



FOR GENERATIONS

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May 12, 2015

Ms. Erica Hamilton
Commission Secretary
British Columbia Utilities Commission
Sixth Floor – 900 Howe Street
Vancouver, BC V6Z 2N3

Dear Ms. Hamilton:

**RE: British Columbia Utilities Commission (BCUC or Commission)
British Columbia Hydro and Power Authority (BC Hydro)
Smart Metering & Infrastructure (SMI) Program -
Quarterly Update Report No. 20 - January to March 2015 (Report)**

BC Hydro writes in compliance with Commission Order No. G-67-10, Directive 6, to provide its Report.

For further information, please contact me at 604-623-4121 or by email at bchydroregulatorygroup@bchydro.com.

Yours sincerely,

Original signed by Fred James

(for) Geoffrey Higgins
Acting Chief Regulatory Officer

st/rh

Enclosure (1)

Copy to: Commission Project No. 3698622 (Fiscal 2012 to Fiscal 2014 Revenue Requirements Application) Registered Intervener Distribution List.

Smart Metering & Infrastructure Program

Quarterly Update Report No. 20

F2015 Fourth Quarter

January to March 2015

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1 Introduction

This Smart Metering & Infrastructure (**SMI**) Quarterly Report No. 20 covers the Fourth Quarter of Fiscal 2015 (**F2015 Q4**), the period from January 1, 2015 to March 31, 2015 and is submitted in accordance with Directive 6 of Commission Order No. G-67-10. Program expenditures are categorized as identified in Directive 4 of Commission Order No. G-67-10. As set out in BC Hydro's letter to the Commission dated March 18, 2011 regarding SMI Quarterly Report No. 3, [Table 5](#) and [Table 10](#) include estimated total SMI Program expenditures at the completion of the program. In accordance with Directive 5 of Commission Order No. G-115-11, a description and value of contracts and commitments related to the SMI Program undertaken during F2015 Q4 is provided in [Appendix A](#). This report also identifies the number of smart meters in the field and the number of remaining smart meter installs, both as of March 31, 2015. Additional tables which identify total program expenditures to date are also included. This report also identifies the level of participation in the Meter Choices Program as of March 31, 2015.

BC Hydro's activities with respect to the SMI Program in F2009 and F2010 focused on foundational program elements, such as meter system technologies and information technology requirements. In F2011, BC Hydro's SMI Program activities focused on the design, issuance and completion of procurement processes for four primary work packages, and the award of major contracts that were on the critical path for the deployment of metering infrastructure for the SMI Program. SMI Program procurement activities continued in F2012, and focused on the development of the theft detection solution components including Distribution System Metering Devices (**DSMD**), and the Energy Analytics Solution (**EAS**) theft analytics software. BC Hydro's SMI Program activities in F2013 included the completion of mass deployment of smart meters, the continued installation of telecommunications infrastructure and implementation of related information systems, procurement processes related to DSMD and the EAS, and the field testing

and deployment of DSMD. In F2014, program activities focused on the procurement of DSMD, the development of the EAS, telecommunications network optimization, implementation of the Meter Choices Program, and the installation of smart meters that were not included as part of the mass deployment. In F2015 SMI Program activities focused on completing the network optimization and the installation of telecommunications infrastructure, migrating the meters and the network to a more advanced networking protocol (**IPv6**), expanding on the EAS capabilities, and implementation of the DSMD (transformer and feeder meters) and their associated applications.

During the summer of 2014, BC Hydro re-assessed the DSMD strategy and decided in October 2014 to discontinue the development of DSMDs and their associated applications. It was identified that theft deterrence benefits were exceeding the SMI business case expectations and the actual level of theft has been declining since 2012. As a result, SMI re-assessed the number and type of devices required to achieve the business benefits and it was determined that 9,000 measurement points (compared to 30,000 originally planned) would be an appropriate number to perform feeder-based energy balancing for all feeders. It was determined that existing Supervisory Control and Data Acquisition (**SCADA**) and Check Meter devices (distribution equipment) already deployed or planned for future deployment on the grid are configurable and sufficiently accurate to provide 9,000 measurement points needed to perform feeder based energy balancing, and to achieve the business benefits. In October 2014, BC Hydro commenced integrating SCADA and check meter devices into the theft solution. Development of the associated applications started in January 2015. This strategy aligns with BC Hydro's asset strategy and the industry direction of leveraging and integrating metering in smart-grid devices for multiple purposes. The change in strategy also results in net lower capital expenditures of approximately \$32 million compared to the original solution.

