

VECC Question # 1

Reference: Application, Page 20, Table 10

Preamble: Woodstock Hydro installed 15,056 smart meters and 3,764 are included in this application.

- a) Please summarize the types of meters installed for each rate class.
- b) Please complete the following table to show the calculation of average costs based on individual meter types.

Class	Type of Meter	Quantity	Meter Cost	Average Meter Cost	Installation Cost	Average Installation Cost	Other Costs	Total Average Cost
Residential								
GS<50 kW								

- c) Please provide a summary of Woodstock Hydro's incremental internal labour costs related to smart meter implementation in terms of positions, contract type (permanent vs. temporary, part-time vs. full-time), length of employment and work activities.

Response:

- a) WHSI notes that some installation costs had been included in category 1.1.1 in the Smart Meter Model and therefore has reallocated these costs to category 1.1.2. WHSI also notes that an adjusting entry for GS<50 smart meters had been included in the residential smart meter job, and has now been adjusted. The overall capital costs for smart meters remain the same, however the category and class amounts have been updated as follows:

Category	Rate Class	Original*	Revised	Variance
1.1.1	Residential	\$ 409,043	\$ 268,884	\$ (140,159)
1.1.2	Residential	\$ 64,228	\$ 111,502	\$ 47,274
1.1.1	GS<50	\$ 220,957	\$ 282,310	\$ 61,353
1.1.2	GS<50	\$ 76,476	\$ 108,007	\$ 31,531
Total		\$ 770,703	\$ 770,703	\$ (0)
1.1.1	All	\$ 629,999	\$ 551,194	\$ (78,805)
1.1.2*	All	\$ 140,704	\$ 219,509	\$ 78,805
		\$ 770,703	\$ 770,703	\$ -

* 1.1.2 Original \$140,704 reflects the removal of the \$4,033 credit per response to OEB Staff IRR#2

The majority of smart meters installed in the residential rate class were REX meters. The single phase residential services exceeding 200 Amp/ 240V had A3RL/8 meters installed. The A3RL/8 must be used in conjunction with a current transformer – hence the reason behind the transformer rated meter, because a 3 phase meter cannot be installed on a single phase service. One 3-phase residential service required a 3-phase A3RL/7 meter.

Depending on the existing service and service size, the General Service <50 rate class had either REX meters or A3RL meters installed.

The following is a list of meter types used in the smart meter implementation:

REX : R2S –Rex 2 Single Phase 240 v- 200 Amp Socket
R1/5 – Rex 1 Single Phase 120v-200 Amp 5 Jaw Socket
R2/9 – Rex 2 Single Phase 120v-200 Amp 5 Jaw Socket

REX 2/600v – Three Phase 600v-200 Amp 2 Element Socket

A3RL/7 – Three Phase Four Wire 3 Element 200A-120/347v 7 Jaw A3RL Socket With Internal Antenna

A3RL/8 – Single Phase 240v-10 Amp Transformer Rated A3RL Socket

A3RL/9 – Three Phase Four Wire 3 Element 200A-120/347v 7 Jaw A3RL Socket With External Antenna

A3RL/10 – Three Phase Three Wire 2 Element 10 A-120/347v Transformer Rated A
Base A3RL

A3RL/11 – Three Phase Four Wire 2.5 Element 10 A-120/347v Transformer Rated A
Base A3RL

A3RL/12 – Three Phase Four Wire 3 Element 10A-120/347v Transformer Rated A Base
A3RL

A3TL/13 – Three Phase 240v -200 Amp Delta 5 Jaw Socket

- b) Three tables have been provided; the amounts approved in EB-2010-0145, the requested amounts for EB-2012-0178, and the combined total amounts for both EB-2010-0145 and EB-2012-0178. Installation Costs and Other Costs have been allocated to individual meter types based on the number of total meters in each rate class.

