



**ORDER NUMBER
G-124-16**

IN THE MATTER OF
the *Utilities Commission Act*, RSBC 1996, Chapter 473

and

British Columbia Hydro and Power Authority and FortisBC Inc.
Smart Meter Safety Complaint

BEFORE:

R. I. Mason, Commissioner

on July 28, 2016

ORDER

WHEREAS:

- A. On July 16, 2015, S.N., a residential customer of the British Columbia and Hydro Power Authority (BC Hydro) filed a complaint with the British Columbia Utilities Commission (Commission) alleging that smart meters installed by BC Hydro and FortisBC Inc. (FBC) are fire safety hazards (Complaint). The complainant provided evidence of eight alleged incidents of fires and thermal damage originating in the vicinity of recently installed smart meters in BC;
- B. Commission staff examined information provided by the complainant and gathered additional information from sources including BC Hydro, FBC, the BC Safety Authority, the Office of the Fire Commissioner, local fire departments, the Canadian Standards Association (CSA) and publicly available literature and reports. The information was summarized in a draft staff report;
- C. The Commission sought comments on the draft staff report from the complainant, FBC and BC Hydro; and
- D. The Commission has reviewed the complaint, the draft staff report and the comments received from the complainant, FBC, BC Hydro and finds that further action on the complaint is not warranted at this time but that there is sufficient justification for increased monitoring of fires that might be related to electrical meters.

NOW THEREFORE pursuant to sections 23(1), 49(c) and 83 of the *Utilities Commission Act*, and for the reasons attached as Appendix A to this order, the British Columbia Utilities Commission orders as follows:

The British Columbia Hydro and Power Authority and FortisBC Inc. are directed to report to the British Columbia Utilities Commission all incidents where a meter and/or meter base is reasonably assessed to be the possible or likely source of a high temperature or fire event that results in the meter and or meter base requiring replacement. All such incidents must be reported to the appropriate authority or authorities for investigation, as appropriate. If no such authority is appropriate, then the utility must conduct its own investigation as to the cause of the incident. This reporting is to begin immediately and continue until December 31, 2020. This

reporting is to occur on a semi-annual basis with reports filed to the Commission within thirty days of December 31 and June 30 of each year. Each report must include, for each incident:

- i. The serial number or other identifier of the meter involved in the incident;
- ii. Identification of whether the incident was a fire or high temperature event;
- iii. Identification of whether the incident occurred during meter installation or replacement, or post-meter installation; and
- iv. For those incidents where BC Hydro or FortisBC investigated the incident themselves, a summary of the investigation; or
- v. For those incidents where BC Hydro or FortisBC informed another authority responsible for investigating the incident, notification of the authority informed, the date, and any response received.

DATED at the City of Vancouver, in the Province of British Columbia, this 28th day of July 2016.

BY ORDER

Original signed by:

R. I. Mason
Commissioner

Attachments

British Columbia Hydro and Power Authority and FortisBC Inc.
Smart Meter Safety Complaint

REASONS FOR DECISION

1.0 COMPLAINT OVERVIEW

On July 16, 2015, S.N., a residential customer of the British Columbia and Hydro Power Authority (BC Hydro) filed a complaint with the British Columbia Utilities Commission (Commission) alleging that smart meters installed by BC Hydro and FortisBC Inc. (FBC) are fire hazards (Complaint).

S.N. provided evidence of six specific incidents where smart meters had allegedly over-heated to the point of failure or caused fires originating in the vicinity of recently installed smart meters. According to S.N. this evidence demonstrates "...that these [smart] meters are dangerous" and "should not be on homes in BC."¹ In subsequent submissions in September and December 2015, S.N. provided evidence of two more incidents, for a total of eight.²

2.0 COMPLAINT REVIEW PROCESS

In response to the Complaint, on October 29, 2015, Commission staff issued questions to BC Hydro and FBC. Additionally, staff requested information from the BC Safety Authority, the Office of the Fire Commissioner (OFC) and local fire departments, and reviewed other sources of publically available information such as the Canadian Standards Association (CSA).

Commission staff compiled the information gathered and completed a draft staff report dated February 10, 2016 and the draft staff report was provided to S.N., BC Hydro and FBC for comment. S.N., BC Hydro and FBC provided comments on the draft staff report by March 4, 2016.

