REFERENCE:

Tab 9, 9.3.1, Page 6 of 18

PREAMBLE TO IR (IF ANY):

Manitoba Hydro describes impacts to residential electric customers as a class. We seek more detail focusing on customers on First Nations reserves.

QUESTION:

Please complete the following table, for each First Nation in the province, for 2016 (or the most recent data available):

Name of First Nation	Number of residential electric customers	Number of residential electric customers with electric space heat	Average annual consumption per residential electric customer (kWh)	Average monthly bill per residential electric customer	Average monthly bill with 7.9% increase (2017/18)	Average monthly bill with 7.9% increase (2018/19)

RATIONALE FOR QUESTION:

To better understand the impact of the rate increase sought on customers on First Nations reserves.

RESPONSE:

Please see the following table for the number of active electric services, the number of those active services that are all electric, and the actual average monthly usage and revenue for 2016/17. The average bill calculations are not weather normalized, therefore it is not possible to calculate the normal monthly bill with rate increases.

	Residential On First Nation Reserves			
First Nation Community	Active Electric Services	Active All Electric	2016/17 Avg Usage (kW.h	2016/17 Avg Monthly Bill
Barren Lands First Nation	138	0	14,161	$100
Berens River First Nation	313	199	25,093	$172
Birdtail Sioux Nation	119	114	26,477	$181
Bloodvein First Nation	196	173	27,513	$188
Brokenhead Ojibway First Nation	184	182	24,317	$166
Buffalo Point First Nation	182	151	17,821	$124
Bunibonibee (Oxford House) First Nation	418	179	31,160	$212
Canupawkpa Dakota First Nation	109	108	25,260	$173
Chemanwawin Cree Nation	320	270	32,735	$222
Dakota Plains First Nation	34	34	19,013	$132
Dakota Tipi First Nation	52	49	31,056	$210
Dauphin River First Nation	71	69	19,617	$136
Ebb And Flow First Nation	405	381	28,352	$194
Fisher River First Nation	478	398	23,975	$164
Fox Lake First Nation	71	62	29,299	$199
Gamblers First Nation	34	33	24,100	$166
Garden Hill First Nation	532	271	29,359	$199
Gods Lake First Nation	300	129	28,767	$196
Hollow Water First Nation	185	156	25,797	$176
Keeseekoowenin First Nation	160	153	25,924	$177
Kinonjeoshtegon First Nation	87	61	26,693	$182
Lake Manitoba First Nation	249	228	30,747	$209
Lake St Martin First Nation	3	2	29,438	$200
Little Black River First Nation	199	188	23,907	$164
Little Grand Rapids First Nation	267	178	26,738	$182
Little Saskatchewan First Nation	72	70	23,724	$163
Long Plains First Nation	356	352	27,146	$185
Manto Sipi Cree Nation	127	55	38,096	$257
Marcel Colomb First Nation	15	15	36,688	$248
Mathias Colomb First Nation	394	376	35,678	$241
Misipawistik (Grand Rapids) First Nation	245	231	30,434	$207
Mosakahiken Cree Nation	261	219	32,167	$219
Nischawayaksihk Cree Nation	509	483	35,566	$240
Northlands Dene First Nation	150	0	14,292	$101
Norway House Cree Nation	1206	1143	33,133	$225
O-Chi-Chak-Ko-Sipi First Nation	126	122	27,514	$188

	Residential On First Nation Reserves			
First Nation Community	Active Electric Services	Active All Electric	2016/17 Avg Usage (kW.h	2016/17 Avg Monthly Bill
O-PIPON-NA-PIWIN	218	199	31,599	$214
Opaskwayak (OCN) Cree Nation	736	638	28,277	$193
Pauingassi First Nation	124	81	23,187	$159
Peguis First Nation	836	739	29,701	$202
Pimicikamak Cree Nation	938	923	34,345	$232
Pinaymootang (Fairford) First Nation	349	295	26,159	$178
Pine Creek First Nation	215	202	28,294	$193
Poplar River First Nation	221	145	24,191	$166
Red Sucker Lake First Nation	203	91	28,428	$194
Rolling River First Nation	139	136	21,168	$146
Roseau River First Nation	202	164	31,251	$213
Sagkeeng First Nation	651	630	26,612	$182
Sandy Bay First Nation	552	544	35,562	$241
Sapotaweyak Cree Nation	251	246	28,314	$193
Sayisi Dene First Nation	119	0	10,794	$78
Shamattawa First Nation	183	0	18,085	$126
Sioux Valley First Nation	361	344	24,403	$168
Skownan First Nation	128	118	27,287	$186
St Theresa Point First Nation	604	307	33,693	$228
Swan Lake First Nation	148	141	22,879	$157
Tataskweyak (Split Lake) First Nation	401	376	37,015	$250
Tootinaowaziibeeng (Valley River) First Nation	108	98	31,501	$214
War Lake First Nation	36	30	27,992	$191
Wasagamack First Nation	272	128	31,902	$216
Waywayseecappo First Nation	436	397	30,747	$209
Wuskwi Sipihk First Nation	30	28	27,354	$187
York Factory First Nation	130	119	34,214	$231

REFERENCE:

Tab 9, 9.3.2, Page 7 of 18

PREAMBLE TO IR (IF ANY):

Manitoba Hydro describes impacts to general service customers as a class. We seek more detail focusing on customers on First Nations reserves.

QUESTION:

Please complete the following table, for each First Nation in the province, for 2016 (or the most recent data available):

Name of First Nation	Number of general service customers	Average annual consumption per general service customer (kWh)	Average monthly bill per general service customer	Average monthly bill with 7.9% increase (2017/18)	Average monthly bill with 7.9% increase (2018/19)

RATIONALE FOR QUESTION:

To better understand the impact of the rate increase sought on customers on First Nations reserves.

RESPONSE:

Please see the following table for the number of active electric services, the actual average monthly usage and revenue for 2016/17. The average bill calculations are not weather normalized, therefore it is not possible to calculate the normal monthly bill with rate increases.

First Nation Community	General Service On First Nation Reserves		
	Active Elec Services	2016/17 Avg Usage (kW.h)	2016/17 Avg Monthly Bill
Barren Lands First Nation	43	23,996	$2,717
Berens River First Nation	59	83,036	$552
Birdtail Sioux Nation	18	91,523	$566
Bloodvein First Nation	37	71,136	$464
Brokenhead Ojibway First Nation	38	76,900	$518
Buffalo Point First Nation	28	73,801	$475
Bunibonibee (Oxford House) First Nation	55	132,345	$870
Canupawkpa Dakota First Nation	18	33,097	$249
Chemanwawin Cree Nation	32	126,864	$807
Dakota Plains First Nation	9	69,139	$449
Dakota Tipi First Nation	8	67,879	$460
Dauphin River First Nation	16	24,381	$177
Ebb And Flow First Nation	27	124,413	$796
Fisher River First Nation	50	132,388	$834
Fox Lake First Nation	31	65,406	$459
Gamblers First Nation	5	37,559	$293
Garden Hill First Nation	48	175,390	$1,298
Gods Lake First Nation	58	93,280	$584
Hollow Water First Nation	28	78,605	$531
Keeseekoowenin First Nation	20	60,727	$421
Kinonjeoshtegon First Nation	13	71,931	$588
Lake Manitoba First Nation	22	89,908	$543
Lake St Martin First Nation	7	116,330	$767
Little Black River First Nation	26	76,212	$553
Little Grand Rapids First Nation	57	64,534	$411
Little Saskatchewan First Nation	12	76,108	$526
Long Plains First Nation	32	159,621	$1,015
Manto Sipi Cree Nation	37	75,097	$486
Marcel Colomb First Nation	6	83,485	$600
Mathias Colomb First Nation	45	114,285	$758
Misipawistik (Grand Rapids) First Nation	32	115,915	$744
Mosakahiken Cree Nation	24	112,459	$751
Nischawayaksihk Cree Nation	85	116,042	$725
Northlands Dene First Nation	54	27,333	$2,772
Norway House Cree Nation	126	132,840	$822
O-Chi-Chak-Ko-Sipi First Nation	18	61,905	$400
O-PIPON-NA-PIWIN	38	118,723	$723

	General Service On First Nation Reserves		
First Nation Community	Active Elec Services	2016/17 Avg Usage (kW.h)	2016/17 Avg Monthly Bill
Opaskwayak (OCN) Cree Nation	89	184,522	$1,093
Pauingassi First Nation	32	66,884	$436
Peguis First Nation	98	116,525	$668
Pimicikamak Cree Nation	84	98,490	$642
Pinaymootang (Fairford) First Nation	33	100,603	$574
Pine Creek First Nation	17	142,117	$1,029
Poplar River First Nation	38	84,021	$540
Red Sucker Lake First Nation	33	95,263	$604
Rolling River First Nation	22	61,933	$422
Roseau River First Nation	28	84,898	$563
Sagkeeng First Nation	64	135,302	$852
Sandy Bay First Nation	35	153,673	$958
Sapotaweyak Cree Nation	25	116,512	$769
Sayisi Dene First Nation	38	26,318	$2,693
Shamattawa First Nation	39	62,210	$5,768
Sioux Valley First Nation	36	79,166	$527
Skownan First Nation	17	79,815	$542
St Theresa Point First Nation	84	108,758	$701
Swan Lake First Nation	38	127,245	$747
Tataskweyak (Split Lake) First Nation	64	118,017	$750
Tootinaowaziibeeng (Valley River) First Nation	15	61,106	$434
War Lake First Nation	9	79,862	$520
Wasagamack First Nation	43	100,692	$666
Waywayseecappo First Nation	26	225,522	$1,302
Wuskwi Sipihk First Nation	10	48,370	$345
York Factory First Nation	24	119,917	$804

REFERENCE:

Tab 9, 9.2, Page 4 of 18

PREAMBLE TO IR (IF ANY):

Manitoba Hydro has introduced the idea of conservation rate designs in this Application.

QUESTION:

Please complete the following table for each First Nation in the province:

			Average annual consumption per residential customer (kWh)								
Name of First Nation	Cumulative number of participating customers in First Nation Power Smart Program	Number of customers retrofitted with insulation	2008	2009	2010	2011	2012	2013	2014	2015	2016

RATIONALE FOR QUESTION:

This question seeks to understand the impact of conservation rate designs on customers in First Nations reserves. Particularly, it seeks to understand the impact of Manitoba Hydro's prior conservation programs. The First Nation Power Smart Program was introduced in 2008 and implemented over the following years. This question seeks to understand the consumption savings that have been achieved will inform the extent to which further conservation may be possible.

RESPONSE:

Please see the attachment to this response for the information for each First Nation in the province.

An additional column has been added to indicate the number of customers who have received basic energy-efficiency items (e.g. low-flow showerheads, LED light bulbs etc.) through the Direct Install stream of the First Nation Power Smart program, in which funding is provided for local labour to install the basic energy efficiency measures.

Cumulative Participation to June 30, 2017				Average Annual Consumption per residential customer (kWh)									
Name of First Nations	Cumulative number of participating customers in First Nation Power Smart Program	Number of customers retrofitted with insulation	Number of customers retrofitted with Direct Install	2007/08*	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
Barren Lands First Nation(Brochet)	52	52	0	-	13,494	13,195	13,535	12,890	15,475	12,375	12,480	12,761	13,422
Beren's River First Nation	15	15	0	-	24,991	26,346	26,100	26,501	27,431	24,432	28,682	28,168	27,088
Birdtail Sioux First Nation(Beulah)	20	20	0	-	29,744	28,291	28,695	30,185	27,686	27,338	28,696	26,841	27,949
Bloodvein First Nation	43	43	0	-	27,210	27,614	28,596	29,443	28,716	26,002	31,774	29,987	29,384
Brokenhead Ojibway Nation (Scanterbury)	85	85	0	-	25,418	26,689	25,837	27,992	25,911	26,518	28,774	28,600	25,968
Buffalo Point First Nation	0	0	0	-	29,349	35,962	30,887	31,449	29,355	27,438	29,858	29,930	30,818
Bunibonibee Cree Nation (Oxford House)	45	45	0	-	27,569	27,428	29,065	31,620	27,223	28,722	32,148	33,649	32,683
Canupawakpa Dakota (Oak Lake) First Nation (Pipestone)	110	36	100	-	26,877	27,946	28,758	28,762	27,349	27,006	28,482	26,705	26,747
Chemawawin Cree Nation (Easterville)	45	45	0	-	30,956	32,825	33,537	33,375	33,379	31,459	34,743	33,602	34,608
Cross Lake First Nation	96	96	0	-	36,556	38,679	35,908	40,339	35,132	34,958	39,573	39,123	37,029
Dakota Plains First Nation (Portage la Prairie)	35	32	31	-	24,416	23,747	24,439	26,551	25,554	27,726	27,082	21,809	19,936
Dakota Tipi First Nation	51	20	50	-	38,701	35,734	34,914	35,656	33,442	36,160	34,871	32,318	32,375
Dauphin River First Nation (Gypsumville)	0	0	0	-	29,051	29,185	26,666	25,922	23,251	22,551	20,352	24,724	21,229
Ebb & Flow First Nation	20	20	0	-	32,929	31,767	32,320	32,699	31,390	30,839	32,061	30,678	30,500
Fisher River Cree Nation (Koostatak)	165	76	101	-	28,581	33,361	29,576	32,071	29,243	28,499	29,255	26,737	25,955
Fox Lake First Nation (Gillam)	40	0	40	-	19,750	31,261	30,584	32,380	31,758	30,026	32,239	31,715	33,717
Gamblers First Nation (Binscarth)	33	13	21	-	24,766	26,899	26,151	27,984	26,838	26,718	29,459	27,402	26,877
Garden Hill First Nation (Island Lake)	67	65	35	-	23,363	24,752	25,390	27,522	26,603	27,358	30,845	31,466	31,197
God's Lake First Nation (God's Lake Narrows)	118	101	21	-	26,109	28,416	27,545	31,546	29,187	29,262	31,872	31,806	30,820
Hollow Water First Nation (Wanipigow)	0	0	0	-	27,550	28,429	27,966	30,205	29,790	29,077	31,298	28,708	27,590
Keeseekoowenin Ojibway Nation (Elphinstone)	136	47	89	-	28,312	26,729	29,324	29,142	28,664	26,638	29,206	27,632	28,213
Kinonjeoshtegon First Nation (Jackhead)	67	60	40	-	31,025	32,493	32,292	32,721	31,884	26,054	29,604	29,995	28,513
Lake Manitoba First Nation (Dog Creek)	119	59	79	-	32,190	32,575	32,072	33,996	32,525	31,605	34,099	33,078	33,042
Lake St. Martin First Nation	0	0	0	-	29,448	28,006	29,819	12,077	18,809	15,629	18,852	31,450	28,727
Little Black River First Nation (O'Hanley)	68	68	0	-	27,661	28,625	26,667	28,463	27,843	25,196	28,791	26,249	24,879
Little Grand Rapids First Nation	18	15	15	-	27,012	29,090	28,502	31,246	30,694	28,525	35,890	28,191	28,153
Little Saskatchewan First Nation	0	0	0	-	31,108	31,988	30,616	28,196	27,472	24,523	22,326	22,702	25,431
Long Plain First Nation	124	96	37	-	30,135	32,179	31,578	33,037	30,903	31,508	31,227	30,486	28,698
Manto Sipi Cree Nation (God's River)	86	62	40	-	37,525	33,205	40,128	44,402	39,566	40,474	41,545	42,202	40,460
Marcel Colomb First Nation Black Sturgeon (Lynn Lake)	0	0	0	-	-	-	-	-	31,660	33,545	41,813	37,711	33,259
Mathias Colomb Cree Nation (Pukatawagan)	55	55	0	-	36,746	38,690	34,756	37,848	37,827	36,693	36,852	37,641	38,818
Misipawistik (Grand Rapids)	126	25	120	-	31,423	32,609	33,235	34,670	32,547	30,333	31,874	32,432	32,252
Mosakahiken (Moose Lake)	29	29	0	-	31,929	32,611	33,553	34,845	33,886	33,510	35,888	35,485	35,427
Nisichawayasihk (Nelson House)	380	19	375	-	36,227	37,496	37,849	44,015	43,035	36,570	39,069	39,850	37,099
Northlands Dene (Lac Brochet)	47	47	0	-	12,846	13,146	13,004	14,254	14,093	13,174	15,978	14,173	12,490
Norway House	15	15	0	-	33,744	33,160	33,891	36,661	33,436	32,626	35,622	36,161	35,338
O-Chi-Chak-Ko-Sipi (Crane River)	60	9	52	-	30,601	32,599	31,614	33,429	32,639	31,845	33,859	32,287	29,150

Cumulative Participation to June 30, 2017				Average Annual Consumption per residential customer (kWh)									
Name of First Nations	Cumulative number of participating customers in First Nation Power Smart Program	Number of customers retrofitted with insulation	Number of customers retrofitted with Direct Install	2007/08*	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
Opaskwayak (OCN)Pas	214	142	100	-	29,169	30,049	30,255	31,783	30,460	29,515	31,011	30,753	30,142
O-Pipon-Na-Piwin (South Indian Lake)	25	20	9	-	32,158	32,690	31,457	34,605	34,444	31,263	33,558	30,709	25,306
Pauingassi (Pauingassie)	0	0	0	-	22,537	24,265	22,584	25,343	25,180	25,854	31,127	24,383	24,574
Peguis	165	110	60	-	34,988	35,962	35,321	36,243	34,063	32,277	35,117	31,578	31,225
Pinaymootang (Fairford)	11	11	0	-	31,463	31,642	29,832	30,336	29,307	28,180	31,769	30,186	30,215
Pine Creek (Camperville)	111	45	68	-	29,284	31,776	31,026	31,349	30,411	28,368	30,208	29,572	29,798
Poplar River (Negginan)	128	97	80	-	29,097	28,551	28,663	31,644	29,232	27,586	29,803	29,557	25,599
Red Sucker Lake (Island Lake)	142	107	99	-	23,983	24,439	24,969	27,872	28,016	27,671	31,016	30,619	30,300
Rolling River (Erickson)	20	20	0	-	22,054	22,659	22,371	23,144	21,628	20,867	22,174	22,287	22,394
Roseau River (Anishinabe)	106	95	40	-	32,383	33,681	33,856	34,871	32,490	32,146	33,762	32,952	33,461
Sagkeeng (Fort Alexander)	459	50	445	-	29,669	29,779	29,583	30,979	29,375	28,176	29,754	29,132	28,359
Sandy Bay (Marius)	479	143	474	-	36,187	37,109	37,988	39,924	38,667	36,864	39,858	38,650	37,917
Sapotaweyak (Pelican Rapids)	61	61	0	-	28,088	28,675	30,944	33,257	31,677	30,169	31,889	33,089	30,310
Sayisi Dene (Tadoule Lake)	67	27	40	-	10,338	10,489	10,359	11,088	10,738	11,326	10,135	10,754	8,809
Shamattawa	15	15	0	-	15,528	16,104	17,039	17,623	17,318	18,289	19,259	19,178	27,955
Sioux Valley (Griswold)	360	285	302	-	26,518	27,007	27,364	28,129	27,172	26,563	27,677	26,324	26,308
Skownan (Waterhen)	40	40	0	-	29,502	31,542	30,163	34,400	30,306	28,936	32,989	29,927	29,588
St. Theresa Point (Island Lake)	90	78	76	-	24,581	23,636	30,423	31,648	29,115	30,871	34,890	36,216	35,777
Swan Lake	0	0	0	-	25,714	26,073	26,283	27,103	24,115	24,341	26,652	24,737	24,511
Tataskweyak (Split Lake)	39	39	0	-	38,966	37,895	40,205	44,833	42,148	39,583	41,592	43,219	38,361
Tootinaowaziibeeng (Valley River)	46	46	0	-	31,629	31,455	32,703	33,866	33,458	32,149	35,439	34,943	34,086
War Lake (Ilford)	0	0	0	-	29,303	34,105	32,798	33,562	30,355	31,978	31,853	34,169	32,353
Wasagamack	45	61	0	-	21,434	22,157	24,372	26,201	25,827	26,456	31,855	33,098	34,368
Waywayseecappo	289	129	238	-	32,253	34,031	33,195	34,259	33,573	31,774	33,612	32,112	32,651
Wuskwi Sipihk (Birch River)	24	8	21	-	26,042	29,302	35,655	35,973	34,950	33,510	33,680	30,060	29,942
York Factory (York Landing)	52	52	0	-	31,824	30,812	32,509	35,512	33,330	31,465	32,227	31,967	34,367
TOTAL	**5358**	**3051**	**3298**	-	**28,387**	**29,349**	**29,472**	**30,801**	**29,517**	**28,557**	**30,793**	**30,073**	**29,437**
*Consumption data for 2007/08 is unavailable.													

REFERENCE:

Appendix 10.5, 2.0, Page 7 of 242

PREAMBLE TO IR (IF ANY):

In Appendix 10.5, Manitoba Hydro Bill Affordability Collaborative Process, Summary Report & Recommendations, p 7 of 242, it is stated: "The Working Group's research and findings also illuminate where more work and future study is most needed. Research gathered over the course of the Working Group's mandate makes clear that households in First Nations, remote and rural communities are most likely to be affected by energy poverty and also most likely to have unpaid Manitoba Hydro bills. The geographically disparate nature of these communities poses a considerable challenge for effective data collection, however, and additional research may further identify specific program enhancements that could prove most useful for these groups."

QUESTION:

Have any steps been taken toward carrying out additional research to further identify specific program enhancements that could prove most useful for on-reserve First Nations households affected by energy poverty?

If so, please specify.

If not, please explain what steps MH intends to take in the future to respond to this identified need.

RATIONALE FOR QUESTION:

RESPONSE:

Yes, Manitoba Hydro has undertaken additional research for on-reserve First Nations households with respect to energy poverty. An Indigenous Voices Omnibus Survey was conducted by Probe Research Inc. in March 2017. Please see the attachment to this response for the results of the survey.

In addition, Manitoba Hydro continues to seek feedback on potential enhancements to its Affordable Energy Program, including its Indigenous Power Smart Program, from key stakeholder groups through its Affordable Energy Program Advisory Committee.

INDIGENOUS VOICES OMNIBUS SURVEY 2017

MANITOBA HYDRO

PROBE RESEARCH INC.

METHODOLOGY

Since 2004, Probe Research Inc. has surveyed thousands of First Nations and Métis people across Manitoba. This 2017 Indigenous Voices survey marks the sixth wave of Probe's large-scale, dedicated survey of Indigenous people – their views, preferences and experiences.

SURVEY INSTRUMENT

The survey instrument was designed by Probe Research in close consultation with clients and with advice and guidance from Probe's Indigenous Advisory Committee.

SAMPLE FRAMEWORK

Between March 6 and 29, 2017, Probe Research conducted telephone interviews with 500 First Nations and Métis people in Manitoba. Probe Research employed a multi-model sampling strategy to access this defined sub-population.

- A total of 224 eligible respondents were identified based on previous Probe surveys in which respondents defined themselves as Indigenous people.
- To ensure a representative proportion of on- and off-reserve First Nations people were included in the sampling, data collection was augmented by targeted in-bound calling to selected northern and remote First Nations communities as well as to residents of urban areas with higher proportions of Indigenous peoples, as defined by the 2011 National Household Survey. This netted a further 247 respondents.
- Finally, 29 respondents were contacted based on personal referrals from among the 471 respondents noted above.

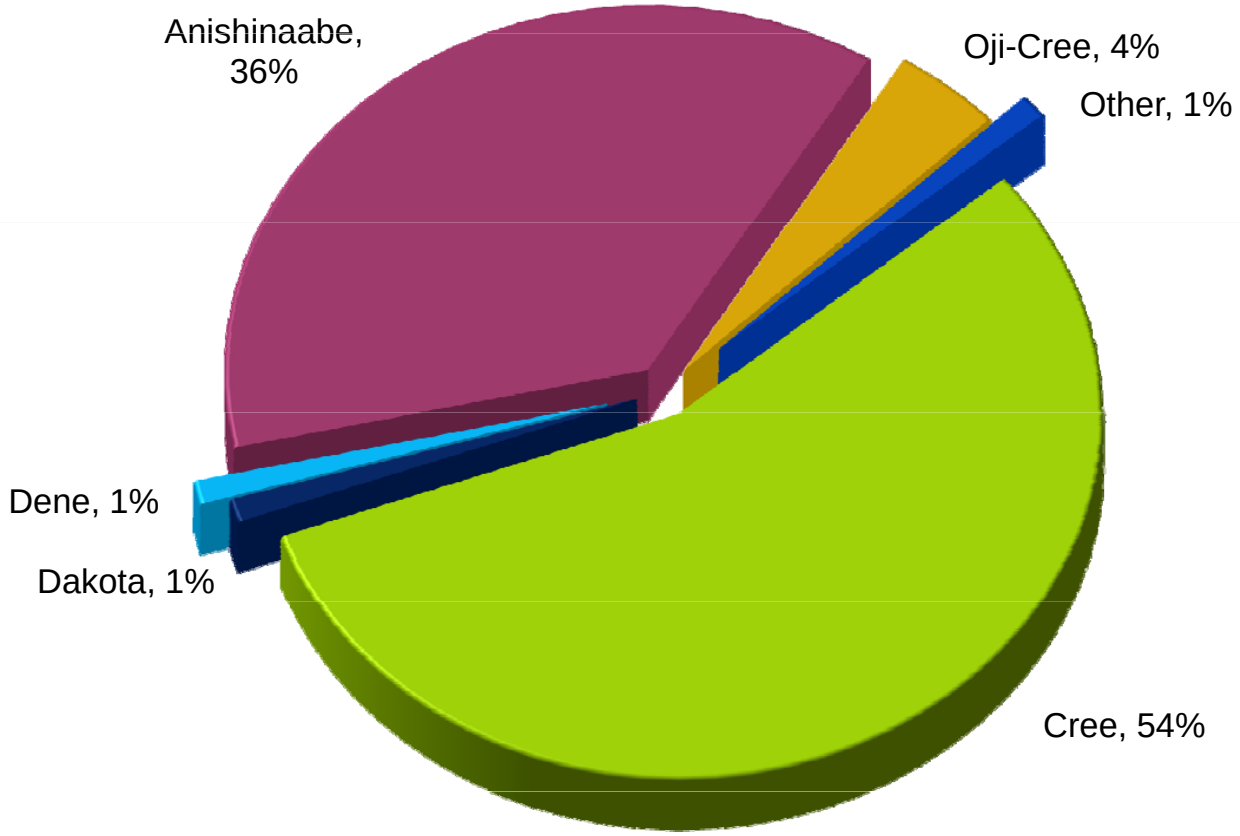
Research Methodology

Survey 500 Métis and First Nations people by telephone, including cell phone. This ensures a random and representative sample that reflects the actual demographics of the province's Indigenous peoples, including those who live on-reserve.

Indigenous Identity	Total 195,000	%	Approx. # of Surveys
First Nation living on-reserve	61,685	31%	155
First Nation living off-reserve	52,540	27%	140
Métis	78,835	40%	200
Inuit/multiple Indigenous identities	580	<1 %	5
Region	**Total 195,900**	**%**	
Winnipeg	72,485	37%	185
South/West Manitoba	56,810	29%	145
Northern Manitoba	66,605	34%	170

First Nations Identity

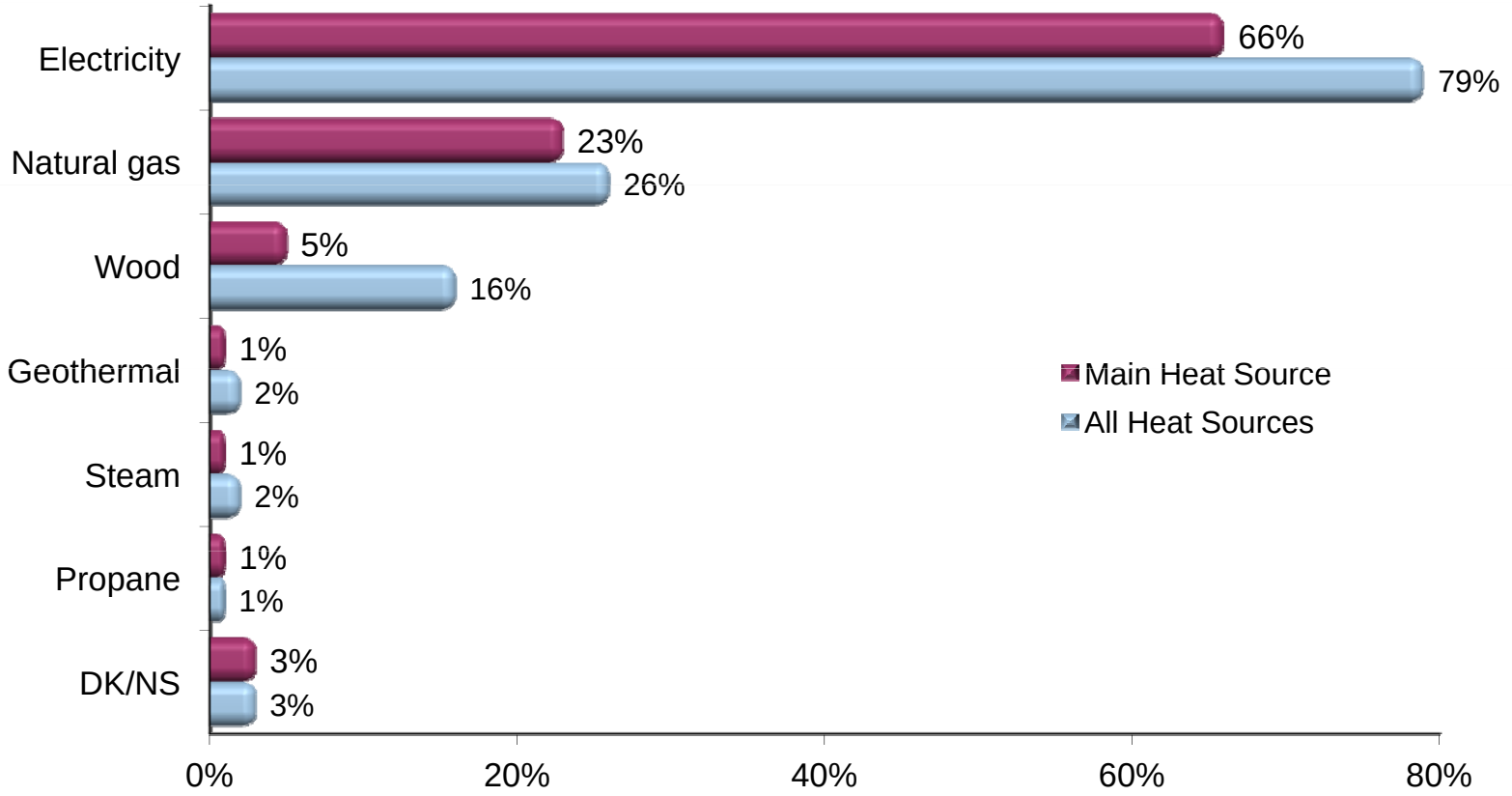
S7. *"Please tell me a little more about your First Nations identity. Are you…?" (n=297)*



Base: First Nations respondents. Multiple mentions accepted

Home Heating Energy Source

MH2A. "*Now, thinking about your household, what is the main energy source used to heat your home? Is it electricity, natural gas, wood, propane, oil, geothermal, or something else? What other energy sources do you use to heat your home?" (n=500)*



Base: All respondents
Multiple mentions accepted

Responsibility for Manitoba Hydro Bill

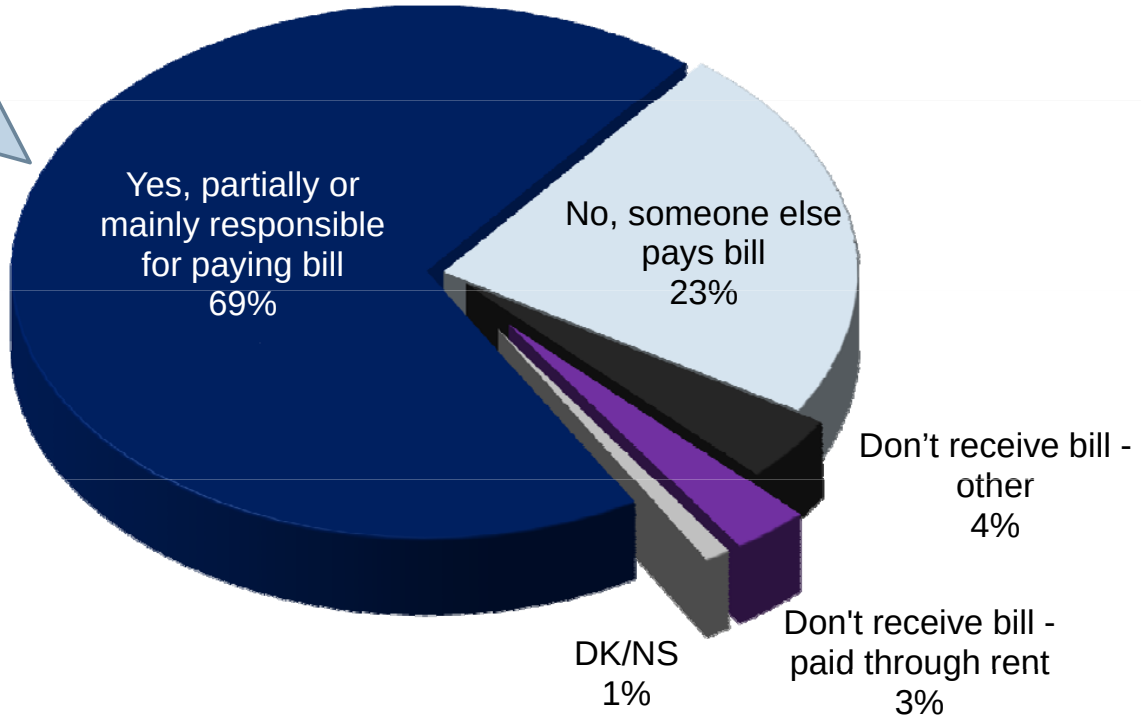
MH3A. *"Are you partly or mainly responsible for paying your home's Manitoba Hydro energy bill for any electricity or natural gas you use, or does someone else usually pay those bills?" (n=500)*

Higher among:

- Middle-aged adults 35-54 (79%)
- Post-secondary grads (79%)

Lower among:

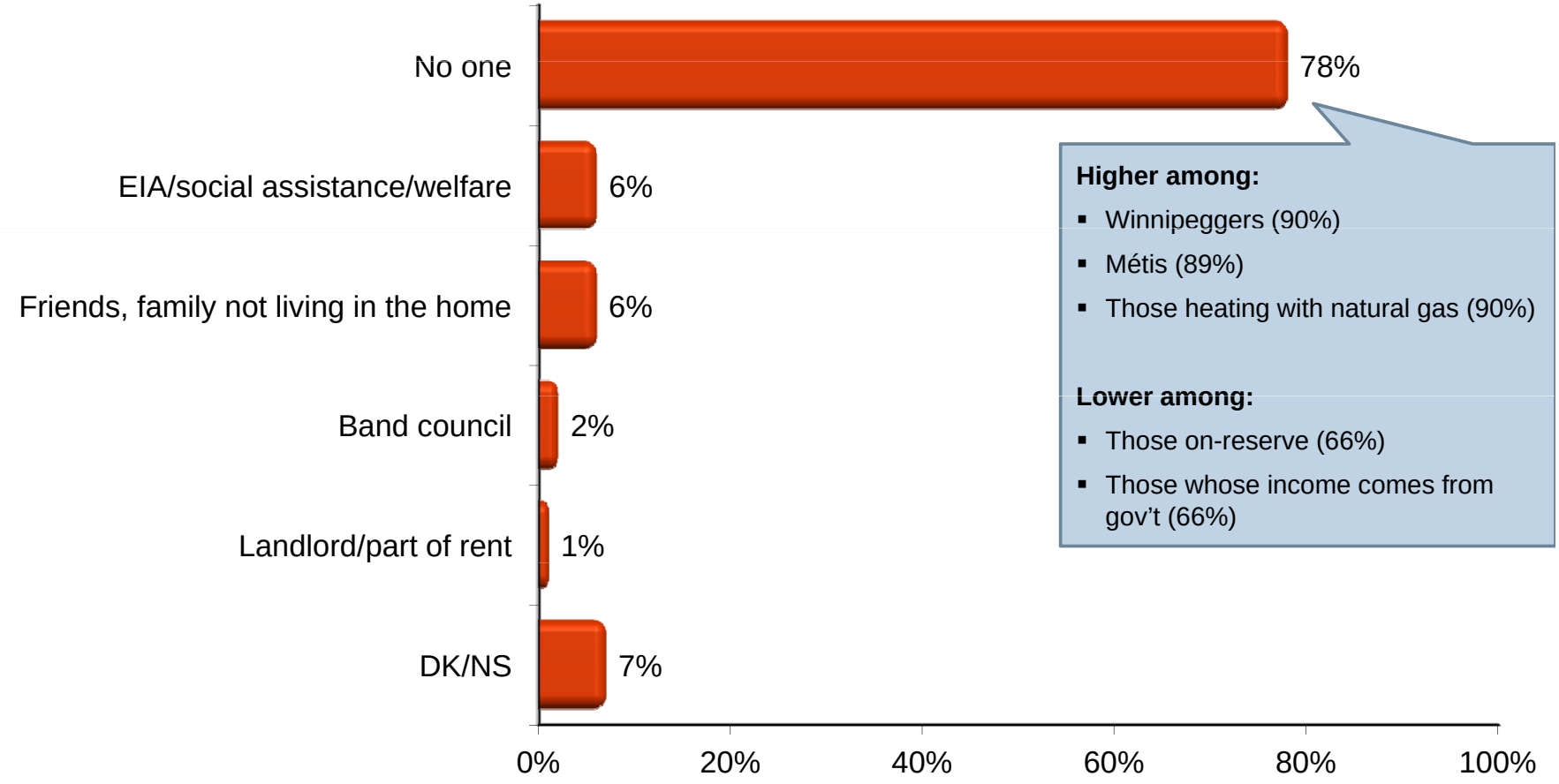
- Younger adults 18-34 (55%)
- Those not employed (55%)
- Low-income households <$30K (56%)



Base: All respondents

Additional Contributors to Energy Bill

MH3C. "*Who, if anyone, from outside your home contributes to your Manitoba Hydro energy bill? Anyone else?*" *(n=459)*



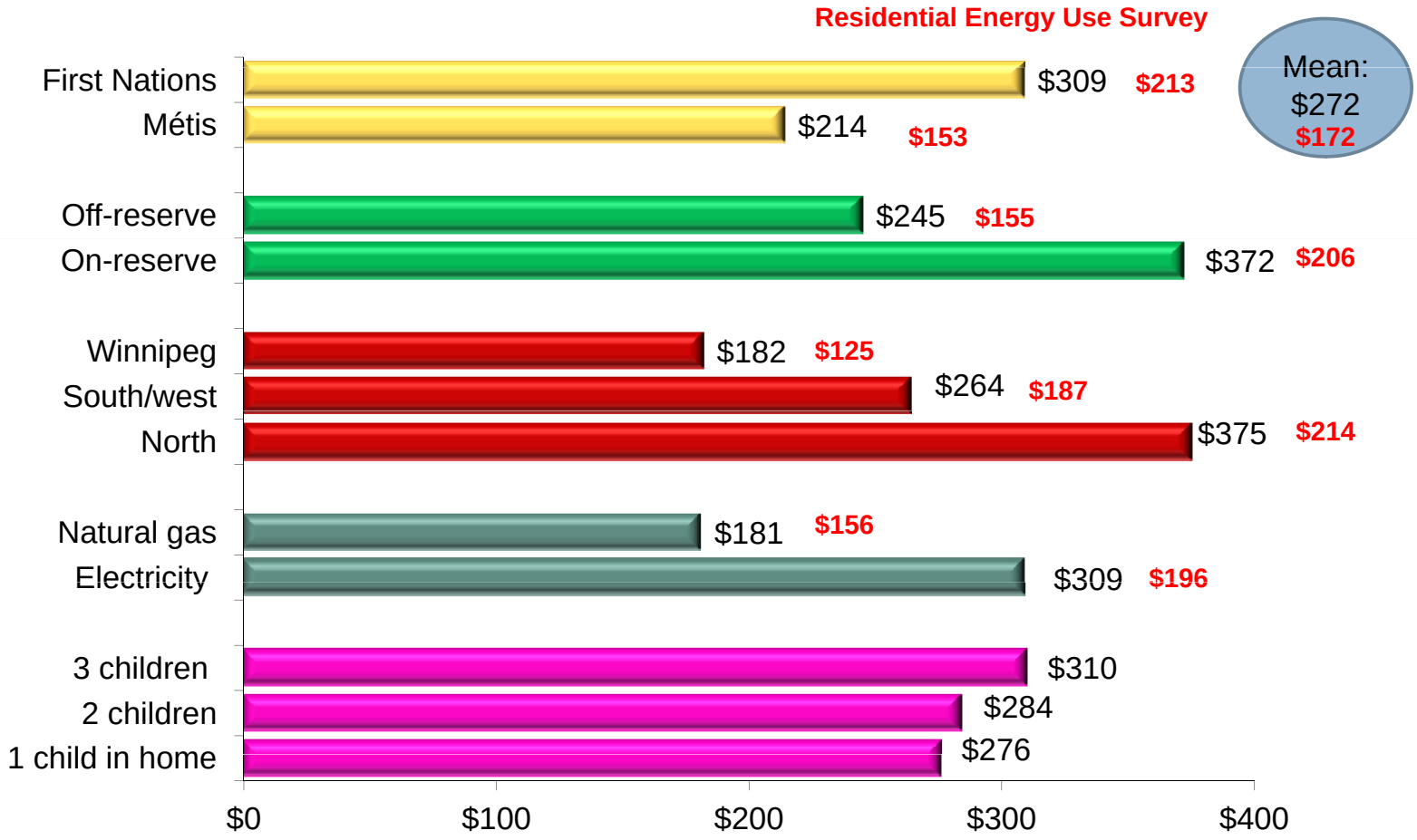
Base: Respondents receiving a Manitoba Hydro bill

PROBE RESEARCH INC.