2 Meter Choices Program

On July 18, 2013, the Minister of Energy and Mines announced that in response to public concerns, BC Hydro would offer new options for customers who delayed their smart meter installation. On September 25, 2013, the Government of British Columbia issued Direction No. 4 providing direction to the Commission with respect to implementing Government policy. On October 7, 2013 BC Hydro filed its Application for approval of charges related to the Meter Choices Program, offering eligible customers an installation of a standard smart meter at no cost, or an installation of a radio-off meter, or the existing legacy meter at the premises for a fee approved by the Commission. On April 25, 2014, the Commission issued Order No. G-59-14 and set the charges related to the Meter Choices Program on a permanent basis.

On July 31, 2014, in accordance with the updated tariff approved by the Commission on July 22, 2014, BC Hydro applied the “missed read credit adjustment” including interest to the accounts of Meter Choices Program customers that had estimated scheduled readings from the start of the Meter Choices Program to July 30, 2014.

The composition of Meter Choices Program participants as of March 31, 2015 is identified in [Table 1](#).

Table 1 Meter Choices Program Participation Breakdown – As of March 31, 2015

Option	Number of Accounts
Legacy Meter	14,228
Selected Radio-off	549
Total	14,777

All BC Hydro electricity meters are required to have a valid Measurement Canada accuracy seal. In 2014, BC Hydro was required, under Measurement Canada Regulations, to exchange 10,700 Meter Choices customers’ legacy meters because the accuracy seal had expired. These meters must be replaced by a meter with a

valid Measurement Canada seal. BC Hydro sent letters to customers explaining why the BC Hydro legacy meter at their premises was being replaced with another legacy meter. Of these customers, approximately 2,600 refused to permit BC Hydro to exchange the time expired meter at their premises.

BC Hydro is continuing to work with these customers and as of March 31, 2015, of the approximately 2,600 customers who refused access, 1,121 have consented to replacement of the legacy meter with another legacy meter.

In late March 2015, an additional 1,320 letters were sent to customers informing them that the Measurement Canada accuracy seal on the legacy meters at their premises would expire in 2015 and require meter exchange. Of these, 165 customers were informed that because the stock of legacy meters for their service type has been exhausted, a radio-off smart meter will need to be installed. The Measurement Canada accuracy seals of all legacy meters remaining in service will expire in subsequent years through 2022, at which point all legacy meters will have expired seals and require replacement by a radio-off smart meter.

3 Project Status

During F2015 Q4, BC Hydro took the following steps to advance and implement the SMI Program:

- Continued deployment of customer meters and telecom equipment;
- Continued transition of customers to automated billing;
- Continued telecom network optimization;
- Continued work related to the Meter Choices Program including exchanges of legacy meters with expired seals;
- Continued development of the meter configuration management tool;
- Continued implementation of IPv6 network protocol;

- Continued development of the EAS including build out of Data Lake (data storage and processing) infrastructure;
- Continued integration activities of SCADA capable devices and check-meters;
- Continued development of Disaster Recovery Capability; and
- Completed the Home Area Network (**HAN**) field validation program.

4 Project Schedule

[Table 2](#) shows the status of the major activities in F2015 Q4 as reported in F2015 Q3 Quarterly Report No. 19.

Table 2 Project Schedule F2015 Q4

Date	Activity	
January 2015	In Field/Over the Air Meter Mitigation – Network Stability	Ongoing
	Continue Network Stabilization and Optimization	Ongoing
	Meter Choices Program: Install Radio Off & Smart Meters	Ongoing
	Validate SCADA Data Measures	Ongoing
	Planning SCADA Infrastructure and Reclosers Field Upgrades	Complete
	Design and Build Check Meter Information Technology	Started
	Test EAS Stage 2a (Energy Balancing 1212 Meters)	Ongoing
	Requirement Definition for EAS 2b (SCADA and Check Meters)	Complete
	Data Lake Build and Testing ADCS	Ongoing
	Disaster Recovery Capability Failover Testing	Ongoing
	Advanced Telecom: WiMAX	Ongoing
	Advanced Telecom: Multiprotocol Label Switching	Ongoing
	In-Home Device – HAN: Field Validation Program	Ongoing
February 2015	In Field/Over the Air Meter Mitigation – Network Stability	Ongoing
	Continue Network Stabilization and Optimization	Ongoing
	Meter Choices Program: Install Radio Off & Smart Meters	Ongoing
	SCADA Recloser Standards Update	Complete
	SCADA Infrastructure and Reclosers Field Upgrades	Ongoing
	Design and Build Check Meter Information Technology	Ongoing
	Check Meters Testing	Started
Test EAS Stage 2a (Energy Balancing 1212 Meters)	Ongoing	

