these customers, an activity that FEI currently conducts manually by travelling to the customer's premises, FEI has not captured any financial benefits in the AMI Project financial analysis. Currently, these customers are charged a Reactivation fee[1] for this reconnection service. As such, the related costs of a

[1] fortisbc_generaltermsandconditions.pdf

manual reconnection are paid for directly by the affected customer, and not customers in general. When FEI finalizes its remote reconnect process, the cost for providing this service will be re-evaluated and the corresponding fee will be submitted to BCUC for review and approval.

1.3 Please explain whether the possible steps under consideration for the AMI remote reconnect process that has not yet been finalized comply with the GSR.

Response:

As cited in the preamble, although FEI's remote reconnect process is yet to be finalized, it will comply with Section 53(2) and all other applicable sections of the GSR.

1.3.1 Please explain whether the proposed steps have been reviewed and approved by Technical Safety BC.

1.3.1.1 If not, please explain what actions FEI will take if Technical Safety BC does not approve FEI's process AMI remote reconnect process.

Response:

FEI has met with Technical Safety BC and discussed the contemplated steps that would be involved in the remote reconnect process. During this meeting and follow-up exchange of additional information, Technical Safety BC did not express objections to FEI conducting remote reconnects.

1.4 Please explain the process to finalize the steps for the AMI remote reconnect process.

1.4.1 Please explain when the AMI remote reconnect process will be finalized.

Response:

Upon approval of the Project, FEI will conduct workshops during the Define and Design phase of the Project to finalize the remote reconnect process. Upon finalizing the remote reconnect process, the documented procedure will be published within FEI's internal technical standards

repository and made available to Technical Safety BC. Technical Safety BC would be made aware that FEI has adopted a new operating procedure for remote reconnects.

2.0 Reference: REBUTTAL EVIDENCE OF FEI

Exhibit B-26, Part 1, Q9, pp. 11–13

Safety Code 6

On page 12 of Part 1 to FEI's Rebuttal Evidence, FEI states:

> Based on this regulatory framework, FEI's understanding is that the AMI gas meters are required to comply with the RF [radio frequency] exposure limits specified in Safety Code 6. The RF exposure levels set out in Safety Code 6 are not "recommendations" or "voluntary" as CORE [the Coalition to Reduce Electropollution] and its witnesses suggest. Additionally, Dr. Heroux's argument that "our homes are not federally regulated sites" to which Safety Code 6 would apply is inapt given that the meters themselves are subject to federal regulation, including Safety Code 6.

FEI further explains on pages 12-13:

> RSS [Radio Standards Specification] 102 sets out various requirements, processes, and evaluation methods for certification of radiofrequency apparatus as being compliant with RF exposure limits. Under section 4, RSS 102 states that, "For the purpose of this standard, Industry Canada has adopted the SAR [specific absorption rate] and RF field strength limits established in Health Canada's RF exposure guideline, Safety Code 6."
>
> […]
>
> As referenced in FEI's prior response to CORE IR 2.36.a., the AMI gas meters produced by Sensus have received certification from Innovation, Science and Economic Development Canada (ISED), the details of which are set out in Appendix F-1 of the Application, Table 2 at p. 20. FEI understands that this ISED certification signifies the meters' compliance with RSS 102.

2.1 Please confirm that Safety Code 6 is mandatory and applies to all components of FEI's AMI Project including, among other things, the Sensus meters.

Response:

FEI confirms that compliance with Safety Code 6 is mandatory for all components of AMI network that emit RF.