Average Monthly Energy Bill

- Across Socio-Demographic Subgroups -

MH3B. *"Approximately how much is your Manitoba Hydro energy bill every month? This includes both natural gas and electricity, if either or both of these are supplied by Manitoba Hydro in your home?" (n=459)*

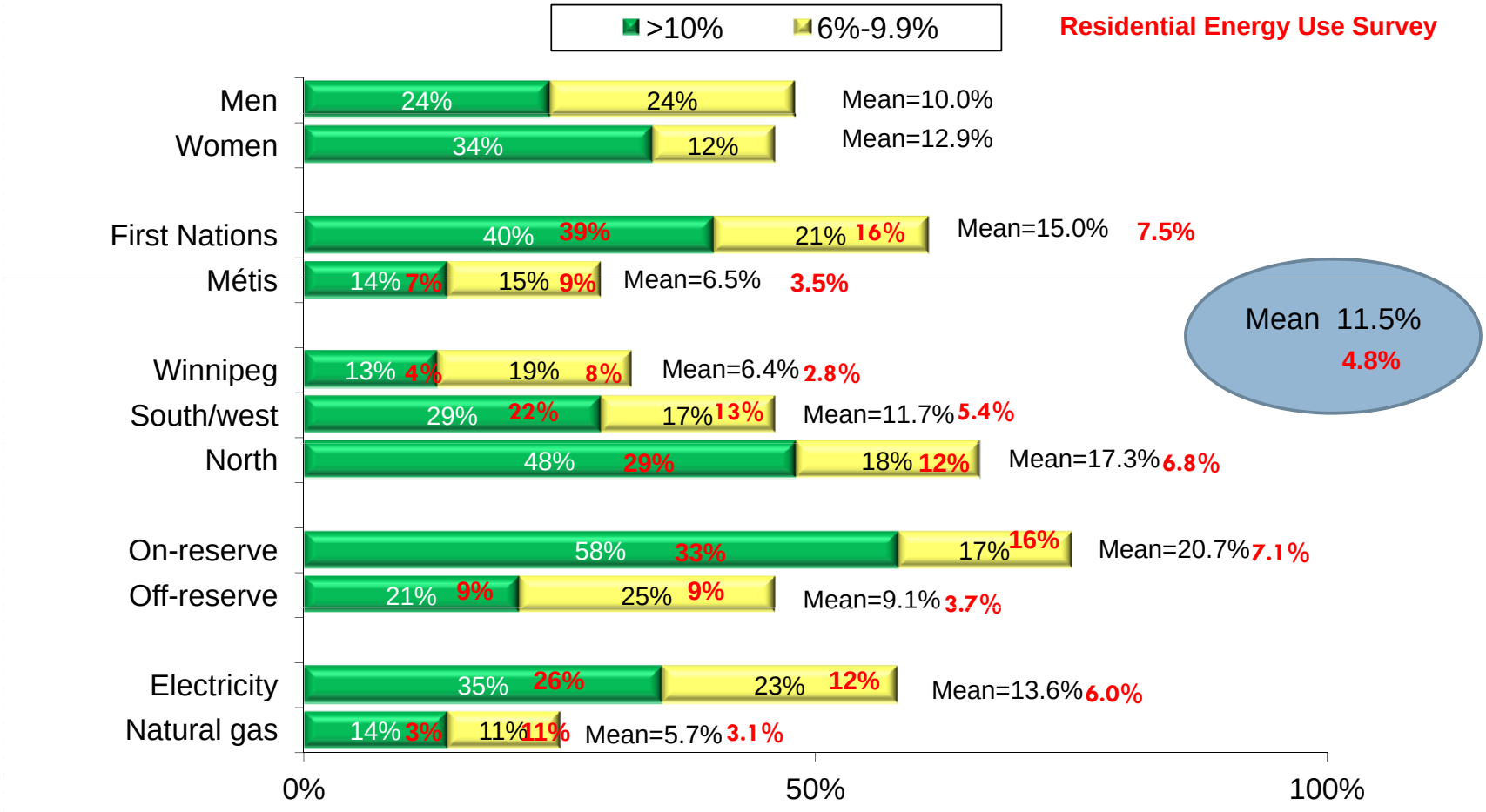


Base: Respondents receiving a Manitoba Hydro bill

PROBE RESEARCH INC.

Energy Burden

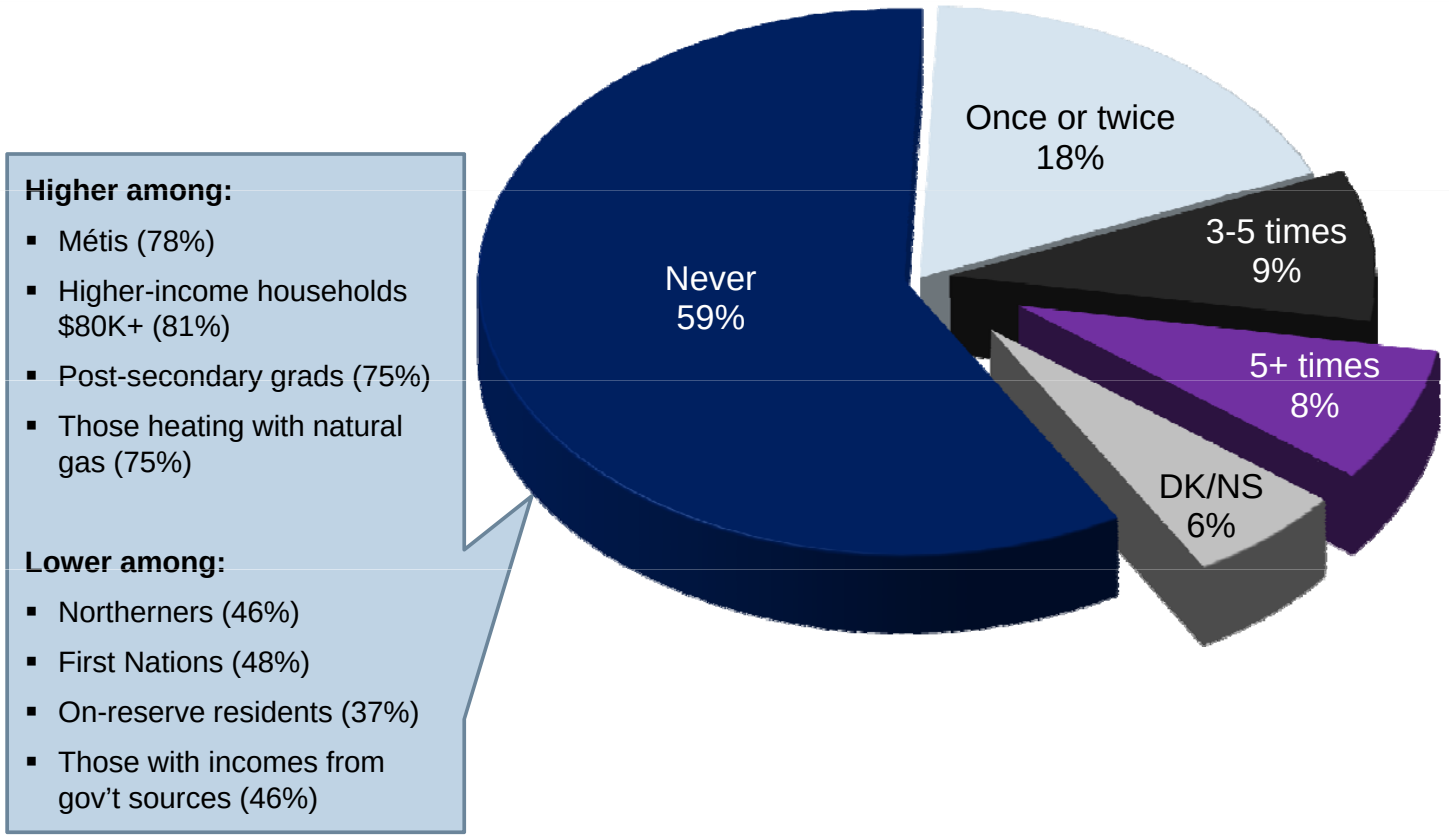
- Across Socio-Demographic Subgroups *(n=329)*



Base: Respondents receiving a Manitoba Hydro bill. Excluding outliers and those for whom no income data was available.
Energy Burden is the percentage of total income spent on household Manitoba Hydro energy bill.

Bill Payment Delinquency

MH3D. *"In the last two years, how many times, if any, have you missed a bill payment to Manitoba Hydro?" (n=459)*

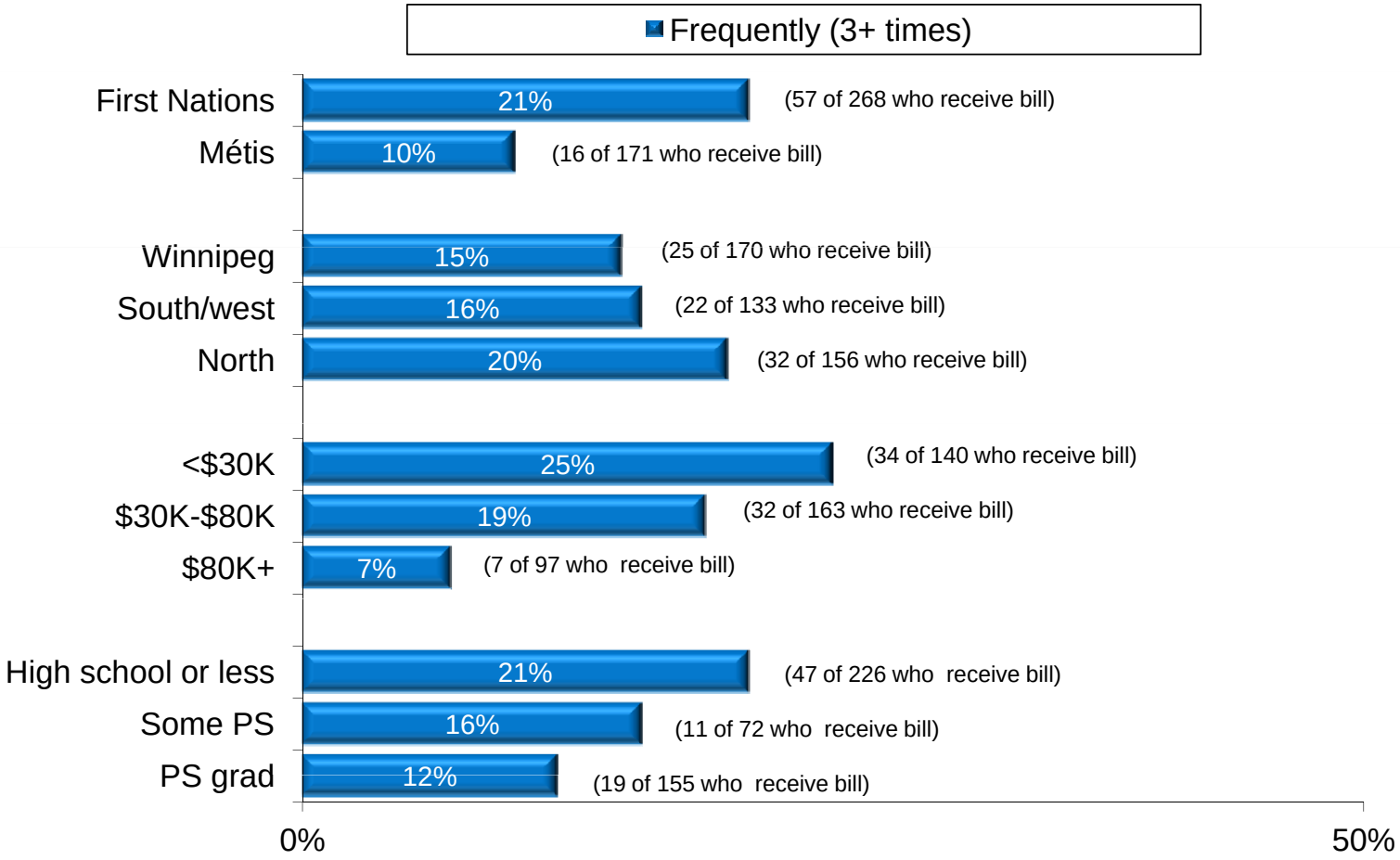


Base: Respondents receiving a Manitoba Hydro bill

Bill Payment Delinquency

- Across Socio-Demographic Subgroups -

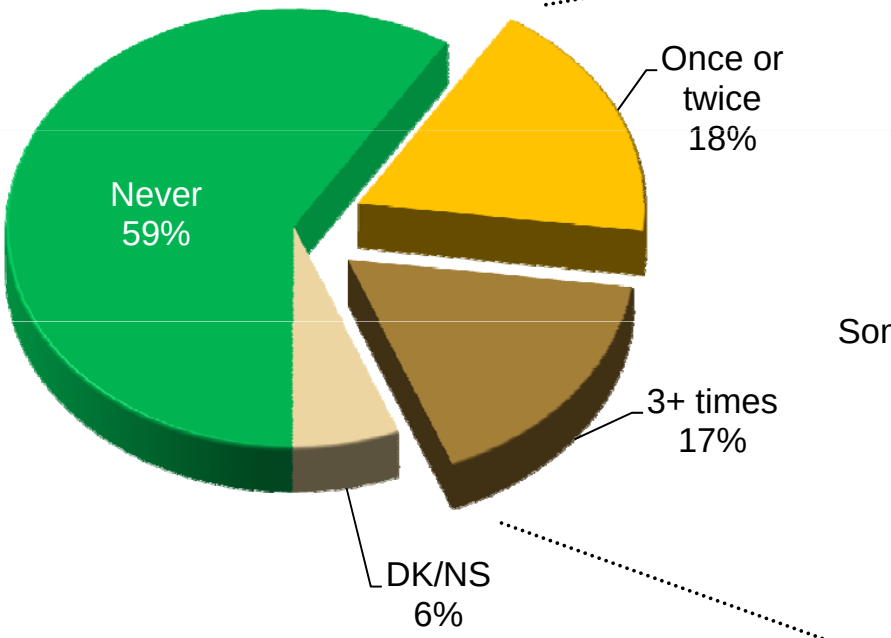
MH3D. *"In the last two years, how many times, if any, have you missed a bill payment to Manitoba Hydro?" (n=459)*



Base: Respondents receiving a Manitoba Hydro bill

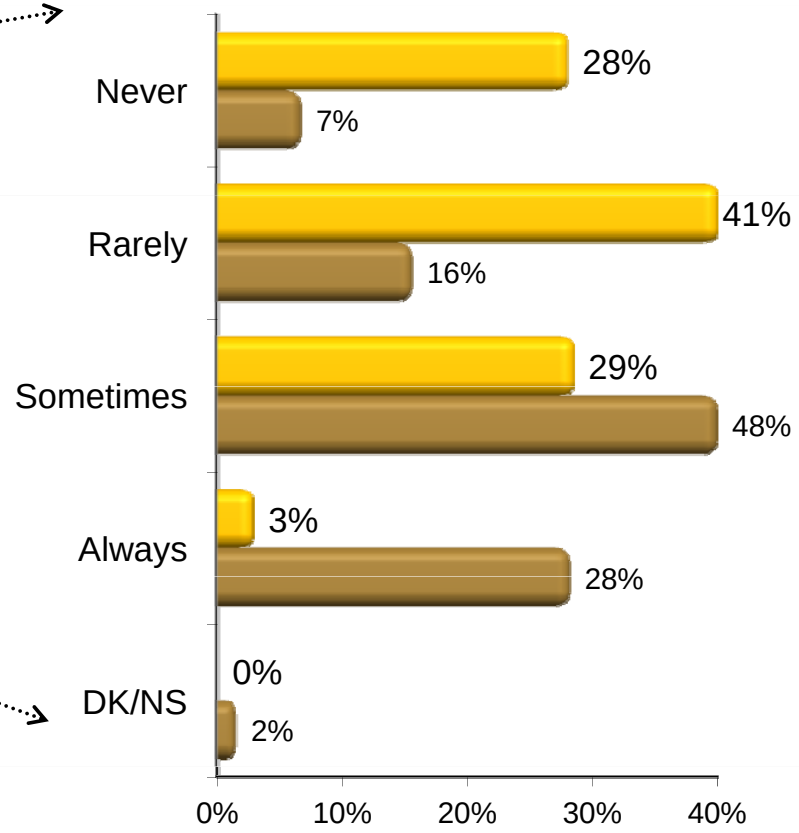
Financial Shortfall as Rationale for Missed Bill Payments

MH3D. *"In the last two years, how many times, if any, have you missed a bill payment to Manitoba Hydro?" (n=459)*



Base: Respondents receiving a Manitoba Hydro bill

MH3E. *"How often did you miss a payment because you couldn't afford the bill?" (n=81 Once or Twice; n=77 3 + Times)*

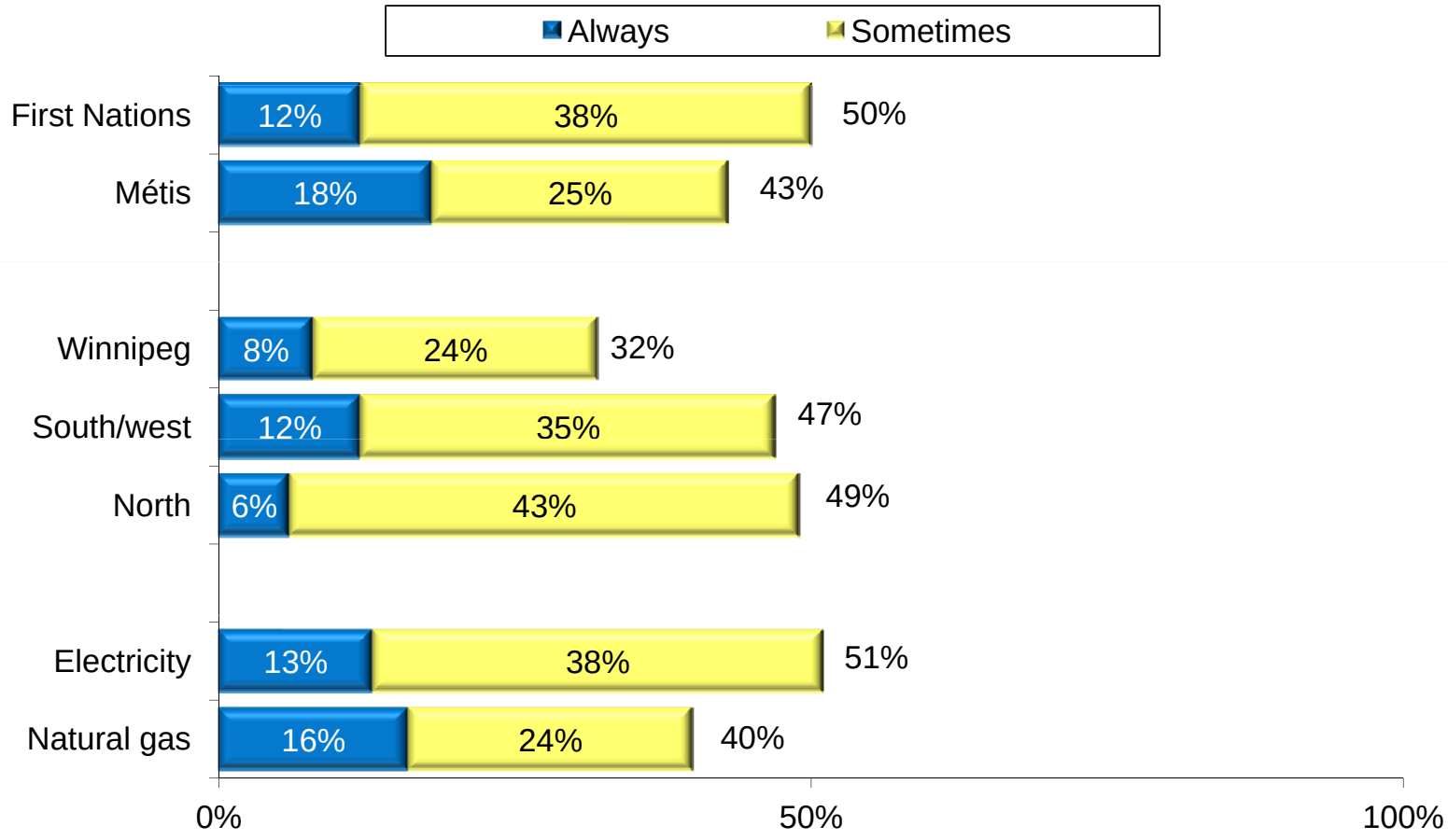


Base: Respondents receiving a Manitoba Hydro bill who have missed a payment in the last two years

Financial Shortfall as Rationale for Missed Bill Payments

- Across Socio-Demographic Subgroups -

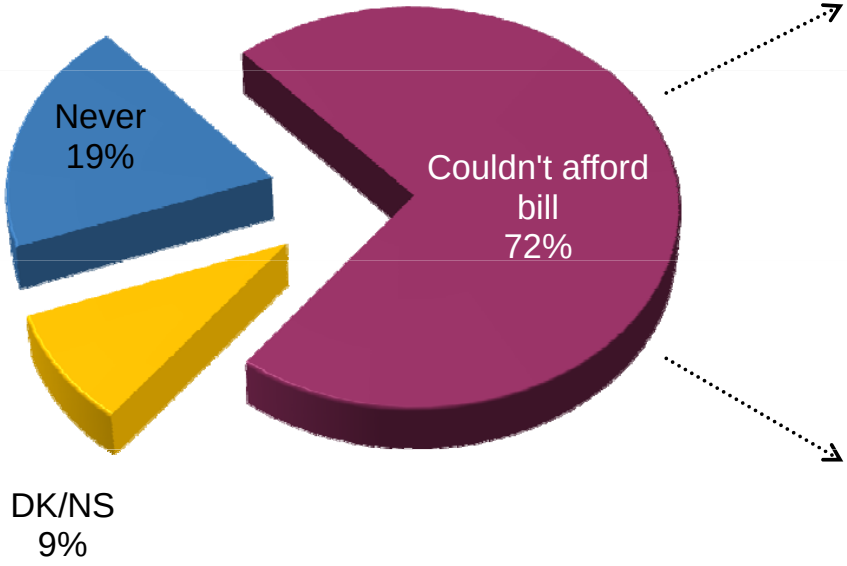
MH3E. *"How often did you miss a payment because you couldn't afford the bill?" (n=187)**



Base: Respondents receiving a Manitoba Hydro bill who have missed a payment in the last two years
*Caution: Small base

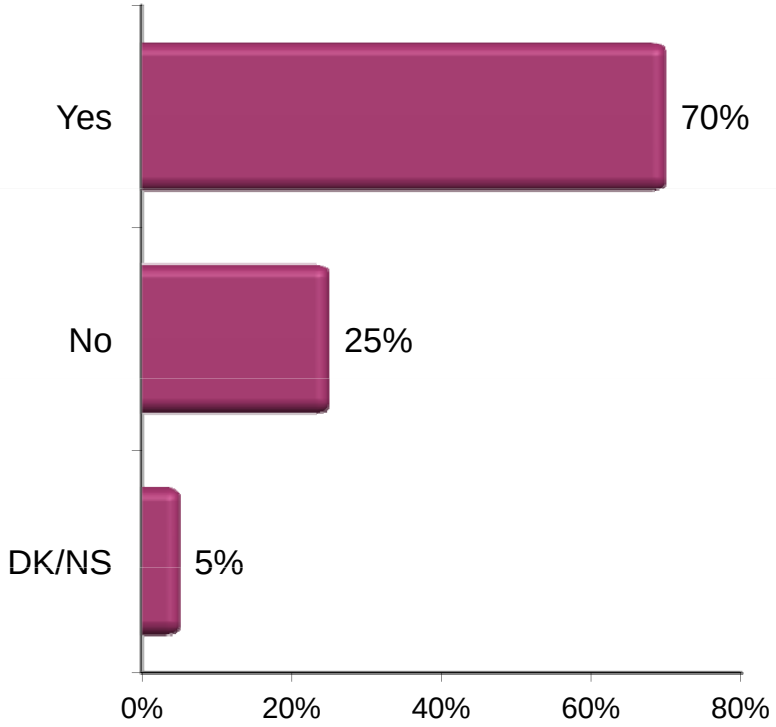
Use of Payment Plan Among Delinquent Manitoba Hydro Customers

MH3E. *"How often did you miss a payment because you couldn't afford the bill?" (n=187)*



Base: Respondents receiving a Manitoba Hydro bill who have missed a payment in the last two years

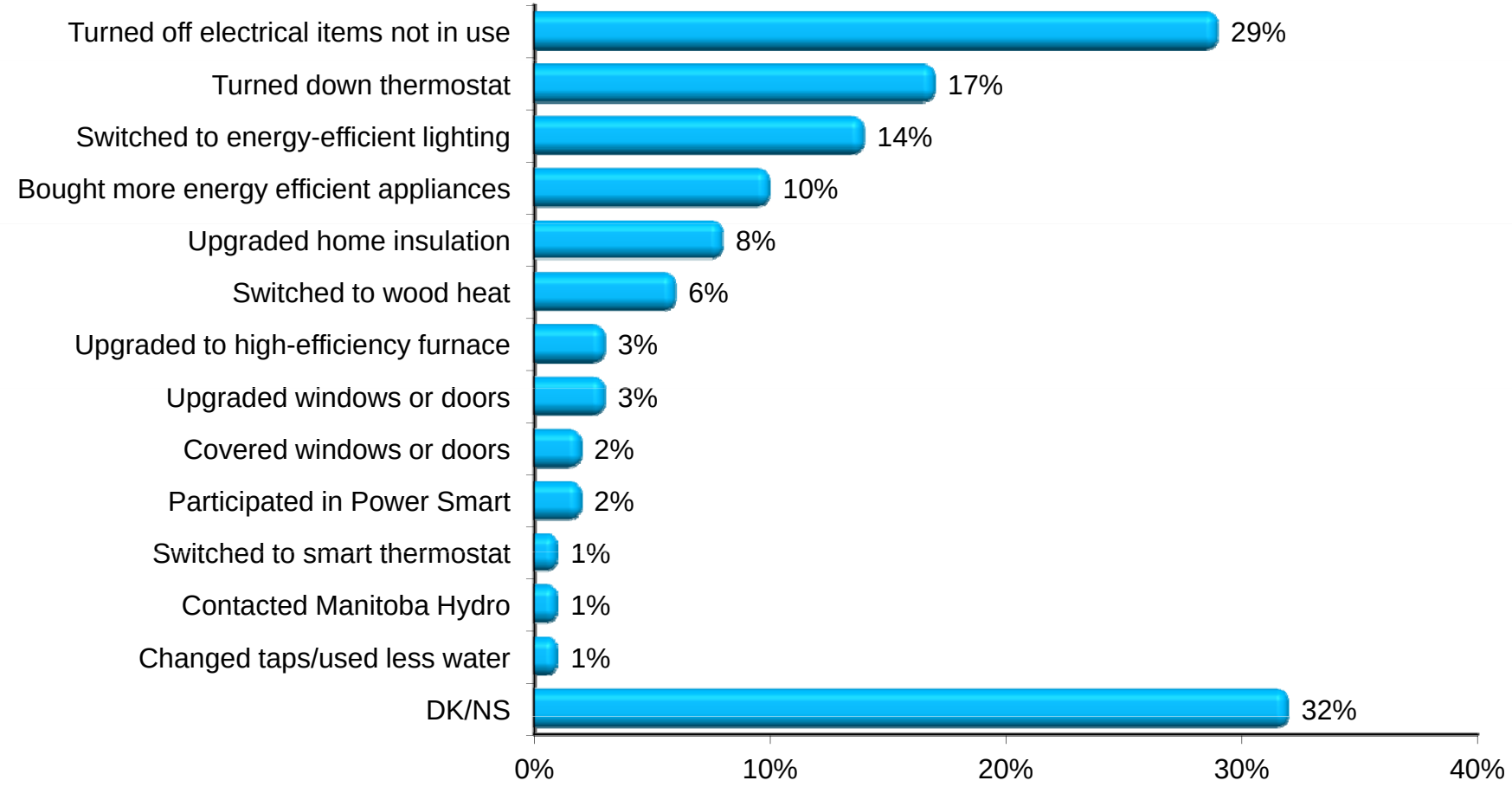
MH3F. *"In the last two years, have you ever arranged with Manitoba Hydro to pay an overdue bill at a later date or as part of a payment plan?" (n=136)**



Base: Respondents receiving a Manitoba Hydro bill who have missed a payment in the last two years due to financial shortfall
*Caution: Small base

Common Energy Conservation Activities Among Delinquent Customers

MH3G. *"What, if anything, have you done recently to save energy in your home and lower your Manitoba Hydro bill? Anything else?" (n=136)**



Base: Respondents receiving a Manitoba Hydro bill who have missed a payment in the last two years due to financial shortfall
*Caution: Small base

REFERENCE:

Appendix 10.5, 3.1, Page 8 of 242

PREAMBLE TO IR (IF ANY):

CITATION 1 (p. 8 of 242): Indigenous & Northern Affairs Canada withdrew from the process on April 5, 2016, noting the federal government does not have jurisdiction over Manitoba Hydro rates.

CITATION 2 (letter from PUB, p. 218 of 242): Recognizing legal jurisdictional matters related to First Nations, the Federal Government ought to be included in the Collaborative Process.

QUESTION:

Please provide a copy of the letter or other written communication by which INAC signified its withdrawal from the process.

RATIONALE FOR QUESTION:

RESPONSE:

Please see the Attachment to this response for a copy of the communication by INAC to the facilitator of the collaborative process. While INAC was invited to participate, it declined to do so, citing jurisdictional reasons.

FIRST PERSON STRATEGIES

Katie Krahn <katie@firstpersonstrategies.com>

Hydro Bill Affordability - Action Items from Kickoff Meeting April 1, 2016

Diana Watson <Diana.Watson@aadnc-aandc.gc.ca> Tue, Apr 5, 2016 at 9:54 AM
To: "Seymour, Katie" <katie@firstpersonstrategies.com>
Cc: "Embuldeniya, Winona" <Winona.Embuldeniya@aandc-aadnc.gc.ca>, "Gustafson, Cliff" <Cliff.Gustafson@aandc-aadnc.gc.ca>, "Moore, David" <David.Moore@aandc-aadnc.gc.ca>

Hi Katie,

We have had a chance to further review the terms of reference and will not be participating in this review process. While INAC does have certain responsibilities for First Nations, the federal government does not have jurisdiction regarding hydro rates in the province of Manitoba. Thanks very much,

Diana

Diana Watson

Manager, Capital and Housing Services
Indigenous and Northern Affairs Canada / Government of Canada
diana.watson@aandc.gc.ca / Tel: 204-984-1048 / TTY: 1-866-553-0554

Gestionnaire, Services d'immobilisations et logement Affaires autochtones et du Nord Canada / Gouvernement du Canada
diana.watson@aadnc.gc.ca / Tél: 204-984-1048 / ATS: 1-866-553-0554
>>> Katie Seymour <katie@firstpersonstrategies.com> 4/4/2016 2:53 PM >>>
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noname
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REFERENCE:

Appendix 10.5, 5.2, Page 16 of 242

PREAMBLE TO IR (IF ANY):

Manitoba Hydro's 2014 Residential Energy Use Survey (REUS) indicates that approximately 14% of Manitoba households spend 6% or more of their total income on energy bills, while about 4.2% of households spend more than 10% of their income. High energy burdens are much more prevalent among LICO-125 households; for example, whereas only 0.2% of non-LICO-125 households allocated 10% or more of their income to energy in 2014, this was true of 13.5% of their energy-poor counterparts. The REUS also suggests that energy poverty is greater among customers who identify as Indigenous (i.e. of First Nations, Metis or Inuit ancestry), customers with older homes and/or homes that are electrically heated, and households with either a single member or five or more members.

QUESTION:

Please provide a copy of the 2014 REUS.

Based on the 2014 REUS or other sources,

a) please indicate the percentage of on-reserve First Nations households that:
    i. Spend 6% or more of their total income on energy bills, and
    ii. Spend 10% or more of their total income on energy bills;
b) please indicate the percentage of on-reserve First Nations households that are LICO-125 households;
c) please indicate the percentages of LICO-125 and non-LICO-125 on-reserve First Nations households that:
    i. Spend 6% or more of their total income on energy bills, and
    ii. Spend 10% or more of their total income on energy bills.

If MH does not have sufficient data to respond to this questions, please:

a) Respond to the extent possible based on the information available,

b) Describe in detail the available data, and
c) Provide copies of any other relevant documents

RATIONALE FOR QUESTION:

RESPONSE:

A copy of the 2014 Residential Energy Use Survey is provided as an attachment to PUB/MH I-125a.

a) Based on the 2014 Residential Energy Use Survey:
   i. 49.0% of on-reserve First Nations customers spend 6% or more of their total annual household income on electricity bills; and,
   ii. 34.4% of on-reserve First Nations customers spend 10% or more of their total annual household income on electricity bills.

b) Based on the 2014 Residential Energy Use Survey, 64.8% of on-reserve First Nations customers are defined as LICO-125.

c) Based on the 2014 Residential Energy Use Survey:
   i. 66.5% of on-reserve LICO-125 and 16.7% of on-reserve non-LICO-125 First Nations customers spend 6% or more of their total annual household income on electricity bills; and,
   ii. 53.0% of on-reserve LICO-125 and 0% of on-reserve non-LICO-125 First Nations customers spend 10% or more of their total annual household income on electricity bills.

REFERENCE:

Appendix 10.5, 5.2, Page 17 of 242

PREAMBLE TO IR (IF ANY):

In 2015 the total cost of collections to Manitoba Hydro was approximately $14.2 million, consisting of $9.5 million in collection expenses and $4.6 million in bad debt write-offs. Over three-quarters of total costs were from credit and collection activity associated with electricity provided by Hydro (as opposed to natural gas). Analysis of year-over-year growth in credit and collection costs indicate these increased significantly in 2015 after having generally declined for several years. The increase in overall expenses appears to be because of the growth in bad debt expenses on the electricity side, which increased nearly 85% between 2014 and 2015.

QUESTION:

Please explain, to the best of Manitoba Hydro's knowledge, why bad debt expenses for electricity increased by nearly 85% between 2014 and 2015.

RATIONALE FOR QUESTION:

RESPONSE:

Bad debt expense for electric operations increased by nearly 85% between 2014 and 2015 as a result of a number of factors. Manitoba Hydro experienced some significant individual write offs in 2015 including large bankruptcies in the mining sector ($296,000), retail sector ($106,000) and a large write off of non-energy revenue related to uncollected rental income ($240,000), totaling $642,000. In addition, bad debt expense in 2014 was lower than normal. For greater context, the bad debt expense for the five year period is presented below.

	2011	2012	2013	2014	2015
Bad Debt Expense	$ 2,787,114	$ 2,537,514	$ 3,011,814	$ 1,956,816	$ 3,618,000

REFERENCE:

Appendix 10.5, 5.3.2, Page 21 of 242

PREAMBLE TO IR (IF ANY):

The EIA [Employment and Income Assistance] and Manitoba Housing programming described is not available for individuals living in First Nations communities.

QUESTION:

Please explain why the EIA and Manitoba Housing programs are not available for individuals living in First Nations communities.

RATIONALE FOR QUESTION:

RESPONSE:

Manitoba Hydro cannot comment on the availability of the referenced programming for individuals living in First Nations communities. Both Employment and Income Assistance and Manitoba Housing programs fall under the purview of the Government of Manitoba.

REFERENCE:

Appendix 10.5, 5.3.2, Page 21 of 242

PREAMBLE TO IR (IF ANY):

Indigenous & Northern Affairs Canada (INAC) currently contributes towards the cost of Manitoba Hydro bills for customers who reside in Manitoba's 63 First Nations communities and who receive social assistance. The contribution is calculated using a pro-rated formula that accounts for the number of social assistance clients in the household. For non-residential accounts (i.e. schools, band office, etc.) in First Nations communities, INAC contributions a proportion of estimated costs. However, it has been argued, that actual electricity costs can be 40% more, or higher than estimates.

QUESTION:

a) Please explain Hydro's knowledge and understanding of the basis on which INAC estimates electricity costs;
b) Please indicate where, and by whom, it has been argued that actual electricity costs can be 40% more, or higher than estimates, and provide copies or references of relevant documents;
c) Has MH attempted to confirm or infirm the allegation that actual electricity costs can be 40% more, or higher, than these estimates? Please indicate what efforts were made, and what information was obtained.

RATIONALE FOR QUESTION:

RESPONSE:

a) Manitoba Hydro's understanding is that for residential customers who receive social assistance, INAC does not estimate consumption but rather provides funding for 100% of the social assistance recipient's portion of the household utility bill. Funding is based on actual electricity costs. For General Service Customers in First Nations Communities (First Nations owned services and infrastructure) Manitoba Hydro is not aware of how

INAC estimates electricity costs, although in cases where First Nations have identified a discrepancy in funding, Manitoba Hydro does provide either the Band or INAC with consumption and billing histories. Manitoba Hydro is aware that INAC contributions are calculated on an overall Operations and Maintenance basis, of which electricity costs are one component.

b) The reference is from the presentation made by Councillor Roger Ross of the Manto Sipi Cree Nation, made on behalf of the Manitoba Keewatinowi Okimakanak, during the Needs for and Alternatives To (NFAT) on May 14, 2014 at Transcript page 10822. http://www.pubmanitoba.ca/v1/nfat/pdf/conferences/presentations_05_14_2014.pdf

c) Manitoba Hydro has not attempted to confirm these statements as it is not a party to INAC's funding arrangements.