Approved EB-2010-0145

Approved EB- 2010-0145										
Class	Type of Meter	Quantity	Meter Cost (Category 1.1.1)	Average Meter Cost	Installation Cost (Category 1.1.2)	Average Installation Cost	Other Costs (Categories 1.2-1.6)	Average Other Costs	Total Cost	Total Average Cost
Residential	A3RL/8	17	\$ 8,822	\$ 518.96	\$ 309	\$ 18.20	\$ 335	\$ 19.71	\$ 9,467	\$ 556.87
	R1/5	430	\$ 59,284	\$ 137.87	\$ 7,825	\$ 18.20	\$ 8,477	\$ 19.71	\$ 75,587	\$ 175.78
	R2/9	116	\$ 15,182	\$ 130.88	\$ 2,111	\$ 18.20	\$ 2,287	\$ 19.71	\$ 19,580	\$ 168.79
	R2S	10,197	\$ 812,771	\$ 79.71	\$ 185,569	\$ 18.20	\$ 201,030	\$ 19.71	\$ 1,199,370	\$ 117.62
GS<50 kW	A3RL/7	61	\$ 31,657	\$ 518.96	\$ 2,833	\$ 46.45	\$ 2,101	\$ 34.44	\$ 36,591	\$ 599.85
	A3RL/8	50	\$ 25,948	\$ 518.96	\$ 2,322	\$ 46.45	\$ 1,722	\$ 34.44	\$ 29,992	\$ 599.85
	A3RL/9	6	\$ 3,114	\$ 518.96	\$ 279	\$ 46.45	\$ 207	\$ 34.44	\$ 3,599	\$ 599.85
	R1/5	19	\$ 2,620	\$ 137.87	\$ 883	\$ 46.45	\$ 654	\$ 34.44	\$ 4,156	\$ 218.76
	R2S	396	\$ 32,358	\$ 81.71	\$ 18,394	\$ 46.45	\$ 13,638	\$ 34.44	\$ 64,390	\$ 162.60
Total Approved EB-2010-0145		11,292	\$ 991,755	\$ 87.83	\$ 220,526	\$ 19.53	\$ 230,451	\$ 20.41	\$ 1,442,731	\$ 127.77

Requested EB-2012-0178

Requested EB-2012-0178										
Class	Type of Meter	Quantity	Meter Cost (Category 1.1.1)	Average Meter Cost	Installation Cost (Category 1.1.2)	Average Installation Cost	Other Costs (Categories 1.2-1.6)	Average Other Costs	Total Cost	Total Average Cost
Residential	A3RL/7	1	\$ 430	\$ 430.39	\$ 36	\$ 35.98	\$ 40	\$ 39.69	\$ 506	\$ 506.06
	A3RL/8	5	\$ 2,595	\$ 518.96	\$ 180	\$ 35.98	\$ 198	\$ 39.69	\$ 2,973	\$ 594.63
	R1/5	69	\$ 9,513	\$ 137.87	\$ 2,483	\$ 35.98	\$ 2,739	\$ 39.69	\$ 14,734	\$ 213.54
	R2/9	136	\$ 16,373	\$ 120.39	\$ 4,893	\$ 35.98	\$ 5,398	\$ 39.69	\$ 26,664	\$ 196.06
	R2S	2,888	\$ 239,973	\$ 83.09	\$ 103,911	\$ 35.98	\$ 114,633	\$ 39.69	\$ 458,516	\$ 158.77
GS<50 kW	A3RL/7	292	\$ 128,951	\$ 441.61	\$ 47,426	\$ 162.42	\$ 4,665	\$ 15.98	\$ 181,042	\$ 620.01
	A3RL/8	29	\$ 15,050	\$ 518.96	\$ 4,710	\$ 162.42	\$ 463	\$ 15.98	\$ 20,223	\$ 697.35
	A3RL/9	100	\$ 51,896	\$ 518.96	\$ 16,242	\$ 162.42	\$ 1,598	\$ 15.98	\$ 69,735	\$ 697.35
	A3RL/10	24	\$ 10,965	\$ 456.88	\$ 3,898	\$ 162.42	\$ 383	\$ 15.98	\$ 15,247	\$ 635.27
	A3RL/11	89	\$ 40,662	\$ 456.88	\$ 14,455	\$ 162.42	\$ 1,422	\$ 15.98	\$ 56,539	\$ 635.27
	A3RL/12	48	\$ 22,022	\$ 458.79	\$ 7,796	\$ 162.42	\$ 767	\$ 15.98	\$ 30,585	\$ 637.19
	A3RL/13	2	\$ 748	\$ 374.13	\$ 325	\$ 162.42	\$ 32	\$ 15.98	\$ 1,105	\$ 552.52
	R1/5	31	\$ 4,274	\$ 137.87	\$ 5,035	\$ 162.42	\$ 495	\$ 15.98	\$ 9,804	\$ 316.26
	R2S	34	\$ 2,948	\$ 86.71	\$ 5,522	\$ 162.42	\$ 543	\$ 15.98	\$ 9,013	\$ 265.10
	Rex 2/600V	16	\$ 4,793	\$ 299.58	\$ 2,599	\$ 162.42	\$ 256	\$ 15.98	\$ 7,648	\$ 477.97
Total Requested		3,764	\$ 551,194	\$ 146.44	\$ 219,509	\$ 58.32	\$ 133,632	\$ 35.50	\$ 904,335	\$ 240.26