3.0 Reference: REBUTTAL EVIDENCE OF FEI

Exhibit B-26, Part 1, Q7, p. 9

Wired AMI Solution

On page 9 of Part 1 to FEI's Rebuttal Evidence, FEI states:

> The analysis of a wired AMI solution was provided in FBC's responses to information requests in its 2012 application for a CPCN for its AMI Project. Although FBC's AMI project was for the installation of electric AMI meters, the challenges and costs associated with a wired AMI meter option are similar and relevant to FEI's AMI Project. In response to the Citizens for Safe Technology (CSTS)'s IR1 12.5 in that proceeding, FBC set out a cost analysis for fibre optic alternatives. While the cost analysis is limited to FBC's service territory, the considerations are relevant to FEI. While fibre infrastructure is often already in place throughout urban areas "to the curb" or "to the neighbourhood", it is likely that a small length of fibre cable to the customer's gas meter is still needed. FEI would be required to enter into agreements for leasing this existing fibre network.
>
> In more rural areas, it has been cost prohibitive to extend fibre networks, and this option likely does not exist for FEI's rural customers. FEI would be required to build fibre in order to access those meters.

3.1 Please explain whether FEI's information on the feasibility of a wired AMI solution has been re-investigated as part of the development of the current FEI AMI CPCN Project, or whether the information is from 2012.

3.1.1 If FEI did not investigate the technical feasibility and cost of a wired AMI solution as part of the current Project development, please explain why not.

3.1.2 Please explain whether it would be likely that the costs and feasibility of a wired AMI solution would have materially changed between 2012 and today. If yes, please explain how.

Response:

For multiple reasons explained in detail below, a wired AMI solution is not considered viable for gas metering, and so was not considered as an alternative for the FEI AMI Project.

As noted in the response to Q7 of FEI's Rebuttal Evidence to the Intervener Evidence filed by CORE, the meters suggested by CORE for a wired AMI alternative are manufactured in China[2] to Chinese national standards.[3] These meters are not tested or certified to Canadian or North

[2] Willfar Information Technology Company Ltd. http://willfar-power.com/about-us.html

[3] The ZG-D-Y wired smart gas meter complies with the Chinese national standard JJG577-2005 (https://www.chinesestandard.net/PDF/English.aspx/JJG577-2005) and is fabricated according to the Chinese Ministry of Construction GB/T 6968-2001 standard (https://www.chinesestandard.net/PDF/English.aspx/GBT6968-

American standards; as such, these meters are not a viable alternative for FEI's AMI Project. None of the gas residential/small commercial meter vendors (Sensus, Honeywell-Elster and Itron) that serve the North American market, offer a product that supports wired communication or are considering the development of a product that supports a wired solution within the foreseeable future. FEI is not aware of any other wired gas AMI meters being considered for the North American market.

In its 2012 application for a CPCN for its AMI Project, a wired AMI alternative was investigated by FBC as a technically feasible alternative as some electric AMI meters were available at that time with a wired communications option. While the analysis from FBC's AMI Project informed the considerations in FEI's AMI Project, it was not solely relied on for its conclusions in this Application. FEI has no new evidence that would suggest the assumptions employed in the 2012 analysis have changed such that a wired option would become either technically or financially viable for FEI's AMI Project.

In addition to the lack of available metering devices explained above, there are very significant challenges associated with a hypothetical wired gas metering solution:

- Unlike electric AMI meters (which, by definition, have access to the power source that they are metering), gas AMI meters have no external source of electricity to power their internal electronics (e.g., the metering and communications circuitry). As such, gas meters must be self-powered by an internal battery. The relatively small size of this battery precludes it from powering equipment that requires continuous communications (such as fibre-optic devices).
- Constructing a fibre-optic communications network throughout FEI's service territory and to each customer premises would be cost-prohibitive. This is because the communications equipment required at each premises to interface the gas meter to the fibre-optic network would itself cost around as much as the proposed AMI meter alone for those premises. In addition, as described above it is not technically feasible to power the fibre-optic communications equipment with a battery for 20 years (the expected lifespan of the AMI meter). As such, there would be significant additional costs associated with providing a power source at each meter location (FEI is anticipating deploying over 1 million residential and small commercial meters).
- While third-party owned fibre to the home is more widely available today than it was in 2012, the cost and technical challenges associated with accessing this fibre make this solution non-viable. As described above, both a power source and communications interface would be required between the AMI meter and the third-party fibre-optic network. FEI also has no certainty that it would be able to negotiate access to the third-party network at a cost-effective rate. Additionally, FEI expects that a significant portion of FEI's gas customers may not be connected to a third-party fibre network (either today, or ever); as such, a wireless solution would be required for these customers in any event.