The Panel was struck to consider the evidence on record for this complaint and to render a decision.

3.0 LEGISLATIVE AUTHORITY

The Commission is reviewing this complaint pursuant to sections 83, 23(1) and 49(c) of the *Utilities Commission Act* (UCA).

Section 83 of the UCA states:

"If a complaint is made to the commission, the commission has powers to determine whether a hearing or inquiry is to be had, and generally whether any action on its part is or is not to be taken."

Section 23(1) of the UCA states:

"The commission has general supervision of all public utilities and may make orders about
(a) equipment,
(b) appliances,
(c) safety devices,

¹ S.N. email dated July 16, 2015.

² S.N. emails dated September 4, 2015 and December 2, 2015.

- (d) extension of works or systems,
- (e) filing of rate schedules,
- (f) reporting, and
- (g) other matters it considers necessary or advisable for
 - (i) the safety, convenience or service of the public, or
 - (ii) the proper carrying out of this Act or of a contract, charter or franchise involving use of public property or rights.”

Pursuant to section 49 (c) of the UCA, the Commission may order public utilities to:

“file with the commission, at the times and in the form and manner the commission specifies, a report of every accident occurring to or on the plant, equipment or other property of the utility, if the accident is of such nature as to endanger the safety, health or property of any person...”

4.0 ISSUE FOR DETERMINATION

While complainant states that “...[smart] meters are dangerous” and “should not be on homes in BC,” the Panel more precisely defines the issue as whether smart meters materially increase the risk of fires in BC over analog and digital meters already in use in British Columbia.

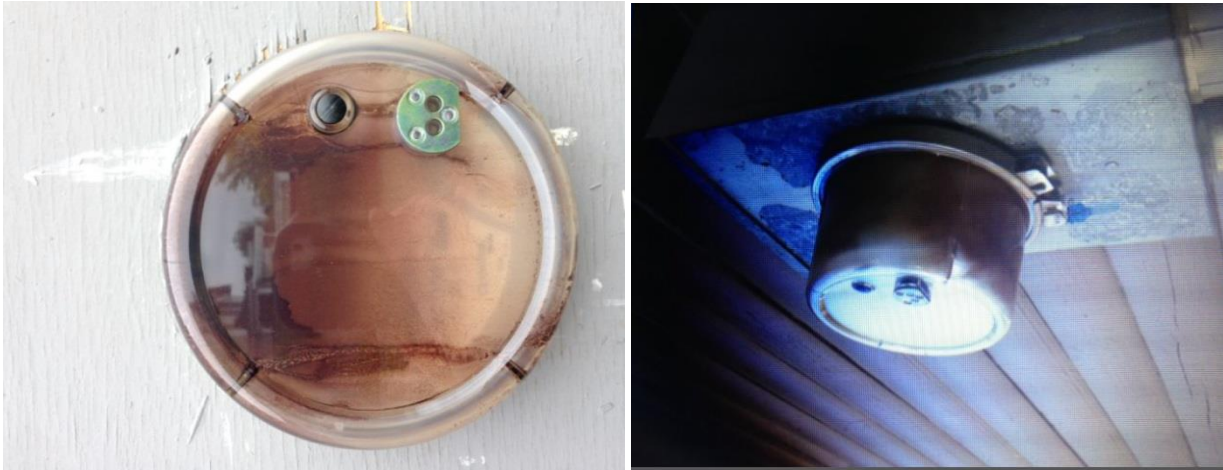
4.1 Evidence submitted by the complainant

The evidence provided by S.N. is summarized below:

Incident	Date	Location	Evidence Submitted
1	January 2015 ³	Burnaby	Front and back images of a detached meter labelled burned meter.
2	November 2014	Vancouver	Front and back images of a detached meter labelled melted meter.
3	October 2014	West Vancouver	Front and side images of a detached meter labelled burned meter and image of an open meter socket.
4	May 2014	Revelstoke	Two images of the front of a meter, one attached, one detached, labelled burned meter.
5	August 5, 2012	Coquitlam	Mention of BC Safety Authority report of a house fire.
6	October 16, 2015	Cloverdale	Link to article in Cloverdale Reporter newspaper regarding a fire at a local restaurant.
7	August 27, 2014	Langford	Link to Chek news video report of a house fire.
8	July 18, 2015	Port Alberni	Office of the Fire Commissioner incident report of a house fire with finding that “fire was investigated and cause found to be an electrical failure of the electrical meter.”