Approved and Requested

Total Approved (EB-2010-0145) and Requested (EB-2012-0178)										
Class	Type of Meter	Quantity	Meter Cost (Category 1.1.1)	Average Meter Cost	Installation Cost (Category 1.1.2)	Average Installation Cost	Other Costs (Categories 1.2-1.6)	Average Other Costs	Total Cost	Total Average Cost
Residential	A3RL/7	1	\$ 430	\$ 430.39	\$ 36	\$ 35.98	\$ 40	\$ 39.69	\$ 506	\$ 506.06
	A3RL/8	22	\$ 11,417	\$ 518.96	\$ 489	\$ 22.24	\$ 534	\$ 24.26	\$ 12,440	\$ 565.45
	R1/5	499	\$ 68,797	\$ 137.87	\$ 10,308	\$ 20.66	\$ 11,216	\$ 22.48	\$ 90,321	\$ 181.00
	R2/9	252	\$ 31,555	\$ 125.22	\$ 7,004	\$ 27.79	\$ 7,685	\$ 30.50	\$ 46,244	\$ 183.51
	R2S	13,085	\$1,052,743	\$ 80.45	\$ 289,480	\$ 22.12	\$ 315,663	\$ 24.12	\$ 1,657,886	\$ 126.70
Total Residential		13,859	\$1,164,943	\$ 84.06	\$ 307,317	\$ 22.17	\$ 335,137	\$ 24.18	\$ 1,807,397	\$ 130.41
GS<50 kW	A3RL/7	353	\$ 160,608	\$ 454.98	\$ 50,259	\$ 142.38	\$ 6,766	\$ 19.17	\$ 217,632	\$ 616.52
	A3RL/8	79	\$ 40,998	\$ 518.96	\$ 7,033	\$ 89.02	\$ 2,185	\$ 27.66	\$ 50,216	\$ 635.64
	A3RL/9	106	\$ 55,010	\$ 518.96	\$ 16,520	\$ 155.85	\$ 1,804	\$ 17.02	\$ 73,334	\$ 691.83
	A3RL/10	24	\$ 10,965	\$ 456.88	\$ 3,898	\$ 162.42	\$ 383	\$ 15.98	\$ 15,247	\$ 635.27
	A3RL/11	89	\$ 40,662	\$ 456.88	\$ 14,455	\$ 162.42	\$ 1,422	\$ 15.98	\$ 56,539	\$ 635.27
	A3RL/12	48	\$ 22,022	\$ 458.79	\$ 7,796	\$ 162.42	\$ 767	\$ 15.98	\$ 30,585	\$ 637.19
	A3RL/13	2	\$ 748	\$ 374.13	\$ 325	\$ 162.42	\$ 32	\$ 15.98	\$ 1,105	\$ 552.52
	R1/5	50	\$ 6,894	\$ 137.87	\$ 5,917	\$ 118.35	\$ 1,150	\$ 22.99	\$ 13,961	\$ 279.21
	R2S	430	\$ 35,306	\$ 82.11	\$ 23,916	\$ 55.62	\$ 14,181	\$ 32.98	\$ 73,403	\$ 170.70
	Rex 2/600V	16	\$ 4,793	\$ 299.58	\$ 2,599	\$ 162.42	\$ 256	\$ 15.98	\$ 7,648	\$ 477.97
Total GS<50		1,197	\$ 378,006	\$ 315.79	\$ 132,718	\$ 110.88	\$ 28,946	\$ 24.18	\$ 539,669	\$ 450.85
Total ALL		15,056	1,542,949	\$ 102.48	440,035	\$ 29.23	364,083	\$ 24.18	2,347,067	\$ 155.89