Date	Activity	
	Design EAS 2b (SCADA and Check Meters)	Ongoing
	Data Lake Build and Testing for ADCS	Ongoing
	Disaster Recovery Capability Failover Testing	Ongoing
	Advanced Telecom: WiMAX	Ongoing
	Advanced Telecom: Multiprotocol Label Switching	Ongoing
	In-Home Device – HAN: Field Validation Program	Ongoing
March 2015	In Field/Over the Air Meter Mitigation – Network Stability	Ongoing
	Continue Network Stabilization and Optimization	Ongoing
	Meter Choices Program: Install Radio Off & Smart Meters	Ongoing
	SCADA Recloser Reconfiguration	Started
	SCADA Information Technology Modifications	Started
	SCADA Infrastructure and Reclosers Field Upgrades	Ongoing
	Design and Build Check Meter Information Technology	Ongoing
	Check Meters Testing	Ongoing
	Test EAS Stage 2a (Energy Balancing 1212 Meters)	Complete
	Design EAS 2b (SCADA and Check Meters)	Complete
	Data Lake Build and Testing for MDMS	Ongoing
	Disaster Recovery Capability Failover Testing	Ongoing
	Advanced Telecom: WiMAX	Ongoing
	Advanced Telecom: Multiprotocol Label Switching	Complete
	In-Home Device – HAN: Field Validation Program	Complete

[Table 3](#) shows the major activities included in the project schedule for the first quarter of F2016.

Table 3 Project Schedule F2016 Q1

Date	Activity
April 2015	In Field/Over the Air Meter Mitigation – Network Stability
	Continue Network Stabilization and Optimization
	Operational Insights Requirements and Design
	Meter Choices Program: Install Radio Off & Smart Meters
	SCADA Recloser Reconfiguration
	SCADA Information Technology Modifications
	Validate SCADA Data Measures (Relays)
	Planning SCADA Infrastructure and Reclosers Field Upgrades
	Design and Build Check Meter Information Technology Systems

Date	Activity
	Check Meter Device Testing
	Build EAS 2b (SCADA and Check Meters)
	Data Lake Build and Testing ADCS
	Data Lake Build and Testing MDMS
	Data Lake Build and Testing SCADA and Check Meters
	Disaster Recovery Capability Failover Design
	Advanced Telecom: WiMAX
May 2015	In Field/Over the Air Meter Mitigation – Network Stability
	Continue Network Stabilization and Optimization
	Operational Insights Requirements and Design
	Meter Choices Program: Install Radio Off & Smart Meters
	SCADA Recloser Reconfiguration
	SCADA Information Technology Modifications
	Validate SCADA Data Measures (Relays)
	SCADA Infrastructure and Reclosers Field Upgrades
	Design and Build Check Meter Information Technology Systems
	Check Meter Device Testing
	Build EAS 2b (SCADA and Check Meters)
	Data Lake Build and Testing ADCS
	Data Lake Build and Testing MDMS
	Data Lake Build and Testing SCADA and Check Meters
	Disaster Recovery Capability Failover Design
	Advanced Telecom: WiMAX
June 2015	In Field/Over the Air Meter Mitigation – Network Stability
	Continue Network Stabilization and Optimization
	Operational Insights Requirements and Design
	Meter Choices Program: Install Radio Off & Smart Meters
	SCADA Recloser Reconfiguration
	SCADA Information Technology Modifications
	SCADA Infrastructure and Reclosers Field Upgrades
	Design and Build Check Meter Information Technology Systems
	Check Meter Device Testing
	Test EAS 2b (SCADA and Check Meters)
	Data Lake Build and Testing SCADA and Check Meters
	Disaster Recovery Capability Failover Design
	Advanced Telecom: WiMAX

Meter deployment continued throughout F2015 Q4, and 6,751 smart meters were installed during the quarter, none of which were installed by Corix, as shown in [Table 4](#). On March 31, 2015, there were 1,914,778 smart meters in the field, and 4,752 conventional meters remaining in the field (excludes 14,228 legacy meters remaining under the Meter Choices Program).