³ Note that days were not provided for the dates of incidents 1-4.

Examples of the images sent by the complainant are:



All images provided by S.N. are included in Appendix B to these reasons.

On December 18, 2015, S.N. provided an email to the Commission with two hyperlinks. One hyperlink includes a discussion on a new Underwriters Laboratory (an American safety standard agency) voluntary safety standard for electric utility meters and the second provides an Answering Brief submitted to the United States of America National Labour Relations Board where statements from persons involved in the case regarding smart meters were cited including the following:

“part of the problem was a loose connection between the meter and the meter base because the smart meters had thinner ‘blades’ than the previous analog meters” and

“the loose connection caused heat, which, in turn, caused an electrical arc, which resulted in ‘two pallets of burned up meters’.”

S.N. submits that “submitting this information to BCUC as yet another piece of evidence to support my contention that these meters are defective and should be recalled.”⁵

4.2 Information gathered by Commission staff

The draft staff report contained information collected from BC Hydro, FBC, OFC, BC Safety Authority, and the United States National Fire Protection Association, among others. Relevant information is summarized below.

4.2.1 Fire reporting in BC

Commission staff reviewed the fire reporting system in BC and found that data on reportable fires occurring in BC are collected by the OFC, under the authority of the *Fire Services Act*. Local fire departments must investigate and report all fires to the OFC. In addition, if the cause of a fire is suspected to involve electrical equipment, the local fire department must notify the BC Safety Authority.⁶

⁴ S.N. email dated July 16, 2015.

⁵ S.N. email dated December 18, 2015.

⁶ February 10, 2016, Draft Staff Report on Smart Meter Fire Safety Concerns, p. 3.

4.2.2 Garis Report

Included with BC Hydro's information and summarized in the draft staff report is the August 2015 Report: "*British Columbia: Analysis of Residential Structure Fires in BC Between July 2010 and June 2015*" authored by Len Garis *et al.* from the University of the Fraser Valley (Garis Report). At the time of writing the report, Mr. Garis was "Fire Chief for the City of Surrey, British Columbia, an Adjunct Professor in the School of Criminology and Criminal Justice & Associate to the Centre for Social Research at the University of the Fraser Valley, a member of the Affiliated Research Faculty at John Jay College of Criminal Justice in New York, and a faculty member of the Institute of Canadian Urban Research Studies at Simon Fraser University."⁷

The Garis Report examined Province-wide data from the OFC to assess whether "there been an increase in the frequency of residential structure fires in BC, specifically caused by electricity and that may be associated with the deployment of smart meters."⁸

To develop the Garis Report the authors reviewed data on 9,944 residential fires reported to the OFC from July 2010 to June 2015.⁹

Table 1 – Subset of Data from Garis Report¹⁰

Electricity Related Fires – BC Data for Period July 1 st to June 30 th	Pre-meters	Post-meters	Post-meters	Post-meters	Post-meters	Post-meters	Post vs Pre-Meter
	2011	2012	2013	2014	2015	2014 to 2015 Change	Pre-meter to 2015 Change
Total residential fires	1,918	2,060	2,091	2,131	1,744	-18.2%	-9.1%
Electrical distribution equipment as igniting object	128	134	130	138	108	-21.7%	-15.6%
Electrical distribution equipment – panel board, switchboard (includes fuse, circuit breakers)	7	2	8	6	5	-16.7%	-28.6%

The OFC does not have a specific reporting category for fires originating at the meter but the Garis Report states that fires related to "electrical distribution equipment" are likely to be most closely related to the meter base which is directly relevant to smart meters.¹¹

⁷ Garis, L, *et al.*, *British Columbia: Analysis of Residential Structure Fires in BC Between July 2010 and June 2015*, August 2015, p. 7.

⁸ *Ibid.*, p. 2.

⁹ *Ibid.*, p. 3.