REFERENCE:

Appendix 10.5, 5.4, Page 22 of 242

PREAMBLE TO IR (IF ANY):

A table is provided showing the results of the Affordable Energy Program (AEP) as of Nov. 30, 2016, including the total participation and numbers of insulation projects and furnace installations. It notes that these programs are available to LICO-125 households, including First Nations. (The data are also found in Table 16 at page 97 of 242, in the PRA report.)

QUESTION:

Please provide a similar table describing the results for First Nations' participation in AEP.

RATIONALE FOR QUESTION:

RESPONSE:

Please see the table below for the results of First Nations' participation in AEP as of November 30, 2016.

First Nations Measure	2007/08 to 2015/16	2016/17 – To Nov 30, 2016	Total to 2016/17 (Nov 30, 2016)
Total Participation	3,077	1,468	4,545
No. of Insulation Projects	2,180	419	2,599
No. of Furnaces Installed	N/A	N/A	N/A
No. of Boilers Installed	N/A	N/A	N/A
Capacity Savings (MW)*	3.6	1.2	4.8
Energy Savings (GWh)*	8.4	2.3	10.7
Natural Gas Savings (million m^3)	N/A	N/A	N/A
Utility Investment (Millions, $)	$3.7	$0.7	$4.4
Customer Investment (Millions, $)	N/A	N/A	N/A
Total DSM Investment (Millions, $)	$3.7	$0.7	$4.4

* 2016/17 savings are estimated as they have not yet been evaluated.

REFERENCE:

Appendix 10.5, 5.6, Page 26 of 242

PREAMBLE TO IR (IF ANY):

The quantitative conclusions found in the citation appear to be derived from section 3.4 of the PRA report (pages 89-94 of 242), but it is not clear exactly where they come from.

CITATION:
PRA conducted a quantitative modelling exercise to simulate the impacts of three rate increase scenarios between 2016 and 2036. As expected, impacts of higher energy costs are anticipated to be most pronounced for households that already spend a significant proportion of their total income on energy. The extent to which rate increases are expected to lead to increased energy poverty among Manitoba Hydro customers depends on the rate increase scenario used (e.g. rate increase over time) and the threshold used to define energy poverty. For example, if a rate increase scenario of approximately 8% for 4 years or 6% for 6 years and a 6% threshold is used, rates of energy poverty are projected to be approximately 24% higher in 2026. When the same rate scenario and a 10% energy poverty threshold is used, a 10% increase is observed. This underscores the degree to which potential rate increases could increase energy poverty in Manitoba. (underlining added)

QUESTION:

To the extent that Hydro is in possession of this information or is able to access it:

a) Please provide precise references in the PRA report for the quantitative conclusions stated in the underlined passages of the citation.
b) Please explain in detail the relationship between the values cited here and Tables 13-14 and Figures 7-10 of the PRA report (section 3.4, pages 89-94 of 242).

RATIONALE FOR QUESTION:

RESPONSE:

The following response was prepared by Prairie Research Associates:

a) These figures were not included in PRA's analytical report. PRA's survey of Manitoba Hydro customers (N=606) finds that when applying 6% or 10% income thresholds (ratios of energy expenditure to pre-tax household income), 59 and 20 households met the definition of energy poverty in 2016; this is equivalent to 9.74% and 3.30% of the survey sample, respectively. In the scenario where electricity rates were assumed to increase 5.95% annually for six years, the simulation model indicates that 73 and 22 households would meet the definition of energy poverty by 2026, when 6% or 10% thresholds are applied; this is equivalent to 12.05% and 3.63%, respectively. As such, depending on the threshold for how energy poverty is defined, rates of energy poverty in this scenario are projected to increase 23.7% (i.e. 12.05% / 9.74%) and 10.0% (3.63% / 3.30%). In the scenario where electricity rates are assumed to increase 7.95% over four years, identical results are obtained for 2026.

b) When real (i.e. inflation-adjusted) energy costs (Table 14) grow faster than real household income (Table 13) there are increases in the prevalence of energy poverty among households that were already close to the threshold. The simulated results presented in Figures 7-8 reflect this. Moreover, while rate increases in excess of household income growth would contribute to larger energy burdens among all households (since each household's income is assumed to grow at the same rate), as Figures 9 and 10 suggest, households that are already meeting the stipulated thresholds will be even more affected.

REFERENCE:

Appendix 10.5, 5.6, Page 26 of 242

PREAMBLE TO IR (IF ANY):

This one-paragraph section (quoted in full in Citation 1) makes no mention of the discussion found in the last two paragraphs of section 3.4 of the PRA report (Citation 2), emphasizing the importance of the assumptions made concerning income growth.

CITATION 1:
PRA conducted a quantitative modelling exercise to simulate the impacts of three rate increase scenarios between 2016 and 2036. As expected, impacts of higher energy costs are anticipated to be most pronounced for households that already spend a significant proportion of their total income on energy. The extent to which rate increases are expected to lead to increased energy poverty among Manitoba Hydro customers depends on the rate increase scenario used (e.g. rate increase over time) and the threshold used to define energy poverty. For example, if a rate increase scenario of approximately 8% for 4 years or 6% for 6 years and a 6% threshold is used, rates of energy poverty are projected to be approximately 24% higher in 2026. When the same rate scenario and a 10% energy poverty threshold is used, a 10% increase is observed. This underscores the degree to which potential rate increases could increase energy poverty in Manitoba. (underlining added)

CITATION 2 (p.92 of 242):
The assumption of regular and uniform income growth across Manitoba Hydro customers is not necessarily innocuous. Table 15, for example, reports the levels of energy poverty associated with utility rate increases under varying assumptions about the rate of household income growth. As shown, if lower-income households encounter lower levels of income growth than has been assumed, the proportion of Manitobans experiencing energy poverty could be significantly higher than depicted in Figure 7, irrespective of the rate increases that are ultimately imposed by Manitoba Hydro. (underlining added)

QUESTION:

a) Please elaborate on the significance of the reservations raised by PRA on pages 91 and 92 of 242 concerning the reasonability of the assumptions regarding income growth for low income households, with regard to the implications of the proposed rate increases for the energy burdens of on-reserve First Nations households.
b) Please provide a table indicating the projected rate of energy poverty in 2026, based on a 6% and a 10% threshold, for annual income growth of 0%, 1% and 2%;
c) Please provide a table indicating the projected rate of energy poverty in 2026, based on a 6% and a 10% threshold, for annual income growth of 0%, 1% and 2%, and for annual rate increases in the trailing years (i.e., the years after the 4, 6 of 12 years of rate increases set out in the scenarios on page 89) of 0%, 1% and 2%.

RATIONALE FOR QUESTION:

The quantitative conclusions set out in Citation 1 form the basis for Manitoba Hydro's conclusion that the proposed rate increases do not lead to unacceptable increases in energy poverty. These quantitative conclusions are based on two unsubstantiated assumptions: that income levels will grow at 2.96%/yr, and that trailing-year rate increases will be limited to the rate of inflation.

Given the importance of the conclusions, it is essential to evaluate the consequences of other reasonable assumptions, even if additional analytical work is required.

RESPONSE:

The following response was prepared by Prairie Research Associates:

a) As we stated in our original study, the nature of assumptions regarding household income growth over the coming years is important. The assumption we used for the purposes of the modelling exercise was that the income of all households would continue to grow at the provincial average observed for the period between 2009-2014, inclusive (i.e. 2.96%). This figure was derived from the most recent data available from

Statistics Canada at the time the report was published (CANSIM Table 206-0011).[1] However, it was and is not possible to separately calculate income growth for on-reserve First Nations households using this same data source, since the Statistics Canada surveys underpinning the data we used specifically exclude people living on reserve.[2] Statistics Canada data collected through the 2011 National Household Survey indicates that the incomes of Aboriginals living on-reserve in Manitoba are low relative to Aboriginals living in Winnipeg and to Manitobans more generally,[3] but provides no insight into income *growth*. In the absence of additional data, we are unable to assess the appropriateness of our assumptions as they relate to the implications of the proposed rate increases for the energy burdens of on-reserve First Nations households.

b) The requested information is presented in Table 1**Error! Reference source not found.** below. It is unclear from the original request whether the specified annual income growth rates or rate increases in the trailing years are in real or nominal terms. We assume the latter.

c) The requested information has been integrated into Table 1 below. The simulation model already incorporates 2.0% annual trailing-year electricity rate increases. Table 1 considers a range of other values to facilitate evaluation of the impact of this factor on projected rates of energy poverty for 2026. The magnitude of the trailing-year rate increases has no impact on energy poverty in the 3.95%-12 year scenario, since such increases would only be experienced after 2026.

---

1 Statistics Canada. (2016, July 8). Table 206-0011—Market income, government transfers, total income, income tax and after-tax income, by economic family type, Canada, provinces and selected census metropolitan areas (CMAs), annual, CANSIM (database). Retrieved from http://www5.statcan.gc.ca/cansim/a26?lang=eng&id=2060011

2 Statistics Canada. (2007, October 24). Survey of Consumer Finances (SCF). Retrieved August 9, 2017, from http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&lang=en&db=imdb&adm=8&dis=2&SDDS=3502

Statistics Canada. (2013, June 26). Survey of Labour and Income Dynamics (SLID). Retrieved August 9, 2017, from http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&lang=en&db=imdb&adm=8&dis=2&SDDS=3889

Statistics Canada. (2017, January 19). Canadian Income Survey (CIS). Retrieved August 9, 2017, from http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&lang=en&db=imdb&adm=8&dis=2&SDDS=5200#a2

3 Stevens, H., & Simpson, W. (2014). *Impact of Increases in Electricity Rates on Low and Non-Low Income Households in Manitoba*. Public Interest Law Centre. Pg. 14.

Table 1: Projected rates of energy poverty for 2026, under varying assumptions around immediate and longer-term electricity rate increases and household income growth (N=606) (nominal values used)

Annual nominal income growth	6% energy poverty threshold						10% energy poverty threshold					
	3.95%, 12 years		5.95%, 6 years		7.95%, 4 years		3.95%, 12 years		5.95%, 6 years		7.95%, 4 years	
	#	%	#	%	#	%	#	%	#	%	#	%
Annual nominal rate increases in trailing years of 0%												
2.96%	69	11.4%	67	11.1%	65	10.7%	21	3.5%	21	3.5%	20	3.3%
2.00%	81	13.4%	80	13.2%	74	12.2%	24	4.0%	24	4.0%	24	4.0%
1.00%	96	15.8%	94	15.5%	89	14.7%	32	5.3%	31	5.1%	27	4.5%
0.00%	104	17.2%	103	17.0%	101	16.7%	43	7.1%	41	6.8%	38	6.3%
Annual nominal rate increases in trailing years of 1%												
2.96%	69	11.4%	69	11.4%	67	11.1%	21	3.5%	21	3.5%	21	3.5%
2.00%	81	13.4%	81	13.4%	80	13.2%	24	4.0%	24	4.0%	24	4.0%
1.00%	96	15.8%	96	15.8%	95	15.7%	32	5.3%	32	5.3%	31	5.1%
0.00%	104	17.2%	104	17.2%	104	17.2%	43	7.1%	43	7.1%	42	6.9%
Annual nominal rate increases in trailing years of 2% (default)												
2.96%	69	11.4%	73	12.0%	73	12.0%	21	3.5%	22	3.6%	22	3.6%
2.00%	81	13.4%	85	14.0%	85	14.0%	24	4.0%	26	4.3%	26	4.3%
1.00%	96	15.8%	97	16.0%	97	16.0%	32	5.3%	34	5.6%	34	5.6%
0.00%	104	17.2%	104	17.2%	104	17.2%	43	7.1%	45	7.4%	45	7.4%

Source: PRA calculations based on survey of Manitoba Hydro customers.

REFERENCE:

Appendix 10.5, 5.7, Page 27-28 of 242

PREAMBLE TO IR (IF ANY):

The first table on page 27 indicates the costs to MH and to the Governments (for uncollected taxes) of three rate design options, based on either a 6% or 10% energy poverty threshold.

The second table indicates the average monthly bill increases required to recover these costs from other customers.

On page 28, the report states:

Throughout the collaborative process, Manitoba Hydro noted its position that, without a sound and defensible business case to substantiate cost savings, it was not in a position to commit any funding for the purpose of subsidizing customer bills. Manitoba Hydro also cannot anticipate that non-subsidized customers in the residential class or other customer classes would agree to fund those amounts by recovering the cost of low-income customer subsidies in their future electricity rates.

QUESTION:

a) Please explain what Manitoba Hydro means by "a sound and defensible business case to substantiate cost savings".
b) Is it correct to infer that Manitoba Hydro is unwilling to consider the application of any of these measures, if they would result in bill increases for other residential customers on the other of these described in the second table?

RATIONALE FOR QUESTION:

RESPONSE:

Response to parts a) and b):

Manitoba Hydro notes that bill affordability is in many respects a matter of the sufficiency of household income. Policy and social program responsibility related to income sufficiency and the general welfare of the public reside with respective levels of government and are not within the mandate of Manitoba Hydro.

Manitoba Hydro may consider implementing bill affordability measures provided those measures are revenue-neutral to Manitoba Hydro and its ratepayers. Revenue-neutrality requires that a potential program would be required to generate sufficient operation cost savings to offset the cost of developing, implementing and sustaining that program.

The potential costs and savings of any such program must be examined in a business case analysis before committing to any such program. An example of this may be an arrearage management program that may potentially reduce collections costs. In the event that the business case for such a proposed program may demonstrate cost reductions that are greater than the cost of developing, implementing and operating that program, Manitoba Hydro would consider adopting it.

However, the measures shown in the tables on page 27 of the Summary Report and Recommendations (found at Appendix 10.5) are explicit financial subsidies to low income customers. The estimate of lost revenues associated with providing low income customer subsidies range from $3.5 million to $36.7 million annually based on the analysis provided by the consultant to the Working Group. No estimate was developed with regard to the potential cost of developing and administering those subsidy programs. Given the estimated amount of those subsidies on a recurring annual basis and the potential costs required to administer a subsidy program, Manitoba Hydro expects that those amounts would far exceed any cost reductions to be obtained by the Corporation by providing those subsidies. In that regard, those measures fail to be revenue neutral.

If the measure is not revenue-neutral, it must be funded as part of the Corporation's revenue requirement and therefore the costs of those subsidies would be borne by other

customers, either in the Residential class, or in other customer classes. The non-participating customers funding the subsidy costs of participating customers to the extent shown in the tables on page 27 of Appendix 10.5, does not meet Manitoba Hydro's objective of revenue-neutrality

REFERENCE:

Appendix 10.5, 5.7, Page 28 of 242

PREAMBLE TO IR (IF ANY):

As noted in Section 8.9 below, the Working Group examined Recommendation #12 contained in the Final Report of the Review Panel on Manitoba Hydro's Preferred Development Plan, submitted by the Public Utilities Board and released by the Government of Manitoba in July 2014. In accordance with this funding recommendation, the Working Group (with the exception of Manitoba Hydro and the Manitoba Department of Families who abstained from recommendations to government) recommends that the government consider the recommendation "that the Government of Manitoba direct a portion of the incremental capital taxes and water rental fees from the development of the Keeyask Project be used to mitigate the impact of rate increases on lower-income consumers, northern and Aboriginal communities." While it is recommended that the costs of rate assistance subsidies be funded from this source, further analysis would be required to ensure that such a proposal meets all appropriate legislative requirements governing Manitoba Hydro.

QUESTION:

Has further analysis been undertaken to ensure that a proposal to direct a portion of the incremental capital taxes and water rental fees from the development of the Keeyask Project be used to mitigate the impact of rate increases on lower-income consumers, northern and Aboriginal communities meets all appropriate legislative requirements governing Manitoba Hydro? If so, please describe in the detail the results of this analysis. If not, why not?

RATIONALE FOR QUESTION:

RESPONSE:

The recommendation that a portion of the incremental capital taxes and water rental fees from the development of the Keeyask Project be used to mitigate the impact of rate increases on lower-income consumers, northern and Aboriginal communities was made to the Government of Manitoba. Manitoba Hydro is not privy to what analysis, if any, has been conducted by the Government of Manitoba with respect to the legislative requirements or amendments to legislation necessary to adopt this recommendation.

REFERENCE:

Appendix 10.5, 6.0, Page 31 of 242

PREAMBLE TO IR (IF ANY):

Manitoba Hydro is, by law, a financially self-sufficient enterprise whose revenues (primarily from domestic and export customers) must cover its costs over time.

QUESTION:

Please provide statutory and, if available, judicial citations in support of the statement that Manitoba Hydro is, by law, a financially self-sufficient enterprise whose revenues (primarily from domestic and export customers) must cover its costs over time.

RATIONALE FOR QUESTION:

RESPONSE:

Manitoba Hydro is established pursuant to *The Manitoba Hydro Act*, C.C.S.M. c. H190 and the recovery of revenues is as set forth in its constating legislation (note in particular s. 39(1)). Further detail with respect to this Information Request requires the production of a legal opinion which Manitoba Hydro respectfully declines to provide.

REFERENCE:

Appendix 10.5, 7.0, Page 32 of 242

PREAMBLE TO IR (IF ANY):

In developing its recommendations, the Working Group considered options for rate design as well as a range of non-rate programs/interventions offered by Manitoba Hydro or others (complementary measures).

QUESTION:

a) Please confirm that none of the rate design options considered by the Working Group was recommended by it;
b) Please confirm that consensus among all Working Group participants was required for an option to be recommended;
c) Please indicate for which, if any, of the rate design options would have been recommended but for the opposition of Manitoba Hydro and/or governmental entities.

RATIONALE FOR QUESTION:

RESPONSE:

Response to parts a) and b):

Confirmed.

c) The Working Group arrived at the following conclusion with respect to the percentage of income payment plan (PIPP) (page 28 of Appendix 10.5.):

"Noting that a PIPP could effectively eliminate energy poverty by design, the Working Group identified the PIPP as the rate option that best addresses both the accuracy and equity principles of energy affordability. However, in light of administrative costs related to implementation of an income-qualified program, and uncertainty about the

sufficiency of potential offsets and overall costs of the PIPP at full subscription, the Working Group did not recommend this option, but instead agreed that it may warrant further study by Manitoba Hydro."

For further information regarding Manitoba Hydro's perspective on revenue-neutrality and the cost-effectiveness of program options, please see the response to AMC/MH I-13a-b.

REFERENCE:

Appendix 10.5, 8.3, Page 35 of 242

PREAMBLE TO IR (IF ANY):

As in Manitoba, emergency assistance is available for utility customers in all jurisdictions included in the environmental scan. Manitoba Hydro's emergency assistance program, Neighbours Helping Neighbours, provides referrals to community support services and one-time emergency funding to assist with energy bills. The program is effective in addressing temporary need, less costly to administer than other assistance programs, and provides wide coverage across the province to both urban and rural customers, including individual members of First Nations. (underlining added)

QUESTION:

Please provide data to demonstrate the extent to which the Neighbours Helping Neighbours program has been used by individual members of First Nations, including the number of requests made and accepted in each year from 2012 through 2016.

RATIONALE FOR QUESTION:

RESPONSE:

The Neighbours Helping Neighbours Program is available for all Manitobans including First Nation customers. The Salvation Army administers the Neighbours Helping Neighbours Program and does not track First Nation status of those applying or receiving assistance.

REFERENCE:

Appendix 10.5, 8.0, Page 33-40 of 242

PREAMBLE TO IR (IF ANY):

The Working Group's nine recommendations are presented in section 8 of the summary report.

QUESTION:

Of the nine recommendations formulated by the Working Group, which are likely to significantly mitigate bill impacts for on-reserve First Nations households? Please explain your response in detail.

RATIONALE FOR QUESTION:

RESPONSE:

Manitoba Hydro's Affordable Energy Program (AEP), which provides lower-income energy efficiency and weatherization initiatives, already offers participating customers significant mitigation of bill impacts for on-reserve First Nations households with free energy savings devices along with free insulation, including funding for local labour to complete the installation. As recommended by the Working Group, Manitoba Hydro will continue to offer the AEP. As all materials in AEP are provided at no-cost to First Nations, any enhancement of funding or additional programming would be for additional energy saving technologies where they can be made to be economically viable.

Manitoba Hydro is currently developing an enhancement to its existing Equal Payment Plan to include a second component; The Energy Affordability Installment program which could provide significant mitigation of bill impacts. Please see the response to Coalition/MH I-126 for further details on The Energy Affordability Installment program.

REFERENCE:

Appendix 10.5, 2.5, Page 67 of 242

PREAMBLE TO IR (IF ANY):

Table 3 provides nominal MH rate increases and inflation for each year since 2000-01, on an annual and cumulative basis.

QUESTION:

Please provide the equivalent data for MH rate increases in constant (inflation-adjusted) dollars, on both an annual and cumulative basis, since 2000-01.

RATIONALE FOR QUESTION:

As the discussion later in the document is based on inflation-adjusted figures, it would be helpful to have the historic data expressed in the same way.

RESPONSE:
The following table provides the inflation-adjusted rate increases (real).

Table 3: Manitoba Hydro electricity rate increases (real and nominal), FY 2000–01 to 2016–17, inclusive

Year	Real Rate Increase*			Nominal Rate Increase			Inflation		
	Annual	Cumulative		Annual	Cumulative		Annual**	Cumulative	
		Since 2000–01	Since 2007–08		Since 2000–01	Since 2007–08		Since 2000–01	Since 2007–08
2000–01	-2.44%	-2.44%	N/A	0.00%	0.00%	N/A	2.5%	2.5%	N/A
2001–02	-3.94%	-6.28%	N/A	-1.92%	-1.92%	N/A	2.1%	4.7%	N/A
2002–03	-2.25%	-8.39%	N/A	0.00%	-1.92%	N/A	2.3%	7.1%	N/A
2003–04	-1.61%	-9.86%	N/A	-0.72%	-2.63%	N/A	0.9%	8.0%	N/A
2004–05	2.24%	-7.84%	N/A	5.00%	2.24%	N/A	2.7%	10.9%	N/A
2005–06	-0.15%	-7.97%	N/A	2.25%	4.54%	N/A	2.4%	13.6%	N/A
2006–07	0.25%	-7.75%	N/A	2.25%	6.90%	N/A	2.0%	15.9%	N/A
2007–08	-1.86%	-9.47%	N/A	0.00%	6.90%	N/A	1.9%	18.1%	N/A
2008–09	2.74%	-6.99%	2.74%	5.00%	12.24%	5.00%	2.2%	20.7%	2.2%
2009–10	2.23%	-4.92%	5.03%	2.84%	15.43%	7.98%	0.6%	21.4%	2.8%
2010–11	1.78%	-3.22%	6.90%	2.80%	18.66%	11.01%	1.0%	22.6%	3.8%
2011–12	-0.78%	-3.98%	6.07%	2.00%	21.03%	13.23%	2.8%	26.0%	6.7%
2012–13	2.81%	-1.28%	9.04%	4.45%	26.42%	18.26%	1.6%	28.1%	8.5%
2013–14	1.07%	-0.22%	10.21%	3.50%	30.84%	22.40%	2.4%	31.1%	11.1%
2014–15	1.23%	1.01%	11.57%	2.75%	34.44%	25.77%	1.5%	33.1%	12.7%
2015–16	2.62%	3.65%	14.49%	3.95%	39.75%	30.73%	1.3%	34.8%	14.2%
2016–17*	1.93%	5.65%	16.70%	3.36%	44.44%	35.13%	1.4%	36.7%	15.8%

*Real Rate Increase = (Nominal Rate Increase - CPI)/(1+CPI)

**The 2016-17 MB CPI has been restated to reflect actual 1.4% from previously forecast 1.8%.

REFERENCE:

Appendix 10.5, 3.0, Page 72-73 of 242

PREAMBLE TO IR (IF ANY):

Tables 5 and 6 refer to rural, northern and First Nations customers.

QUESTION:

Are these categories exclusive? Or are some First Nations customers also counted as rural or northern, depending on their geographic location?

RATIONALE FOR QUESTION:

RESPONSE:

The categories of rural, northern and First Nations are not exclusive. A First Nations customer would likely also be counted as rural or as rural and northern, depending upon geographic location.

REFERENCE:

Appendix 10.5, 3.2, Page 75-78 of 242

PREAMBLE TO IR (IF ANY):

Section 3.2.1 addresses energy poverty in the general sample, and section 3.2.2 addresses energy poverty in the arrears sample, indicating for each the percent of the sample found to be a) energy poor and b) poor payers.

QUESTION:

Did the consultants determine the percent of on-reserve First Nations households sampled that are a) energy poor, b) poor payers and c) under the LICO-125 threshold? If so, please provide that analysis.

If not, please provide the data from their customer survey that would be required to evaluate the percent of on-reserve First Nations households sampled that are a) energy poor, b) poor payers and c) under the LICO-125 threshold.

RATIONALE FOR QUESTION:

RESPONSE:

The following response was prepared by Prairie Research Associates:

Only 13 respondents (from both the general sample [n= 786] and the over-sampled arrears sample [n = 315]) to the survey self-identified or indicated that their spouse self-identified as First Nations, live on-reserve, and agreed to have their data linked (the reserve variable is a Manitoba Hydro variable from their administrative data). Therefore, the data from the customer survey are not reliable to support this analysis.

REFERENCE:

Appendix 10.5, 3.3.1, Page 82 of 242

PREAMBLE TO IR (IF ANY):

Table 8 provides the results of a regression analysis of the factors affecting electricity consumption. (Detailed results are found in Appendix C.)

QUESTION:

Please provide a similar analysis for on-reserve First Nations households.

If Manitoba Hydro is unable or unwilling to carry out such an analysis, please provide the underlying data for on-reserve First Nations households that would be required to support such an analysis.

RATIONALE FOR QUESTION:

RESPONSE:

The following response was prepared by Prairie Research Associates:

This regression analysis cannot be undertaken because only one respondent identified themselves or their spouse as First Nations, lives on reserve, reported their income, and provided a response to all of the other variables that were used to run the regression analysis (as noted in Appendix C). Please refer to the response to AMC/MH I-21 regarding the limitations around analyzing customers residing in northern and remote First Nations communities.

REFERENCE:

Appendix 10.5, 3.3.1, Page 84 of 242

PREAMBLE TO IR (IF ANY):

Table 11 provides average natural gas consumption by household income (and by LICO-125 status), overall and per square foot. Note 41 points out that there is an inverse relationship between income and gas consumption per square foot, "which may suggest that lower-income households occupy less energy-efficient residences than their higher-income counterparts." No such table is provided regarding electricity consumption.

QUESTION:

Please provide a table similar to Table 11 for electricity consumption, both for all residential customers and for First Nations residential customers.

RATIONALE FOR QUESTION:

RESPONSE:

Based on the results of 2014 Residential Energy Use Survey, the following table shows the average electricity consumption by household income and by LICO-125 status, for all residential customers in a table similar to Table 11 of Appendix 10.5.

2014 Residential Energy Use Survey
Average Weather Adjusted Electric Consumption

All Residential Basic Customers			
By Household Income			
Household Income	Sample Size	Annual kWh	kWh/sqft
< $25,000	510	12,045	13.4
$25,000-$49,999	1,271	13,827	12.7
$50,000-$74,000	1,195	16,080	13.0
$75.000-$99,999	802	17,478	13.3
$100,000+	998	18,916	12.6
By LICO-125 Status			
LICO-125	1,323	14,487	13.8
Non-LICO-125	3,453	16,425	12.6

The following table provides average electricity consumption by household income and by LICO-125 status in a table similar to Table 11 of Appendix 10.5 for First Nation residential customers only, based on the results of 2014 Residential Energy Use Survey. It should be noted that the sample size within the subsectors requested is insufficient to draw conclusions representative of the First Nations residential customer base.

2014 Residential Energy Use Survey
Average Weather Adjusted Electric Consumption

First Nations Residential Basic Customers			
By Household Income			
Household Income	Sample Size*	Annual kWh	kWh/sqft
< $25,000	14	26,456	28.3
$25,000-$49,999	5	27,676	29.1
$50,000-$74,000	12	32,336	27.1
$75.000-$99,999	3	36,356	39.1
$100,000+	1	30,947	25.8
By LICO-125 Status			
LICO-125	23	27,833	27.8
Non-LICO-125	12	32,969	31.0

REFERENCE:

Appendix 10.5, 3.3.4, Page 87 of 242

PREAMBLE TO IR (IF ANY):

The section describes the "Social Process" set up by MH in collaboration with INAC to manage payments of First Nations accounts.

QUESTION:

Please provide copies of agreements with INAC establishing the "Social Process", as well as copies of all reports produced since 2012 with respect to this process.

RATIONALE FOR QUESTION:

RESPONSE:

Manitoba Hydro is not aware of any agreements with INAC regarding the establishment of the Social Process. However, Attachment 1 to this response provides a copy of a letter of support regarding the Social Process, sent by INAC on December 9, 2009 to First Nations Income Assistance Administrators. Manitoba Hydro does not prepare regular or periodic reports in relation to the Social Process, with the exception of individual community reports provided as part of the process. These individual community reports primarily contain confidential information related to specific customers.

Indian and Northern Affairs Canada / Affaires indiennes et du Nord Canada

365 Hargrave Street, Room 200
WINNIPEG, Manitoba
R3B 3A3

DEC 0 9 2009

Your file Votre référence
CIDM 736277
Our file Notre référence
6550-1
S2

Income Assistance Administrators,
Tribal Council Advisors,
Co-Managers,
Third Party Managers

Re: Section 4.3 Utility and Fuel Allowances / Utility Allowances/ Hydro Electricity – Processing Hydro Electricity Payments

INAC has been advised by Manitoba Hydro of a new process in relation to First Nation Social Hydro Accounts which became effective January 2009 with a recent update in September 2009.

Upon review of the newly developed process, the department is fully supportive of the procedures Manitoba Hydro has developed for payments made to Hydro Accounts on behalf of an Income Assistance client. Please be advised, effective immediately, the requirement for IA client associated Hydro billings requested or collected for Hydro billing payments is no longer required due to the new process developed by Manitoba Hydro. The Manitoba Income Assistance Policy and Procedure Guide will be updated in the near future. Please consider this letter as an update to the Guide in the interim.

Further, we have been advised that Manitoba Hydro has been in communication via phone or on site providing training and assistance regarding the First Nations Accounts –Social Process Training /Resource Manual 2009. For some months, all of you have been in receipt of the Manitoba Hydro spreadsheet that is faxed to you on a monthly basis; it is this document that is used to identify Hydro account numbers with current billing amounts to be entered into your computer management systems. It is your computer management systems which have the tenancy profile information/housing occupancy data to link the IA recipient to the Hydro account number. Whether you manage your Income Assistance program manually or with a computer management system, the tenancy profiles/housing occupancy data forms must be kept on file and up to date on each client file.

Proration is based upon completed and up to date information maintained in your computer management systems via tenancy profile information / housing occupancy data. It is imperative for all issuing authorities to maintain current information utilizing tenancy profiles/housing occupancy data forms.

.../2

Please be further advised, compliance will be utilizing the Manitoba Hydro spreadsheet in all reviews as the primary source of information. Additionally, the Hydro Detailed Sheet will be utilized as it would have been faxed back to Manitoba Hydro which identified: IA client name, the 14 digit account number of the main hydro account holder and the prorated current billing amount which will be cross referenced with the monthly report submitted for the review month. The Manitoba Income Assistance Policy and Procedure Guide will be updated in the near future. Please consider this letter as an update to the Guide in the interim.

If you have any further questions on this subject, please contact your Tribal Council Advisor, if applicable, or the Social Development Operational Specialist at INAC at (204) 983-2334 or the Funding Services Officer assigned to your community or Manitoba Hydro First Nation Accounts, Social Accounts Administrator, Jo-Anne Smith at 204-360-5172.

Regards,

Rod Graham
A/Associate Director, Funding Services
Indian and Northern Affairs Canada
Manitoba Region

CC: Chief and Council
Funding Services Officers and Compliance Unit

REFERENCE:

Appendix 10.5, 3.3.4, Page 87 of 242

PREAMBLE TO IR (IF ANY):

This process aligns with the provincial policies used by the EIA [Employment and Income Assistance] program in paying utility bills. Manitoba is planning to change EIA by offering a general transfer payment, out of which the recipient will be responsible for managing all household costs; under the planned change, EIA will no longer pay utility bills on behalf of social assistance clients (Province of Manitoba, 2016). Since INAC mirrors provincial policy, once Manitoba completes this reform, the social process is likely to change, with uncertain effects on the arrears experienced by Manitoba Hydro customers living in First Nations communities.

QUESTION:

To the extent that Hydro is in possession of this information or is able to access it:
Please provide detailed information concerning Manitoba's plans to change EIA to a general transfer payment. Where was this reform announced? What form will it take (legislation, regulation, policy)? When is it expected to be implemented? What is its current status?

a) Has INAC given any explicit indication that it intends to adopt a similar policy? If so, please provide copies of all relevant communications and/or public statements.
b) Does Manitoba Hydro anticipate that replacing the current social process to a general transfer payment is likely to increase First Nations arrears, or decrease them? Please explain your answer.

RATIONALE FOR QUESTION:

RESPONSE:

a) In July 2015, EIA informed Manitoba Hydro that it would be making program changes that would result in a reduction in the number of clients placed on direct billing.

Manitoba Hydro received additional information on this transition from EIA during the Bill Affordability Collaborative Process. EIA stated that changes began to be phased in between December 2015 and June 2016 and that starting in July 2016 the majority of new EIA clients would no longer be able to have their utility costs paid directly by EIA. Manitoba Hydro is not aware of the current status of the program's implementation.

b) INAC has given no indication to Manitoba Hydro that it intends to adopt a similar policy.

c) Manitoba Hydro does not anticipate that such a change is forthcoming. If such a change were made, Manitoba Hydro would be concerned about a potential increase in arrears as a result of such a change. The concerns for Manitoba Hydro would be similar to concerns held about the EIA changes. Those concerns relate to the size of a general transfer being adequate to cover the recipient's shelter needs, including the cost of electricity, and the potential decrease in payments related to these energy accounts and the potential increased cost that may be incurred by Manitoba Hydro as it pursues effort to try to collect on these accounts.

REFERENCE:

Appendix 10.5, 3.3.4, Page 88 of 242

PREAMBLE TO IR (IF ANY):

Approximately one-third of these communities is located north of the 53rd parallel and therefore has colder temperatures than southern communities, resulting in higher heating costs.

QUESTION:

Please provide detailed information in support of this statement, including the latitude and average annual heating degree days for each First Nations community.

RATIONALE FOR QUESTION:

RESPONSE:

Manitoba Hydro does not collect Heating Degree Days (HDD) specific for every community in Manitoba. Based on the information provided from the Environment Canada website, Manitoba Hydro collects the HDD values from eight weather stations across Manitoba located in Winnipeg, Brandon, Dauphin, The Pas, Thompson, Churchill, Portage la Prairie and Morden.

The following table presents the 25 year average HDD (14°C base) and latitudes for the eight weather stations:

Location	25 year average HDD (14°C base)	Latitude
Winnipeg	4,528	49.898
Brandon	4,683	49.864

Location	25 year average HDD (14°C base)	Latitude
Dauphin	4,615	51.150
The Pas	5,156	53.826
Thompson	6,216	55.745
Churchill	7,188	58.768
Portage la Prairie	4,363	49.972
Morden	4,169	49.192

REFERENCE:

Appendix 10.5, 3.3.4, Page 88 of 242

PREAMBLE TO IR (IF ANY):

As noted above, poor quality or deteriorating housing is characterized by low levels of energy efficiency, resulting in high energy consumption and correspondingly high energy bills. As long as housing in First Nations communities remains substandard, energy consumption will be higher than the norm for similar households elsewhere. Indeed, housing may be in such a poor state that retrofits to increase energy efficiency may have little impact on reducing energy burden. Programs such as Power Smart to upgrade insulation presume that the house is in reasonable condition, but this is often not the case in First Nations communities.47 (underlining added)

QUESTION:

a) Please elaborate on the observation that housing in First Nations communities may be in such a poor state that retrofits to increase energy efficiency may have little impact on reducing energy burden, and its implications for bill affordability measures required in these communities;
b) If Manitoba Hydro has any data in its possession that is relevant in this regard, please provide it;
c) Please elaborate on the implications of this observation for an energy affordability policy with respect to First Nations.

RATIONALE FOR QUESTION:

RESPONSE:

a) The report generated was the result of a Collaborative Process and was provided by Prairie Research Associates (PRA). The reference made above was provided by PRA based on their literature review and key informant interviews as referenced in their

report in the Bill affordability research framework found on PDF page numbers 148 – 153 of 242.

Through the Affordable Energy Program however, under the Indigenous Power Smart Approach, the dedicated Indigenous Energy Advisor works with each Community Band Housing Manager to identify homes eligible for upgrades. If a home is found to have structural issues which would delay the installation of energy efficiency upgrades, the Indigenous Energy Advisor identifies the need for repair and then follows up with the Band Housing Manager until repairs are complete at which point the upgrade can be then be undertaken.

b) Manitoba Hydro does not maintain data with regards to the condition of housing in First Nation communities. Manitoba Hydro relies on the Band Housing Managers to provide this information.

c) Please see the response to part a) above.

REFERENCE:

Appendix 10.5, 3.3.4, Page 88 of 242

PREAMBLE TO IR (IF ANY):

Note 46: Some individuals believe that First Nations in general should not be responsible for energy costs, pending resolution of long-standing disputes related to hydro infrastructure development over the last several decades. In a few cases, this belief appears to be sustained by band leadership.

QUESTION:

To the extent that Hydro is in possession of this information or is able to access it, please provide the source of this information, of a) to what extent this view is held among i) First Nations populations and ii) band leadership, and b) the extent to which it is well founded.

RATIONALE FOR QUESTION:

RESPONSE:

The following response was prepared by Prairie Research Associates:

The source of the information was key informant interviews undertaken with First Nations representatives. The purpose of the interviews that PRA conducted with was to gain an understanding into the nature of the issues of bill affordability, and not to quantify the extent to which various beliefs about paying for electricity are held among First Nations.

REFERENCE:

Appendix 10.5, 3.3.4, Page 89 of 242

PREAMBLE TO IR (IF ANY):

In summary, the arrears experienced by Manitoba Hydro with the accounts held by residents of First Nations communities arise because of administrative (short-term) or structural factors. Addressing the structural factors is beyond the scope of any policy change by Manitoba Hydro and lies primarily with the federal government.

QUESTION:

Please describe in detail (a) the administrative (short-term) issues that could be addressed to resolve First Nations arrears issues without the involvement of the federal government, and (b) what the structural factors are that lie with the federal government

RATIONALE FOR QUESTION:

RESPONSE:

The administrative (short-term) and structural factors are detailed on pages 88 and 89 of 242 of Appendix 10.5. These factors, identified by PRA Inc., were obtained from key informant interviews conducted by PRA of administrative staff in several First Nation communities.

At page 88 of Appendix 10.5, it is noted that confusion surrounding responsibility for bill payments is an administrative issue. Manitoba Hydro has and continues to educate First Nation residents on the Social Process. Efforts involve messaging with bills, presentations in communities, meetings with Chief & Council and direct communication with individual residents and Band Social Administrator inquiries.

REFERENCE:

Appendix 10.5, 3.3.4, Page 89 of 242

PREAMBLE TO IR (IF ANY):

"MB Hydro, 2016b", referred to in Citation 1, consists of the web page found at https://www.hydro.mb.ca/your_home/first_nations/index.shtml, quoted in full in Citation 2.

CITATION 1:
Note 49: It is important to note that residents of First Nations communities are eligible for assistance through Power Smart and participation in bill affordability programming (MB Hydro, 2016b). Information offered by Manitoba Hydro suggests that First Nations participation in these programs is increasing.