During the fourth quarter of F2015, three Field Area Network (**FAN**) collectors (Cisco Connected Grid Routers) were installed and 12 were removed (after review of meter performance and business criteria), bringing the total number installed to 1,863 by the end of F2015 Q4. In addition to FAN collectors, 74 Range Extenders were installed during the quarter, bringing the total number in the field at the end of the quarter to 5,236. Small numbers of FAN collectors and range extenders will be installed as part of the optimization of the telecom network which is currently underway and will continue in F2016.

Table 4 Customer Mass Meter Deployment – June 2011 Schedule and Actuals

Region	Total Meters	Fiscal 2012			Fiscal 2013				Fiscal 2014				Fiscal 2015				Total
		Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Corix Installations (June 2011 Plan)																	
Lower Mainland South	444,215	51,542	127,290	127,050	113,613	24,720	-										444,215
North Interior	104,367	16,163	22,411	24,292	23,522	17,979	-										104,367
North Coast	42,432	3,265	21,205	15,711	1,635	616	-										42,432
Vancouver Island	387,895	26,765	76,129	80,599	81,660	77,628	45,114										387,895
Lower Mainland North (Metro)	623,611	14,875	135,681	152,653	154,563	134,737	31,102										623,611
	368,311	14,875	95,282	107,867	68,404	71,315	10,568										368,311
	38,206	-	10,000	28,206	-	-	-										38,206
	83,534	-	-	-	-	63,000	20,534										83,534
	78,911	-	-	16,580	62,331	-	-										78,911
	24,250	-	-	-	23,828	422	-										24,250
	18,975	-	18,975	-	-	-	-										18,975
	11,424	-	11,424	-	-	-	-										11,424
South Interior	191,966	-	30,244	32,281	38,871	66,637	23,933										191,966
Kootenay	54,438	-	-	-	15,803	32,324	6,311										54,438
Planned Corix Installations (June 2011 Plan)	1,848,924	112,610	412,960	432,586	429,667	354,641	106,460										1,848,924
To End of Q2 F2015																	
Actual Corix Installations	1,769,629	116,583	422,563	451,796	385,314	261,527	70,307	16,291	3,148	216	14,514	20,207	6,254	909	-	-	1,769,629
Actual BC Hydro Installations	145,149 **																
Total Smart Meter Installations	1,914,778																
Conventional Meters Remaining in Field (Excl. Meter Choices Program)	4,752																

* Revised figure.

** Includes smart meters installed due to growth in the number of customer accounts during the deployment.

5 Project Costs: F2015 Q4, Year to Date, and SMI Program to Date

Excluding contingency, which has been allocated to planned expenditures for F2015 Q4, actual operating expenditures were significantly lower than planned during F2015 Q4. Actual capital expenditures during F2015 Q4 are less than plan by \$47.6 million primarily because no DSMD devices were purchased, aligning with the DSMD strategy decision taken in October 2014. Forecast operating and capital expenditures at the completion of the program have been adjusted downward from \$892.6 million to \$860.6 million. The expected cost reduction reflects the change in the DSMD strategy, resulting in \$32 million decrease in related program expenditures.

In F2015 Q4, BC Hydro has received a \$15 million settlement payment from Itron to compensate for higher than expected capital and operating costs related to the smart metering system technologies. Of the payment, \$10 million has been credited to the SMI Program Regulatory Account as a component of net operating costs eligible for deferral, and \$5 million has not been deferred as it relates to post F2016 operating costs, which are not subject to deferral.

Operating and capital expenditures related to the SMI Program incurred by BC Hydro in F2015 Q4, F2015 full year and for the SMI Program to date are shown in [Table 5](#), [Table 6](#) and [Table 7](#) below, respectively.