¹⁰ *Ibid.*

¹¹ *Ibid.*

The Garis Report's concludes that:

available data does not indicate that there has been an increased frequency of residential structure fires associated with electricity since July 2010. Declining trends are observed....However, given the very small numbers of events that occur in these categories, both of these findings need to be interpreted with caution. Still, having drawn attention to this issue, it should also be noted that the analysis presented here includes all fires reported for the entire province of British Columbia over the time period of interest. As a result, these are the best estimates available.

A final point worth emphasizing relates to the relative frequency of fires caused by electricity when compared to those that result from cooking and smoking. Without wishing to minimise any fire event, it is important to recognize that these types of every day activities result in many more fires for BC than those caused by electricity.¹²

4.2.3 U.S. Statistics

The draft staff report gathered the following information from the United States National Fire Protection Association:

Table 2 – US Annual Average Residential Fires¹³

Year	2002-2005	2007-2011
Average # of home fires per year where the ignition source was attributed to the electric meter or meter box	940	610

From 2007 to 2011 the number of smart meters installed in the US increased from approximately 2.5 million to 37 million.¹⁴

4.2.4 Data from BC Hydro and FBC

BC Hydro and FBC provided the following data on incidents during and post smart meter installation:

Table 3 – BC Utility Reported Data¹⁵

Incidents that caused equipment damage or fire	BC Hydro (For 1,930,000 installs)	FBC (For 124,409 installs)
During installation	19	0
Post-installation	12	5

¹² Ibid., p. 5.

¹³ Home Electric Fires, National Fire Protection Association, 2013 and Home Structure Fires Involving Electrical Distribution or Lighting Equipment, National Fire Protection Association, 2008, as shown in February 10, 2016 Draft Staff Report, p. 7.

¹⁴ Electric Power Annual 2013, U.S. Energy Information Administration, Table 10.10, as shown in February 10, 2016 Draft Staff Report, p. 7.

¹⁵ February 10, 2016, Staff Draft Report, p. 9.

The draft staff report notes that BC Hydro states it does not specifically track post-installation incidents and that the 12 incidents stated in the table above were identified as a result of internal requests to clarify information. The draft staff report also notes that BC Hydro's reporting of incidents that occurred during installation may not be comprehensive because data obtained from the BC Safety Authority in 2012 for a different matter contained two reports which did not have a corresponding event reported by BC Hydro in the data it provided for this proceeding.¹⁶

4.3 BC Hydro and FBC comments

BC Hydro and FBC provided comments on the information in the draft staff report.

BC Hydro notes that B.C. and U.S. statistics have been included but statistics for other Canadian provinces have not.¹⁷

Regarding installation incidents, BC Hydro states "this section is missing an explanation of the apparent discrepancy between the installation incidents reported by BC Hydro and the BC Safety Authority. We request that Commission staff provide the BC Safety Authority reports so that we can comment on the discrepancy, and that the staff report be revised accordingly."¹⁸

FBC also comments on the installation incidents and corrects the statement "FortisBC reports no incidents at time of install" to "FortisBC reported seven incidents of arcing/damage to meter/meter base or potential for damage and require immediate repair."¹⁹

4.4 Complainant comments

On March 4, 2016, S.N. provided comments and a Response Document to the information contained in the draft staff report. To prepare both, S.N. asked three unidentified professional engineers to provide comments on the technical aspects of the draft staff report. Because the professional engineers remain unidentified, all comments are attributed to S.N. A summary of S.N.'s relevant comments is below.

4.4.1 Issues with the Garis Report

S.N. characterizes the Garis Report as suffering from a lack of objectivity and from incomplete and poorly researched data.²⁰ S.N. submits that the Garis Report relies only on data from the OFC which is often inputted into the database long after an incident has occurred.²¹

S.N. contends that data is entered into the OFC system

often many months after the fire report was submitted by the local fire authorities. Of the reports I've gathered, approximately 70% have not been put on the system within 1-2 months of

¹⁶ Ibid.

¹⁷ BC Hydro comments, March 3, 2016, p. 2.

¹⁸ Ibid.

¹⁹ FBC Comments, March 4, 2016, p. 2.

²⁰ S.N. comments March 3, 2016, p. 1.