CITATION 2:
POWER SMART AND FIRST NATIONS
We are partnering with First Nations communities to help them be Power Smart.

Power Smart First Nations Program
Each First Nations community is matched with an energy efficiency specialist to select qualifying homes and recommend energy efficient measures.

Energy saving measures may include insulation and basic energy efficiency upgrades:
• compact fluorescent light bulbs;
• insulated pipe wrap;
• draft proofing;
• faucet aerators;
• low-flow showerheads.

We can provide community members with training to do the upgrades. Energy saving seminars can be arranged to provide community members with information and tips on what they can do to make their communities more energy efficient.

Community Geothermal Program

Through the Community Geothermal Program First Nations community members are engaged in being active participants in reducing their energy consumption. This is achieved through training local businesses on how to install and maintain geothermal heat pump systems while providing homeowners with convenient and affordable financing through Pay As You Save (PAYS) Financing.

Aki Energy, a non-profit social enterprise group, is the main contact point for First Nation Communities seeking to use the Community Geothermal Program. In addition to helping the communities identify opportunities for geothermal technology use, Aki Energy also trains community members on how to install and maintain these systems.

Benefits

- local economic benefits through job and business creation;
- little to no upfront capital costs are required to install the geothermal heat pump systems by using PAYS Financing;
- increased customer support as local businesses are trained to install and maintain the equipment;
- lower energy consumption for homeowners.

For more information about the program, call 204-480-5900, 1-888-MBHYDRO (outside of Winnipeg), or email us.

(underlining added)

QUESTION:

a) Please provide the information referred to in Citation 1 suggesting that "First Nations participation in these programs is increasing", distinguishing between First Nations participation in Power Smart and in bill affordability programming;
b) How many energy efficiency specialists are in the program? On average, how many First Nations is each specialist responsible for?

c) Please elaborate on the circumstances in which the energy saving measures provided by the program "may include insulation";
d) For each year from 2012 through 2016, please indicate the number of First Nations homes that have been insulated under this program;
e) Please describe any challenges that may arise in applying the PAYS program in First Nations communities, and how they are resolved;
f) Please provide the approximate cost of a geothermal heat pump system;
g) Please provide the number of geothermal heat pump systems that have been installed to date in First Nations communities in Manitoba.

RATIONALE FOR QUESTION:

RESPONSE:

a) Participation in the Affordable Energy Program has continuously increased each year since program inception. The below table shows the number of Completed Homes under the Indigenous approach.

Yearly Participation	2009/ 2010	2010/ 2011	2011/ 2012	2012/ 2013	2013/ 2014	2014/ 2015	2015/ 2016	2016/ 2017	2017/ 2018 (As of June 30, 2017)	Total
Indigenous	29	133	244	314	373	467	1517	1845	436	5358

The Direct Install Channel, launched December 1, 2014, provides basic energy efficient upgrades to qualifying homes to increase energy efficiency and save water.

Manitoba Hydro has contacted all First Nation Communities to discuss their participation in the program, and participation in the AEP has been initiated within 90 per cent of the First Nation Communities. The total number of homes for on-reserve Indigenous communities is approximately 16,000. As of June 30, 2017, Manitoba Hydro

has completed energy efficiency upgrades in over 5,300 homes representing approximately 33% of the market.

All First Nation customers are eligible for the Neighbors Helping Neighbors bill affordability program. Please see the response to AMC/MH I-17 for further information.

b) Each community works with one dedicated Indigenous Energy Advisor who along with each Band Housing Manager identifies qualifying homes and recommends energy efficient measures. This provides First Nation Communities with a direct point of contact to explain the program in detail, address any questions, assist with acquiring supplier quotes, transportation logistics, training for installation of materials, inspection of completed work, assistance with invoicing and general follow ups through the process to ensure the energy efficiency upgrades are completed. Twelve energy efficiency specialists are also available for consultation with regards to any residential or commercial Power Smart program. Other than the Indigenous Power Smart Program, the energy efficiency specialists can assist Communities in pursuing additional energy efficiency opportunities in the residential and commercial sectors.

c) Please see the response to PUB/MH I-126b-e for information regarding the circumstances in which the energy saving measures provided by the program to First Nation homes "may include insulation."

d) The chart below shows the number of on-reserve Indigenous homes that have been insulated under the Affordable Energy Program.

Yearly Insulation Installs	**2009/ 2010**	**2010/ 2011**	**2011/ 2012**	**2012/ 2013**	**2013/ 2014**	**2014/ 2015**	**2015/ 2016**	**2016/ 2017**	**Total**
Indigenous	132*	133	244	314	373	415	569	609	2789

*The 103 homes received insulation in 2009 however will not be counted as "Completed Homes" until they receive Direct Install.

e) A key challenge with implementation of PAYS in First Nations communities is the ineligibility of loan payments as a reimbursable expense by Indian and Northern Affairs

Canada (INAC). Approximately 70 per cent of home owners/tenants on First Nations are on social assistance and therefore have a portion of, or their entire utility bill paid by INAC.

INAC has recently put a temporary hold on any additional First Nations using PAYS financing until other options have been reviewed. This has limited the ability of other First Nations to join the Community Geothermal Program through the use of the PAYS financing option. Manitoba Hydro is working to resolve this issue by providing INAC with more detailed information about the program and the support provided by Manitoba Hydro which will provide assurance that the overall utility bill will be equal to or lesser than the bill prior to the geothermal heat pump system being installed.

A challenge originally faced by Manitoba Hydro in administering the PAYS loan to First Nation communities involved minimizing the financial risk in lending to First Nations in the event that the PAYS loans could not be secured by a caveat placed on the property. Normally, all PAYS financing agreements require that a caveat be placed on the property in question, which allows the loan to be transferred as owners and tenants change and ensures there is a commitment to loan repayment. However, it is not possible to place caveats on Crown Land. In lieu of a caveat on the property, Manitoba Hydro and the First Nation enter into a formal agreement, through a Band Council Resolution (BCR). The BCR specifies that the Band is ultimately responsible for loan repayment should a tenant, which is benefiting from PAYS financing, go in arrears or move out of the property.

Given that a BCR is required when implementing PAYS on First Nations, the continuity of funding energy efficiency upgrades may be disrupted when there is a change of Chief and Council. If a new Chief and Council are elected, review of all past programs and initiatives under the previous Council may be undertaken which can result in delays in installations and program uptake. The strategy for resolving this issue is to have program staff meet with the new Chief and Council as soon as leadership changes occur in order to discuss the merits of continuing with the energy efficiency upgrades and the benefits to the community members as well as answer any questions that the new leadership may have.

f) The approximate average cost of a geothermal heat pump system installed on a First Nation through the Community Geothermal Program is $17,500.

g) To the end of July 2017, 340 geothermal heat pump systems have been installed on First Nations through the Community Geothermal Program.

Sufficient geothermal installer capacity has been built within participating communities and so geothermal systems are also expanding into new home construction with nearly 50 new homes recently built with this energy efficient technology in the communities of Fisher River and Peguis.

REFERENCE:

Appendix 10.5, 3.4, Page 89 of 242

PREAMBLE TO IR (IF ANY):

CITATION 1 (p. 89 of 242):

Manitoba Hydro is currently exploring the possibility of requesting approval of annual electricity rate increases upon its customer base that are larger than previously forecast in order to promote financial sustainability in the coming years. One objective of the quantitative modelling exercise was therefore to assess how a range of potential increases may affect Manitoba Hydro customers, with particular emphasis on the magnitude of energy poverty and the energy burden experienced by low-income households. To this end, the following three distinct scenarios were modelled over a 20-year horizon (2016–2036, inclusive):

- ► 3.95% nominal electricity rate increases for 12 years
- ► 5.95% nominal electricity rate increases for 6 years
- ► 7.95% nominal electricity rate increases for 4 years

All nominal rate increases were assumed to apply only to the energy charge (i.e., the per-kWh price of electricity) and not the monthly basic charge (i.e., the fixed component of the customer's bill that does not vary with actual electricity use), which was simply assumed to increase at the rate of inflation. Furthermore, rate increases were assumed to begin in 2017, to persist over the intervals listed above, and then to increase in step with inflation (i.e., 2.0%).

CITATION 2 (GRA, s. 9.3, Tab 9, p. 5 of 18)

Manitoba Hydro is proposing 7.9% rate increases for both 2017/18 and 2018/19. The proposed rates have been designed such that the increases have been applied across-the-board to all rate classes and equally across all rate components for customers taking service from the Manitoba Hydro grid system.

QUESTION:

a) Please confirm that the assumption that the monthly basic charge would only increase at the rate of inflation is not consistent with the present application. Please elaborate on the significance of this difference in interpreting the results of the modelling described in the report;

RATIONALE FOR QUESTION:

RESPONSE:

The following response was prepared by Prairie Research Associates:

PRA's understanding is that the rate increases currently being proposed will be applied to all rate components, inclusive of monthly basic charges. By contrast, the model assumes that while energy charges are subject to Manitoba Hydro rate increases, basic monthly charges will grow at the rate of inflation. In this regard, the assumption incorporated into the modelling exercise is inconsistent with the present application. The details of the current rate application were not known to PRA at the time this research was undertaken. For reference, information regarding the rate structure used as the basis for the simulation modelling (including sample calculations) is presented in Table 1 below:

Table 1: Characteristics of the rate structure used as the basis for the modelling exercise, including sample calculation (all monetary amounts expressed in inflation-adjusted terms)				
Rate component	**Scenario**	**Interval**	**2016**	**2026**
Basic charge (≤ 200 Amp)	3.95% increases, 12 years	Monthly	$7.82	$7.82
	5.95% increases, 6 years	Monthly	$7.82	$7.82
	7.95% increases, 4 years	Monthly	$7.82	$7.82
Energy charge ($/kWh)	3.95% increases, 12 years	N/A	$0.0793	$0.0983
	5.95% increases, 6 years	N/A	$0.0793	$0.1023
	7.95% increases, 4 years	N/A	$0.0793	$0.1021

Illustration of annual electricity bill calculation in the simulation model, assuming consumption of 11,830 kWh (i.e., the household survey average):

Electricity Bill (2016, any scenario) = (Basic Charge + Energy Charge) x Taxes = (12 x $7.82 + 11,830 kWh x $0.0983 / kWh = ($93.84 + $938.12) x 1.1563 = ($1,031.96) x 1.1563 = $1,193.26 *[basic charge accounts for 9.1% of total bill]*

Electricity Bill (2026, 5.95% increases for 6 years) = (Basic Charge + Energy Charge) x Taxes = (12 x $7.82 + 11,830 kWh x $0.1023 / kWh = ($93.84 + $1,209.66) x 1.1563 = ($1,303.50) x 1.1563 = $1,507.23 *[basic charge accounts for 7.2% of total bill]*

Table 1 shows that the basic monthly charge accounts for a relatively small proportion of each household's estimated electricity bill. In the event that rate increases were extended to include basic charges, energy poverty and household energy burden would increase slightly faster than if they were not included.

REFERENCE:

Appendix 10.5, 3.4, Page 89 of 242

PREAMBLE TO IR (IF ANY):

CITATION 1 (p. 89 of 242):

Manitoba Hydro is currently exploring the possibility of requesting approval of annual electricity rate increases upon its customer base that are larger than previously forecast in order to promote financial sustainability in the coming years. One objective of the quantitative modelling exercise was therefore to assess how a range of potential increases may affect Manitoba Hydro customers, with particular emphasis on the magnitude of energy poverty and the energy burden experienced by low-income households. To this end, the following three distinct scenarios were modelled over a 20-year horizon (2016–2036, inclusive):

- ► 3.95% nominal electricity rate increases for 12 years
- ► 5.95% nominal electricity rate increases for 6 years
- ► 7.95% nominal electricity rate increases for 4 years

All nominal rate increases were assumed to apply only to the energy charge (i.e., the per-kWh price of electricity) and not the monthly basic charge (i.e., the fixed component of the customer's bill that does not vary with actual electricity use), which was simply assumed to increase at the rate of inflation. Furthermore, rate increases were assumed to begin in 2017, to persist over the intervals listed above, and then to increase in step with inflation (i.e., 2.0%).

CITATION 2 (GRA, s. 9.3, Tab 9, p. 5 of 18)

Manitoba Hydro is proposing 7.9% rate increases for both 2017/18 and 2018/19. The proposed rates have been designed such that the increases have been applied across-the-board to all rate classes and equally across all rate components for customers taking service from the Manitoba Hydro grid system.

QUESTION:

b) Has Manitoba Hydro made any commitment, in the present filing or elsewhere, to the effect that, after the 7.95% nominal electricity rate increases for 4 years proposed in the present application, rate increases will be limited to inflation until 2036?
   i) If so, please provide precise references to these commitments.
   ii) If not, please provide the results of a similar analysis in which annual rate increases in the years after the periods described in the bullet points of the citation (the "trailing years") exceed inflation by 2%.

RATIONALE FOR QUESTION:

RESPONSE:

Manitoba Hydro advises that the issuance of Order 79/15, approving a 3.36% rate increase for August 1, 2017 instead of the 7.9% as requested has resulted in the need to further obtain two additional years of 7.9% rate increases followed by an increase of 4.45%, before returning to rate increases consistent with the forecast level of inflation.

Please see Appendix 3.8 for information on the revised financial outlook.

Please see the response to AMC/MH I–35 for the requested analysis.

REFERENCE:

Appendix 10.5, 3.4, Page 90 of 242

PREAMBLE TO IR (IF ANY):

To complete the model, it was assumed that both price levels and household incomes would grow at levels equivalent to the averages of increases observed in Manitoba since 2009. As shown in Table 13, these were determined to be 1.78% and 2.96%, respectively. (underlining added)

QUESTION:

Does Manitoba Hydro consider it reasonable to assume that household incomes on First Nations reserves will grow at a rate of 2.96%/year through 2036? If not, please elaborate on the significance of the results of this modelling exercise.

RATIONALE FOR QUESTION:

RESPONSE:

The following response was prepared by Prairie Research Associates:

As noted in our response to AMC/MH I-12a, due to a lack of current statistical data, Manitoba Hydro is unable to assess the appropriateness of our assumptions as they relate to future rates of growth of household income in First Nations communities.

REFERENCE:

Appendix 10.5, 3.4, Page 91-92 of 242

PREAMBLE TO IR (IF ANY):

Figures 7 and 8 indicate the impact of Manitoba Hydro rate increases on the proportion of LICO-125 households above an energy poverty threshold of 6% and 10%, respectively, for each year 2016–36. The source is identified as "PRA calculations based on survey of Manitoba Hydro customers".

QUESTION:

To the extent that Hydro is in possession of such information or is able to access it.

a) Please provide Excel versions of the data used to produce these figures.
b) Please provide Excel spreadsheets, including formulas, of the calculations used to produce the figures presented in these graphs.

RATIONALE FOR QUESTION:

These figures apparently take into account the assumptions regarding income growth referred to in the first full paragraph of page 90 of 242 and in the right-hand columns of Table 13 on the same page. Given the reservations about the validity of these assumptions found on the last paragraph of page 94 and the first paragraph of page 95, it may be necessary to recalculate these impacts using other assumptions.

RESPONSE:

The following response was prepared by Prairie Research Associates:

a) In preparing these figures, the simulation model directly references data collected through the survey of Manitoba Hydro customers. Due to a need to preserve the privacy

and confidentiality of survey respondents, PRA is unable to share the raw (i.e., household-level) data used as the basis for Figures 7 and 8.

b) Please refer to our response to Part a).

REFERENCE:

Appendix 10.5, 3.4, Page 91-92 of 242

PREAMBLE TO IR (IF ANY):

Figures 9 and 10 indicate the impact of Manitoba Hydro rate increases on the energy burdens experienced by energy-poor and non-energy-poor households, using an energy poverty threshold of 6% and 10%, respectively, for the years 2016, 2020 and 2024. The source is identified as "PRA calculations based on survey of Manitoba Hydro customers".

QUESTION:

a) Please provide Excel versions of the data used to produce these figures.
b) Please provide Excel spreadsheets, including formulas, of the calculations used to produce the figures presented in these graphs.

RATIONALE FOR QUESTION:

These figures apparently take into account the assumptions regarding income growth referred to in the first full paragraph of page 90 of 242 and in the right-hand columns of Table 13 on the same page. Given the reservations about the validity of these assumptions found on the last paragraph of page 94 and the first paragraph of page 95, it may be necessary to recalculate these impacts using other assumptions.

RESPONSE:

The following response was prepared by Prairie Research Associates:

a) In preparing these figures, the simulation model directly references data collected through the survey of Manitoba Hydro customers. Due to a need to preserve the privacy and confidentiality of survey respondents, PRA is unable to share the raw (i.e., household-level) data used as the basis for Figures 9 and 10.

b) Please refer to our response to Part a).

REFERENCE:

Appendix 10.5, 3.4, Page 91 of 242

PREAMBLE TO IR (IF ANY):

CITATION:
The impact of the rate increases upon the proportion of LICO-125 households with energy burdens exceeding 6% (i.e., are defined as "energy poor" in the context of a 6% threshold) is illustrated in Figure 7. As shown, all scenarios are predicted to result in significant growth in energy poverty over roughly the next decade. However, in the simulations in which electricity rates grow by 5.95% for six years or 7.95% for four years, these increases are far more pronounced, in that they occur more quickly and persist for longer, relative to the case in which 3.95% increases occur for 12 years. By 2028, however, rates of energy poverty across all scenarios have essentially converged, and thereafter, these rates decline as a consequence of steady growth in household incomes. (underlining added)

QUESTION:

Please confirm that the conclusion expressed in the last sentence ("By 2028, however, rates of energy poverty across all scenarios have essentially converged, and thereafter, these rates decline as a consequence of steady growth in household incomes.") flows from the assumption expressed on page 89 of 242 to the effect that rate increases after the initial 4, 6 or 12 years (depending on the scenario) would be limited to the rate of inflation.

Please indicate how this conclusion would change if the subsequent rate increases were instead equal to inflation + 2%.

RATIONALE FOR QUESTION:

RESPONSE:

The following response was prepared by Prairie Research Associates:

It would be more accurate to say declines in rates of energy poverty across scenarios are attributable to the assumption that future levels of income growth will outstrip rate increases (whether those increases are set equal to the rate of inflation or to something else).

Assumptions around the details of the individual rate scenarios—including the magnitude of trailing-year rate increases—were reviewed and approved by the Bill Affordability Working Group prior to modeling. However, if subsequent rate increases are set to 3.78% (i.e. inflation + 2%), Figure 1 below illustrates that rates of energy poverty continue to increase until the end of the simulation period.

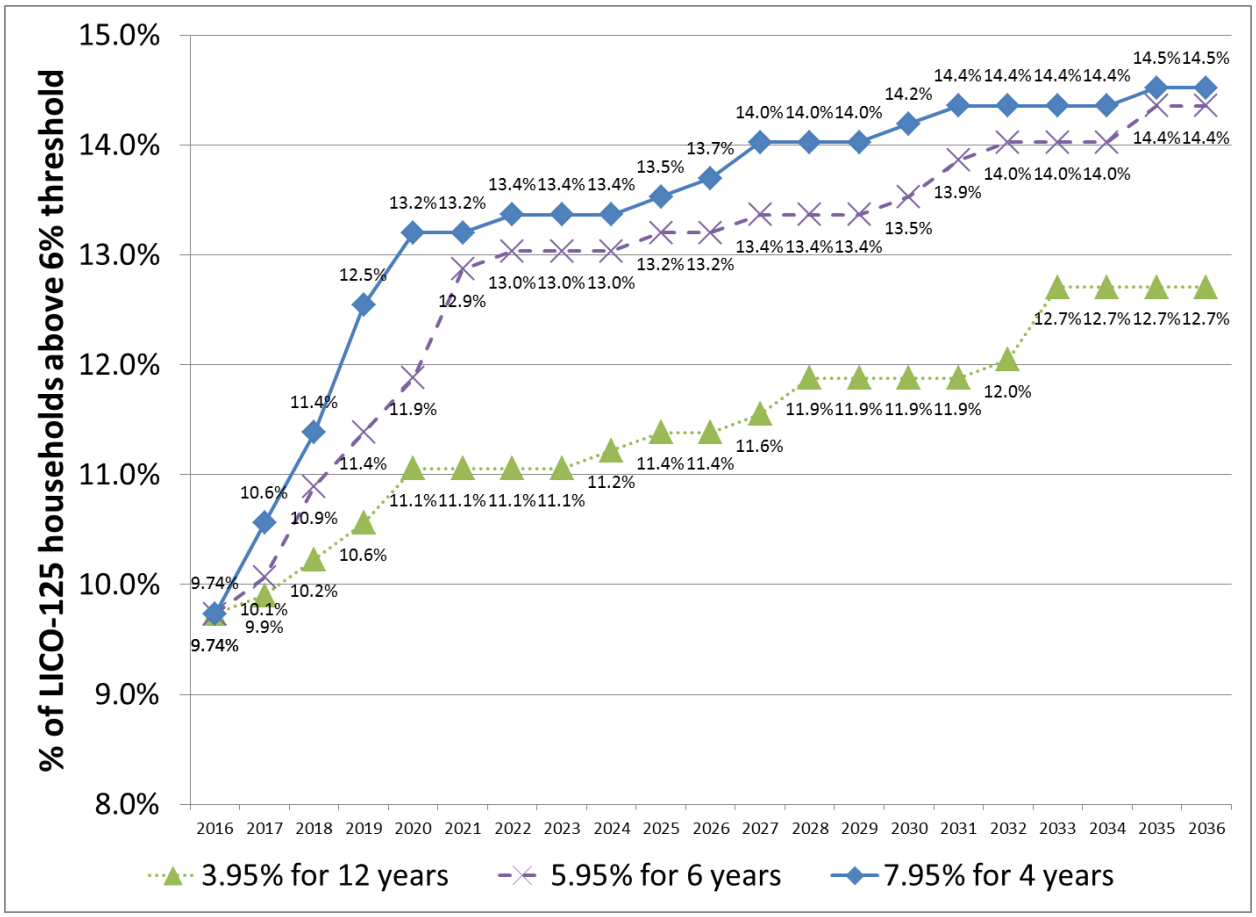

Figure 1: Impact of Manitoba Hydro rate increases on proportion of LICO-125 households above 6% energy poverty threshold, 2016–36, inclusive (*3.78% trailing-year increases, 2.96% nominal increases in household income)*

Source: PRA calculations based on survey of Manitoba Hydro customers (N=606)

REFERENCE:

Appendix 10.5, 3.4, Page 94-95 of 242

PREAMBLE TO IR (IF ANY):

Table 15 indicates the proportion of LICO-125 households with energy burdens exceeding 6% in 2020 for annual income growth between 0% and 3% (in 0.5% increments). The values for the three scenarios at 3% annual income growth (11.1%, 11.9% and 13.2%, respectively) appear to correspond to the 2020 values found in Figure 7 on page 91 of 242.

CITATION:
It is important to acknowledge the extent to which the results of the modelling exercise are driven by the assumptions presented at the beginning of this section. Of these, assumptions regarding the regularity and uniformity of growth in household income are perhaps the most critical. The model used as the basis for the above results effectively imposes the assumption that growth in household income will occur at precisely the same rates over time for all Manitobans (i.e., 2.96% annually). In reality, however, the evidence suggests that income growth has historically occurred more quickly among higher-income households (Canada Without Poverty, 2015). Furthermore, changing economic circumstances could conceivably generate average rates of income growth that are higher or lower than the rates observed for the past five years.

The assumption of regular and uniform income growth across Manitoba Hydro customers is not necessarily innocuous. Table 15, for example, reports the levels of energy poverty associated with utility rate increases under varying assumptions about the rate of household income growth. As shown, if lower-income households encounter lower levels of income growth than has been assumed, the proportion of Manitobans experiencing energy poverty could be significantly higher than depicted in Figure 7, irrespective of the rate increases that are ultimately imposed by Manitoba Hydro.

QUESTION:

a) Please expand Table 15 to include results for each year from 2017 through 2036.

b) Please provide a similar table for a 10% energy poverty threshold.
c) Please provide similar tables, assuming a inflation + 2% annual rate increase for the years following the rate increases set out in the three scenarios (page 89 of 242).

RATIONALE FOR QUESTION:

Table 15 demonstrates that PRA has initiated the reflections referred to in IR

RESPONSE:

The following response was prepared by Prairie Research Associates:

a) Table 1 below presents the requested information. The 2% trailing year increases referenced in the table's title are consistent with Table 15 in PRA's original analysis.

b) This information is again included in Table 1 below.

c) Table 2 below presents the requested information. Assuming inflation + 2% trailing year electricity rate growth (i.e. as opposed to 2%, as in PRA's original report) does increase the proportion of Manitoba Hydro customers with energy burdens exceeding the defined thresholds (i.e. 6% or 10%). However, the magnitude of these increases, within the context of the simulations, depends on the threshold considered, the extent of short-to-medium term changes in electricity rates, and assumptions around annual growth in household income. The impact is greater when coupled with larger immediate rate increases (i.e. 5.95% and 7.95%), and if a 10% threshold is used. It also becomes more pronounced the longer the higher trailing-year increases are sustained, because such increases would exceed assumed rates of household income growth. The relationship between household income growth and the impact of assumptions regarding trailing year increases is complicated, and no generalizations can be made from the results of the modelling exercise.

Table 1: Proportion of households with income below LICO-125 threshold and energy burdens exceeding 6% and 10%, under varying assumptions around immediate and longer-term electricity rate increases and household income growth—2% trailing-year increases (N=606)

Annual nominal income growth	6% energy poverty threshold						10% energy poverty threshold					
	3.95%, 12 years		5.95%, 6 years		7.95%, 4 years		3.95%, 12 years		5.95%, 6 years		7.95%, 4 years	
	#	%	#	%	#	%	#	%	#	%	#	%
2016												
3.00%	59	9.7%	59	9.7%	59	9.7%	20	3.3%	20	3.3%	20	3.3%
2.96%	59	9.7%	59	9.7%	59	9.7%	20	3.3%	20	3.3%	20	3.3%
2.50%	59	9.7%	59	9.7%	59	9.7%	20	3.3%	20	3.3%	20	3.3%
2.00%	59	9.7%	59	9.7%	59	9.7%	20	3.3%	20	3.3%	20	3.3%
1.50%	59	9.7%	59	9.7%	59	9.7%	20	3.3%	20	3.3%	20	3.3%
1.00%	59	9.7%	59	9.7%	59	9.7%	20	3.3%	20	3.3%	20	3.3%
0.50%	59	9.7%	59	9.7%	59	9.7%	20	3.3%	20	3.3%	20	3.3%
0.00%	59	9.7%	59	9.7%	59	9.7%	20	3.3%	20	3.3%	20	3.3%
2017												
3.00%	60	9.9%	61	10.1%	64	10.6%	20	3.3%	21	3.5%	21	3.5%
2.96%	60	9.9%	61	10.1%	64	10.6%	20	3.3%	21	3.5%	21	3.5%
2.50%	60	9.9%	64	10.6%	64	10.6%	21	3.5%	21	3.5%	21	3.5%
2.00%	61	10.1%	64	10.6%	65	10.7%	21	3.5%	21	3.5%	21	3.5%
1.50%	62	10.2%	64	10.6%	65	10.7%	21	3.5%	21	3.5%	21	3.5%
1.00%	62	10.2%	65	10.7%	66	10.9%	21	3.5%	21	3.5%	21	3.5%
0.50%	64	10.6%	65	10.7%	68	11.2%	21	3.5%	21	3.5%	21	3.5%
0.00%	65	10.7%	66	10.9%	68	11.2%	21	3.5%	21	3.5%	21	3.5%
2018												
3.00%	62	10.2%	66	10.9%	69	11.4%	21	3.5%	21	3.5%	22	3.6%
2.96%	62	10.2%	66	10.9%	69	11.4%	21	3.5%	21	3.5%	22	3.6%
2.50%	63	10.4%	66	10.9%	70	11.6%	21	3.5%	21	3.5%	22	3.6%
2.00%	66	10.9%	68	11.2%	72	11.9%	21	3.5%	21	3.5%	22	3.6%
1.50%	66	10.9%	69	11.4%	73	12.0%	21	3.5%	21	3.5%	22	3.6%
1.00%	66	10.9%	70	11.6%	75	12.4%	21	3.5%	22	3.6%	22	3.6%
0.50%	67	11.1%	72	11.9%	78	12.9%	21	3.5%	22	3.6%	22	3.6%
0.00%	69	11.4%	72	11.9%	79	13.0%	21	3.5%	22	3.6%	22	3.6%
2019												
3.00%	64	10.6%	69	11.4%	76	12.5%	21	3.5%	21	3.5%	22	3.6%
2.96%	64	10.6%	69	11.4%	76	12.5%	21	3.5%	21	3.5%	22	3.6%
2.50%	66	10.9%	70	11.6%	78	12.9%	21	3.5%	22	3.6%	22	3.6%
2.00%	67	11.1%	72	11.9%	79	13.0%	21	3.5%	22	3.6%	23	3.8%

Table 1: Proportion of households with income below LICO-125 threshold and energy burdens exceeding 6% and 10%, under varying assumptions around immediate and longer-term electricity rate increases and household income growth—2% trailing-year increases (N=606)

Annual nominal	6% energy poverty threshold						10% energy poverty threshold					
	3.95%, 12 years		5.95%, 6 years		7.95%, 4 years		3.95%, 12 years		5.95%, 6 years		7.95%, 4 years	
1.50%	68	11.2%	74	12.2%	80	13.2%	21	3.5%	22	3.6%	24	4.0%
1.00%	70	11.6%	79	13.0%	81	13.4%	22	3.6%	23	3.8%	24	4.0%
0.50%	71	11.7%	79	13.0%	82	13.5%	22	3.6%	24	4.0%	24	4.0%
0.00%	74	12.2%	79	13.0%	84	13.9%	22	3.6%	24	4.0%	27	4.5%
2020												
3.00%	67	11.1%	72	11.9%	80	13.2%	21	3.5%	22	3.6%	24	4.0%
2.96%	67	11.1%	72	11.9%	80	13.2%	21	3.5%	22	3.6%	24	4.0%
2.50%	67	11.1%	75	12.4%	81	13.4%	21	3.5%	22	3.6%	24	4.0%
2.00%	69	11.4%	79	13.0%	83	13.7%	21	3.5%	24	4.0%	26	4.3%
1.50%	71	11.7%	79	13.0%	87	14.4%	22	3.6%	24	4.0%	28	4.6%
1.00%	74	12.2%	80	13.2%	91	15.0%	24	4.0%	24	4.0%	28	4.6%
0.50%	78	12.9%	83	13.7%	92	15.2%	24	4.0%	24	4.0%	31	5.1%
0.00%	80	13.2%	88	14.5%	95	15.7%	24	4.0%	28	4.6%	34	5.6%
2021												
3.00%	67	11.1%	77	12.7%	79	13.0%	21	3.5%	22	3.6%	24	4.0%
2.96%	67	11.1%	78	12.9%	79	13.0%	21	3.5%	22	3.6%	24	4.0%
2.50%	67	11.1%	79	13.0%	80	13.2%	21	3.5%	24	4.0%	24	4.0%
2.00%	72	11.9%	80	13.2%	84	13.9%	23	3.8%	24	4.0%	26	4.3%
1.50%	74	12.2%	83	13.7%	90	14.9%	24	4.0%	24	4.0%	28	4.6%
1.00%	80	13.2%	91	15.0%	92	15.2%	24	4.0%	28	4.6%	31	5.1%
0.50%	81	13.4%	93	15.3%	96	15.8%	24	4.0%	31	5.1%	33	5.4%
0.00%	85	14.0%	95	15.7%	97	16.0%	25	4.1%	32	5.3%	34	5.6%
2022												
3.00%	67	11.1%	79	13.0%	79	13.0%	21	3.5%	24	4.0%	24	4.0%
2.96%	67	11.1%	79	13.0%	79	13.0%	21	3.5%	24	4.0%	24	4.0%
2.50%	71	11.7%	81	13.4%	81	13.4%	22	3.6%	24	4.0%	24	4.0%
2.00%	74	12.2%	86	14.2%	86	14.2%	24	4.0%	26	4.3%	26	4.3%
1.50%	79	13.0%	91	15.0%	91	15.0%	24	4.0%	31	5.1%	31	5.1%
1.00%	82	13.5%	95	15.7%	95	15.7%	25	4.1%	32	5.3%	32	5.3%
0.50%	88	14.5%	97	16.0%	97	16.0%	27	4.5%	34	5.6%	34	5.6%
0.00%	95	15.7%	101	16.7%	101	16.7%	31	5.1%	37	6.1%	37	6.1%
2023												
3.00%	67	11.1%	79	13.0%	79	13.0%	21	3.5%	24	4.0%	24	4.0%
2.96%	67	11.1%	79	13.0%	79	13.0%	21	3.5%	24	4.0%	24	4.0%

Table 1: Proportion of households with income below LICO-125 threshold and energy burdens exceeding 6% and 10%, under varying assumptions around immediate and longer-term electricity rate increases and household income growth—2% trailing-year increases (N=606)

Annual nominal	6% energy poverty threshold						10% energy poverty threshold					
	3.95%, 12 years		5.95%, 6 years		7.95%, 4 years		3.95%, 12 years		5.95%, 6 years		7.95%, 4 years	
2.50%	72	11.9%	81	13.4%	81	13.4%	23	3.8%	24	4.0%	24	4.0%
2.00%	77	12.7%	86	14.2%	86	14.2%	24	4.0%	26	4.3%	26	4.3%
1.50%	81	13.4%	92	15.2%	92	15.2%	24	4.0%	31	5.1%	31	5.1%
1.00%	86	14.2%	96	15.8%	95	15.7%	26	4.3%	33	5.4%	33	5.4%
0.50%	94	15.5%	97	16.0%	97	16.0%	31	5.1%	34	5.6%	34	5.6%
0.00%	97	16.0%	103	17.0%	103	17.0%	32	5.3%	39	6.4%	39	6.4%
2024												
3.00%	67	11.1%	79	13.0%	79	13.0%	21	3.5%	24	4.0%	24	4.0%
2.96%	68	11.2%	79	13.0%	79	13.0%	21	3.5%	24	4.0%	24	4.0%
2.50%	74	12.2%	80	13.2%	80	13.2%	24	4.0%	24	4.0%	24	4.0%
2.00%	80	13.2%	86	14.2%	86	14.2%	24	4.0%	26	4.3%	26	4.3%
1.50%	83	13.7%	93	15.3%	93	15.3%	24	4.0%	31	5.1%	31	5.1%
1.00%	91	15.0%	97	16.0%	97	16.0%	31	5.1%	34	5.6%	34	5.6%
0.50%	96	15.8%	99	16.3%	99	16.3%	31	5.1%	37	6.1%	37	6.1%
0.00%	100	16.5%	104	17.2%	104	17.2%	35	5.8%	41	6.8%	41	6.8%
2025												
3.00%	69	11.4%	75	12.4%	75	12.4%	21	3.5%	22	3.6%	22	3.6%
2.96%	69	11.4%	77	12.7%	76	12.5%	21	3.5%	22	3.6%	22	3.6%
2.50%	74	12.2%	79	13.0%	79	13.0%	24	4.0%	24	4.0%	24	4.0%
2.00%	80	13.2%	86	14.2%	86	14.2%	24	4.0%	26	4.3%	26	4.3%
1.50%	86	14.2%	94	15.5%	94	15.5%	25	4.1%	31	5.1%	31	5.1%
1.00%	94	15.5%	97	16.0%	97	16.0%	31	5.1%	34	5.6%	34	5.6%
0.50%	98	16.2%	102	16.8%	101	16.7%	34	5.6%	38	6.3%	38	6.3%
0.00%	103	17.0%	104	17.2%	104	17.2%	40	6.6%	44	7.3%	44	7.3%
2026												
3.00%	69	11.4%	72	11.9%	72	11.9%	21	3.5%	22	3.6%	22	3.6%
2.96%	69	11.4%	73	12.0%	73	12.0%	21	3.5%	22	3.6%	22	3.6%
2.50%	77	12.7%	79	13.0%	79	13.0%	24	4.0%	24	4.0%	24	4.0%
2.00%	81	13.4%	85	14.0%	85	14.0%	24	4.0%	26	4.3%	26	4.3%
1.50%	91	15.0%	94	15.5%	94	15.5%	31	5.1%	31	5.1%	31	5.1%
1.00%	96	15.8%	97	16.0%	97	16.0%	32	5.3%	34	5.6%	34	5.6%
0.50%	101	16.7%	103	17.0%	103	17.0%	37	6.1%	41	6.8%	41	6.8%
0.00%	104	17.2%	104	17.2%	104	17.2%	43	7.1%	45	7.4%	45	7.4%
2027												

Table 1: Proportion of households with income below LICO-125 threshold and energy burdens exceeding 6% and 10%, under varying assumptions around immediate and longer-term electricity rate increases and household income growth—2% trailing-year increases (N=606)

Annual nominal	6% energy poverty threshold						10% energy poverty threshold					
	3.95%, 12 years		5.95%, 6 years		7.95%, 4 years		3.95%, 12 years		5.95%, 6 years		7.95%, 4 years	
3.00%	70	11.6%	72	11.9%	72	11.9%	21	3.5%	22	3.6%	22	3.6%
2.96%	70	11.6%	72	11.9%	72	11.9%	22	3.6%	22	3.6%	22	3.6%
2.50%	79	13.0%	79	13.0%	79	13.0%	24	4.0%	24	4.0%	24	4.0%
2.00%	82	13.5%	85	14.0%	85	14.0%	24	4.0%	26	4.3%	26	4.3%
1.50%	92	15.2%	94	15.5%	94	15.5%	31	5.1%	32	5.3%	32	5.3%
1.00%	97	16.0%	98	16.2%	97	16.0%	34	5.6%	36	5.9%	36	5.9%
0.50%	103	17.0%	104	17.2%	104	17.2%	40	6.6%	41	6.8%	41	6.8%
0.00%	105	17.3%	105	17.3%	105	17.3%	46	7.6%	50	8.3%	50	8.3%
2028												
3.00%	70	11.6%	70	11.6%	70	11.6%	22	3.6%	22	3.6%	22	3.6%
2.96%	72	11.9%	72	11.9%	72	11.9%	22	3.6%	22	3.6%	22	3.6%
2.50%	79	13.0%	79	13.0%	79	13.0%	24	4.0%	24	4.0%	24	4.0%
2.00%	85	14.0%	85	14.0%	85	14.0%	26	4.3%	26	4.3%	26	4.3%
1.50%	95	15.7%	95	15.7%	95	15.7%	32	5.3%	32	5.3%	32	5.3%
1.00%	98	16.2%	98	16.2%	98	16.2%	37	6.1%	37	6.1%	37	6.1%
0.50%	104	17.2%	104	17.2%	104	17.2%	44	7.3%	44	7.3%	44	7.3%
0.00%	106	17.5%	106	17.5%	105	17.3%	54	8.9%	54	8.9%	54	8.9%
2029												
3.00%	69	11.4%	69	11.4%	69	11.4%	21	3.5%	21	3.5%	21	3.5%
2.96%	70	11.6%	70	11.6%	70	11.6%	22	3.6%	22	3.6%	22	3.6%
2.50%	79	13.0%	79	13.0%	79	13.0%	24	4.0%	24	4.0%	24	4.0%
2.00%	84	13.9%	84	13.9%	84	13.9%	26	4.3%	26	4.3%	26	4.3%
1.50%	95	15.7%	95	15.7%	95	15.7%	33	5.4%	33	5.4%	32	5.3%
1.00%	100	16.5%	100	16.5%	100	16.5%	37	6.1%	37	6.1%	37	6.1%
0.50%	104	17.2%	104	17.2%	104	17.2%	45	7.4%	45	7.4%	45	7.4%
0.00%	106	17.5%	106	17.5%	106	17.5%	56	9.2%	56	9.2%	56	9.2%
2030												
3.00%	69	11.4%	69	11.4%	69	11.4%	21	3.5%	21	3.5%	21	3.5%
2.96%	69	11.4%	69	11.4%	69	11.4%	21	3.5%	21	3.5%	21	3.5%
2.50%	79	13.0%	79	13.0%	79	13.0%	24	4.0%	24	4.0%	24	4.0%
2.00%	84	13.9%	84	13.9%	84	13.9%	26	4.3%	26	4.3%	26	4.3%
1.50%	95	15.7%	95	15.7%	95	15.7%	33	5.4%	33	5.4%	33	5.4%
1.00%	102	16.8%	102	16.8%	101	16.7%	37	6.1%	37	6.1%	37	6.1%
0.50%	105	17.3%	105	17.3%	105	17.3%	47	7.8%	47	7.8%	46	7.6%