Table 5 SMI Program Operating and Capital Expenditures – F2015 Q4 and Forecast at Completion

(\$ million)	Operating Expenditures			Capital Expenditures			Forecast at Completion (\$)	
	Actual	Plan	Variance	Actual	Plan	Variance	Operating	Capital
Labour	0.1	0.7	0.6	1.3	0.7	(0.6)	28.7	51.5
Consultants & Contractors	0.6	0.2	(0.4)	9.3	4.9	(4.4)	41.6	369.5
Materials/Other	(9.8)	1.8	11.6	5.4	58.4	53.0	(5.9)	363.1
Interest	n/a	n/a	n/a	0.4	0.0	(0.4)	n/a	12.1
Sub-total SMI Program	(9.1)	2.7	11.8	16.4	64.0	47.6	64.4	796.2
Interest on Deferral	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Total	(9.1)	2.7	11.8	16.4	64.0	47.6	860.6	

Table 6 SMI Program Operating and Capital Expenditures – F2015 Full Year

(\$ million)	Operating Expenditures			Capital Expenditures		
	Actual	Plan	Variance	Actual	Plan	Variance
Labour	1.5	2.5	1.0	7.1	5.3	(1.8)
Consultants & Contractors	3.0	1.8	(1.2)	36.3	43.8	7.5
Materials/Other	(9.8)	1.7	11.5	11.2	92.4	81.2
Interest	n/a	n/a	n/a	2.2	0.0	(2.2)
Sub-total SMI Program	(5.3)	6.0	11.3	56.8	141.5	84.7
Interest on Deferral	n/a	n/a	n/a	n/a	n/a	n/a
Total	(5.3)	6.0	11.3	56.8	141.5	84.7

Table 7 SMI Program Operating and Capital Expenditures – SMI Program to Date

(\$ million)	Operating Expenditures	Capital Expenditures	Total Expenditures
Labour	27.6	50.2	77.8
Consultants and Contractors	40.8	323.9	364.7
Materials/Other	(8.4)	283.3	274.9
Interest	n/a	10.8	10.8
Sub-total SMI Program	60.0	668.2	728.2
Interest on Deferral	7.5	n/a	7.5
Total	67.5	668.2	735.7

Operating and capital expenditures by program component¹ for F2015 Q4, F2015 full year, and SMI Program to date are presented in [Table 8](#), [Table 9](#), and [Table 10](#) respectively.

¹ In Directive No. 4 of Commission Order No. G-67-10, BC Hydro was directed to report SMI Program costs broken down by the components specified therein.

Table 8 SMI Program Operating and Capital Expenditures by SMI Program Component – F2015 Q4

(\$ million)	Operating Expenditures			Capital Expenditures		
	Actual	Plan	Variance	Actual	Plan	Variance
Smart Meters	0.0	0.0	0.0	2.2	0.0	(2.2)
Telecommunications Systems	0.0	0.0	0.0	0.3	0.0	(0.3)
Meter Data Management System	0.0	0.0	0.0	0.0	0.0	0.0
Solution Integration	0.0	0.0	0.0	0.5	0.0	(0.5)
In-Home Display/In-Home Feedback	0.4	0.3	(0.1)	0.0	0.0	0.0
Conservation Based Rates	0.0	0.0	0.0	0.0	0.0	0.0
Smart Grid ¹	0.3	0.0	(0.3)	12.7	19.6	6.9
Other						
Procurement	0.0	0.0	0.0	0.1	0.0	(0.1)
Program Management	0.0	0.0	0.0	0.0	0.3	0.3
Facilities	0.0	0.0	0.0	0.0	0.0	0.0
Finance	0.0	0.0	0.0	0.2	0.0	(0.2)
Human Resources	0.0	0.5	0.5	0.0	0.0	0.0
Contract Management	0.0	0.0	0.0	0.1	0.0	(0.1)
IT Infrastructure	0.0	0.0	0.0	0.2	0.0	(0.2)
Security	0.0	0.0	0.0	0.1	0.0	(0.1)
Communications & Stakeholder Engagement	0.0	0.4	0.4	0.0	0.0	0.0
Regulatory	(9.8)	0.0	9.8	0.0	0.0	0.0
Transition to Operations	0.0	0.0	0.0	0.0	0.0	0.0
Interest During Construction ²	0.0	0.0	0.0	0.0	0.0	0.0
Total Other	(9.8)	0.9	10.7	0.7	0.3	(0.4)
Contingency	0.0	1.5	1.5	0.0	44.1	44.1
Total	(9.1)	2.7	11.8	16.4	64.0	47.6

¹ Smart Grid includes theft detection and other advanced telecom infrastructure related expenditures.