- c) As discussed in EB-2010-0145, WHSI entered into a contract with Olameter for the installation of the majority of residential smart meters in WHSI's territory. A highly-structured approach for mass deployment was coordinated and the process flowed smoothly and efficiently, ensuring cost effectiveness and customer communication. In-house metering personnel assisted with the coordination between Olameter and in-house billing personnel to ensure that the process unfolded as smoothly as possible. Olameter provided installation services to WHSI from October 2009 to February 2010.

WHSI directly leveraged the expertise of our three full-time, permanent, experienced metering personnel for the installation of smart meters for approximately 2,800 former prepay meter sites and all GS<50 sites. These meter changes required more specific knowledge of the former technology which had been in place, were of higher complexity (e.g. 3-phase vs. single-phase) and/or required specific scheduling or accommodation to the customer's operational needs. WHSI staff performed these activities commencing April 2009. All former prepay services had smart meters installed by June 2010. The GS <50 smart meter installations were substantially complete by June 2010, other than for new commercial services installed to December 2011, or for individual circumstances where scheduling and coordination with customers resulted in installations after June 2010.

The Elster AMI system requires the use of regional collectors / gatekeepers which collect meter data from registered meters in the vicinity. Further, in some cases a location-specific repeater and/or an external antenna for a specific meter must be installed to assist in data collection in a local area where communication with a meter or group of meters would otherwise be hindered or impossible. WHSI's gatekeepers and repeaters are pole-mounted for security purposes, thereby requiring the use of a bucket truck for installation and servicing. In-house metering and line personnel installed all gatekeepers and repeaters.

WHSI's full-time permanent meter and line technicians generally have 10 to 30 years of experience and also bring knowledge of the unique aspects of individual services and our service territory.

WHSI had confirmed in EB-2010-0145 that internal installation costs associated with the smart meter implementation had been excluded from the 2011 cost of service filing test year and are therefore not included in current rates.

Category	Labour	Approved	Requested			Total
		2009 Approved	2010	2011	Total Requested	
1.1.2	Full Time Permanent	\$ 152,367	\$ 97,739	\$ 11,184	\$ 108,924	\$ 261,291
1.1.2	Sub Contract	\$ 51,928	\$ 22,623			\$ 51,928
1.2.3	Full Time Permanent	\$ 110	\$ 3,063	\$ 178	\$ 3,241	\$ 3,351
Total	Total	\$ 204,404	\$ 123,426	\$ 11,362	\$ 112,165	\$ 316,569

VECC Question # 2

Reference 1: 2013 Smart Meter Model V3 20120829

Reference 2: Board Guideline G-2011-0001, Smart Meter Funding and Cost Recovery – Final Disposition, dated December 15, 2011, Page 19

Preamble: The Guideline states, “The Board views that, where practical and where data is available, class specific SMDRs should be calculated on full cost causality.”