Table 1: Proportion of households with income below LICO-125 threshold and energy burdens exceeding 6% and 10%, under varying assumptions around immediate and longer-term electricity rate increases and household income growth—2% trailing-year increases (N=606)

Annual nominal	6% energy poverty threshold						10% energy poverty threshold					
	3.95%, 12 years		5.95%, 6 years		7.95%, 4 years		3.95%, 12 years		5.95%, 6 years		7.95%, 4 years	
0.00%	108	17.8%	108	17.8%	108	17.8%	60	9.9%	61	10.1%	60	9.9%
2031												
3.00%	67	11.1%	67	11.1%	67	11.1%	21	3.5%	21	3.5%	21	3.5%
2.96%	69	11.4%	69	11.4%	69	11.4%	21	3.5%	21	3.5%	21	3.5%
2.50%	79	13.0%	79	13.0%	79	13.0%	24	4.0%	24	4.0%	24	4.0%
2.00%	84	13.9%	84	13.9%	84	13.9%	26	4.3%	26	4.3%	26	4.3%
1.50%	96	15.8%	96	15.8%	96	15.8%	33	5.4%	33	5.4%	33	5.4%
1.00%	103	17.0%	103	17.0%	103	17.0%	39	6.4%	40	6.6%	39	6.4%
0.50%	105	17.3%	105	17.3%	105	17.3%	51	8.4%	51	8.4%	51	8.4%
0.00%	109	18.0%	109	18.0%	109	18.0%	65	10.7%	66	10.9%	65	10.7%
2032												
3.00%	66	10.9%	66	10.9%	66	10.9%	21	3.5%	21	3.5%	21	3.5%
2.96%	66	10.9%	66	10.9%	66	10.9%	21	3.5%	21	3.5%	21	3.5%
2.50%	79	13.0%	79	13.0%	78	12.9%	22	3.6%	22	3.6%	22	3.6%
2.00%	84	13.9%	84	13.9%	84	13.9%	26	4.3%	26	4.3%	26	4.3%
1.50%	96	15.8%	96	15.8%	96	15.8%	34	5.6%	34	5.6%	34	5.6%
1.00%	103	17.0%	103	17.0%	103	17.0%	41	6.8%	41	6.8%	41	6.8%
0.50%	105	17.3%	105	17.3%	105	17.3%	54	8.9%	54	8.9%	54	8.9%
0.00%	112	18.5%	112	18.5%	112	18.5%	67	11.1%	68	11.2%	67	11.1%
2033												
3.00%	65	10.7%	65	10.7%	65	10.7%	21	3.5%	21	3.5%	21	3.5%
2.96%	66	10.9%	66	10.9%	66	10.9%	21	3.5%	21	3.5%	21	3.5%
2.50%	75	12.4%	76	12.5%	75	12.4%	22	3.6%	22	3.6%	22	3.6%
2.00%	84	13.9%	84	13.9%	84	13.9%	26	4.3%	26	4.3%	26	4.3%
1.50%	96	15.8%	96	15.8%	96	15.8%	34	5.6%	34	5.6%	34	5.6%
1.00%	104	17.2%	104	17.2%	104	17.2%	42	6.9%	42	6.9%	42	6.9%
0.50%	106	17.5%	106	17.5%	106	17.5%	54	8.9%	54	8.9%	54	8.9%
0.00%	114	18.8%	114	18.8%	114	18.8%	72	11.9%	72	11.9%	72	11.9%
2034												
3.00%	64	10.6%	64	10.6%	64	10.6%	21	3.5%	21	3.5%	21	3.5%
2.96%	64	10.6%	64	10.6%	64	10.6%	21	3.5%	21	3.5%	21	3.5%
2.50%	74	12.2%	74	12.2%	73	12.0%	22	3.6%	22	3.6%	22	3.6%
2.00%	84	13.9%	84	13.9%	84	13.9%	26	4.3%	26	4.3%	26	4.3%
1.50%	96	15.8%	96	15.8%	96	15.8%	34	5.6%	34	5.6%	34	5.6%

Table 1: Proportion of households with income below LICO-125 threshold and energy burdens exceeding 6% and 10%, under varying assumptions around immediate and longer-term electricity rate increases and household income growth—2% trailing-year increases (N=606)

Annual nominal	6% energy poverty threshold						10% energy poverty threshold					
	3.95%, 12 years		5.95%, 6 years		7.95%, 4 years		3.95%, 12 years		5.95%, 6 years		7.95%, 4 years	
1.00%	104	17.2%	104	17.2%	104	17.2%	43	7.1%	43	7.1%	43	7.1%
0.50%	108	17.8%	108	17.8%	107	17.7%	58	9.6%	58	9.6%	58	9.6%
0.00%	115	19.0%	115	19.0%	115	19.0%	74	12.2%	74	12.2%	74	12.2%
2035												
3.00%	62	10.2%	62	10.2%	62	10.2%	21	3.5%	21	3.5%	21	3.5%
2.96%	64	10.6%	64	10.6%	63	10.4%	21	3.5%	21	3.5%	21	3.5%
2.50%	72	11.9%	72	11.9%	72	11.9%	22	3.6%	22	3.6%	22	3.6%
2.00%	84	13.9%	84	13.9%	84	13.9%	26	4.3%	26	4.3%	26	4.3%
1.50%	97	16.0%	97	16.0%	97	16.0%	34	5.6%	34	5.6%	34	5.6%
1.00%	104	17.2%	104	17.2%	104	17.2%	44	7.3%	44	7.3%	44	7.3%
0.50%	108	17.8%	108	17.8%	108	17.8%	61	10.1%	61	10.1%	61	10.1%
0.00%	116	19.1%	116	19.1%	116	19.1%	76	12.5%	76	12.5%	76	12.5%
2036												
3.00%	62	10.2%	62	10.2%	62	10.2%	21	3.5%	21	3.5%	21	3.5%
2.96%	62	10.2%	62	10.2%	62	10.2%	21	3.5%	21	3.5%	21	3.5%
2.50%	72	11.9%	72	11.9%	72	11.9%	22	3.6%	22	3.6%	22	3.6%
2.00%	84	13.9%	84	13.9%	84	13.9%	26	4.3%	26	4.3%	26	4.3%
1.50%	97	16.0%	97	16.0%	97	16.0%	34	5.6%	34	5.6%	34	5.6%
1.00%	104	17.2%	104	17.2%	104	17.2%	45	7.4%	45	7.4%	45	7.4%
0.50%	109	18.0%	109	18.0%	109	18.0%	65	10.7%	65	10.7%	65	10.7%
0.00%	117	19.3%	117	19.3%	117	19.3%	81	13.4%	81	13.4%	81	13.4%

Source: PRA calculations based on survey of Manitoba Hydro customers.

Table 2: Proportion of households with income below LICO-125 threshold and energy burdens exceeding 6% and 10%, under varying assumptions around immediate and longer-term electricity rate increases and household income growth—inflation plus 2% (i.e., 3.78%) trailing-year increases (N=606)

Annual nominal income growth	6% energy poverty threshold						10% energy poverty threshold					
	3.95%, 12 years		5.95%, 6 years		7.95%, 4 years		3.95%, 12 years		5.95%, 6 years		7.95%, 4 years	
	#	%	#	%	#	%	#	%	#	%	#	%
2016												
3.00%	59	9.7%	59	9.7%	59	9.7%	20	3.3%	20	3.3%	20	3.3%
2.96%	59	9.7%	59	9.7%	59	9.7%	20	3.3%	20	3.3%	20	3.3%
2.50%	59	9.7%	59	9.7%	59	9.7%	20	3.3%	20	3.3%	20	3.3%
2.00%	59	9.7%	59	9.7%	59	9.7%	20	3.3%	20	3.3%	20	3.3%
1.50%	59	9.7%	59	9.7%	59	9.7%	20	3.3%	20	3.3%	20	3.3%
1.00%	59	9.7%	59	9.7%	59	9.7%	20	3.3%	20	3.3%	20	3.3%
0.50%	59	9.7%	59	9.7%	59	9.7%	20	3.3%	20	3.3%	20	3.3%
0.00%	59	9.7%	59	9.7%	59	9.7%	20	3.3%	20	3.3%	20	3.3%
2017												
3.00%	60	9.9%	61	10.1%	64	10.6%	20	3.3%	21	3.5%	21	3.5%
2.96%	60	9.9%	61	10.1%	64	10.6%	20	3.3%	21	3.5%	21	3.5%
2.50%	60	9.9%	64	10.6%	64	10.6%	21	3.5%	21	3.5%	21	3.5%
2.00%	61	10.1%	64	10.6%	65	10.7%	21	3.5%	21	3.5%	21	3.5%
1.50%	62	10.2%	64	10.6%	65	10.7%	21	3.5%	21	3.5%	21	3.5%
1.00%	62	10.2%	65	10.7%	66	10.9%	21	3.5%	21	3.5%	21	3.5%
0.50%	64	10.6%	65	10.7%	68	11.2%	21	3.5%	21	3.5%	21	3.5%
0.00%	65	10.7%	66	10.9%	68	11.2%	21	3.5%	21	3.5%	21	3.5%
2018												
3.00%	62	10.2%	66	10.9%	69	11.4%	21	3.5%	21	3.5%	22	3.6%
2.96%	62	10.2%	66	10.9%	69	11.4%	21	3.5%	21	3.5%	22	3.6%
2.50%	63	10.4%	66	10.9%	70	11.6%	21	3.5%	21	3.5%	22	3.6%
2.00%	66	10.9%	68	11.2%	72	11.9%	21	3.5%	21	3.5%	22	3.6%
1.50%	66	10.9%	69	11.4%	73	12.0%	21	3.5%	21	3.5%	22	3.6%
1.00%	66	10.9%	70	11.6%	75	12.4%	21	3.5%	22	3.6%	22	3.6%
0.50%	67	11.1%	72	11.9%	78	12.9%	21	3.5%	22	3.6%	22	3.6%
0.00%	69	11.4%	72	11.9%	79	13.0%	21	3.5%	22	3.6%	22	3.6%
2019												
3.00%	64	10.6%	69	11.4%	76	12.5%	21	3.5%	21	3.5%	22	3.6%
2.96%	64	10.6%	69	11.4%	76	12.5%	21	3.5%	21	3.5%	22	3.6%
2.50%	66	10.9%	70	11.6%	78	12.9%	21	3.5%	22	3.6%	22	3.6%
2.00%	67	11.1%	72	11.9%	79	13.0%	21	3.5%	22	3.6%	23	3.8%

Table 2: Proportion of households with income below LICO-125 threshold and energy burdens exceeding 6% and 10%, under varying assumptions around immediate and longer-term electricity rate increases and household income growth—inflation plus 2% (i.e., 3.78%) trailing-year increases (N=606)

Annual nominal	6% energy poverty threshold						10% energy poverty threshold					
	3.95%, 12 years		5.95%, 6 years		7.95%, 4 years		3.95%, 12 years		5.95%, 6 years		7.95%, 4 years	
1.50%	68	11.2%	74	12.2%	80	13.2%	21	3.5%	22	3.6%	24	4.0%
1.00%	70	11.6%	79	13.0%	81	13.4%	22	3.6%	23	3.8%	24	4.0%
0.50%	71	11.7%	79	13.0%	82	13.5%	22	3.6%	24	4.0%	24	4.0%
0.00%	74	12.2%	79	13.0%	84	13.9%	22	3.6%	24	4.0%	27	4.5%
2020												
3.00%	67	11.1%	72	11.9%	80	13.2%	21	3.5%	22	3.6%	24	4.0%
2.96%	67	11.1%	72	11.9%	80	13.2%	21	3.5%	22	3.6%	24	4.0%
2.50%	67	11.1%	75	12.4%	81	13.4%	21	3.5%	22	3.6%	24	4.0%
2.00%	69	11.4%	79	13.0%	83	13.7%	21	3.5%	24	4.0%	26	4.3%
1.50%	71	11.7%	79	13.0%	87	14.4%	22	3.6%	24	4.0%	28	4.6%
1.00%	74	12.2%	80	13.2%	91	15.0%	24	4.0%	24	4.0%	28	4.6%
0.50%	78	12.9%	83	13.7%	92	15.2%	24	4.0%	24	4.0%	31	5.1%
0.00%	80	13.2%	88	14.5%	95	15.7%	24	4.0%	28	4.6%	34	5.6%
2021												
3.00%	67	11.1%	77	12.7%	80	13.2%	21	3.5%	22	3.6%	24	4.0%
2.96%	67	11.1%	78	12.9%	80	13.2%	21	3.5%	22	3.6%	24	4.0%
2.50%	67	11.1%	79	13.0%	82	13.5%	21	3.5%	24	4.0%	24	4.0%
2.00%	72	11.9%	80	13.2%	87	14.4%	23	3.8%	24	4.0%	28	4.6%
1.50%	74	12.2%	83	13.7%	92	15.2%	24	4.0%	24	4.0%	29	4.8%
1.00%	80	13.2%	91	15.0%	93	15.3%	24	4.0%	28	4.6%	33	5.4%
0.50%	81	13.4%	93	15.3%	96	15.8%	24	4.0%	31	5.1%	34	5.6%
0.00%	85	14.0%	95	15.7%	98	16.2%	25	4.1%	32	5.3%	36	5.9%
2022												
3.00%	67	11.1%	79	13.0%	80	13.2%	21	3.5%	24	4.0%	24	4.0%
2.96%	67	11.1%	79	13.0%	81	13.4%	21	3.5%	24	4.0%	24	4.0%
2.50%	71	11.7%	81	13.4%	84	13.9%	22	3.6%	24	4.0%	26	4.3%
2.00%	74	12.2%	86	14.2%	91	15.0%	24	4.0%	26	4.3%	30	5.0%
1.50%	79	13.0%	91	15.0%	94	15.5%	24	4.0%	31	5.1%	32	5.3%
1.00%	82	13.5%	95	15.7%	96	15.8%	25	4.1%	32	5.3%	34	5.6%
0.50%	88	14.5%	97	16.0%	98	16.2%	27	4.5%	34	5.6%	36	5.9%
0.00%	95	15.7%	101	16.7%	103	17.0%	31	5.1%	37	6.1%	40	6.6%
2023												
3.00%	67	11.1%	79	13.0%	81	13.4%	21	3.5%	24	4.0%	24	4.0%
2.96%	67	11.1%	79	13.0%	81	13.4%	21	3.5%	24	4.0%	24	4.0%

Table 2: Proportion of households with income below LICO-125 threshold and energy burdens exceeding 6% and 10%, under varying assumptions around immediate and longer-term electricity rate increases and household income growth—inflation plus 2% (i.e., 3.78%) trailing-year increases (N=606)

Annual nominal	6% energy poverty threshold						10% energy poverty threshold					
	3.95%, 12 years		5.95%, 6 years		7.95%, 4 years		3.95%, 12 years		5.95%, 6 years		7.95%, 4 years	
2.50%	72	11.9%	82	13.5%	86	14.2%	23	3.8%	24	4.0%	28	4.6%
2.00%	77	12.7%	90	14.9%	92	15.2%	24	4.0%	28	4.6%	31	5.1%
1.50%	81	13.4%	94	15.5%	96	15.8%	24	4.0%	31	5.1%	34	5.6%
1.00%	86	14.2%	97	16.0%	98	16.2%	26	4.3%	34	5.6%	36	5.9%
0.50%	94	15.5%	98	16.2%	101	16.7%	31	5.1%	37	6.1%	38	6.3%
0.00%	97	16.0%	103	17.0%	104	17.2%	32	5.3%	41	6.8%	42	6.9%
2024												
3.00%	67	11.1%	79	13.0%	81	13.4%	21	3.5%	24	4.0%	24	4.0%
2.96%	68	11.2%	79	13.0%	81	13.4%	21	3.5%	24	4.0%	24	4.0%
2.50%	74	12.2%	83	13.7%	88	14.5%	24	4.0%	25	4.1%	28	4.6%
2.00%	80	13.2%	91	15.0%	92	15.2%	24	4.0%	29	4.8%	33	5.4%
1.50%	83	13.7%	96	15.8%	96	15.8%	24	4.0%	33	5.4%	35	5.8%
1.00%	91	15.0%	98	16.2%	98	16.2%	31	5.1%	36	5.9%	37	6.1%
0.50%	96	15.8%	103	17.0%	104	17.2%	31	5.1%	39	6.4%	41	6.8%
0.00%	100	16.5%	104	17.2%	104	17.2%	35	5.8%	45	7.4%	49	8.1%
2025												
3.00%	69	11.4%	80	13.2%	82	13.5%	21	3.5%	24	4.0%	26	4.3%
2.96%	69	11.4%	80	13.2%	82	13.5%	21	3.5%	24	4.0%	26	4.3%
2.50%	74	12.2%	85	14.0%	90	14.9%	24	4.0%	27	4.5%	28	4.6%
2.00%	80	13.2%	92	15.2%	94	15.5%	24	4.0%	31	5.1%	34	5.6%
1.50%	86	14.2%	96	15.8%	98	16.2%	25	4.1%	34	5.6%	36	5.9%
1.00%	94	15.5%	98	16.2%	101	16.7%	31	5.1%	37	6.1%	39	6.4%
0.50%	98	16.2%	104	17.2%	104	17.2%	34	5.6%	42	6.9%	47	7.8%
0.00%	103	17.0%	105	17.3%	105	17.3%	40	6.6%	51	8.4%	55	9.1%
2026												
3.00%	69	11.4%	80	13.2%	83	13.7%	21	3.5%	24	4.0%	26	4.3%
2.96%	69	11.4%	80	13.2%	83	13.7%	21	3.5%	24	4.0%	26	4.3%
2.50%	77	12.7%	86	14.2%	90	14.9%	24	4.0%	28	4.6%	28	4.6%
2.00%	81	13.4%	92	15.2%	96	15.8%	24	4.0%	33	5.4%	34	5.6%
1.50%	91	15.0%	97	16.0%	98	16.2%	31	5.1%	36	5.9%	36	5.9%
1.00%	96	15.8%	101	16.7%	103	17.0%	32	5.3%	38	6.3%	42	6.9%
0.50%	101	16.7%	104	17.2%	105	17.3%	37	6.1%	48	7.9%	50	8.3%
0.00%	104	17.2%	106	17.5%	107	17.7%	43	7.1%	56	9.2%	60	9.9%
2027												

Table 2: Proportion of households with income below LICO-125 threshold and energy burdens exceeding 6% and 10%, under varying assumptions around immediate and longer-term electricity rate increases and household income growth—inflation plus 2% (i.e., 3.78%) trailing-year increases (N=606)

Annual nominal	6% energy poverty threshold						10% energy poverty threshold					
	3.95%, 12 years		5.95%, 6 years		7.95%, 4 years		3.95%, 12 years		5.95%, 6 years		7.95%, 4 years	
3.00%	70	11.6%	80	13.2%	84	13.9%	21	3.5%	24	4.0%	27	4.5%
2.96%	70	11.6%	81	13.4%	85	14.0%	22	3.6%	24	4.0%	27	4.5%
2.50%	79	13.0%	87	14.4%	90	14.9%	24	4.0%	28	4.6%	29	4.8%
2.00%	82	13.5%	94	15.5%	97	16.0%	24	4.0%	34	5.6%	36	5.9%
1.50%	92	15.2%	98	16.2%	98	16.2%	31	5.1%	36	5.9%	38	6.3%
1.00%	97	16.0%	103	17.0%	103	17.0%	34	5.6%	42	6.9%	47	7.8%
0.50%	103	17.0%	105	17.3%	105	17.3%	40	6.6%	50	8.3%	57	9.4%
0.00%	105	17.3%	109	18.0%	110	18.2%	46	7.6%	61	10.1%	66	10.9%
2028												
3.00%	70	11.6%	81	13.4%	85	14.0%	22	3.6%	24	4.0%	27	4.5%
2.96%	72	11.9%	81	13.4%	85	14.0%	22	3.6%	24	4.0%	27	4.5%
2.50%	79	13.0%	88	14.5%	92	15.2%	24	4.0%	28	4.6%	30	5.0%
2.00%	85	14.0%	96	15.8%	97	16.0%	26	4.3%	34	5.6%	36	5.9%
1.50%	95	15.7%	98	16.2%	100	16.5%	32	5.3%	37	6.1%	40	6.6%
1.00%	98	16.2%	103	17.0%	104	17.2%	37	6.1%	46	7.6%	49	8.1%
0.50%	104	17.2%	106	17.5%	108	17.8%	44	7.3%	57	9.4%	60	9.9%
0.00%	106	17.5%	111	18.3%	114	18.8%	54	8.9%	69	11.4%	71	11.7%
2029												
3.00%	72	11.9%	81	13.4%	85	14.0%	22	3.6%	24	4.0%	27	4.5%
2.96%	72	11.9%	81	13.4%	85	14.0%	22	3.6%	26	4.3%	28	4.6%
2.50%	79	13.0%	88	14.5%	92	15.2%	24	4.0%	28	4.6%	32	5.3%
2.00%	89	14.7%	97	16.0%	97	16.0%	28	4.6%	36	5.9%	36	5.9%
1.50%	96	15.8%	99	16.3%	102	16.8%	34	5.6%	39	6.4%	43	7.1%
1.00%	101	16.7%	104	17.2%	105	17.3%	37	6.1%	49	8.1%	55	9.1%
0.50%	104	17.2%	107	17.7%	111	18.3%	46	7.6%	60	9.9%	66	10.9%
0.00%	108	17.8%	115	19.0%	115	19.0%	59	9.7%	73	12.0%	79	13.0%
2030												
3.00%	72	11.9%	81	13.4%	86	14.2%	22	3.6%	26	4.3%	28	4.6%
2.96%	72	11.9%	82	13.5%	86	14.2%	22	3.6%	26	4.3%	28	4.6%
2.50%	80	13.2%	90	14.9%	92	15.2%	24	4.0%	30	5.0%	32	5.3%
2.00%	91	15.0%	97	16.0%	97	16.0%	28	4.6%	36	5.9%	38	6.3%
1.50%	96	15.8%	102	16.8%	103	17.0%	34	5.6%	41	6.8%	46	7.6%
1.00%	103	17.0%	105	17.3%	107	17.7%	41	6.8%	54	8.9%	58	9.6%
0.50%	105	17.3%	111	18.3%	113	18.6%	53	8.7%	66	10.9%	70	11.6%

Table 2: Proportion of households with income below LICO-125 threshold and energy burdens exceeding 6% and 10%, under varying assumptions around immediate and longer-term electricity rate increases and household income growth—inflation plus 2% (i.e., 3.78%) trailing-year increases (N=606)

Annual nominal	6% energy poverty threshold						10% energy poverty threshold					
	3.95%, 12 years		5.95%, 6 years		7.95%, 4 years		3.95%, 12 years		5.95%, 6 years		7.95%, 4 years	
0.00%	110	18.2%	116	19.1%	116	19.1%	65	10.7%	81	13.4%	88	14.5%
2031												
3.00%	72	11.9%	83	13.7%	86	14.2%	22	3.6%	26	4.3%	28	4.6%
2.96%	72	11.9%	84	13.9%	87	14.4%	22	3.6%	27	4.5%	28	4.6%
2.50%	80	13.2%	91	15.0%	92	15.2%	24	4.0%	31	5.1%	34	5.6%
2.00%	92	15.2%	97	16.0%	97	16.0%	29	4.8%	36	5.9%	38	6.3%
1.50%	98	16.2%	103	17.0%	103	17.0%	36	5.9%	44	7.3%	47	7.8%
1.00%	104	17.2%	106	17.5%	108	17.8%	43	7.1%	58	9.6%	62	10.2%
0.50%	106	17.5%	114	18.8%	115	19.0%	58	9.6%	71	11.7%	77	12.7%
0.00%	114	18.8%	116	19.1%	119	19.6%	70	11.6%	89	14.7%	93	15.3%
2032												
3.00%	72	11.9%	84	13.9%	87	14.4%	22	3.6%	27	4.5%	28	4.6%
2.96%	73	12.0%	85	14.0%	87	14.4%	22	3.6%	27	4.5%	28	4.6%
2.50%	81	13.4%	92	15.2%	94	15.5%	24	4.0%	31	5.1%	35	5.8%
2.00%	92	15.2%	97	16.0%	98	16.2%	33	5.4%	38	6.3%	40	6.6%
1.50%	98	16.2%	103	17.0%	103	17.0%	36	5.9%	47	7.8%	51	8.4%
1.00%	104	17.2%	108	17.8%	111	18.3%	49	8.1%	61	10.1%	65	10.7%
0.50%	109	18.0%	115	19.0%	115	19.0%	63	10.4%	78	12.9%	86	14.2%
0.00%	116	19.1%	120	19.8%	121	20.0%	76	12.5%	95	15.7%	102	16.8%
2033												
3.00%	73	12.0%	85	14.0%	87	14.4%	22	3.6%	27	4.5%	28	4.6%
2.96%	77	12.7%	85	14.0%	87	14.4%	22	3.6%	27	4.5%	28	4.6%
2.50%	82	13.5%	92	15.2%	94	15.5%	26	4.3%	32	5.3%	35	5.8%
2.00%	93	15.3%	97	16.0%	98	16.2%	34	5.6%	38	6.3%	42	6.9%
1.50%	98	16.2%	103	17.0%	105	17.3%	39	6.4%	49	8.1%	56	9.2%
1.00%	105	17.3%	111	18.3%	113	18.6%	50	8.3%	64	10.6%	69	11.4%
0.50%	111	18.3%	115	19.0%	117	19.3%	69	11.4%	87	14.4%	91	15.0%
0.00%	116	19.1%	121	20.0%	124	20.5%	83	13.7%	104	17.2%	108	17.8%
2034												
3.00%	77	12.7%	85	14.0%	87	14.4%	22	3.6%	27	4.5%	28	4.6%
2.96%	77	12.7%	85	14.0%	87	14.4%	22	3.6%	27	4.5%	29	4.8%
2.50%	85	14.0%	92	15.2%	94	15.5%	27	4.5%	34	5.6%	35	5.8%
2.00%	94	15.5%	97	16.0%	99	16.3%	34	5.6%	40	6.6%	44	7.3%
1.50%	101	16.7%	104	17.2%	106	17.5%	39	6.4%	54	8.9%	58	9.6%

Table 2: Proportion of households with income below LICO-125 threshold and energy burdens exceeding 6% and 10%, under varying assumptions around immediate and longer-term electricity rate increases and household income growth—inflation plus 2% (i.e., 3.78%) trailing-year increases (N=606)

Annual nominal	6% energy poverty threshold						10% energy poverty threshold					
	3.95%, 12 years		5.95%, 6 years		7.95%, 4 years		3.95%, 12 years		5.95%, 6 years		7.95%, 4 years	
1.00%	105	17.3%	113	18.6%	113	18.6%	56	9.2%	69	11.4%	76	12.5%
0.50%	115	19.0%	117	19.3%	119	19.6%	72	11.9%	91	15.0%	94	15.5%
0.00%	120	19.8%	124	20.5%	124	20.5%	92	15.2%	108	17.8%	114	18.8%
2035												
3.00%	77	12.7%	85	14.0%	87	14.4%	22	3.6%	26	4.3%	29	4.8%
2.96%	77	12.7%	87	14.4%	88	14.5%	22	3.6%	28	4.6%	30	5.0%
2.50%	85	14.0%	93	15.3%	94	15.5%	28	4.6%	34	5.6%	36	5.9%
2.00%	96	15.8%	98	16.2%	99	16.3%	36	5.9%	42	6.9%	44	7.3%
1.50%	103	17.0%	105	17.3%	107	17.7%	41	6.8%	56	9.2%	61	10.1%
1.00%	107	17.7%	113	18.6%	115	19.0%	60	9.9%	76	12.5%	84	13.9%
0.50%	115	19.0%	119	19.6%	121	20.0%	78	12.9%	94	15.5%	104	17.2%
0.00%	121	20.0%	124	20.5%	126	20.8%	96	15.8%	115	19.0%	119	19.6%
2036												
3.00%	77	12.7%	87	14.4%	88	14.5%	22	3.6%	27	4.5%	30	5.0%
2.96%	77	12.7%	87	14.4%	88	14.5%	22	3.6%	28	4.6%	31	5.1%
2.50%	86	14.2%	93	15.3%	94	15.5%	28	4.6%	35	5.8%	37	6.1%
2.00%	97	16.0%	99	16.3%	102	16.8%	36	5.9%	44	7.3%	47	7.8%
1.50%	103	17.0%	106	17.5%	109	18.0%	47	7.8%	61	10.1%	65	10.7%
1.00%	109	18.0%	115	19.0%	116	19.1%	64	10.6%	82	13.5%	88	14.5%
0.50%	116	19.1%	121	20.0%	124	20.5%	86	14.2%	104	17.2%	108	17.8%
0.00%	122	20.1%	126	20.8%	127	21.0%	104	17.2%	120	19.8%	124	20.5%

Source: PRA calculations based on survey of Manitoba Hydro customers.

REFERENCE:

Appendix 10.5, 4.1, Page 96 of 242

PREAMBLE TO IR (IF ANY):

CITATION:
The AEP is delivered to specific client groups through five distinct channels, including individual; First Nations; private landlords and tenants; social housing providers and tenants; and neighbourhoods (Dunsky Energy Consulting & Summerhill Group, 2015):
…

> ► First Nations. Working with each First Nations community, a dedicated energy advisor works directly with First Nations communities to provide free basic energy savings measures, free insulation, and funding for local labour to install all of the materials. No application process is required to participate in the AEP through this delivery channel (Dunsky Energy Consulting & Summerhill Group, 2015). In total, 4,553 households had participated in this program stream as of November 30, 2016, accounting for slightly more than one-quarter (25.3%) of AEP participants to date. The bulk of the outstanding work to be undertaken through this delivery channel involves the direct installation of low/no-cost energy efficiency measures (Dunsky Energy Consulting & Summerhill Group, 2015), since at least two-thirds of the estimated market for insulation upgrades has been so far addressed (Galbraith, 2016).

QUESTION:

Please provide copies of the two report referenced in the citation:

- Dunsky Energy Consulting, & Summerhill Group. (2015). External Review of the Affordable Energy Program. Montreal, QC: Manitoba Hydro, and
- Galbraith, C. (2016, May). Affordable Energy Program & Neighbours Helping Neighbours. Presented at the Collaborative Process -- Manitoba Hydro Bill Affordability Program, Manitoba Hydro Building, Winnipeg, Manitoba.

RATIONALE FOR QUESTION:

RESPONSE:

Please find attached a copy of the response to MKO/COALITION/MH I-9 from the 2015/16 & 2016/17 Electric General Rate Application for the External Review of the Affordable Energy Program report prepared by Dunsky Energy Consulting, & Summerhill Group.

Please also find attached the presentation delivered in May 2016 on the Affordable Energy Program & Neighbours Helping Neighbours.

Manitoba Hydro

Manitoba Hydro 2014/15 & 2015/16 General Rate Application
MKO-COALITION/MH-I-9

Section:		**Page No.:**	
Topic:	Power Smart Programs		
Subtopic:	Evaluation reports		
Issue:	Access to evaluation reports		

PREAMBLE TO IR (IF ANY):

As program administrators seek to improve program performance they may conduct both internal evaluations of programs and/or contract with independent evaluators to conduct formal process and impact evaluations. These reports may provide useful information in determining the extent to which programs are maximizing their benefits to ratepayers.

QUESTION:

Provide all internal or third-party evaluation reports that have been conducted of any of the Power Smart Programs over the past five years, especially where those reports focus on the Affordable Energy Program.

RATIONALE FOR QUESTION:

Evaluation reports can provide important data regarding the success of programs and of the opportunities for improvement. These reports can help determine the appropriateness of Manitoba Hydro's proposed Power Smart programs. The question has a broader focus than GAC 1-35 in that it includes more than AEF question and seeks external as well as internal evaluations.

RESPONSE:

Internal program evaluations are performed on an annual basis at the end of each fiscal year with the results aggregated and reported in the Power Smart Annual Review. The latest evaluated results are provided in Appendix 8.2.

An internal Affordable Energy Program (AEP) Process Review was completed in 2014. See the response to GAC/MH-I-55d.

A third-party review of the Affordable Energy Program was completed in 2015. A copy of the report is attached.

Manitoba Hydro has engaged external firms to conduct impact evaluations of three additional DSM programs covering each customer sector as follows:

- Residential - Home Insulation Program;
- Commercial - Building Envelope Program; and
- Industrial – Performance Optimization Program.

Work on the three evaluations is underway with final reports expected to be recived over the next few months.

External Review of the Affordable Energy Program

PREPARED BY:
DUNSKY ENERGY CONSULTING

SUMMERHILL GROUP

Submitted to:
Cheryl Pilek, Manager, Power Smart Planning, Evaluation & Research
Colleen Galbraith, Program Manager, Affordable Energy Unit

Manitoba Hydro

March 3rd, 2015 – **FINAL REPORT**

dunsky ENERGY CONSULTING

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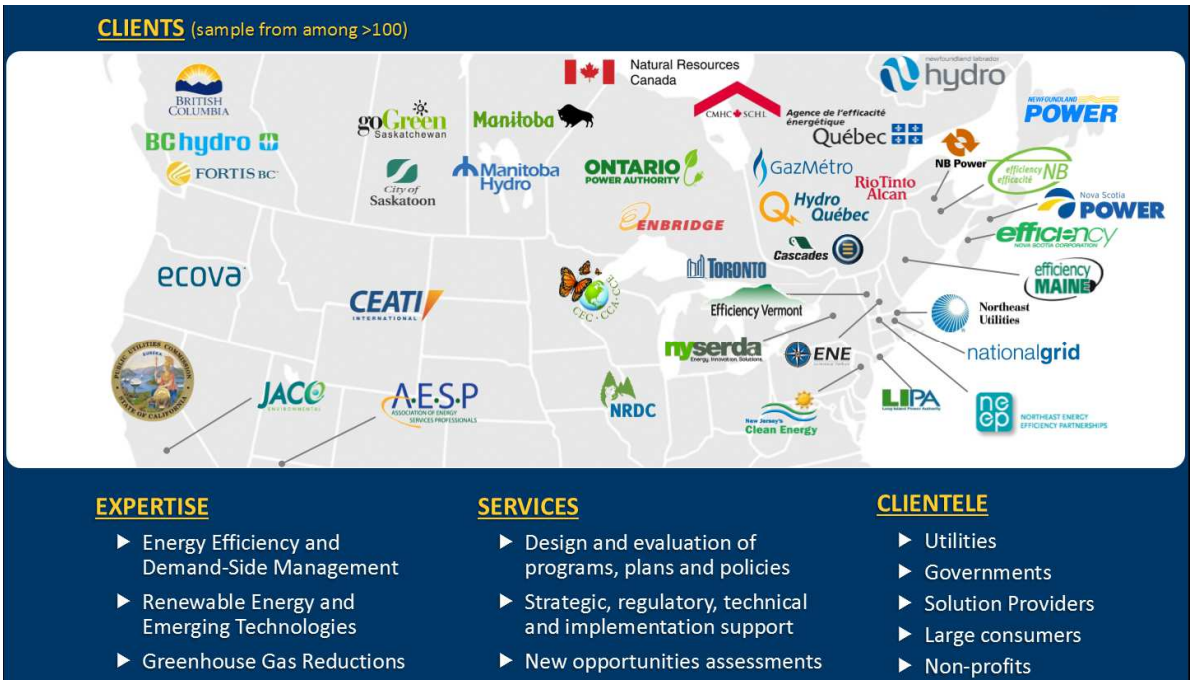
ABOUT **DUNSKY ENERGY CONSULTING**

Dunsky Energy Consulting is specialized in the design, analysis, implementation and evaluation of energy efficiency and renewable energy programs and policies. Our clients include leading utilities, government agencies, private firms and non-profit organizations throughout North America.



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Summerhill designs and implements energy efficiency programs and engagement strategies for utilities, retailers, property management groups, corporations and industry associations. We specialize in interacting with participants using innovative approaches that achieve measurable results. Our goal is to bring enthusiasm, insight, and innovation to help our clients engage their customers in order to build stronger relationships and encourage better choices.

For over 15 years, Summerhill's service offerings have included:

- Design and implementation of customized mass-market consumer facing environmental programs
- Creation and delivery of employee engagement, stakeholder engagement and environmental education programs
- Product, industry and customer trends research enabling informed decisions
- Content development of environmental and sustainability marketing materials
- Strategic consulting & development integrating business and sustainability

We are based in Toronto, with offices in Regina, Halifax, and Washington, D.C., employing over 50 full-time staff and more than 800 part-time ambassadors that support our program delivery across Canada.

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ACKNOWLEDGEMENTS

In preparing this report, the Dunsky Team benefitted from the extensive collaboration, insights and experience of Cheryl Pilek and Colleen Galbraith, of Manitoba Hydro, as well as their colleagues and staff.

The project manager, Martin Poirier, would also like to thank Megan Bennett and Lenard Hart of Summerhill, as well as François Boulanger and Mariangiola Fabbri of Dunsky Energy Consulting, for their participation to this project. We are also thankful for the insights gained from our discussions with the staff and representatives of BC Hydro, Action for Boston Community Development (ABCD), Efficiency Maine, the Maine Housing Authority, NYSERDA, the Saskatchewan Housing Corporation, as well as from our interviews with AEP's stakeholders and program participants.

TABLE OF CONTENTS

1. INTRODUCTION

1.1 PROJECT SCOPE

The scope of this study is to review the program design of the Affordable Energy Program (AEP), to examine lessons that can be learned from best practices and leading programs in North America, to identify opportunities for program improvement, and to advise on the framework and methodologies for both impact evaluations and cost-effectiveness analysis.

This program review focused on two levels of assessment: (1) a high-level, strategic review, and (2) a more detailed, process-related analysis. It covered the following topics: flow of program processes and program delivery channels, marketing and expectations of participation levels, accessing lower income customers in rental properties, incentive levels including customer co-payment levels, hurdle rates used in assessing measures and cost-effectiveness.

1.2 METHODOLOGY

The project's activities consisted of a jurisdictional scan, to learn from other low income program's experience in the U.S. and In Canada, followed by the review of the AEP itself. The review team also examined closely Manitoba Hydro's cost-effectiveness framework and impact evaluation methodology for this program. Our methodology for each these project activities is described in the following sub-sections.

1.2.1 METHODOLOGY - JURISDICTIONAL SCAN

Considering the large number and variety of low income programs available in Canada and the U.S. and in order to provide Manitoba Hydro with a meaningful review, programs were chosen according to the following criteria:

- **General**:
  - Balanced representation Canada – USA
  - Program's availability to owners and tenants
  - Type of building (e.g. social housing, multifamily)

- **Best-in-Class**:
  - Innovative programs
  - Participation and savings (expected or achieved)
  - Programs have been previously identified as champions (e.g. ACEEE)

- **Similarities with Manitoba**:
  - Fuel mix
  - Winter peak regions
  - Programs include reserve/aboriginal communities
  - State ownership.