² Interest during construction is included in actual expenditures for each expenditure category, but not included in planned expenditures by category. Therefore, a separate line item is included in "Other."

Most of the variance in capital expenditures for F2015 Q4 in [Table 8](#) above relates to no DSMD device being purchased, aligning with the DSMD strategy decision taken in October 2014.

Table 9 SMI Program Operating and Capital Expenditures by SMI Program Component – F2015 Full Year

(\$ million)	Operating Expenditures			Capital Expenditures		
	Actual	Plan	Variance	Actual	Plan	Variance
Smart Meters	0.3	0.0	(0.3)	5.4	1.0	(4.4)
Telecommunications Systems	0.0	0.0	0.0	2.8	0.0	(2.8)
Meter Data Management System	0.0	0.0	0.0	0.0	0.0	0.0
Solution Integration	0.0	0.0	0.0	2.4	2.4	0.0
In-Home Display/In-Home Feedback	1.5	1.1	(0.4)	0.0	0.0	0.0
Conservation Based Rates	0.0	0.0	0.0	0.0	0.0	0.0
Smart Grid ¹	1.9	0.8	(1.1)	42.0	89.2	47.2
Other						
Procurement	0.0	0.0	0.0	0.3	0.0	(0.3)
Program Management	0.0	0.0	0.0	0.4	2.2	1.8
Facilities	0.1	0.0	(0.1)	0.0	0.0	0.0
Finance	0.0	0.0	0.0	0.9	0.4	(0.5)
Human Resources	0.3	1.1	0.8	0.1	0.1	0.0
Contract Management	0.0	0.0	0.0	0.4	0.3	(0.1)
IT Infrastructure	0.0	0.0	0.0	1.8	1.0	(0.8)
Security	0.0	0.0	0.0	0.3	0.2	(0.1)
Communications & Stakeholder Engagement	0.3	0.9	0.6	0.0	0.0	0.0
Regulatory	(9.8)	0.1	9.9	0.0	0.0	0.0
Transition to Operations	0.1	0.5	0.4	0.0	0.0	0.0
Interest During Construction ²	0.0	0.0	0.0	0.0	0.0	0.0
Total Other	(9.0)	2.6	11.6	4.2	4.2	0.0
Contingency	0.0	1.5	1.5	0.0	44.7	44.7
Total	(5.3)	6.0	11.3	56.8	141.5	84.7

¹ Smart Grid includes theft detection and other advanced telecom infrastructure related expenditures.

² Interest during construction is included in actual expenditures for each expenditure category, but not included in planned expenditures by category. Therefore, a separate line item is included in "Other."

Table 10 SMI Program Operating and Capital Expenditures by SMI Program Component – SMI Program to Date and Forecast at Completion of Program

(\$ million)	Actual Expenditures – Program to Date			Forecast Expenditures - Completion of Program	
	Operating Expenditures	Capital Expenditures	Total Expenditures	Operating	Capital
Smart Meters	11.6	357.9	369.5	11.5	359.2
Telecommunications Systems	0.4	41.4	41.8	0.4	41.4
Meter Data Management System	0.2	8.1	8.3	0.2	8.1
Solution Integration	0.0	51.2	51.2	0.0	52.4
In-Home Display/In-Home Feedback	7.3	19.1	26.4	7.5	19.3
Conservation Based Rates	0.0	3.9	3.9	0.0	3.9
Smart Grid ¹	10.5	116.2	126.7	12.0	168.4
Other					
Program Management	4.6	20.3	24.9	4.6	21.0
Facilities	2.1	4.2	6.3	2.1	4.8
Finance	2.7	4.4	7.1	2.7	4.5
Regulatory	(8.7)	0.0	(8.7)	(8.7)	0.0
Procurement	0.1	20.3	20.4	0.1	20.3
Contract Management	0.0	1.7	1.7	0.0	1.9
Customer	2.6	0.0	2.6	2.6	0.0
Business Transformation	2.0	0.0	2.0	2.0	0.0
Engineering, IT, Telecom, Security & Field Trials	3.4	0.0	3.4	3.4	0.0
Utility Operations	1.4	0.0	1.4	1.4	0.0
Human Resources	0.9	0.5	1.4	1.6	0.5
Communication & Stakeholder Engagement	11.2	0.0	11.2	11.3	0.0
Transition to Operations	0.5	0.0	0.5	0.9	0.0