²¹ S.N. Response Document, pp. 16-17.

the report having been submitted. And many of those have not even been put on the system in time to be included in that year's annual report...which means that they don't get reported at all.²²

S.N. provided two examples of fires where the local fire department completed the report 10-12 months after the incident and then added the reports to the OFC database around 6 months later. As well, two examples were provided of fires where no report was filed with the local fire authority after a Freedom of Information Request to the OFC.²³

S.N. also contends that because the OFC does not have a specific category for smart meters, "there is no way for the Fire Commissioner to track fires associated with or caused by this device."²⁴ As well S.N. submits that there are no data for fires for which the igniting objects are classified as "undetermined" which account for 40% of the reports she has obtained.²⁵

4.4.2 Issues with U.S. data

S.N. questions the relevance and comparability of the U.S. data provided. The complainant questions whether the statistics have been confirmed to be credible and suggests that the data must be validated so that "the numbers are truly representative of the real facts and are complete and appropriate for the situation before basing any decisions on them."²⁶

4.4.3 Issues with BC Hydro Incident Reporting

S.N. submits that because BC Hydro is not tracking post-installation incidents, neither BC Hydro nor the Commission are aware of the scale of the problem.²⁷ The complainant alleges the following specific problems with utility reporting:

- Hydro has said, and I have in writing, that when a meter fails or is burned, they do not investigate its failure but rather send the meter straight to ITRON for replacement.²⁸
- A fire inspector and a fire chief told me (in confidence)" that BC Hydro removes meters from the scene.²⁹ "...among the reports that I've received, this has happened 15 times or approximately 15% of the time. This seems to be a systemic issue, because I have received statements from both the Fire Commissioner's Office and BC Safety Authority that BC Hydro is allowed to remove smart meters before the fire inspectors are allowed to do their jobs because 'it is their equipment.' Fire inspectors have confirmed that smart meters are often removed when they arrive at the scene, and, as a result, even when evidence seems to indicate that the smart meter was involved, they are, by law, required to indicate that that the igniting object was "undetermined."³⁰

²² S.N. Response Document, pp. 16–17.

²³ Ibid., p. 17.

²⁴ Ibid., p. 5.

²⁵ Ibid., p. 17.

²⁶ Ibid., p. 19.

²⁷ Ibid., p. 3.

²⁸ Ibid., p. 23.

²⁹ Ibid., p. 9.

³⁰ Ibid., p. 6.

4.4.4 Need for an Independent Review

S.N. submits that an independent review of smart meter safety needs to occur to address, in part, because “incident data are spread over several different organizations with gaps due to the non-reporting of incidents. What scant information is being gathered is inadequately coded and is not being investigated forensically and is not being shared.”³¹

S.N. states that she has gathered information relating to more than 100 incidents over the last 2-3 years from several government agencies including the OFC, BC Hydro, BC Safety Authority and others. She states that the information gathered “demonstrate[s] the need for a serious review of the various reporting systems that are maintained to ensure the safety of the BC public in general.”³²

S.N. contends that the Commission is in a conflict of interest in assessing smart meter implementation because it was not involved in smart meter implementation “so that involvement now in a process for which it suddenly decides to start taking action is inevitably unacceptably biased. An independent third party body must take the lead to use adequate technical expertise to assemble reliable data, assess the critical issues and draw sound conclusions from the data, without influence from the Utilities, Fire Chiefs, or Government interference.”³³

4.4.5 S.N.’s requests

S.N. concludes her comments with the following four requests:

1. Require that an immediate and complete investigation by independent qualified forensic experts of the safety of ITRON smart meters currently on homes in BC be undertaken;
2. Establish one agency that has the responsibility for coordination of the various reporting agencies to ensure regulations are followed and that tracking/reporting of all fires are done as per those regulations;
3. Establish meaningful penalties (e.g. firing) for those who disregard or allow others to disregard regulations, e.g. removing smart meters from fire scenes before official inspection has been done, or neglecting to inform the BCSA of an electrical incident before the scene has been corrupted.
4. Amend the BC Electrical Safety Regulation which currently exempts utilities from any and all safety regulation, ensuring that any utility equipment that is put on private residences and businesses is certified by a qualified agency (CSA) or a professional electrical engineer licensed in BC.³⁴

COMMISSION DETERMINATION

The Panel relies on the data from the OFC as reported in the Garis Report to find that, at this time, there is no evidence that smart meters materially increase the risk of fires in BC over analog and digital meters.