The following ten programs, in eight jurisdictions (three in Canada and five in the U.S.), were selected and reviewed:

- Energy Saving Kit (British Columbia)
- Energy Conservation Assistance Program (British Columbia)
- PG&E Assistance Programs (California)
- Home Energy Assessment (Massachusetts)
- Low Income Multifamily Energy Retrofits (Massachusetts)
- Low Income (Home) Energy Assistance Program (Maine)
- NHSAVES@Home with Home Energy Assistance (New Hampshire)
- EmPower for Residents (New York)
- Save-ON-Energy HOME ASSISTANCE Program (Ontario)
- Home Energy Improvement Program (Saskatchewan)

For each program reviewed in this project, our research team used several data collection methods, including a literature review, a review of programs' documentation and website, requests for information (through e-mail and phone), and phone interviews with program representatives. For each program, information was gathered and organized around seven key program elements: program process and delivery models, marketing strategies, participation levels, rental properties, payment of measures costs, hurdle rates and cost-effectiveness.

Detailed info on each program and jurisdiction is presented in Appendix A, and the list of all interviews conducted in Appendix B.

1.2.2 METHODOLOGY - AEP PROGRAM REVIEW

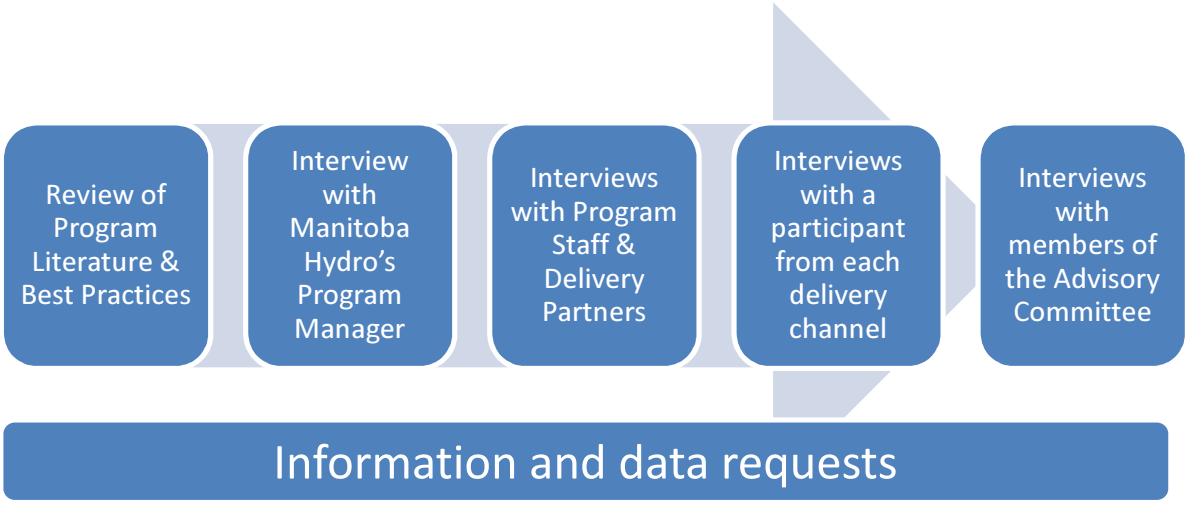
The Dunsky and Summerhill team reviewed and analysed the current AEP documentation, and conducted interviews and information requests with the program manager and program staff to gather all relevant information on the program.

Group leaders in the identified delivery channels were surveyed to identify any program barriers and opportunities they directly experienced or that were experienced by members of their group. In addition, surveys were conducted with past AEP participants to identify the factors that motivated them to participate and the channels they used to access the program.

As part of this analysis, the Dunsky Team examined specific program design parameters such as measures span, customer co-payments, and bill assistance initiatives.

Our early findings and recommendations were discussed and tested during an internal Dunsky – Summerhill brainstorming session. This session was also an opportunity to explore other program improvement opportunities. We finally sought inputs from AEP Advisory Committee members before presenting our findings to Manitoba Hydro.

Figure 1.1 – Review Process



1.2.3 METHODOLOGY - EVALUATION FRAMEWORK REVIEW

Our team reviewed the AEP evaluation plan, collected and analyzed AEP energy savings calculation spreadsheets (insulation, heating systems and combined measures), reviewed algorithms documented in the Evaluation Plan and the energy savings calculation spreadsheets, and requested and reviewed additional information on assumptions and data sources.

These program assumptions were compared with other programs' technical reference manuals, savings assumptions, and evaluation processes. Our review included the evaluation methodologies, savings assumptions, results reporting, and cost-effectiveness calculations. We devoted specific attention to

assessing the program's cost-effectiveness framework at a higher level, with a view to identifying opportunities to improve its accuracy and usefulness.

2. REVIEW OF LOW INCOME PROGRAM BEST PRACTICES

In order to provide Manitoba Hydro with an overview of current best practices for low income programs across North America, the research team selected and reviewed ten Low income programs in eight jurisdictions (three in Canada and five in the U.S.). For each program, information was gathered and organized around seven key program elements: program process and delivery models, marketing strategies, participation levels, rental properties, payment of measures costs, hurdle rates and cost-effectiveness.

In the section below we present common best practices, as well as the key learnings associated to each of the key program elements.

2.1 SELECTED PROGRAMS

After considering about 40 programs in 18 jurisdictions (8 Canadian Provinces and 10 U.S. States), the research team selected the ten programs listed in table 2.1 below.

Table 2.1 - List of Selected Programs

JURISDICTION	PROGRAM NAME
British Columbia	1. ENERGY SAVING KIT
	2. ENERGY CONSERVATION ASSISTANCE
California	3. ENERGY SAVINGS ASSISTANCE
Maine	4. MULTIFAMILY ELECTRIC HEAT AND LOW INCOME
Massachusetts	5. MASS SAVE INCOME ELIGIBLE PROGRAMS
	6. LOW INCOME MULTI-FAMILY ENERGY RETROFIT
New Hampshire	7. NHSAVE@HOME WITH HOME ENERGY ASSISTANCE
New York	8. NYSERDA EMPOWER
Ontario	9. OPA SAVE-ON-ENERGY HOME ASSISTANCE PROGRAM
Saskatchewan	10. HOME AND RENTAL REPAIR

Each selected jurisdiction is briefly presented below, while a more detailed description of the key program elements is available in appendix A.

2.1.1 BRITISH COLUMBIA

In 2007, the Provincial Government of British Columbia set out a plan to meet 50% of its future resource needs through energy conservation by 2020. Considering that 15-20% of its customers are designated low income, BC Hydro put in place two Power Smart programs specifically for low income households:

- Energy Saving Kits (ESK), launched in 2008, BC Hydro partnered with Fortis BC at the end of 2010. Custom kits were launched in 2014 to increase the amount of showerheads and window films distributed.
- Energy Conservation Assistance Program (ECAP), launched in 2010, BC Hydro partnered with Fortis starting in summer 2012, allowing a single application form per customer and the installation of the measures by a single contractor for both utilities at the same visit. While the program is offered province-wide, the service is limited in rural or remote areas (depending on accessibility and minimum participation levels)

Eligibility to these programs includes several factors like household income, account verification, and program funding.

2.1.2 CALIFORNIA

California presents a wide array of income-qualified energy assistance programs, providing discounts on electric and gas bills (CARE), special electric rates for limited-income households (FERA), no-cost weatherization services (ESAP) and administering the federal low income program (LIHAP[1])[2].

PG&E offers a portfolio of energy assistance programs to its customers[3], including CARE (California Alter Rate for Energy), FERA (Family Electric Rate Assistance), ESA (Energy Savings Assistance Program) and other financial assistance programs (LIHEAP and REACH[4]).

The Energy Savings Assistance Program is a “whole-house approach” program providing free energy education, weatherization measures and energy efficient appliances to reduce gas and electric usage. Almost one third of PG&E residential customers qualify for the ESA Program. Funded through a public purpose charge on customer utility bills, for the 2012-2014 cycle the program has a budget of

[1] Low Income Home Energy Assistance Program
[2] The list of all programs available can be found at http://www.cpuc.ca.gov/PUC/energy/Low+Income/
[3] The full list of assistance programs offered by PG&E can be found here: http://www.pge.com/en/myhome/saveenergymoney/financialassistance/index.page?
[4] Relief for Energy Assistance through Community Help

$469,207,675 and a home goal of 359,820 households. During the program cycle, PG&E aims at treating about 20% of 1.8 million low income customers[5].

2.1.3 MAINE

In Maine, several low income programs are administered by Maine Housing, the state's housing authority, including LIHEAP (assistance and emergency fuel), WAP (weatherization), Low Income Assistance Plan (LIAP) and Maine Housing's Central Heating Improvement Program (CHIP). Eligibility is based on the total household income (established by income eligibility guidelines or 60% of the state area median income, whichever is less). If eligible for LIHEAP, participants may also qualify for the other programs.

The Multifamily Electric Heat Low Income Program selected and reviewed for this report, is managed by Efficiency Maine, and focuses on a very specific market segment, the weatherization and installation of heat pumps for electric heated multifamily buildings. Efficiency Maine is also rolling out the same program for gas and one for single family homes and manages other low income programs, like the Food bank CFLs program.

2.1.4 MASSACHUSETTS

Massachusetts' local utilities and energy efficiency providers have joined with the Massachusetts Association for Community Action (MASSCAP) and Low income Energy Affordability Network (LEAN) to promote programs to qualifying low income households, targeting both single-family and multifamily households.

MASSAVE income-eligible programs for single-family households generally have multiple sources of funds, including the Federal government (the Department of Energy and the Department of Health & Human Services) and utilities across the state and are managed by the Department of Housing Community Development, with 23 regional non-profit and local government organizations. Together they form LEAN, and through LEAN, low income families may be eligible for a number of programs including[6]:

[5] "Providing Energy Savings Assistance to Low Income Customers" PowerPoint presentation for the Utility Energy Forum (2013)

[6] http://www.masssave.com/residential/home-energy-assessments/income-eligible-programs/income-eligible-programs

- Fuel Assistance: subsidies to reduce the price for energy services;
- Utility Discount Rates: discounted rates to lower energy bills[7]; and
- Payment Plans and/or Arrearage Management Programs: gas and electric utility providers work with customers to spread out payments on overdue portions of their bill. Many utility providers also offer an Arrearage Management Program, allowing past due balances over a certain amount to be forgiven if customers adhere to a structured payment plan.

The Low Income Multifamily Energy Retrofit Program (LIMF) is funded by the utilities and administered by LEAN. The program provides 100% incentives for comprehensive energy efficiency retrofits (both gas and electric) for multi-family residential units and post building assessment to identify opportunities. All applicants benchmark their energy usage in the first year using an online tool called "WEGOWise" (Water, Electricity, Gas, Oil) a utility tracking and energy benchmarking software.

2.1.5 NEW HAMPSHIRE

As part of the Restructuring Act[8], the electric utilities regulated by the Public Utilities Commission (PUC) have established a set of energy efficiency programs designed for statewide implementation. The "CORE Energy Efficiency Programs" are funded by the System Benefits Charge (~78% in 2013) and Regional Greenhouse Gas Initiative (RGGI) funds and implemented by New Hampshire utilities. In addition to the statewide programs, individual utilities also run specific programs.

For each dollar invested in the programs, the return for customers has been calculated at more than $6.

Among the programs available:

- Home Energy Assistance program, a "whole house" weatherization program, free of charge for participants;
- Electric Assistance Program (EAP), which helps eligible customers pay their electric bills (9% - 77% discount on monthly electric bills, depending on customer's gross household income and household size);
- WAP (Weatherization Assistance Program), a low income weatherization federal program (for which demand in NH is currently higher than the available funds); and
- Fuel Assistance Program (FAP), also federal, providing discounts on monthly electricity and gas bills.

[7] Note that customers qualifying for Fuel Assistance are automatically referred to local gas or electric utility for a bill discount

[8] Section 374-F:3 (X), http://www.gencourt.state.nh.us/rsa/html/xxxiv/374-f/374-f-mrg.htm

2.1.6 NEW YORK

NYSERDA offers several programs providing cost-effective home improvements:

- Assisted Home Performance with ENERGY STAR®: income-eligible households can receive a subsidy (Assisted Subsidy) representing up to 50% (up to $5000) of an approved energy efficiency project;
- Assisted New York ENERGY STAR Certified Homes: a $500 cash incentive to households meeting income-eligibility requirements; and
- EmPower New York: free energy efficiency improvements available to homeowners and renters

NYSERDA has also created the Low income Forum on Energy, which brings together organizations and individuals committed to addressing the challenges and opportunities facing low income New Yorkers.

Additional programs, not administered by NYSERDA, are also available in the state of New York:

- Low income Home Energy Assistance Program (HEAP), for financial assistance to eligible households to help pay for their home heating costs; and
- Weatherization Assistance Program (WAP), which assists income-eligible families and individuals by reducing their heating/cooling costs and improving the safety of their homes through energy efficiency measures.

2.1.7 ONTARIO

Several programs are available for low income residents in Ontario. Most programs are offered and managed directly by Ontario's gas and electricity utilities. Among others:

- Low Income Energy Assistance (LEAP), developed by the Ontario Energy Board (OEB) to assist low income customers with their energy bill payments. The program provides a one-time grant of up to $500 per year[9] to eligible customers having difficulty paying 'past due' electricity bills and it is not intended to provide regular or ongoing bill payment assistance;
- Home Winterproofing Program, provides insulation and draft proofing at no charge to eligible Enbridge Gas customers (homeowners);
- Save-ON-Energy Home Assistance Program (HAP), depending on the heating and housing type and the existing efficiencies, the program offers free home improvement to eligible participants;

[9] $500 in emergency assistance for electricity bills ($600 if electric heating) and $500 for gas bills. http://www.ontarioenergyboard.ca/OEB/Consumers/Consumer+Protection/Help+for+Low income+Energy+Consumers#leap

The Ontario Power Authority (OPA) funds the Save-ON-Energy Home Assistance Program for uptake across all Ontario Local Distribution Companies (LDCs). The program promotion and outreach is largely done through networking with social agencies and via word-of-mouth, with some LDCs also doing some targeted advertising. Recent improvements to the program include accepting applications from those living in on-reserve first nation's housing and the possibility for social housing providers to apply on behalf of all their residents (as a result, over participation by social housing complexes increased from about 20% to close to 70% of total participation).

The program still has some eligibility complications that restrict participation and benefits from flowing from landlords to low income tenants. It does, however, maximize participation by allowing everything from shallow to deep retrofit measures depending on the home and who owns it.

2.1.8 SASKATCHEWAN

The Home Repairs program is one of Saskatchewan Housing Corporation (SHC) programs designed to provide support and options for low income households in the province that might not otherwise be able to afford housing. The programs include capital rent subsidy, a partnership with Habitat for Humanity and the Home Repairs Program (available for renters and home owners).

The Home Repairs Program was redesigned in 2012 and offers higher assistance levels, increased eligibility, and shorter loan forgiveness periods. Although none of the SHC programs specifically targets energy conservation, home repairs can have the co-benefit of increasing energy efficiency for homes and apartments depending on the repair provided (i.e. insulation, higher efficiency furnaces). By design, this program has a quite limited number of participants.

2.2 IDENTIFIED BEST PRACTICES

Low income programs are largely present across the board, some date from the 1970's and 80's (like the U.S. Weatherization Assistance Program - WAP - and PG&E Energy Assistance Programs), while others are more recent. In the U.S., federal programs like WAP and LIHEAP generally provide base funding and are used as a leverage for local, state or other sources of funding.

Despite local and national differences, low income households face common barriers when it comes to energy programs: limited access to capital, split incentives (high share of rental units makes program participation more difficult due to landlords' lack of interest in investing in renovation), organizational practices (e.g. limited interest from contractors in serving low income households), higher levels of illiteracy and lower education, general distrusts towards financial institutions and utilities and language barriers (e.g. in particular in states with high immigrant population like California).

There are several benefits deriving from the successful design and implementation of low income programs, both for program participants and utilities. Among others: decreasing energy-use and energy

bills, improved comfort and safety, and access to essential public services are some of the main benefits for the participants while utilities would witness lower credit and collection costs, avoided service shut-off costs, reduced uncollectible accounts write-offs and improved customer relations.

Among the programs reviewed, a number of common best practices have been identified: most programs include different housing types, like single-family houses, multi-family buildings and mobile homes (e.g. BC, CA, ME, NY, OPA, SK), and rental properties (BC, CA, MA, NH, NY, ON, SK); best-in-class programs provide a comprehensive coverage of services and geographical areas (e.g. CA, MA, NY) and have established regular partnership to leverage funding and provide efficient and effective program delivery (e.g. MA, NH). In particular, in order to build trust and acquire legitimacy, several programs cooperate with other low income service providers and trusted social agencies which are active within the community and the targeted segment (e.g. MA, NY, OPA): for example, in the United States low income programs are often managed locally by Community Action Agencies, which also provide direct customer services for non-energy programs (e.g. NH, ME, NY).

A whole-house approach (e.g. CA, NH, NY), the use of sophisticated diagnostic and analytical tools (e.g. NY - BPI certified contractors and MA - online tracking and benchmarking software), joint with a comprehensive portfolio of services provided (programs often offer a broad range of measures, not targeted to one single technology) are also among identified best practices. In addition, programs are generally fuel neutral, cover multiple energy sources – gas, electricity, oil, etc. (e.g. BC, CA, NY) and provide flexible and diverse gas and electric measures (i.e. OPA, BC, MA).

Another feature characterizing best practices among low income programs is the adoption of innovative services and approaches, like delivering marketing material and services in multiple languages (in California communication regarding the available low income programs is provided in 9 languages, targeting specific segments of the community), engaging with social housing providers (accepted as program applicants in Ontario) and first nations communities (e.g. OPA, BC, MA, SK), including education as one of the key services provided (e.g. BC,CA, NH) and redefining the traditional low income household segment in favor of the inclusion of so-called limited-income customers (with eligible incomes set above the federal poverty guidelines).

2.3 OVERVIEW BY MAIN TOPICS

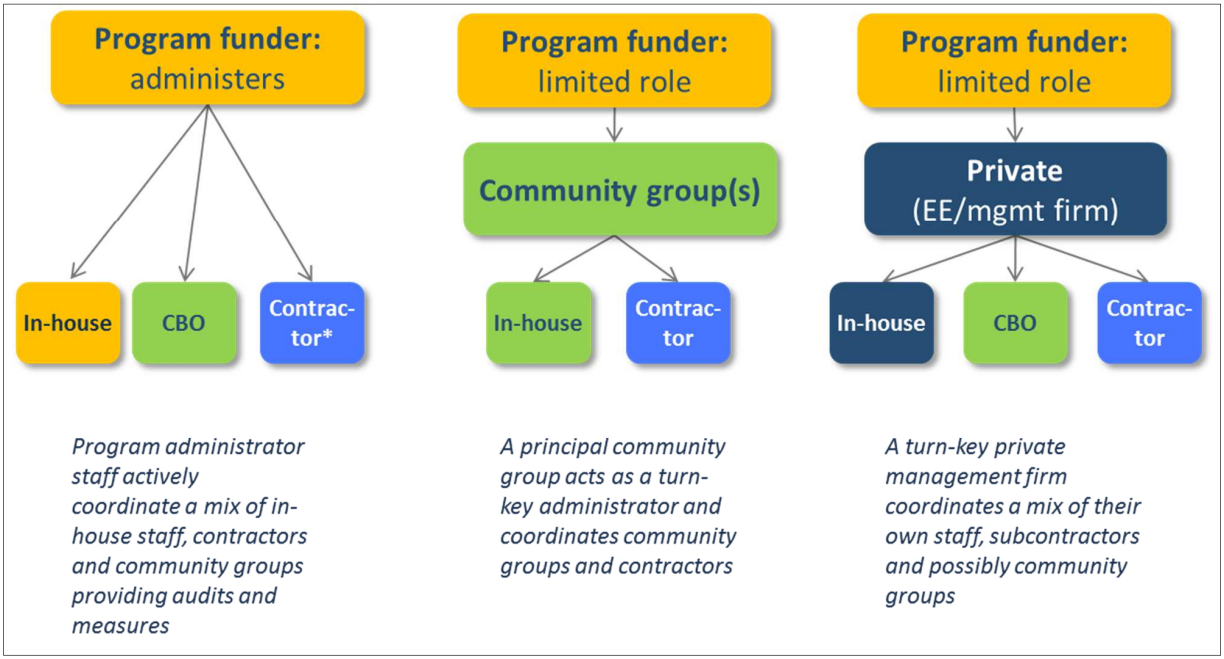
In this section, we present key learnings of our programs review by main topics, including program process and delivery models, marketing strategies, participation levels, rental properties, payment of measures costs and hurdle rates and cost-effectiveness. Key program elements are presented in further detail in Appendix A, with a summary table for each selected program.

2.3.1 DELIVERY MODELS

There are three common deliver models for low income programs (as illustrated in Figure 2.1). The role of the program funder varies according to the model, going from being an active player in the program coordination and administration to having a more limited role and delegating the program administration either to community group(s) or to an external private contractor. In the U.S. low income programs are often managed and administered by the Department of Housing Community Development and Community Action Agencies (CAA) in cooperation with regional non-profit and local government organizations.

With the exception of Saskatchewan, which manages the program entirely on its own, delivery is generally ensured in cooperation with external contractors.

Figure 2.1 - Program Delivery Models



2.3.2 PROGRAM PROCESS

Program processes are similar across the board: in most cases participants must complete an application (paper form or on-line); once the application is approved, the agency or utility manages the process and supports the participant until the measure is installed and verified (Figure 2.2).

Application forms can require household authorization to obtain household information and relevant energy usage data, the landlord's consent to participate to the program and the signature of the utility account holder. NYSERDA also accepts Utility or Agency referrals.

Figure 2.2 - Program Process

2.3.3 MARKETING STRATEGIES

Marketing activities differ largely according to program target, eligible participants and covered territory. Strategies include an increasing involvement of local communities and community centers to build trust among the targeted segment and the creation of local networks (e.g. MA Low income Energy Affordability Network - LEAN). Bill inserts, website and word-to-mouth (e.g. BC, OPA, NH) are among the most common marketing strategies, together with the increased use of social marketing tools (e.g. CA, MA, NY) and customer segmentation analysis and targeted mail (e.g. CA). Marketing is also used to leverage local governments and community organizations' programs (e.g. BC, CA, MA). In CA for instance, the Energy Savings Assistance program's (ESA) outreach team leverages various local government and community organizations' programs and knowledge of their communities to promote ESA and enroll customers.

Only a few programs do not have marketing activities, mainly due to limited participation targets (e.g. SK) or to a specific strategy (i.e. Efficiency Maine Multifamily Electric Heat is a highly directed program with no marketing or any other type of communication in place. Eligible participants are called directly by the program delivery agent and invited to participate.)

2.3.4 PARTICIPATION LEVELS

Not all programs are able to clearly assess their participation levels and targeted participation levels, as the total number of eligible customers is often not known. The participation is usually expressed in total number of customers served annually rather than the share of the total eligible customers. PG&E and OPA programs are the only programs with targeted participation levels: in its 2012-2014 program cycle, PG&E targets about 20% of 1.8 million low income customers, while OPA aims at participation levels reaching 10-12% of its eligible customers (estimated at about 15% of residential customers).

Efficiency Maine's Multifamily Electric Heat Program is the only exception: the program closed in June 2014 because all the eligible buildings were upgraded, reaching 100% of its targeted market.

2.3.5 RENTAL PROPERTIES

Overcoming the owner-tenant split incentive is one of the major barriers to low income programs. The selected programs present several strategies used to tackle this issue, according to the type of building involved.

For single-units, measures are generally free of cost for participants, landlord authorization may be required (e.g. BC Hydro ECAP, OPA). The need of an authorization may constitute a barrier to participation, especially if the consent is required for basic upgrades (i.e. for market rent properties, OPA requires the landlord consent even for light bulbs replacements and power bars).

For multifamily buildings, measures are generally free for tenants, landlord authorization might be required for certain measures (e.g. pipe wrap, insulation, and weatherization). Whole-building measures may be implemented on the entire building if a minimum share of the tenants are documented as eligible (e.g. NYSERDA requires at least 66% of LI tenants[10], who are eligible if they pay the utility bills). The OPA allows social housing providers to submit a single application for all their social housing units.

Engaging tenants and landlords remains challenging when they don't pay their utility bills.

2.3.6 PAYMENT OF MEASURES COSTS

For homeowners measures are usually free up to a certain limit (e.g. max $8,000 in NH, forgivable loans up to $23,000 in SK). Measures are generally free for tenants. Under certain conditions, landlord contribution may be required: NYSERDA for example requires a 25% contribution if the landlord is in charge of bill payment and/or the project is eligible for extra insulation and weatherization measures or fridge replacement in more than 5 units.

[10] Under certain conditions, NYSERDA allows measures to also be applied to single apartments.

In Saskatchewan, “rental property owners” (landlords) are required to contribute a minimum of 25% of the eligible repair costs and homeowners are responsible for all costs greater than the approved amount.

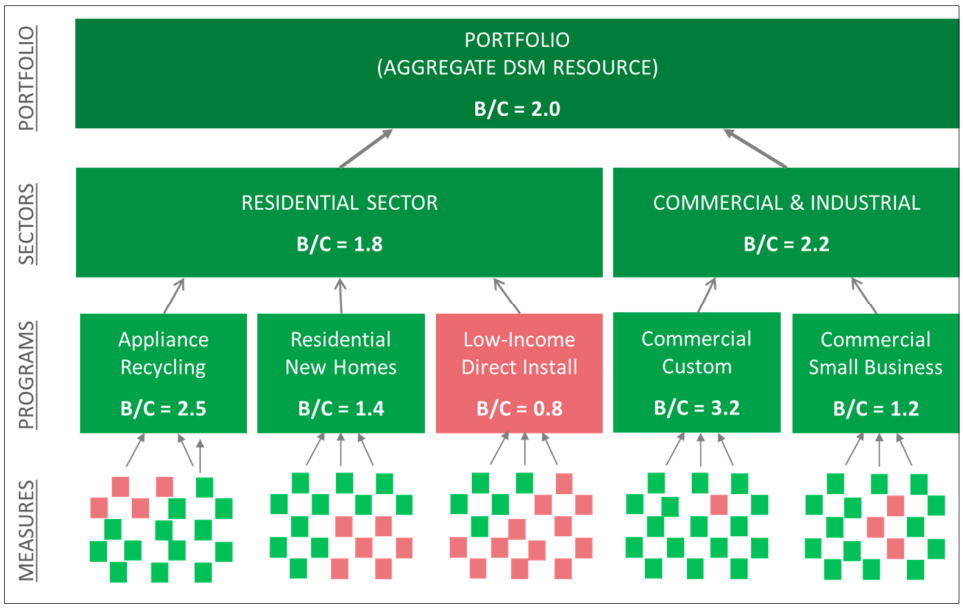
2.3.7 HURDLE RATES AND COST-EFFECTIVENESS FRAMEWORK[11]

Most programs undergo cost-effectiveness tests and/or regular evaluation. The only exception is Saskatchewan, where no cost-effectiveness test is required, since the Home and Rental program is not run by a utility, but through a social housing corporation. Cost-effectiveness screening can occur at different levels; higher-level screening usually helps meet cost-effectiveness thresholds (see Figure 2.3):

- Test is applied to all Low income programs combined (e.g. BC Hydro and MA Income Eligible programs) and, in certain cases, a benefit adder is allowed (i.e. in BC the provincial DSM regulations allows the program a 30% benefit adder)
- Test is only applied to the measure installed and/or retrofit project (e.g. OPA, MA Multifamily Retrofit)
- Test is done on the portfolio of residential programs (e.g. CORE Energy Efficiency Programs NH)

[11] In addition to the team’s review of selected U.S. and Canadian programs, this sub-section draws info on other programs from this report: Peach, Gil. 2012. “The TRC and Low Income”, Low income Subcommittee, NV Energy DSM Collaborative.

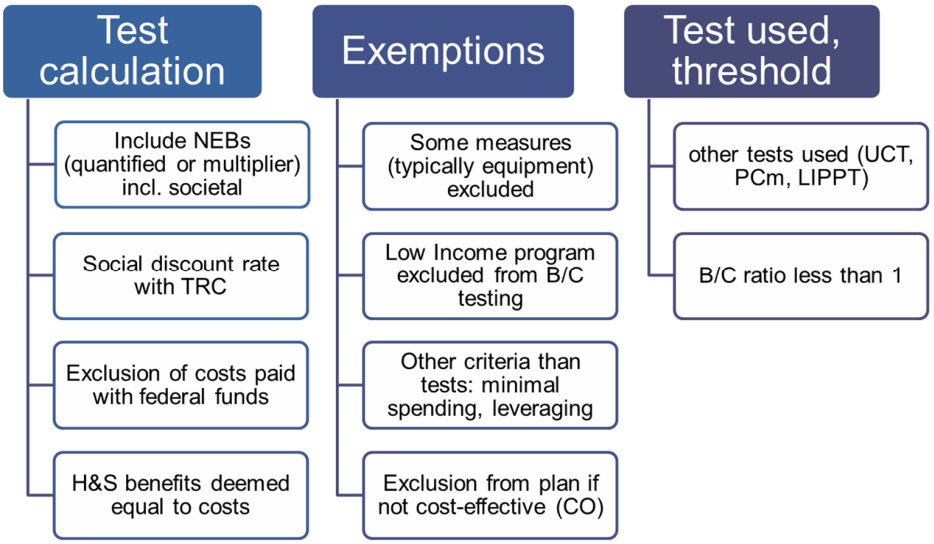
Figure 2.3 – Cost-Effectiveness Screening Level



Different tests are applied to assess the cost-effectiveness of low income programs: the most common are the Total Resource Cost Test (TRC), the Utility Cost Test (UCT) and the Participant Test (PT). There is a general leniency when it comes to low income programs. In the U.S., states that use the Total Resource Cost (TRC) as their primary test for cost-effectiveness testing either are not using the TRC for low income programs, or use a modified form of TRC. Modified TRC may include societal non-energy benefits (NEBs), or use a societal discount rate. Some states make adjustments to costs based on external funds received.

Non-energy benefits can either be included as dollars amounts, or as “adders” or “multipliers”. Adders can be as high as 25% of energy benefits (CO, NM). It is largely recognized that low income programs bring additional benefits such as reduced arrearages, service terminations and reconnections, health & safety, etc.; Massachusetts’ TRC, for example, specifically include some of these benefits.

Figure 2.4 – Adjustments to Cost-Effectiveness Framework for Low Income Programs



Valuing NEBs is not a simple task. PG&E in CA, for example, accounts for NEBs, but quality of life improvements (health, comfort, and safety benefits) are not properly accounted for. A Cost-effectiveness Working Group has been established to determine a list of health, comfort and safety criteria to be used to better account for quality of life improvements and environmental benefits.

The required B/C ratio varies depending if it is applied at measure, program or portfolio level and ranges between 0.25 to 1 or greater (according to the level of application). In NH the programs offered by the NH Electric and Gas Utilities must have a combined benefit-to-cost ratio for the residential sector programs of 1.0 or greater. If the B/C ratio is lower, there is no incentive associated with the program cost effectiveness performance metric. In CA, PG&E Energy Savings Assistance program's approval is based on the cost-effectiveness of the entire program; cost-effectiveness test is also used at the measure level (minimum B/C ratio of 0.25): in cases where the measure does not pass but provides a health or safety benefit, it may be kept in the program regardless of the test result.

In NY, NYSERDA's EmPower Program requires that the installed cost of each energy efficiency measure meet a savings-to-investment ration (SIR) of 1.1 or greater. Depending on the funding source, a TRC of 1.0 or greater may also be required for specific measures.

In CA, UCT and a modified participant test (MTP) are also used to determine which measures are included in the ESA program[12].

Exemptions may apply to cost-effectiveness requirements for specific individual measures (furnaces, water heaters) that are included in the program, even if they are not cost-effective. Finally, the whole low income program can also be exempted from cost-effectiveness requirements. In Colorado, if a low income program is not cost effective, it is delivered but removed from the DSM portfolio performance results so it does not lower the overall results.

As we can see, even though low income programs are subject to cost-effectiveness tests, as any other program, regulators and program managers recognize the broad range of benefits such programs bring in addition to energy savings, including: comfort, health & safety benefits, mitigation of rate increases for participating low income customers, reduction of customer arrearages and disconnects, environmental benefits, etc. The various types of adjustments to the general cost-effectiveness frameworks are meant to internalise those benefits, or at least to consider them indirectly by not unduly penalizing the low income programs.

[12] California recently moved away from the Low Income Public Purpose Test, which has been used since 2001.

3. PROGRAM OVERVIEW

3.1 GENERAL PROGRAM DESCRIPTION AND PROCESS

Manitoba Hydro's Affordable Energy Program (AEP) targets energy efficient opportunities in the lower income market sector of Manitoba. The AEP was introduced in December 2007 with insulation upgrades to attics, wall cavities and basements or crawlspaces. The program initially targeted homeowners of single and multi-attached dwellings, but additional program components were subsequently added:

- The furnace & boiler component was introduced on July 28, 2008. (On August 1, 2013 the furnace and boiler offering was modified to reduce the customer payment.)
- In 2013, AEP expanded the eligibility for participation to include tenants.

Targeted energy efficient upgrades include:

- Insulation upgrades
- Replacement of standard efficiency natural gas furnaces and boilers
- Energy efficient light bulbs
- Low Cost – No Cost measures (low-flow showerheads, pipe wrap insulation, faucet aerators, caulking and other minor draftproofing measures, etc.)
- Health & Safety measures (safety caps, carbon monoxide detectors)

Most measures, as well as home audits and one-to-one assistance, are provided for free to the customers. Furnace replacements are offered at a small co-payment with zero interest on-bill financing, while participants receive a grant for boiler replacements. Co-payments are further described in section 4.5.

Customers are eligible for the program based on income thresholds set by Statistics Canada's annual Low Income Cut Off (LICO) where AEP has increased the thresholds by an additional 25% (referred to as LICO 125), allowing more customers to qualify for the program. Table 3.1 indicates current[13] thresholds.

[13] These thresholds are updated annually.

Table 3.1 - AEP's LICO 125 Income Thresholds

Household size	Total Income[14]
1 Person	$29,826
2 People	$37,133
3 People	$45,650
4 People	$54,425
5 People	$62,863
6 People	$70,898
7 or more Persons	$78,934

Once eligibility has been established and a customer has been approved, a free energy audit by a Manitoba Hydro certified Energy Advisor is conducted to determine which upgrades are available. Free energy saving items, including low flow showerheads, caulking, faucet aerators, insulating pipe wrap, and energy efficient lighting, are installed or provided to the customer during the audit. Materials, installation and labour for qualifying insulation upgrades are free for qualifying customers.

Owners of homes with structural or health & safety issues are referred to the provincial assistance programs. First, the energy advisor and/or contractor identifies the issues, and then there is some coordination between the AEP project manager and provincial programs' employees to transfer the project. Homeowners come back to the AEP when the issues have been dealt with.

3.2 PARTICIPATION RATES AND SAVINGS

The program is forecasting an annual participation level of 2,093 participants for 2016/17, an increase over the historical participation levels (Table 3.2).

[14] Total income of household before deductions.

Table 3.2 – Historic and Forecasted Participation

	2007/08 to 2013/14	2014/15	2015/16	2016/17	TOTAL
Participants	8,072	2,155	2,180	2,093	14,500
Furnace	3,009	680	690	700	5,079
Boiler	75	15	15	15	120
Insulation	5,683	1,249	1,141	1,049	9,122

The annual participation rate[15] of 1.8% compares well to other low income programs[16]. The AEP is targeting homes that require significant upgrades, and this focus translates into higher participation from homes that have a standard furnace (3.4% target market/yr.) and poor/fair insulation levels (4.1%/yr.). It is estimated[17] that 25% of standard furnaces will have been replaced and 36% of homes with poor/fair insulation levels will have been upgraded by the end of 2016/17. Boiler replacement numbers are lower, with an annual replacement rate of only 0.9%, which is analyzed in further details in section 4.5.

Table 3.3 – Participation Rates

Component	Estimated Market	Total Participation Rate (end 2016/17)	Yearly Participation Rate (2016/17)
Total Participants	115,100 [18]	12.6%	1.8%
Furnaces	20,525	24.7%	3.4%
Insulation	25,298	36.1%	4.1%
Boilers	1,725	7.0%	0.9%

[15] AEP participants divided by total estimated low income market.

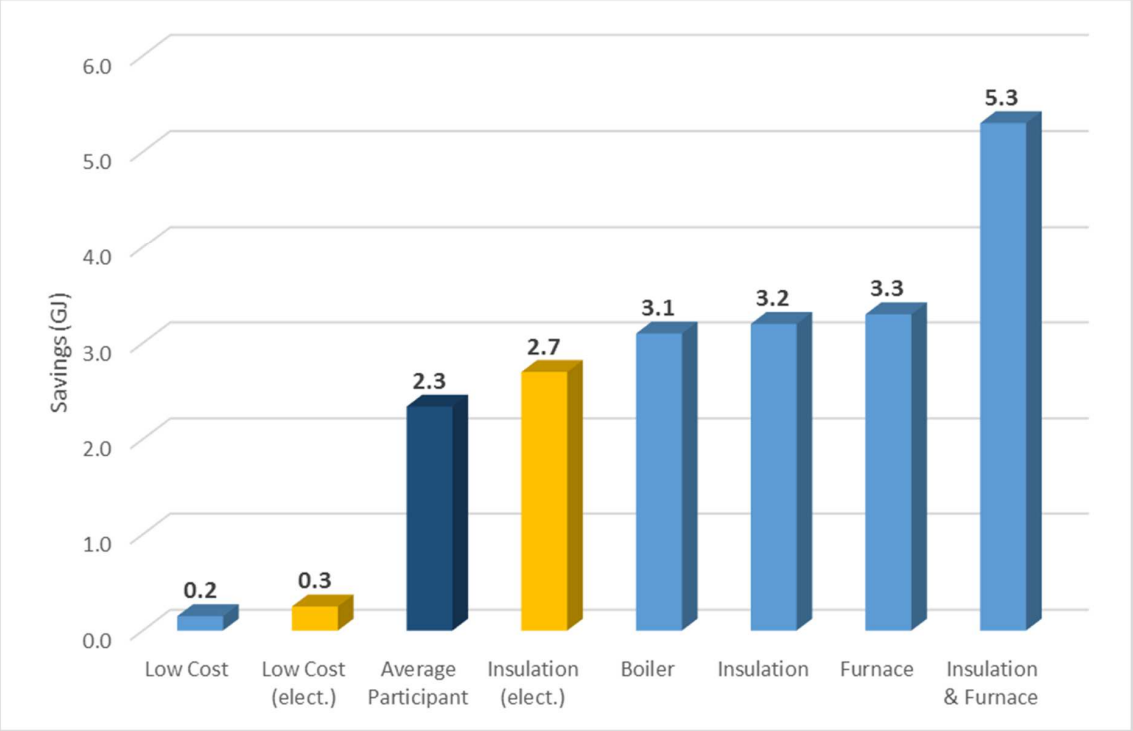
[16] According to a Dunsky review of leading programs (confidential), the best programs achieve an annual participation rate of 1% to 4%.

[17] The market size for furnace/boiler replacements and insulation upgrades has been estimated by Manitoba Hydro using self-reported information obtained through surveys, which can be unreliable especially for insulation levels.

[18] 105,100 homeowners and 10,000 renters

The AEP is achieving significant savings of 23.4 gigajoules[19] (GJ) per participant, which is about 20% of the consumption of an average home in Manitoba[20]. Savings for the subset of participants that receive heating equipment replacement and/or insulation upgrades are even higher, ranging from 27 to 53 GJ.