	Actual Expenditures – Program to Date			Forecast Expenditures - Completion of Program	
Leasehold Improvements	0.0	0.4	0.4	0.0	0.4
Field Trial Equipment	0.0	0.0	0.0	0.0	0.0
Security	0.0	1.9	1.9	0.0	2.0
Infrastructure (IT)	0.0	16.8	16.8	0.0	16.9
Program Development ²	7.2	0.0	7.2	7.3	0.0
Interest During Construction ³	0.0	0.0	0.0	0.0	1.2
Total Other	30.0	70.5	100.5	31.3	73.5
Contingency	0.0	0.0	0.0	1.5	70.0
Total	60.0	668.3	728.3	64.4	796.2
				860.6	

¹ Smart Grid includes theft detection and other advanced telecom infrastructure related expenditures.

² Program Initiation and Identification includes expenditures of \$7.3 million incurred during F2006 and F2008 (inclusive). These amounts were expensed in the year in which they were incurred, although only \$0.6 million was recovered in rates (i.e., \$6.7 million was incurred ex-plan).

³ Interest during construction is included in actual expenditures for each expenditure category, but not included in planned expenditures by category. Therefore, a separate line item is included in “Other”.

Smart Metering & Infrastructure Program

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Appendix A

**SMI Program Contracts and Commitments –
Executed in F2015 Q4**

Supplier/Vendor	Contract Value (\$)	Description
Alcatel-Lucent Canada Inc	244,427	Advanced Telecom Network Enhancement Services
Annex Consulting Group Inc.	649,752	IT Resources
Awesense Wireless Inc	3,489,444	Check Meter Software and Services
BitStew Systems Inc	375,000	Operational Insights Software and Services
Black & Veatch Canada Company	120,000	Advanced Telecom Engineering Services
Borden Ladner Gervais LLP	87,000	Legal Services
Brainhunter Systems Ltd	136,940	IT Resources
Capgemini Canada Inc.	555,130	IT Resources
Compugen Inc.	594,000	Disaster Recovery Consulting Services
Deloitte LLP	92,880	Security Analyst
DNA Data Networking and Assemblies	2,294	Advanced Telecom Network Enhancement Services
EMC Corporation Of Canada	1,284,709	IT Services
Groundswell Group Inc	64,408	IT Resources
HD3 Networks Inc	70,560	IT Resources
Howe Sound Consulting Inc	79,200	DSMD Resource
J. Wilkins Consulting Ltd.	77,500	Network Infrastructure Design Resource
JTS Consulting, Inc	181,325	Business Analysts and Procurement Resource
Lawson Lundell LLP	15,000	Legal Services
Leacy Consulting Services Limited	158,400	Business Transformation Resources
Long View Systems Corporation	106,080	Network Infrastructure Design Services
Modis Canada Inc	66,000	IT Resource
Nextgen Technologies Ltd	175,760	SCADA Upgrade Services
Nolan Darcy Charles	19,200	Aboriginal Consulting Services
Planetworks Consulting Corporation	560,000	Advanced Telecom Engineering Resources
Procom Consultants Group Ltd	79,320	Advanced Telecom Engineering Resources
Quartech Systems Ltd	161,400	Business Analyst and Project Management Resource
Randstad Interim Inc	50,000	Advanced Telecom Technician
Robert Half Canada Inc	41,119	Project Accountant

Smart Meter Deployment Consulting	108,000	Deployment Consultant
Sure Power Consulting, LLC	197,120	IT Resource
Talon Helicopters Ltd	20,000	Helicopter Use for Advanced Telecom Network Enhancement
TAXI Canada Ltd	30,793	HAN Program Marketing Services
Teema Solutions Group Inc	1,440	IT Resource
Teksystems Canada Inc.	1,007,879	IT Resources
Telus Communications Company	968,083	Telecom Services
Tibco Software (Ireland) Limited	177,000	Software Licences
Vertec Communications Inc	103,524	Advanced Telecom Network Enhancement Services
West Pacific Consulting Group	797,440	IT Resources
Zikai Lu	25,000	Business Intelligence Analyst
TOTAL	12,973,127	