The OFC data has a category for residential fires where the electrical distribution equipment was the igniting object; this is the OFC category that is most likely to capture meter related fires. The OFC data shows that there

³¹ S.N. Response Document, p. 3.

³² S.N. Comments, March 3, 2016, p. 1.

³³ S.N. Response Document, pp. 32–33.

³⁴ Ibid., p. 33.

were 128 residential fires in 2011, which was prior to smart meter deployment, and 134, 130, 138 and 108 in 2012, 2013, 2014 and 2015, respectively, which were post smart meter deployment. The Panel does not consider this to show a material difference between fires possibly related to analog and digital meters and those possibly related to smart meters. The Panel also takes note that the number of fires in 2015 is lower than pre-smart meter deployment numbers in 2011.

The Panel relies on the OFC data reported in the Garis Report because, in the view of the Panel, the fire reporting data from the OFC under the authority of the *Fire Services Act* is authoritative for BC. Despite the allegations made by S.N. that some fire reports are never submitted to the OFC and that some reports are submitted late the Panel considers that the reporting requirements of the *Fire Services Act* provide a legal requirement which supports the credibility of the data. As well, the Panel finds that the Garis Report is credible because it reports the OFC data and Mr. Garis, a Fire Chief and academic, is a credible author for such a report.

The Panel does not rely on the U.S. Statistics provided as they are not directly comparable to British Columbia and there is no detailed explanation of the data. However, the Panel notes that these data do corroborate its finding that at this time there is no evidence that smart meters materially increase the risk of fires over analog and digital meters. The Panel also notes that both the Garis Report and the US data show declining trends since smart meter deployment, in their respective datasets.

S.N. has provided evidence of eight specific incidents. This evidence was used by the Commission to justify conducting this review of the complaint but it is not sufficiently comprehensive to be used directly to refute the OFC data which, as discussed above, is credible data for the whole province. The onus is on the complainant to present persuasive evidence or a persuasive case to support their complaint; in this case, S.N. has not done that.

Regarding the specific analysis of whether smart meters are a greater fire risk than analog and digital meters during and subsequent to their installation, the Panel acknowledges that the BC Hydro and FBC data could be improved, as evidenced by BC Hydro's submission that it does not track post installation incidents. As well, the Panel acknowledges that the OFC does not have a specific category for meter fires and that their data could be more specific.

While the Panel sees no evidence at this time that smart meters materially increase the risk of fires in BC over analog and digital meters, **the Panel directs BC Hydro and FortisBC Inc. to report to the Commission all incidents where a meter and/or meter base is reasonably assessed to be the possible or likely source of a high temperature or fire event that results in the meter and or meter base requiring replacement. All such incidents must be reported to the appropriate authority or authorities for investigation, as appropriate. If no such authority is appropriate, then the utility must conduct its own investigation as to the cause of the incident. This reporting is to begin immediately and continue until December 31, 2020. This reporting is to occur on a semi-annual basis with reports filed to the Commission within thirty days of December 31 and June 30 of each year. Each report must include, for each incident:**

- i. The serial number or other identifier of the meter involved in the incident;
- ii. Identification of whether the incident was a fire or high temperature event;
- iii. Identification of whether the incident occurred during meter installation or replacement, or post-meter installation; and
- iv. For those incidents where BC Hydro or FBC investigated the incident themselves, a summary of the investigation; or

- v. For those incidents where BC Hydro or FBC informed another authority responsible for investigating the incident, notification of the authority informed, the date, and any response received.**

In regards to S.N.'s further four requests, the Panel has authority over public utilities under the UCA. While the Panel acknowledges that overlapping jurisdictions among various public agencies can be problematic, the Commission does not have the legislative authority to address requests related to other agencies. S.N. may choose to address her concerns with the relevant agencies, including the OFC, discussed in these reasons.

Regarding the request for an independent review of this matter, S.N. has simply alleged that the Commission has a conflict of interest in this matter but has provided no evidence of this. Based on the lack of evidence the Panel finds the Commission does not have a conflict of interest in this matter.

Given the findings above, and that fact that the Panel relied on information in the draft staff report, the Panel sees no need to finalize that draft report.

ALL IMAGES PROVIDED BY COMPLAINANT S.N.