Figure 3.1 – Savings per Participant (GJ)



[19] All energy units have been converted in gigajoules to enable a direct comparison between electricity and natural gas savings. A gigajoule equals to 277.8 kWh, or 26.5 cubic meters of natural gas.

[20] Comparing the average savings of AEP with average consumption of AEP participant, or average low income households, would have been more appropriate. Unfortunately, this information is not available.

3.3 RESULTS BY CHANNEL

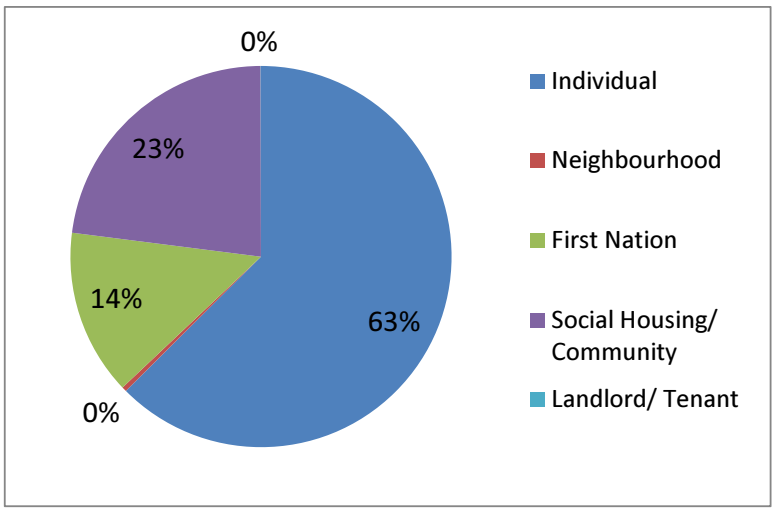
The Affordable Energy Program has four distinct delivery channels, each with tailored application processes, criteria for qualification and application and implementation processes, they include:

1. Individual (Rural and Urban);
2. First Nations;
3. Social Housing Providers and their tenants; and
4. Private Landlords and their tenants.

The Neighbourhood Power Smart channel is a fifth channel that is predominantly a recruitment and support pilot for the Individuals in the Brandon and William Whyte communities via a Community Canvasser.

As of August 31, 2014, AEP installations have been completed in a total of 9,012 homes in Manitoba. The majority (63%) of installations have come through the Individual channel followed by 23% through Social Housing Providers and their tenants, and 14% in the First Nations channel. Less than 1% of results have come into the program through the private Landlord /Tenant channel and the Neighbourhood channel to date (see Figure 3.2 below).

Figure 3.2 – Cumulative Results as of August 31, 2014 by Channel



The majority (74%) of installations have occurred in single detached homes. With 88% of the installations in multi-residential attached units completed within the social housing channel. Table 3.4 shows the breakdown of installation results by channel and by housing type.

Table 3.4 - Results by Channel

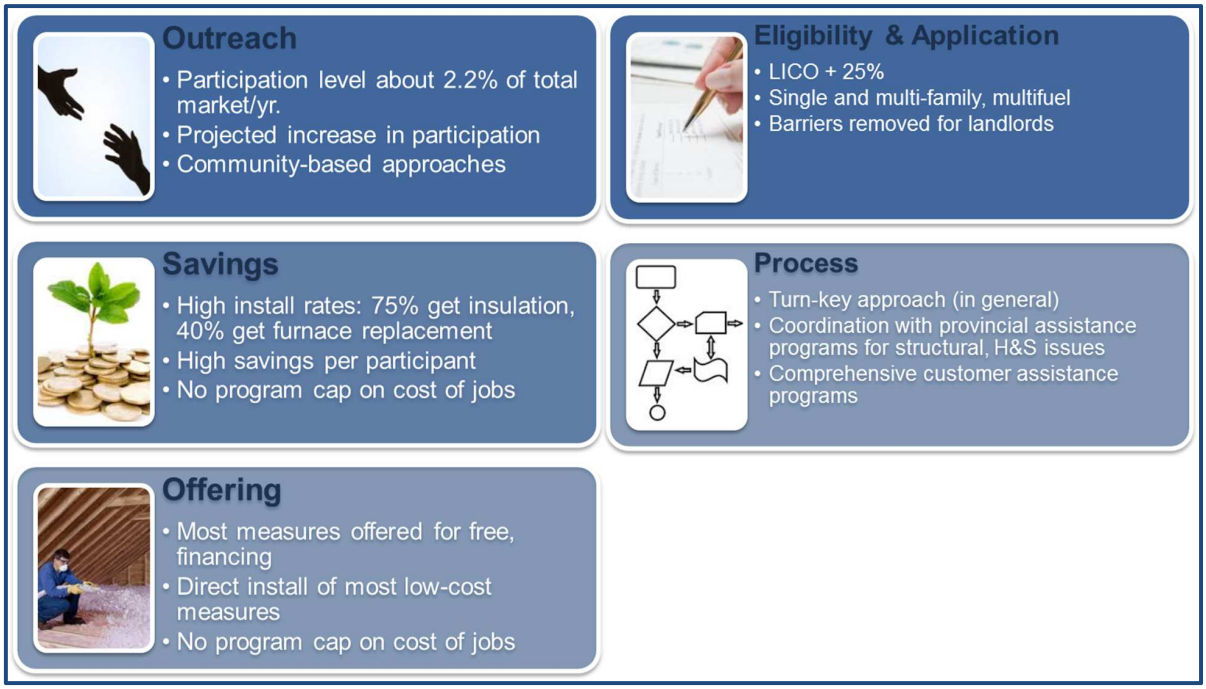
Channel	Single Detached	Multi-Attached	Mobile Homes	Cumulative
Individual	5,333	255	49	5,637
Neighbourhood	36			36
First Nation	1,266			1,266
Social Housing/ Community	30	2,039		2,069
Landlord/ Tenant	3	1		4
TOTAL	**6,668**	**2,295**	**49**	**9,012**

3.4 KEY STRENGTHS

Our high-level assessment of the Affordable Energy Program (AEP) is that the program is well managed and is achieving solid results. AEP is drawing from best practices in many aspects of its program design, including a generally turnkey approach, free energy efficiency measures (or small co-payment with no interest on-bill financing), direct install of low-cost measures during the audit, coordination with other low income programs, etc. Results in terms of participation rates, install rates and savings are strong. AEP also reaches to a large low income population by including both single and multi-family buildings, by using an adder of 25% on Low income Cut-Offs (LICOs) for eligibility and by offering both gas and electric saving measures.

AEP's key strengths are summarised in figure 3.3 below.

Figure 3.3 - Key Strengths of the AEP Program



4. PROGRAM REVIEW BY MAIN COMPONENT

4.1 OUTREACH / MARKETING

The AEP program has a strong marketing plan that includes a mixture of advertising tactics delivered across different types of media as well as community-based social marketing activities and targeted marketing strategies by channel. The table below lists the current and proposed marketing elements.

Table 4.1 – Current and Proposed Marketing Elements

CURRENT	PROPOSED
Media Buy & Advertising	
TV	
Bill Inserts	
Newspapers/ Print advertising including translated minority specific publications	
Billboard Advertising	
Transit Bus Shelters	
Convenience Store Signage	
Online	
	You Tube or simple instructional videos on the website that describe the program's offerings, how one qualifies and the steps to apply would be a helpful resource for participants and a potentially valuable marketing piece for the program that could be easily shared
Manitoba Hydro's Website including landing page rotating banner	
Social Media (Facebook and Twitter) and Facebook sponsored ads	
Outbound calling	
	Continued and coordinated, data driven outbound calling to include mobile home residents and continue to leverage any outbound calling occurring for the Water & Energy Saver Program (WESP)
Direct calls to targeted customers (including Bill Assistance)	
Community Approach	
Posters/ collateral at community centres, etc.	Decals for participating contractor vans/trucks
Street -by - Street events with lead up marketing Neighbourhood Power Smart Project team marketers	
Approved Contractor Marketing	
Events in local shopping centers (i.e. Safeway) to distribute reusable shopping bags.	

Table 4.1 – Current and Proposed Marketing Elements (*continued*)

CURRENT	PROPOSED
Landlords & Tenants	
Direct calls to landlords and property managers	Leverage Property Mgt & Landlord Association newsletters and outreach channels to further reach tenants, landlords and property managers
Direct letters / mailers to landlords and property managers	Tenant and landlord engagement through rental agencies and the Residential Tenancies Branch
Presentations & in-person meetings with Property Mgt & Landlord Associations	
Word of Mouth - Testimonials - Referrals	
Lawn signs for completed homes	Referral program / mechanism (to be designed)
Program packaging that encourages customer to share their experience.	Testimonials and/or case studies that provide personal insights from participants to be included in collateral and/or web (print or video)
Promotional reusable shopping bags	FAQs on the website
Social Housing Channel	
Coordinated events and outreach	

The internal Process Evaluation conducted by Manitoba Hydro reported in May 2014 how customers remembered first hearing about the program (see Table 4.2). The primary two tactics that dominated the response were bill inserts (33%) and word-of-mouth (31%). The cost analysis outlined below further demonstrates that these two specific tactics are also very cost effective (word of mouth being free to Manitoba Hydro). Testimonials, referrals and case studies may be effective content to add into the mix.

Table 4.2 - How Customers First Heard of AEP Program[21]

Marketing Tactic	2014
Insert in MB Hydro bill	33%
Recommendation from family, friend/ coworker	31%
Newspaper	19%
TV	12%
MB Hydro website	10%
Bus bench & Outdoor signage	9%
Letter or postcard/mail	4%

4.1.1 Marketing Cost Analysis

To understand the return on investment (ROI) and evaluate Manitoba Hydro's marketing costs, two components were evaluated:

1. The cost per view/piece; and
2. The % of the budget spent compared to the % of customer recall.

The cost-per-view analysis focused on the major advertising components in the marketing plan (bill inserts, newspaper, TV and outdoor signage) and estimated the associated cost per view or per piece, using budget and media cost data provided by Manitoba Hydro and impression data available online. An assumption that 50% of potential impressions were actually viewed by a customer was added to allow for the difference between promotional claims for ad revenue purposes and actual views. The results from this analysis show that bill inserts tend to be the most cost effective at $0.03 cost per piece. Outdoor signage was the most expensive per impression at $0.23 per view; however, it was also seen to be the most targeted of the media outreach, as this tactic can be appropriately narrowed to specific neighbourhoods. Similarly, print advertising is also seen as more costly, but can be used to reach more specific audiences based on geography or readership demographics (see Table 4.3). Note, this analysis is based on outreach alone, not uptake.

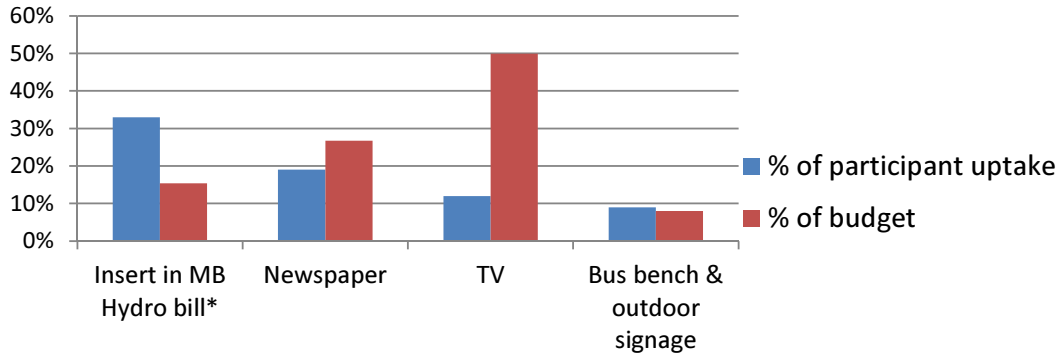
[21] Source: Affordable Energy Program, Process Evaluation, May 2014

Table 4.3 - Cost per View Analysis

Media Buy & Bill Inserts	Budget	Estimated views	Cost per piece / view
Insert in MB Hydro bill	$ 27,000.00	900,000	$ 0.03
Newspaper	$ 47,045.13	278,250	$ 0.17
TV	$ 87,891.06	949,500	$ 0.09
Outdoor signage	$ 14,045.00	61,885	$ 0.23

The following Figure 4.1 compares the percentage of marketing budget spent to the percentage of customers who recalled hearing about the program through that specific tactic. This analysis demonstrates the comparative value of the tactic based on the recall survey data. The results show for example that a bill insert is a relatively small percentage of the budget, yet accounts for the largest percentage of recall, therefore is of good value and should be continued. This analysis may also show that TV, while a cost effective way to reach many viewers, is not the most effective way to drive applications.

Figure 4.1 - Analysis of recall vs. budget



4.1.2 Additional Marketing Strategies and Tactics to Consider

The current marketing plan is very thorough as is; however, there are potential strategies and tactics that could be further leveraged to help increase successful uptake of the program, they are listed and described below.

TESTIMONIALS, CASE STUDIES, EXPANDED FAQS

A clear finding from the interviews conducted revealed that participants were skeptical that the offer is "too good to be true". Individuals might be more confident and ready to apply if they had more information about how the operations of the program might impact the routines of their daily life.

This content could come in the form of a short video, written testimonial from a past participant or through simple Frequently Asked Questions (FAQs) on the website that could be updated on a quarterly basis to reflect new FAQs that Manitoba Hydro staff is responding to.

Some of the questions that were suggested from our interviews with participants include for example:

- Will my family and I need to leave the home at any point and for how long?
- How many times will a contractor or auditor be in and out of my house? Which rooms?
- Is spray foam potentially hazardous to my health?
- There must be some limitations to the rules for this program – what should I know before? (i.e. what if pipes or electrical wires need to be moved, is this covered?)

Personal case studies could also be considered as they can include personal quotes that profile customer experiences, photos and video footage that customers can relate to in their homes or apartments. These case studies could be in a print or video format.

WORD OF MOUTH - REFERRALS

Leveraging the fact that 31% of customers reported hearing about the program through a personal connection, it may be worthwhile to further encourage participants to "spread the word" and refer a friend through a simple postcard that all participants receive that encourages them to tell a friend by passing on the card which has contact info for Manitoba Hydro's AEP team. Offering an incentive for referrals has been explored in other jurisdictions; however, the tracking operations are logistically difficult and have not proven to be overly successful to date. A simple "thank you" postcard with program details has worked in Ontario and should be explored for Manitoba.

OUTBOUND CALLING

Manitoba Hydro should continue coordinated, targeted and data driven outbound calling in 2015. Further to the outbound calling initiative to customers in arrears and those receiving Bill Assistance, including mobile home owners should be considered.

Coordinating outreach with other Power Smart programs and the data available through those programs is also an opportunity, such as leveraging any outbound calling occurring for the Water & Energy Saver Program (WESP). In 2012-2013, it was largely successful for the AEP program to collaborate with outbound calls for the Water & Energy Saver Program (WESP) as well as the Lower

Income Neighbourhood – Higher Natural Gas Consumption Calls[22] with a return of rate on applications of 19-25% for all leads generated through these targeted calls.

LANDLORD & PROPERTY MANAGEMENT OUTREACH BLITZ

The landlord channel to date has not had many completed installs (only four as of August 2014); however, given the new and revised eligibility requirements, there is consensus among those interviewed for this review that these changes will be well received by landlords and tenants and should result in an increase in applicants and participants.

It is recommended that Manitoba Hydro prioritize a strategic outreach blitz to landlords, property managers and their associations in early 2015. A blitz would include the following steps:

Figure 4.2 – Marketing Blitz Steps

The following list of property management and landlord associations is recommended to target with the above strategy. These associations produce newsletters, magazine content, social media outlets as well as email newsletters that can be helpful marketing tools to leverage.

- Professional Property Management Association, http://www.ppmamanitoba.com/
- Manitoba Landlords Association, http://manitobalandlords.ca/category/winnipeg-landlords/
- Real Estate Investment Groups:
    1. Exclusive Investor Club (http://www.meetup.com/ExclusiveInvestorClub/
    2. Sophisticated Property Investors Network (SPIN), https://www.facebook.com/StrategicPropertyInvestmentNetwork
- Winnipeg Rental Network, http://www.winnipegrentnet.ca/landlord-guide.cfm

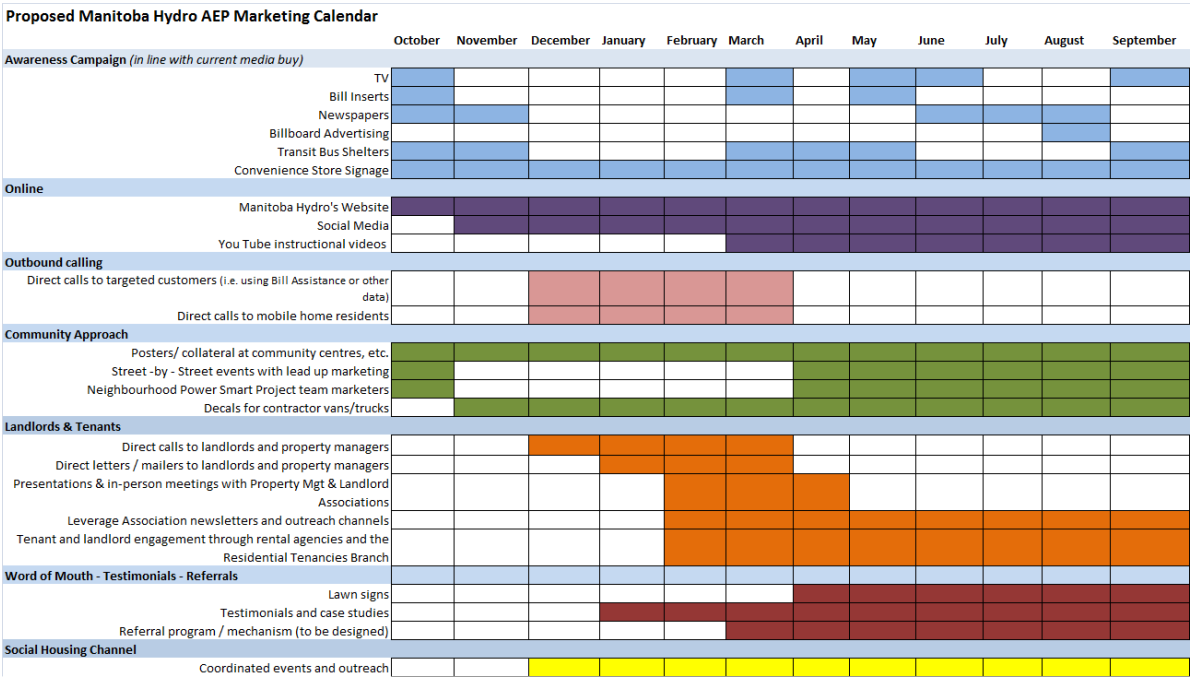
Manitoba Hydro should continue to reach out to and inform:

[22] Manitoba Hydro, 2013. Report on Lower Income Energy Efficiency Program and the Furnace Replacement Program for the Period Ending June 30, 2013.

- North End Community Renewal Corp, Tenant Landlord Corp., http://necrc.org/index.php/housing/program-activities/
- Residential Tenancies Branch, http://www.gov.mb.ca/cca/rtb/

Below is a marketing calendar that displays the current as well as the proposed marketing activity tactics in a calendar format.

Figure 4.3 – Proposed Marketing Calendar



4.2 ELIGIBILITY AND APPLICATION

For an individual home owner or home renter to be eligible for the AEP, the applicant must live year-round in a single detached home, semi-detached home (including townhouses, row houses, multiple houses), or a mobile home and earn below 125% of the Low Income Cut Off (LICO 125) threshold set by Statistics Canada based on household income and size. In July 2013, tenants and private landlords were added to the list of qualifying participants.

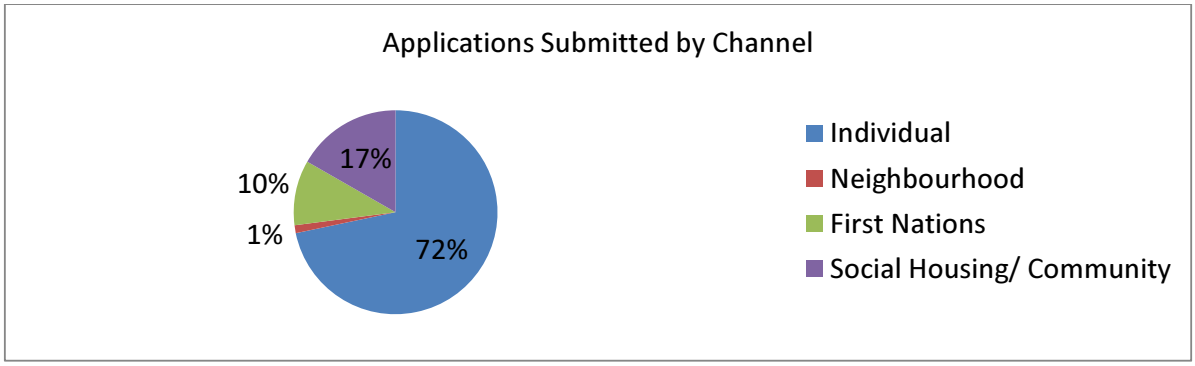
Application forms are available for download from the Manitoba Hydro website and an online application is in development and should be implemented in December 2014. Dedicated Manitoba

Hydro staff and a toll-free number are in place to assist and support customers through the entire application and to the completion of the program.

In July 2014, the Affordable Energy Program branded folder that was provided to the applicant was replaced with a simple brown envelope with instructions on the envelope to help better assist in organizing customer's documentation and next steps.

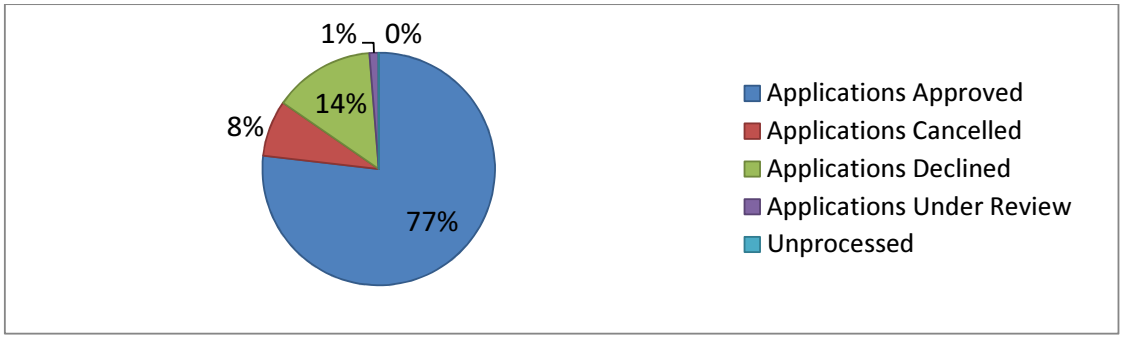
As of August 31, 2014 there have been over 12,000 applications submitted to date, the majority (72%) through the Individual Channel. See Figure 4.4 below for a breakdown of applications submitted by Channel.

Figure 4.4 - Applications Submitted by Channel



Within the Individual Channel, of the 8,930 application submitted, 77% of applications have been approved, 8% were cancelled, 14% were declined and 1% were under review at time of data collection (see Figure 4.5).

Figure 4.5 - Application Status within the Individual Channel



The high rate of application success (77%) is very strong. Applications are typically cancelled (approximately 8% of the time) when the applicant decides not to proceed with the application process or the applicant was missing the required signature or tax documents.

Manitoba Hydro has established processes for missing documents from customers and contractors including follow up with phone calls and voice messages, direct mail, and email if applicable. Follow ups are tracked in the database and reminders are set to trigger a follow up in the future if the customer/ contract has still not provided the missing documents.

The primary reason for an applicant to be declined (approximately 14% of the time) is because they do not meet the income qualification criteria. Other reasons for declining the application include situations where the home is not their primary residence, the home is not occupied (or under renovation), the home was built after 1999 or the application is for a property that has already been submitted. When declined, Manitoba Hydro refers the applicants to other Power Smart Programs.

Once the application is accepted and work begins, 82% of the projects in the individual channel are completed, 100% in the First Nation, 99% in the Social Housing and only 30% in the Neighbourhood Power Smart Project channel (see Table 4.4).

Table 4.4 - Percent of Applications Accepted and of Projects Completed as of August 31, 2014

Channel	% of Applications Accepted	% of Projects Completed
Individual (Includes landlords)	78%	82%
First Nation	100%	100%
Social Housing/ Community	100%	99%
Neighbourhood Power Smart Project	77%	30%

For the majority of channels, there is a very high level of both application acceptance and follow through to successful completion of the project. The outlier is the Neighbourhood Power Smart Project, with only 30% of projects completed of applications accepted. This may be attributed to the large influx of applications in the past six months and the fact that some customers are yet to select their contractor. To ensure this group of applicants successfully completes their projects, may require additional program support and facilitation to ensure applicants follow through (i.e. community canvasser).

The following section describes the processes within each delivery channel.

4.3 PROCESS

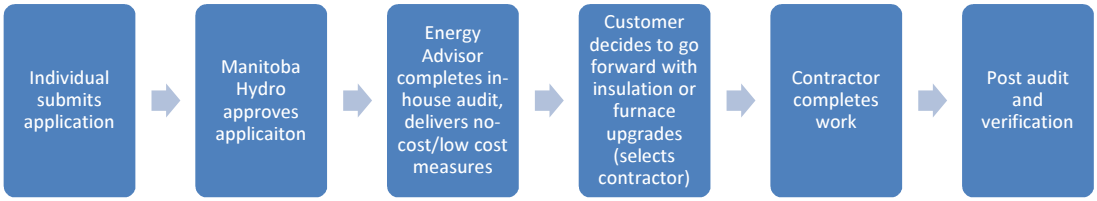
This section describes the overall processes involved in each delivery channel, highlighting opportunities and recommendations for program improvement.

4.3.1 Individual Channel

The individual channel is the primary delivery channel for the Affordable Energy Program, representing 63% of results and 72% of applications submitted.

The basic process for individuals participating in the program generally includes the following steps:

Figure 4.6 – Individual Channel Process

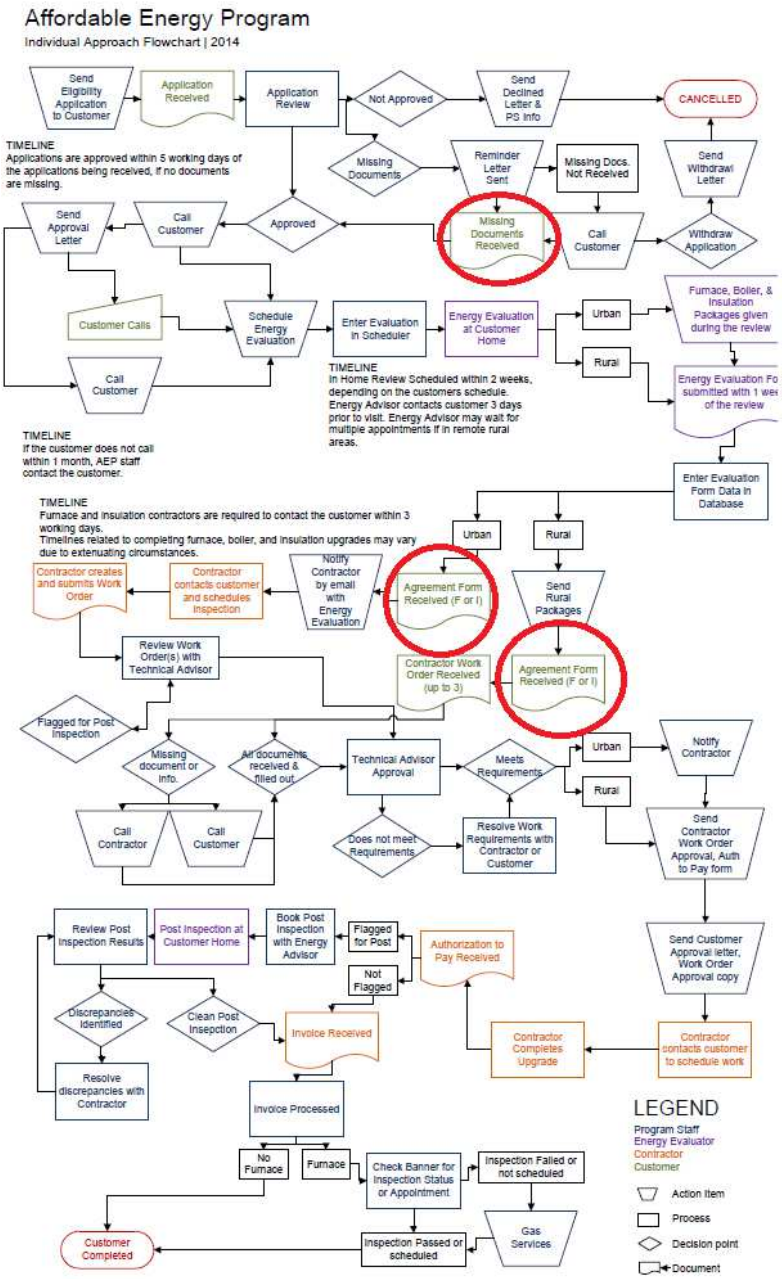


When reviewing the process for the individual channel, a few bottlenecks and challenges were identified (see Figure 4.7 for identification of where the bottlenecks exist in the current Individual Process Flow):

1. Applicants don't necessarily have, or are comfortable sharing, income tax information or SIN numbers.
2. Applicants have difficulty understanding the rules, requirements and application forms;
3. The Agreement Form that is provided to the participant during the in-home evaluation/audit – requires customer to select contractor and sign off. This step could be missed and may result in non-completion of project ; and
4. The suggested requirement for rural participants to get three (3) quotes – although not a program requirement – may still be a bottleneck to the application process.

Given these findings, there are a number of recommendations suggested below (Table 4.5) to help remove the potential bottlenecks in the process and ultimately increase the number of individual applications submitted, accepted and projects completed.

Figure 4.7 – Flowchart with Identified Bottlenecks[23]



[23] Source: AEP Process Review (2014).

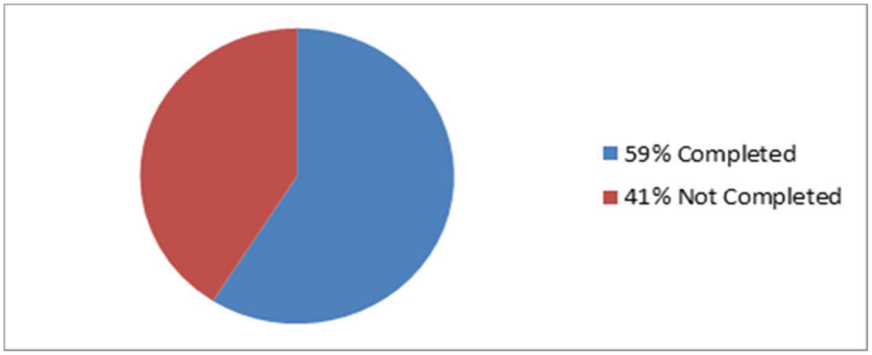
Table 4.5 - Recommended Improvements to the AEP Individual Process

Findings	Recommendations
1. Submitting tax forms / missing documentation	Consider allowing government issued forms instead of CRA, such as: Income Assistance, Disability, Guaranteed Income Supplement, Allowance for Seniors, Allowance for the Survivor, National Child Benefit Supplement
2. Program rules & application requirements are sometimes difficult for participants to understand	Consider expanding application material formats to include audio and video explanations with instructions. Continue and increase support and dialogue with each applicant by either Manitoba Hydro, or refer applicant to a community canvasser to facilitate them through the process from start to end. Continue to filter marketing materials and application documentation through a low income specialist to ensure language is accessible and appropriate.
3. Agreement Form signature on-site	On-site signature of Agreement Form – submitted to Energy Auditor on day of audit or add an automatic reminder call to the database to follow up with the applicant 1-2 weeks following the audit.
4. Rural requirement for three (3) contractor quotes	MH to work with contractors for rural quotes directly, continue to be lenient and supportive with applicants

4.3.2 First Nations Channel

There are 63 First Nation Communities in Manitoba and all of them have been approached and engaged by Manitoba Hydro's First Nations advisor to participate in the AEP. As of August 31, 2014, 1266 homes have received insulation upgrade in 37 communities.

Figure 4.7 – Percent of First Nation Communities Completed to Date



The Manitoba Hydro First Nations Power Smart Energy Advisor works with the individual housing managers within each of the First Nation Communities to identify which homes would benefit from an upgrade. The Housing Manager selects, based on their knowledge of the construction and insulation levels in the homes, the homes that qualify for insulation upgrades. Some communities have indicated they exceed the minimum insulation levels to be eligible, or they are currently addressing flood issues, so they are not participating. The Advisor does a walk-through of the homes when he visits the communities. There is no application process required.

The First Nations Housing Manager identifies the local labourer. Manitoba Hydro funds the training, labour and material for a community member to do the installation. Manitoba Hydro funds the supplier directly. It was noted in the research that it would assist the First Nation Housing Managers if Manitoba Hydro could provide an advance payment for the labour to assist with cash flow. Manitoba Hydro has a Band Council resolution agreement with each First Nation. This has successfully removed the paperwork and is a model that other Utilities are interested in learning more about.

Manitoba Hydro is currently finalizing a process to provide basic energy efficient upgrades to homes with sufficient insulation levels in First Nations Communities by employing local labour.

Manitoba Hydro is launching a Direct Install Program of low cost/ no cost measures in each of the First Nations starting November 2014. According to Manitoba Hydro, there are approximately 10,000 eligible homes.

There is currently no First Nations representative on the AEP Advisory Committee.

Recommendations:

1. Go forward with a direct install of low-cost, no-cost at all homes on the First Nations;
2. Consider an advance payment to the Bands to help with cash flow for the community labour; and
3. Consider inviting a First Nations representative to the Advisory Committee.

4.3.3 Social Housing Channel

Manitoba Hydro takes a unique approach to engaging the social housing sector. For single detached, attached (townhouses and row houses), and mobile homes that are managed by non-profit social housing providers, the housing provider simply needs to demonstrate that they only rent to low income tenants to apply to AEP and no individual applications from the tenants are required. The individual tenants living in Social Housing are not required to demonstrate or prove their income to Manitoba Hydro as they automatically qualify by living in social housing units.

The housing provider and Manitoba Hydro have a direct agreement that outlines what Manitoba Hydro provides and the housing locations. Manitoba Hydro reviews the properties in advance. This has been an efficient process to date with 100% of applications submitted approved and 99% of projects completed.

As of August 31, a total of 2,039 installs have been completed on attached homes and 30 installations completed in detached homes, accounting for 23% of the total results to date.

Social Housing authorities are represented on the AEP Advisory Committee.

OPPORTUNITIES TO CONSIDER

There are two opportunities to consider with respect to eligibility and design of the social housing channel for the AEP.

First, is to consider eligibility and upgrades for the multi-residential, apartment-style buildings that social housing providers manage (beyond row houses and townhouses). These buildings are currently eligible for upgrades through Manitoba Hydro's Commercial Lighting Program (CLP), and tenants can access the free Water & Energy Saver Program kits.

The AEP offer could be customized and based on more limited retrofit activity within suites. For example, direct install of the low-cost / no-cost measures in suites and boiler retrofits for apartment buildings. Installing low-cost measures for direct install may not be cost effective because it is fairly labour intensive, but it is worth exploring further.

The second opportunity is to continue to work and have discussions with Manitoba Housing on a case-by-case basis, to identify opportunities within their buildings (including multi-residential and apartment style). There is a precedent in both Ontario and Quebec for rate-payer utility programs to support upgrades in low income government funded social housing.

Recommendations:

1. Consider redesigning the eligibility criteria to include multi-residential and apartment-style commercial buildings that social housing providers manage (beyond row houses and townhouses) for certain measures (i.e. in-suite lighting direct install, and boiler upgrades);

2. Consider low cost measure direct install in all social housing units (regardless of which are receiving insulation upgrades); and

Continue exploring opportunities with Manitoba Housing, or some of their sponsored partners, to participate.

4.3.4 Landlord/Tenant Channel

The landlord and tenant channel was added to the program in July 2013. The upgrade offering is the same as the individual approach. Typically the landlord completes the application for the rental properties. Manitoba Hydro collects the income qualifying information directly from the tenants in a pre-paid/posted envelope.

The tenants are not required to pay their utility bill directly to Manitoba Hydro for the building to qualify for the program. If the tenant does pay the bill directly, then they directly realize the energy savings. If the bill is included with the rent, Manitoba Hydro asks the landlord to pass on the savings to the tenant; however, Manitoba Hydro does not have any enforcement jurisdiction in this matter as all rent regulations are administered through the Province of Manitoba – Residential Tenancy Branch (RTB).

Originally, the landlord needed to commit to rent to lower income tenants for 10 years, which was reduced to 5 years and now has been removed from the requirements altogether, as this was a significant barrier to entry for landlords and property managers. Currently the only requirement is that they can't sell the property within the first year, which is the same as the individual stream.

Similarly to the social housing channel, single detached, multi-attached, multi-residential (up to 4-plex), row homes and town homes qualify. Multi-residential apartment blocks that are bulk meter billed are excluded.

Marketing of the program currently targets landlords and tenants through bill inserts, the overall promotional campaign, some door-to-door canvassing.

There is landlord representation on the AEP Advisory Committee.

The table below highlights recommended changes to consider to the landlord channel, with the associated benefits and impacts.

Table 4.6 - Landlord Channel: Existing and Potential Strategies and their Impact

Potential additional strategies	Benefits & Impact
• Eligibility for multi-residential apartment buildings larger than 4-plexes could be considered, with limits placed on the retrofit activity, not the building eligibility (i.e. in-suite direct install lighting)	• This will help to reach even more building types, install more measures and reach more lower income customers who rent
• Increased targeted marketing to landlords and property mgt associations explaining recent changes to the program and ease of entry	• Increase uptake for landlords & multi-residential
• Direct Install for multi-residential low cost measures	• Install more measures, reach more tenants

4.3.5 The Neighbourhood Power Smart Project Channel

The Neighbourhood Power Smart Project channel was born out of a community-based approach which was originally an outreach strategy in which Manitoba Hydro worked with local community organizations, housing groups, associations, and MLAs to find opportunities and expand reach of the program.

Manitoba Hydro now provides funding to the North End Community Renewal Corporation and the Brandon Community Renewal Corporation so they can hire, train and manage local canvassers who do door-to-door outreach in the communities, attend local events, connect with local groups with the primary objective of marketing the program, and recruiting applicants.

The skill set required to do this work is unique – the canvassers require sales skill as well as the communication and social skill to build trust and establish a rapport with the target demographic.

The community canvassers help not only to sign up applicants, but support customers through the entire process (e.g. helping the applicant complete and submit the paperwork, attend the in-house energy audit to be there for additional support and assist the applicant with the follow up paper work required) and is a primary contact for the applicant when they have any questions or concerns about the work to be done on their home, contractors in their space, etc. This facilitation and support role is valuable for assisting customers and ensuring they complete the work on the projects.

The results to date for this channel are minimum compared to the other channels, with 36 single detached homes completed to date (<1% of total), and 111 applications received since November 2012.

The recent addition of the Street-by-Street events has resulted in 43 new applications being received since May 29, 2014 (38% of total program to date within the last three months).

Street-by-Street Approach

The Street-by-Street approach is a neighbourhood based outreach strategy. Manitoba Hydro selects specific blocks (50-60 homes each) within targeted communities to host a street event. Communities to select for the street-by-street approach are selected by looking at maps, consulting with community groups, looking at customer data and previous participation to identify which streets would benefit most from additional outreach.