2019).

FEI notes that a number of questions in this round of IRs have sought to better understand the potential benefits associated with a hypothetical fibre-optic AMI network.[4] FEI agrees that, in general terms, fibre-optic communications could have benefits such as higher bandwidth or other potential capabilities. However, given that there are no compatible and commercially available AMI metering devices available in North America and given the other considerations noted above, any potential benefits are moot as this solution is not viable. FEI's proposed wireless approach is a safe and cost-effective solution that will meet the objectives of its AMI Project.

[4] CORE IR3 2.a and 2.b

B. REBUTTAL EVIDENCE OF EXPONENT

4.0 Reference: REBUTTAL EVIDENCE OF EXPONENT
Exhibit B-26, Part 2, Q6, p. 7
Wired Communications to AMI Meters

On page 7 of Part 2 to FEI's Rebuttal Evidence, Exponent states:

> Also, Mr. Karow misunderstands the SC 6 Standard by implying that the metric by which compliance with SC 6 is established is an instantaneous comparison with the SC 6 reference levels. This is incorrect. The metric for compliance with SC 6 is the basic restriction. The only scientifically established effect from RF/microwave electromagnetic energy occurring at the lowest level of exposure is heating of body tissue (for additional discussion regarding the status of research and conclusions on potential non-thermal effects see the response to Q8). Therefore, the basic restriction limits the amount of energy that can be absorbed by the body (including a safety factor) (see SC 6, Section 2, p. 4). The Reference Period of 6 minutes (SC 6, Table 5) for time averaging is used in recognition of the fact that the human body has natural processes to deal with temperature increases. [Emphasis in original]

4.1 Please explain whether there is a standard, similar to Safety Code 6, that applies to instantaneous emissions.

4.1.1 Is there a maximum allowed level of instantaneous RF emissions allowed under any standard applicable to FEI's AMI Project in Canada?

Response:

Safety Code 6 addresses potential health and safety aspects of exposure to electromagnetic energy while other regulations maintained by Innovation, Science and Economic Development Canada (ISED, formerly Industry Canada) address other aspects, for example potential interference with other communications services.

Regarding health-based standards, Safety Code 6 includes provisions for exposures shorter than the stated reference period of 6 minutes provided that these short-term exposures still comply with the time-averaged limits specified by Safety Code 6 (see e.g., Tables 5 and 6 and associated Notes [pp. 8-9]).

ISED has separate and specific limits for the maximum allowed level of instantaneous RF emissions for various frequency bands and applications set out in Radio Standards Specifications and Standard Radio System Plans.[5] These standards effectively constrain instantaneous power

[5] RSS-134(Issue 2) - 900 MHz Narrowband Personal Communication Service (Section 4.3, page 5) and SRSP-509 - Technical Requirements for Narrowband Personal Communications Services in the Bands 901-902 MHz, 930-931 MHz and 940-941 MHz, (Section 5, page 3).

(Equivalent Isotropic Radiated Power [EIRP]) to 11.5 watts for devices such as the meters proposed in FEI's AMI Project.

As stated in the Exponent RF Technology Report (Appendix F-1 p. 19), the 2-watt EIRP of the Sonix IQ is the highest of the endpoint devices to be used in the AMI Project. The instantaneous emissions of the Sonix IQ meter are therefore approximately one sixth or 17 percent of the level permitted by these standards.[6]

[6] RSS-134(Issue 2) - 900 MHz Narrowband Personal Communication Service (Section 4.3, page 5) and SRSP-509 - Technical Requirements for Narrowband Personal Communications Services in the Bands 901-902 MHz, 930-931 MHz and 940-941 MHz, (Section 5, page 3).