- a) Please complete a separate smart meter revenue requirement model by customer class (including any adjustments resulting from interrogatory responses).
- b) Please re-calculate the SMDR & SMIRR rate riders based on full cost causality by rate class.
- c) Please provide a table that summarizes the total Smart Meter Rate Adder Revenue and associated interest collected by customer class.

Response:

- a) As discussed on pages 22 to 25 of our application, WHSI recorded all capital and OM&A costs to the Residential and GS<50 rate classes where those cost were directly attributable to those rate classes. Smart meters and their installation costs were tracked by job-specific numbers, so that the smart meter and installation costs for residential customers were charged directly to a residential job number. Likewise, smart meters and installation costs for GS<50 customers were charged to a GS<50 job number.

WHSI took the same approach for operation and maintenance expense incurred when WHSI field staff attend the site/meter in question.

All other costs that would be attributable to both rate classes were allocated based on the total number of smart meters installed between 2009 and 2011. As noted on page 26 of the application, residential meters accounted for 92.05% of total smart meters, and GS<50 accounted for 7.95%.

Given that the shared costs for software, hardware, collectors, and other shared capital, and costs for software maintenance, web presentment, data collection, and other commonly used services are based on the number of meters, WHSI believes this is the most reasonable approach to take for shared cost allocation.

WHSI submits that the combination of actual, direct class costs plus a pro-rata share of indirect costs based on the number of meters best reflects full cost causality.

In its original application, WHSI had calculated the percentage of total 2010 and 2011 capital costs as 65.82% Residential, and 34.18% GS<50. After the reclassification of costs between residential and GS<50 as discussed in VECC IRR# 1 above, and the removal of the \$4,033 credit amount as discussed in OEB Staff IRR # 2, the allocation of 2010 and 2011 capital costs are now 55.66% Residential and 44.34% GS<50. An updated Table 14 below reflects these changes.

Table 14 Updated

Smart Meter Capital Costs - 2010 - 2011											
Category	Shared Costs			% Allocation		Residential			GRAND TOTAL	Res %	GS<50 %
	2010	2011	Total	Res	GS<50	2010	2011	Total			
	A	B	C	D	E	F	G	H	L	M	N
						(A*D) Shared Costs	(B*D) (Shared Costs)	(F+G) (Shared Costs)	(H+K)	(H/L)	(K/L)
1.1.1 Direct Costs			\$ -			\$ 252,765	\$ 16,119	\$ 268,884	\$ 551,194		
1.1.2 Direct Costs						\$ 99,789	\$ 11,713	\$ 111,502	\$ 219,509		
1.1.2 Shared Costs			\$ -	92.05%	7.95%	\$ -	\$ -	\$ -	\$ -		
1.2.1 Shared Costs			\$ -	92.05%	7.95%	\$ -	\$ -	\$ -	\$ -		
1.2.2 Shared Costs	\$ 2,056	\$ 1,596	\$ 3,652	92.05%	7.95%	\$ 1,893	\$ 1,469	\$ 3,362	\$ 3,652		
1.2.3 Shared Costs	\$ 3,923	\$ 255	\$ 4,178	92.05%	7.95%	\$ 3,611	\$ 235	\$ 3,846	\$ 4,178		
1.3.1 Shared Costs	\$ 972		\$ 972	92.05%	7.95%	\$ 895	\$ -	\$ 895	\$ 972		
1.3.2 Shared Costs	\$ 75,121	\$ 21,445	\$ 96,566	92.05%	7.95%	\$ 69,149	\$ 19,740	\$ 88,889	\$ 96,566		
1.5.2 Shared Costs	\$ 9,700		\$ 9,700	92.05%	7.95%	\$ 8,929	\$ -	\$ 8,929	\$ 9,700		
1.5.3 Shared Costs	\$ 4,029	\$ 4,785	\$ 8,813	92.05%	7.95%	\$ 3,708	\$ 4,404	\$ 8,113	\$ 8,813		
1.6.3 Shared Costs	\$ 6,000	\$ 3,750	\$ 9,750	92.05%	7.95%	\$ 5,523	\$ 3,452	\$ 8,975	\$ 9,750		
Grand Total	\$ 101,801	\$ 31,831	\$ 133,632			\$ 446,262	\$ 57,132	\$ 503,394	\$ 904,335	55.66%	44.34%
									Original	65.82%	34.18%

This capital allocation was entered into Tab 10A. Cost_Alloc_SMDR, cells T25 and V25. The resulting revenue requirement as calculated on Tab 10A. for each rate class is summarized as follows;

SMDR	Residential	GS<50	Total
Return on Capital	\$ 77,961	\$ 62,105	\$ 140,066
Depreciation/Amortization/interest	\$ 103,634	\$ 82,557	\$ 186,191
Operating expense/interest	\$ 274,267	\$ 25,266	\$ 299,533
Revenue Requirement before Taxes/PILS	\$ 455,862	\$ 169,929	\$ 625,791
Grossed-up Taxes/PILS	\$ 1,240	\$ 462	\$ 1,701
Total Revenue Requirement	\$ 457,102	\$ 170,390	\$ 627,492

The 2013 revenue requirement as calculated on Tab 10B. Cost_Alloc_SMIRR is summarized as follows:

SMIRR	Residential	GS<50	Total
Return on Capital	\$ 25,899	\$ 20,632	\$ 46,530
Depreciation/Amortization/interest	\$ 42,239	\$ 33,648	\$ 75,887
Operating expense/interest	\$ 31,726	\$ 2,903	\$ 34,628
Revenue Requirement before Taxes/PILS	\$ 99,864	\$ 57,183	\$ 157,046
Grossed-up Taxes/PILS	\$ 7,963	\$ 4,559	\$ 12,522
Total Revenue Requirement	\$ 107,826	\$ 61,742	\$ 169,568

- b) Tab 10A. Cost_Alloc_SMDR, of the Smart Meter Model calculated the SMDR requirement by customer class based on the allocations of both direct costs and allocated costs as discussed in the original application.

With reference to OEB Staff IRR # 4, WHSI has also updated the OM&A expense in the Smart Meter Model to include 2013 estimated costs of \$34,628 and depreciation expense of \$78,635. After this adjustment and the capital adjustments as previously noted, the SMDR rate riders are summarized below:

Proposed Smart Meter Rate Riders						
	Residential			GS < 50		
	Original	Revised	Change	Original	Revised	Change
Smart Meter Disposition Rate Rider (SMDR)	\$ 0.29	\$ 0.12	\$ (0.17)	\$ 6.47	\$ 8.91	\$ 2.44
Smart Meter Incremental Revenue Requirement Rate Rider (SMIRR)	\$ 0.52	\$ 0.64	\$ 0.12	\$ 3.15	\$ 4.24	\$ 1.09
Total	\$ 0.81	\$ 0.76	\$ (0.05)	\$ 9.62	\$ 13.15	\$ 3.53

c)

	2010 SMFA	2011 SMFA	2012 SMFA	Collected	% of Total SMFA Collected	Allocation of Interest	Total SMFA + Interest
Residential	\$222,834	\$162,519	\$34,764	\$420,116	90.95%	\$11,650	\$431,766
GS<50	\$19,531	\$13,292	\$2,880	\$35,703	7.73%	\$990	\$36,693
GS 50- 999 kW	\$3,364	\$2,279	\$438	\$6,081	1.32%	\$169	\$6,249
GS>1,000 kW	\$0	\$24	\$17	\$40	0.01%	\$1	\$41
TOTAL	\$245,728	\$178,113	\$38,099	\$461,940	100%	\$12,809	\$474,750