Media and local community is contacted and notified in advance. During the street event the Manitoba Hydro program manager, staff, along with the local canvasser are in attendance, there is a branded tent, vehicles, staff are wearing t-shirts and have application forms on hand to help customers apply on the spot. According to the program manager, these events have helped to build momentum and drive word of mouth promotion. It is effectively using the community-based social marketing tactic of "your neighbours are doing it" to help build confidence and trust in the program.

Following the event, the program staff join the community canvasser to knock on doors in the neighbourhood. It has become a channel for Manitoba Hydro staff to connect with the customers and answer their questions first hand and help them to understand that the offer is true.

General Community Outreach

Recognizing the importance of leveraging as many organizations, networks and community touch-points as possible and that there is a need to move beyond the door-to-door canvassing, Manitoba Hydro is considering whether it makes sense to engage additional community groups further. In addition, they are working internally on a community strategy that includes working directly with community centers and doing pilot events at local grocery stores. For example, on the first Tuesday of every month the Safeway store in the William Whyte complex offers 10% discount off customers' grocery bill. Manitoba Hydro has leveraged this opportunity to connect with their target market by having staff on site handing out AEP reusable bags with program information.

Recommendations

1. Ensure through recruiting or training that partnering NGOs and community based organizations have the specific skills and expertise required to recruit and support (unique skill set – combination of sales experience and ability to relate to this specific community and demographic);

2. Engage and train social agencies and traditional poverty relief organizations who already work with target to sell program & support clients through the application (i.e. meals-on-wheels, senior orgs); and

3. Continue to participate in regular workshops/events to engage and update stakeholders working with lower income customers.

4.4 ENERGY EFFICIENCY MEASURES OFFERED

The AEP is offering a good range of energy efficient products and services, mainly covering heating equipment, building envelope, hot water and lighting (Table 4.7). Furthermore, the program management is seeking opportunities to expand the product list, the newest additions being drain water heat recovery and light-emitting diode lighting (LEDs).

Although the program offering is extensive, the reviewers have identified several additional measures that are worth considering. Because of the project's budget constraints, this is a fairly high level overview of potential opportunities, and further analyses would be required before including them in the program.

The main gap in the current offering is the lack of a good alternative for homes heated with electric baseboards. As we'll discuss further in a following section, the AEP is getting far less electric-heated participants than their actual market share, and savings per participant are also lower than for gas customers. Air source heat pumps are definitely worth considering as an addition to AEP's offering, both to increase participation rates and depth of savings for electric customers. Appliance replacement is part of other programs (e.g. OPA), and should be considered as a way to drive electrical savings cost effectively by utilizing the existing infrastructure in place for the Refrigerator Retirement Program.

Table 4.7 - Current AEP Offering and New Opportunities

End Use / Component	Actual Offering	Current Additions	Worth Considering
Heating equipment	Gas furnaces (AFUE 94%) and boilers, thermostats (with equipment replacement), fuel switching[24]		Air source heat pumps, furnace/boiler tune-ups, thermostats and controls
Building Envelope	Insulation upgrades, caulking (+caulking gun), window films		Blower-door assisted air sealing
Hot water	Showerhead and aerators, pipe wrap	Drain water heat recovery is waiting for approval and should be implemented in the near future	High efficiency water heaters
Lighting	CFLs (up to 6)	Light-emitting diode lighting (LEDs) are currently being distributed to AEP's energy advisors and will be available soon	
Appliances / Electronics	Fridge/Freezer removal (through Refrigerator Retirement Program)	Smart power strips are under consideration as a potential addition	Energy Star fridge/freezer replacement
Behavioral	Home audit and one-on-one assistance		Behavioral component
Misc. Measures	Safety caps, socket gaskets, fridge thermometer, window kits, carbon monoxide detectors (with furnace upgrades)		Carbon monoxide detectors (for all furnaces/boilers) and smoke detectors (as an health & safety measure)

[24] Although there is no fuel switching incentive per se, the program's offering for furnace replacement is also available to electric, oil, propane or coal customers that wish to switch fuel and are located in a gas territory. Households that do not have access to gas can opt for an electric furnace.

4.4.1 HEATING EQUIPMENT

Gas furnace replacement is an important measure for the program; 40% of all AEP participants (and 52% of gas heated participants) are receiving a new furnace through the program.

There is no equivalent offering for electric heated homes, except for switching to gas, which can be prohibitive if there is no ducting system in place (as is the case for homes with baseboard heating) and impossible if the home is not located within the gas service area. Electric low income customers represent 44% of the target market, but only 22% of AEP participants. While the higher price of electricity might have induced some improvements in building envelope compared to gas customers and thus reduced the potential for insulation upgrades, it is fair to assume that electric customer participation could be increased with a more appealing and comprehensive offering.

Air source heat pumps could help provide deeper savings and higher electric customer's participation. They could be offered on the same basis as furnaces, with fixed monthly payment representing a share of the total cost. Air source heat pump technology has evolved tremendously over the past decade, providing more efficient and reliable heat, especially for colder climates. Cold climate heat pumps have been or are being tested in places such as Yukon, Alaska and the U.S. Northwest[25]. The Canadian Centre for Housing Technology recently tested a cold climate air source heat pump using R-2000 test houses, and the ASHP was able to meet all heating demands even on the coldest day (average outdoor temperatures of -19^{o}C), with a system COP[26] of 1.5.

The Northeast Energy Efficiency Partnerships (NEEP) developed a cold-climate air source heat pump specification which goes beyond the current HSPF metric to help identify the best units for very cold climate applications. It should be noted that Manitoba Hydro is currently testing a heat pump that meets the specifications outlined by NEEP with results expected back once the heating season has ended.

As can be seen on figure 4.8, a Yukon market characterization study indicates that theoretically an ASHP specifically designed for cold climates can maintain a fairly high coefficient of performance even at very

[25] An important pilot project was conducted in the Northwest which included onsite metering, billing analysis, and lab testing. Lab testing compared well with actual field measured coefficients of performance (COPs) across a range of temperature conditions and largely validated that manufacturer ratings are accurate. With seasonal COPs ranging from 2.4 to 3.4 (average of 3), the inverter driven technology delivered high performance across the Northwest. (Ecotope Inc., 2014. Final Summary Report for the Ductless Heat Pump Impact and Process Evaluation, Northwest Energy Efficiency Alliance)

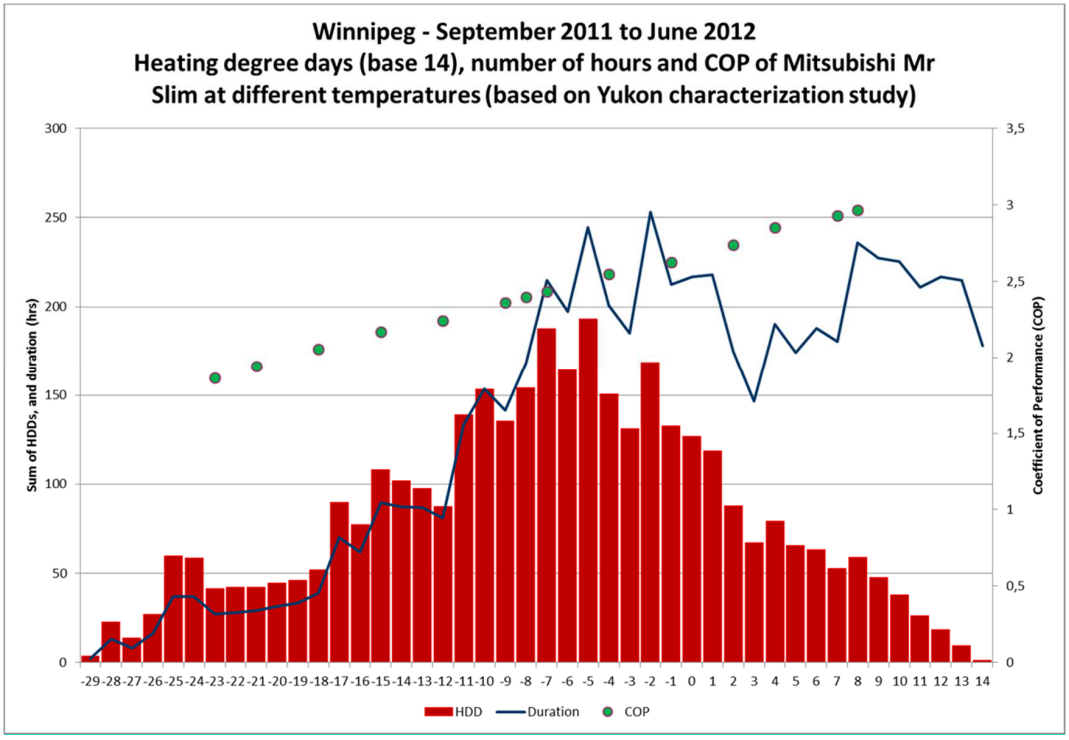
[26] COP values notably include electricity used by fans, which were operating continuously for ventilation. (CMHC, 2014. Performance Assessment of a Cold-Climate Air Source Heat Pump, Canada Mortgage and Housing Corporation)

cold temperatures (in this case, a COP around 2 at -20°C). Furthermore, the bulk of heating energy requirements actually happens at much higher temperatures during a typical winter. In Winnipeg, 75% of heating degree days (HDDs) occurs at temperatures above -12°C, at which the ASHP is even more efficient. Performance results from Manitoba Hydro's current field testing will verify to what extent savings estimates based on manufacturer-reported data are achieved.

At extremely cold temperatures, supplemental heating is required to ensure comfort. This heat can be supplied by existing baseboards or by an electric resistance in the ASHP itself. Areas where heat is not supplied by an ASHP head would also need supplemental electric heating. ASHPs procure little to no peak savings, but may be cost-effective on energy savings alone, depending on energy versus capacity avoided costs.

Ductless ASHPs also work better with homes that have an open interior configuration. For homes that do not have an open interior, which is the case for most of the low income homes in Manitoba, multi-head systems would be required to heat the entire home. This would lower the cost-effectiveness of the ASHP system.

Figure 4.8 – Cold-Climate Air Source Heat Pump Performance[27]



Manitoba Hydro is following this technology and has been field monitoring ASHPs (both conventional and cold climate design) to determine their seasonal efficiency and reliability in harsh operating conditions. Manitoba Hydro is currently monitoring the Mitsubishi Zuba-Central, and plans to test additional models in the near future. We recommend expanding the field monitoring to include models from several manufacturers, and choose those models that are particularly well suited for very cold climate operation.

Apart from electrically-heated homes, there is also a gap in the offering for households that do not replace their heating equipment, either because they are not opting for the AEP replacement offering or because their equipment does not qualify (already high efficiency, other fuels used). In these cases, tune-ups, thermostats and controls (e.g. boiler resets) could be provided[28]. Tune-ups, in particular, are a low-cost measure and are routinely offered by other low income programs. They can provide cost-

[27] Theoretical performance based on manufacturers' data.

[28] Electronic thermostats and controls are actually offered to participants that do replace their heating equipment.

effective energy savings and also make sure the equipment is working properly, procuring increased safety benefits and reduced future repair costs.

4.4.2 BUILDING ENVELOPE

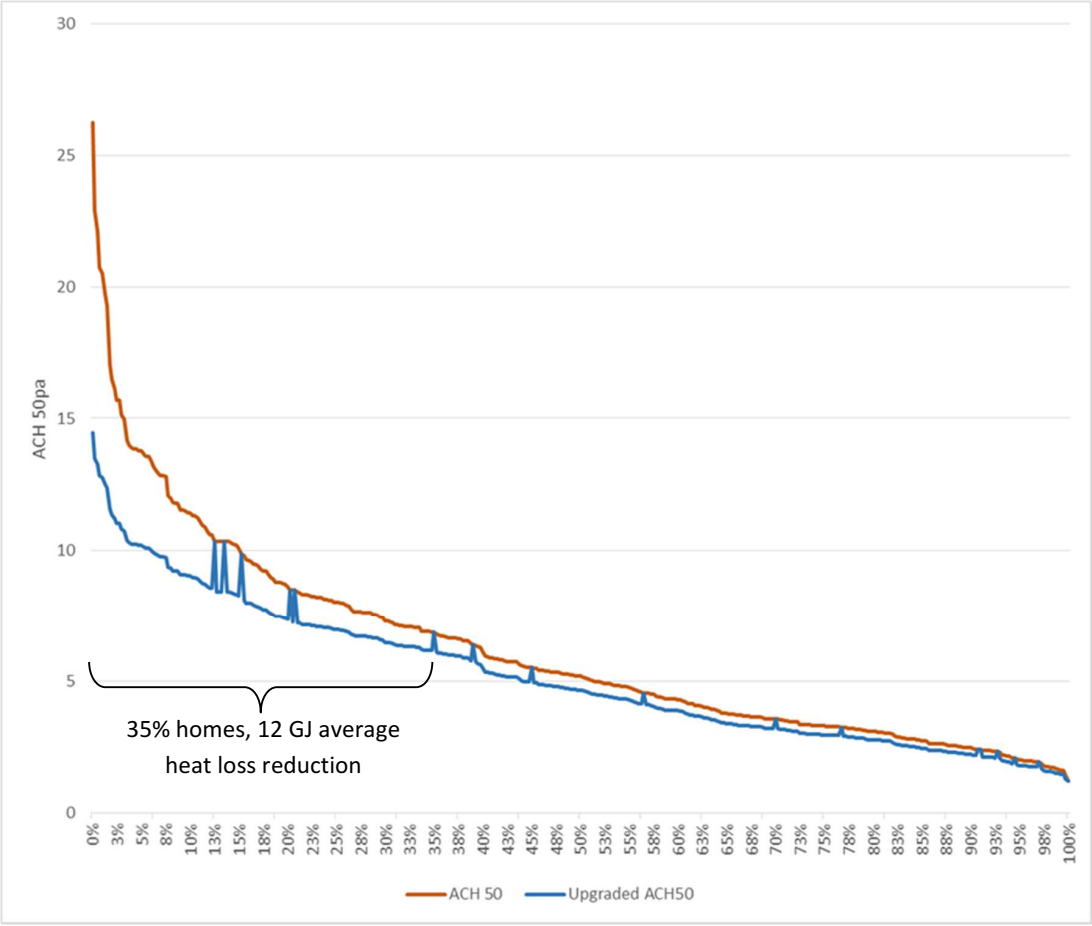
Insulation upgrades are available for homes with low attic insulation (R30 or less) or no wall/basement insulation. AEP is achieving a high rate of 75% of homes that receive some kind of insulation upgrade[29]. Attics are insulated to R50, walls to R12 and basements to R24. Other insulation upgrades can be accepted on a case by case basis, for example if the existing wall or basement insulation is poor and there is some opportunity to upgrade it. The average insulation upgrade costs $3,700 and the largest project so far cost $16,000. There is no program limitation on the size or cost of insulation jobs.

Professional draftproofing is currently limited to upgraded components. For example, if attic insulation is added, draftproofing will be conducted on the attic floor, but not on other components such as windows and basement headers. There would be an opportunity to expand draftproofing for houses with very high leakage. According to low income ecoENERGY air leakage reduction targets, the 35% leakiest homes could reduce heat losses by 12 GJ on average (Figure 4.8). Air leakage reduction obtained with professional blower-door assisted draftproofing can actually be much higher than these targets.

There are currently no blower door tests in the AEP programs. This can be an issue because leaky houses may be harder to identify. Draftproofing is also more efficient when conducted using a blower door unit to clearly identify the main sources of air leakage (which can fluctuate as draftproofing is performed). Finally, air leakage has to be monitored to ensure that draftproofing does not create new problems (excessive moisture, air quality, backdrafting). Adding blower door testing during the audit, retrofit and quality control phases would increase the program costs. This has to be balanced with the additional savings that professional blower-door assisted draftproofing would procure.

[29] Unfortunately, no breakdown by insulation component is available.

Table 4.8 – Actual and Potential Air Changes per Hour at 50pa (ACH50) of Low Income Homes in Manitoba (401 ecoENERGY files)



4.4.3 HOT WATER

The AEP is offering traditional low cost water saving and pipe insulation measures. Additional saving potentials could be tapped with more intensive measures. The AEP management is working to include drain water heat recovery and is waiting for approval. This measure is already accepted in the Power Smart program designed for electric customers in the able-to-pay market, and it can offer considerable savings especially for larger families. We strongly support the addition of this new measure. We recommend that training be offered by the program and be mandatory for participating contractors to ensure proper installation.

Efficient water heaters could also be considered, although these units usually experience high turnover rates because of short effective useful life (which means that a lot of them would have been replaced anyway).

4.4.4 LIGHTING

Compact fluorescent lighting (CFLs) has been offered for quite a while, at first with strong utility incentives, and now as a more mainstream lighting product. This new market baseline, combined with more stringent lighting efficiency regulations, has pushed innovative programs to turn to the next generation of efficient lighting, the light-emitting diode lighting (LEDs).

LEDs are more efficient than CFLs but also have a much longer useful life, present no disposal issues and operational restrictions in cold environments as CFLs do, and have a broader range of application. The higher upfront cost, which has already dropped dramatically, is expected to decline further over the next 15 years.

The review team are pleased to learn that the AEP is deploying LEDs and that they should be offered soon to AEP participants.

4.4.5 APPLIANCES / ELECTRONICS

Old refrigerator removal is currently offered to all Manitobans, including low income households, through the Refrigerator Retirement Program. The program offers free pickup of old units plus a $40 incentive. It is mostly targeting secondary units that do not need to be replaced. Utilizing the existing infrastructure to both remove and deliver new appliances, the AEP program could offer Energy Star appliance upgrades to low income households. Advances in refrigerator efficiency have created opportunities for upgrade replacements before end-of-life, especially in the low income market where units tend to be kept much longer. A co-payment and financing offering similar to what is in place for furnace replacements in the AEP program, could help pay part of the replacement costs.

Smart power strips are another opportunity to address the appliances and electronics end use. These strips help control phantom loads from peripheral devices such as printers, DVD players, and monitors by shutting down completely the power to those devices that would otherwise go in standby mode. This is done automatically by sensing the change in current draw from the main device (e.g. desk computer) using the “control outlet”. This is a relatively easy and cheap measure but should be put in place during the visit by the Energy Advisor to make sure it is installed properly and that energy benefits are maximised.

4.4.6 BEHAVIORAL COMPONENT

The AEP offers one-on-one assistance to program participants during the energy audit. While this certainly brings some savings from changes in consumption habits, the program could greatly benefit from a true behavioral component.

Studies have shown that low income consumption habits are very diverse, ranging from frugal lifestyle to over-consumption. A behavioral component would ensure that participating households are engaged in energy conservation. A behavioral component may include elements such as a home energy report, web-based interactive tools, goal setting and progress tracking, and tailored offerings to participating customers to really induce long-term changes in consumption patterns.

However, as there can be important fixed costs to set up such behavioral programs, the AEP participants alone would probably not be sufficient to bring cost-effective savings, but this component could be offered to other market segments as well.

4.4.7 MISCELLANEOUS MEASURES

Carbon monoxide detectors are provided as a health and safety measure to participants that receive a furnace replacement. Manitoba Hydro should consider extending this measure to all dwellings with gas combustion equipment in place, whether this equipment was installed with the AEP or not. Radon testing kits and smoke detectors could also be provided, and existing smoke detectors verified, for all participants. While these products and services bring no energy savings, some are common in low income programs as health and safety measures. Since AEP staff are visiting homes for outreach and audits anyway, these measures can be provided at lower incremental costs. Manitoba Hydro could partner with external organizations (e.g. provincial or federal agencies, fire departments, local governments, etc.) that are concerned with health and safety issues to cover these extra costs.

4.5 CO-PAYMENTS

Co-payments from low income participants are only required for furnaces and boilers. All of the other products and services are free of charge for the participant. This generally free offering is in line with best practices for low income programs.

The average natural gas furnace replacement costs approximately $3,600. Of this amount, $3,030 is being covered by the AEP and $570 by customer contributions through a $9.50 no interest monthly

payment over five years[30]. With current rates and estimated average savings for furnace replacements, this offering is cash-flow positive from day 1 for the participant[31]. Savings could be reduced by as much as 48% before the replacement would stop procuring net bill savings. This co-payment and built-in financing offering is well balanced, giving to participating customers the opportunity to replace their old heating equipment with a net benefit on their short-term bills.

Boiler replacement costs approximately $8,500, of which $3,000 is covered by the AEP through a grant. The participant must cover the remaining $5,500. There is no integrated financing offering, although financing is available through other programs targeting the "able-to-pay" market (Power Smart Residential Loan, Power Smart PAYS Financing). The share of the total cost that must be supported by the participant is much higher (about 58% for boilers versus 16% for furnaces). We have seen that the number of boiler replacements within the AEP is small. This may be explained in part by the fact that boilers could be kept much longer than furnaces, generating lower replacement rates, but the lower incentive and the lack of a tailored financing offer for low income customers may also explain these results.

Table 4.8 – Summary of Co-Payments in AEP

Measure	AEP Offering / Co-Pay	Comments
Furnace (94% AFUE)	Participant must pay $9.50/month during 5 years[32]	• Well balanced approach
Boilers (85% AFUE)	Participants receive a grant[33] of $3,000, must pay the balance of $5,500 (financing available through other programs)	• Consider simple financing plan in AEP as per furnaces • Incentive share of total cost is low
All other upgrades & audit	Free	• In line with best practices

[30] Manitoba Hydro's cost for offering the loan (approximately $60 for administration cost, plus the interest cost) is covered by the program.

[31] Bill savings are estimated at $219 / yr. for furnace replacement only, and $357 / yr. for furnace replacement and insulation.

[32] Down from $19 a month since August 2013.

[33] Up from $ 2,500 since August 2013.

4.6 CUSTOMER BILLING ASSISTANCE INITIATIVES

Manitoba Hydro's customer billing assistance initiatives include a broad spectrum of activities and strategies to support their customers who struggle with making timely payments. In 2009, a review of the Bill Assistance program was conducted. This report identified and described the activities listed below as key components of Manitoba Hydro's Bill Assistance program:

- Payment arrangements (162,000 payment arrangements totaling approximately $120 million are made annually[34]);
- Select your own payment date;
- Equal payment plan (29% of customers have taken advantage);
- Late payment charges may be reduced or waived;
- Alternative payment methods;
- Defer reconnection fee;
- Limits of disconnection;
- Crisis intervention (i.e. Neighbours helping Neighbours);
- Customer rebates & DSM;

In 2010, Roger Colton[35] identified rate affordability, arrearage management, crisis intervention, and energy efficiency as key areas of a program. Of these areas, Manitoba Hydro's Bill Assistance programs hit on all of these areas except rate affordability, which tends to work against energy efficiency and there is no clear precedent of success in Canada.

There is significant coordination between the Affordable Energy Program and Bill Assistance program including:

- Affordable Energy Program (AEP) staff follow up with former Neighbours Helping Neighbours participants on a weekly basis to help answer customer questions, while urging participation in AEP;
- A mandatory application to AEP is required by customers when seeking a grant and AEP staff follow up with grant recipients to apply to the program;
- Currently use the customer data and contact info from credit and billing to target customers for AEP. Some recent examples include a direct mailer letter to high consumption customers and the use of Credit's auto-dialer to reach customers in arrears with potential energy efficiency upgrades; and
- AEP staff worked with Credit and Recovery to develop criteria and questions that will be used to increase referrals to the Affordable Energy Program from customers who call into Credit and Recovery.

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[34] Schedule A - Terms of Reference 038217, External Review of the Affordable Energy Program

[35] Colton, Roger, and Sheehan Fisher (2010). *Home Energy Affordability in Manitoba: A Low income Affordability Program for Manitoba Hydro.*

One recommendation for aligning AEP and Bill Assistance even more tightly would be to automatically enroll customers in AEP once they have been identified as challenged by paying bills or referred to NHN.

5. EVALUATION FRAMEWORK

This section deals with the evaluation of energy impacts and the cost-effectiveness framework. Manitoba Hydro is using, for the AEP, an evaluation plan that establishes algorithms and deemed savings to use to quantify energy savings. The reviewers conducted an in-depth review of these assumptions, as well as corresponding program documentation (e.g. cost-effectiveness calculations). These analyses are presented in sub-section 5.1.

Although savings for some specific measures might need to be adjusted, our assessment is that the overall level of savings seems reasonable. A potential weakness of AEP's approach is that these impact evaluations rely solely on deemed savings and algorithms. It would be recommended that these estimates be tested with hard data such as billing information to confirm the level of savings. Sub-section 5.2 proposes some complements to the current evaluation activities.

The last sub-section takes a look at the cost-effectiveness framework at a higher level and covers topics such as the choice of metrics, the hurdle rate and the inclusion of non-energy benefits.

5.1 SAVINGS ASSUMPTIONS

As we indicated earlier, our general assessment is that overall savings assumptions seem reasonable. Some measures could have greater savings (faucet aerators), while some could have their savings reduced (CFLs, to account for the new regulation), but these adjustments would likely counter-balance themselves to a certain point. Also, some factors seem to be accounted for, even though it is not explicitly included in the algorithms (e.g. adequate temperature balance point of heating degree days used for insulation upgrades). Table 5.1 presents detailed findings and recommendations for each AEP measure, and discussions on specific measure assumptions are presented in sub-sections afterwards. Our main recommendation is to better document some of the assumptions used in algorithms and some of the deemed savings.

Apart from savings, we note that lighting replacements (i.e. future avoided replacement costs of baseline lighting due to the longer effective useful life of efficient lighting) may not have been included in the cost-effectiveness analysis. It would be important to adjust the cost of efficient lighting downwards to account for this benefit, especially as the AEP is making the switch to LED lighting that have a very long useful life.

Table 5.1 – Review of Savings Algorithms and Assumptions

Measure and General Assessment	Remarks / Recommendations
Insulation Algorithm is of similar nature than other TRM's algorithms and can provide a reasonable estimate of energy savings. Several key factors are insufficiently documented. Assumed heating system efficiency need to be confirmed for natural gas and electric systems.	Several adjustment factors are applied, with insufficient documentation. Cumulative impacts of errors in those assumptions could be significant. **The adjustment factors used in the algorithm should be fully documented.** Natural gas heating system efficiencies are assumed to be 83%. Manitoba Hydro indicated that this assessment is specific to low income households. **The reviewer questions this assumption and recommends validating the AFUE of natural gas AEP participants.** The impact of heat pumps on the average electric heating system efficiency is not accounted for. **Manitoba Hydro should conduct an assessment of the distribution of electric heating system type within the AEP participants**. When comparing AEP's algorithm for insulation savings to other jurisdictions' TRM, the C-Factor seems a correction factor applied to the HDD times 24 hours. **The reviewer recommends to review and document the C-Factor/HDD relationship, and to modify the balance point temperature for the calculation of HDD as required.** See below for additional discussion.
Furnaces and Boilers Algorithm applied for furnaces and boilers savings is reasonable. Algorithm in the AEP Evaluation plan should be updated to reflect the actual algorithm applied for savings estimates. Heating system efficiencies (existing and upgrade) should be revised.	The algorithms presented in the AEP Evaluation Plan and the spreadsheet used to estimate energy savings differ considerably. **The AEP Evaluation Plan should be updated to reflect the actual algorithm used and to present the assumptions used in those calculations.** **Manitoba Hydro could increase the confidence in the energy savings estimates by including the climate region (North/South) in the assessment of the archetypes heating requirements.** Baseline system efficiencies are significantly lower than expected. **Manitoba Hydro should document the AFUE of the system being replaced and update this assumption accordingly.** **The AFUE assumption for new furnaces should be revised to 94%.** See below for additional discussion.

Measure and General Assessment	Remarks / Recommendations
Combination of Insulation and Furnace Replacement Algorithm applied is deemed reasonable. Algorithm in the AEP Evaluation plan should be updated to reflect the actual algorithm used.	The algorithm applied for the calculation of energy impacts account for the specific home heating load, based on the heating system energy savings calculations, whereas the Evaluation Plan applies a uniform heating load in its calculation. **The Evaluation Plan should be updated to reflect the actual algorithm used to calculate the impacts of combined insulation and heating system upgrades.**
Air sealing Undocumented deemed energy savings.	The AEP evaluation plan presents an algorithm, comparing energy consumption pre and post upgrades, to calculate energy savings. The program assumes uniform, deemed savings for air sealing for all participants receiving insulation and/or heating system upgrades. Manitoba Hydro assumes that additional energy savings come from closing up the chimney during a furnace retrofit and additional draft-proofing above and beyond the insulation itself. The savings derived from air sealing is undocumented. **Manitoba Hydro should document the assumptions used to calculate the deemed savings for air sealing measures, and apply the savings to the appropriate measure (i.e. for heating systems improvement or insulation as appropriate).** **The AEP Evaluation Plan should state the deemed savings from air sealing measures.**

Measure and General Assessment	Remarks / Recommendations
Compact Fluorescent Lighting Algorithm is reasonable. Undocumented assumptions. Impact of federal regulations not included. Cost/benefits analysis should account for full measure life.	The algorithm applied for the calculation of energy savings from CFL is reasonable. However, there are several undocumented assumptions related to the hours of use and interactive effects factor. **The AEP Evaluation Plan should fully document the assumptions used in the energy savings calculation.** The impact of the federal regulation on General Purpose Lighting is not accounted for. The improvement in efficacy of incandescent light bulb should be included in the calculations. This would have a negative impact of around 35% on the energy savings. **The baseline wattage of bulbs should be updated to reflect the Federal regulation on General Purpose Lighting.** The impact of replacement costs in the cost-effectiveness calculations are probably not accounted for. The avoidance of annual replacement costs for incandescent bulbs should be included in the cost-effectiveness calculation. **The replacement cost of the baseline equipment over the duration of the conservation measure should be included in the cost-effectiveness analysis.**
Showerheads Algorithm is reasonable. Baseline information should be confirmed. The evaluation plan should present the deemed savings for faucet aerators and general methodology.	The algorithm used for the calculation of energy savings is reasonable. The baseline technology assumes a 2.4 USGPM showerhead. The reviewer considers this baseline flow rate as potentially high, and could potentially overestimate the energy savings. The algorithm applied assumes there is a single shower per household, potentially overestimating the energy savings. **Manitoba Hydro should validate the baseline assumptions for showerhead flow rates and the number of showers per household.**

Measure and General Assessment	Remarks / Recommendations
Aerators Algorithm is reasonable, but should be adapted to account for other factors. Key assumptions need to be documented. The evaluation plan should present the deemed savings for faucet aerators and general methodology.	The algorithm used for the calculation of energy savings is reasonable. The energy savings estimates should be updated to include a factor accounting for water that is used instantaneously (down-the-drain factor). Faucet aerators do not provide energy savings when faucet are used to fill a container or the sink. The algorithm assumes there are only two faucets in the household (one in the bathroom, and one in the kitchen). **The algorithm should be adapted to include a *Down-the-drain* factor to calculate energy savings from faucet aerators. The algorithm should be updated to reflect the number of faucets in a household.** Several key assumptions on faucet water use are insufficiently documented, leading to potential underestimation of energy savings. Manitoba Hydro's Assumptions indicates a 44.1 l/day/household water consumption from faucet. Other sources indicate a 84.8 l/day of *hot water* consumption at faucets. Other assumptions to be reviewed include the distribution of faucet water used between the kitchen and the bathroom as well as the proportion of hot water used. **Manitoba Hydro should review and document key assumptions for faucet water consumption.**
Pipe wrap Claimed savings are reasonable. Undocumented savings.	Energy savings from water heater pipe wrap are assigned a deemed value. There is no documentation for the energy savings associated with this measure, but it is comparable to values reported in other regions' TRMs. **Energy savings from water heater tank pipe wrap should be documented.**

Measure and General Assessment	Remarks / Recommendations
Peak Savings Coincident factors should reflect the specific end-use.	Peak capacity savings are calculated from a unique coincident factor for all measures in the program. Contribution to peak load reduction can vary significantly between measures, depending on the end-use – for example, a reduction in heating system consumption, which occur during the peak season, will have a higher coincident factor than savings that occur throughout the year such as lighting improvements. **Manitoba Hydro should document the peak coincident factors applied for the AEP project and assign values based on the end-uses affected by the conservation measures.**

INSULATION

The AEP Evaluation Plan applies a detailed engineering algorithm to estimate energy savings from insulation measures. Although the algorithm details differ from other jurisdictions' TRM, it has a similar nature as others found in the literature. The main differences are in the correction factors applied to estimate the energy savings.

The algorithm relies on several adjustment factors that are insufficiently documented:

- Air leakage factor
- C-Factor
- Construction factor
- R-Adjustment

Although individually the values seem reasonable, the review could not assess the cumulative impact of minor divergence between the assumed values and real-life situations. **The adjustment factors used in the algorithm should be fully documented.**

Natural gas heating system efficiencies used in insulation savings calculations are assumed to be 83%. Manitoba Hydro indicated that this assessment is specific to low income households. **The reviewer questions this assumption and recommends that the AFUE of natural gas AEP participants be validated.** A revision to the natural gas system efficiencies could positively impact the energy savings estimates.

Electric heating system efficiency is assumed to be 100% (baseboard heating). No provision for more efficient heating systems such as heat pumps has been included in the analysis. **Manitoba Hydro should conduct an assessment of the distribution of electric heating system type within the AEP participants**. A revision to the electric system efficiency could negatively impact the energy savings estimates.

The algorithm notably relies on the heating degree days (HDDs) to estimate energy savings. Manitoba Hydro applies Natural Resources Canada's definition of heating degree days based on a balance temperature of 18°C. This balance temperature has been considered as too high by several jurisdictions and utilities, and a balance point temperature of 15.5°C is being applied in several jurisdictions.

When comparing AEP's algorithm for insulation savings to other jurisdictions' TRM, the C-Factor seems a correction factor applied to the HDD times 24 hours. **The reviewer recommends to clarify and document the C-Factor/HDDs relationship, and to modify the balance point temperature for the calculation of HDDs as required.**

FURNACES AND BOILERS

The algorithms presented in the AEP Evaluation Plan and the spreadsheet used to estimate energy savings differ considerably. The AEP Evaluation Plan presents the energy savings as the difference between the consumption with a standard efficiency system and the consumption with a high efficiency system. The actual calculations for the energy savings are more detailed, and include several assumptions that need to be documented. **The AEP Evaluation Plan should be updated to reflect the actual algorithm used and to present the assumptions used in those calculations.**

The algorithm calculates the energy consumption of heating systems based on different heating requirement archetypes, by applying the system AFUE to the heating system requirement. The archetypes developed and used are deemed as sufficient. The reviewer has not evaluated the heating requirements of the archetypes.

Manitoba Hydro could increase the confidence in the energy savings estimates by including the climate region (North/South) in the assessment of the archetypes heating requirements. This would be a similar treatment as for the calculation of insulation savings.

The algorithm assumes uniform system efficiency of 60% for the systems being replaced. Although furnaces older than 20 years could have that level of efficiency, more recent conventional furnaces also eligible for replacement have an efficiency of 78%. **Manitoba Hydro should document the AFUE of the system being replaced and update this assumption accordingly.**

The algorithm assigns a 92% AFUE for the new furnaces installed, although the program installs furnaces with 94% AFUE. **The AFUE assumption for new furnaces should be revised to 94%.**

5.2 IMPACT EVALUATION

Manitoba Hydro conducts impact evaluation of the AEP on an annual basis. This evaluation is currently limited to a desk review of savings estimates using deemed savings and engineering algorithms.

There is a risk associated with using only savings estimates. Even the best engineering algorithms can't possibly account for all the factors that could have an impact on real life energy savings. For example, some low income households may manage electricity usage very aggressively by shutting down baseboard heating as they leave rooms. This would lead to much lower savings for some insulation jobs, but would not be accounted for by the algorithms[36].

Empirical impact evaluations, using real consumption data, would help ensure that savings estimates are in line with reality. Manitoba Hydro is currently working on billing analyses but hasn't completed any so far because of the difficulties associated with establishing a control group. We recognize that the low income population is not very large and difficult to identify before their participation to the AEP. However, it would be better in our view to conduct a billing analysis without a control group than having no analysis at all.

The control group's function is to account for unobservable influences on energy consumption. Presumably the greatest influence that can skew the results of an empirical study is the fact that people can invest in energy efficiency on their own even without participating to the program, and this effect would very likely be minimal or non-existent in a low income population. The main purpose of a first empirical evaluation would be to confirm the magnitude and reasonableness of savings estimates.

Another empirical mean of confirming savings for furnaces and boilers would be to conduct combustion tests before and after their replacement, to confirm starting and ending AFUE estimates. As we indicated, the AFUE estimate for existing equipment seems low, and this assumption might lead to slightly overestimated savings. Combustion tests, which include stack temperature and CO_2 level reading, would help confirm the magnitude of savings. These tests could be conducted before and after the installation of a new furnace or boiler.

5.3 COST-EFFECTIVENESS FRAMEWORK AND PROGRAM METRICS

Cost effectiveness screening and evaluation for AEP is conducted at the program level. On an annual basis, the program manager updates the program plan, reviewing measures offered by AEP, measures savings, incremental costs, program administrative costs and incentive levels. The overall cost

[36] We note that most of the low income ecoENERGY files have a modeled energy consumption that is higher than the real consumption.

effectiveness of the program is assessed at the end of each fiscal year. There is no screening of individual customer projects; when customers apply for the program and qualify based on their income levels, any qualifying measures are approved.

AEP reports and compares to plan on a myriad of metrics. For the cost-effectiveness tests only, Manitoba Hydro uses the Total Resource Cost (TRC) ratio and net present value (NPV), the Social Cost ratio, the Levelized Recource Cost (LRC), the Levelized Utility Cost (LUC), the Rate Impact Measure (RIM) ratio, the Net Utility Benefit (NUB) ratio, the Utility Net Present Value (Utility NPV), the Customer Payback, and the Participating Customer (PC) ratio and NPV. Table 5.2 presents a few of AEP's metrics.

Manitoba Hydro uses all the cost-effectiveness tests and other metrics in what is called a "balanced approach", meaning that no single test is used for screening and all test results are considered. This approach is used when developing programs for the mass market. The AEP, which was created to address the low participation levels of low income households, includes all measures that are available in the mass market retrofit programs, plus furnaces and boilers.

While this approach has its merits, it is difficult within this framework to assess the basis of measures selection / screening for the mass market, and its impacts on AEP's offering.

It can also be harder to make decisions such as including new measures that are not actually offered to the mass market, or accepting special projects (i.e. retrofit projects that are not fitting in AEP's specifications but would nevertheless be cost-effective[37]).

In our view, key metrics for the AEP would be (figure 5.1):

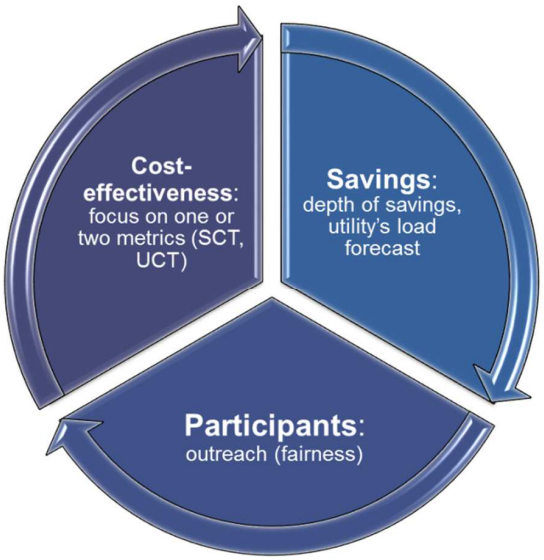
- **Participation**, a measure of the outreach the program achieved (and fairness to low income customers that pay for DSM activity through their rates);
- **Cost-effectiveness**, with a focus on one or two tests such as the Social Cost Test and the Utility Cost Test;
- **Savings**, both to evaluate the depth of savings by participant and the program's impact on the utility's load forecast.

[37] Walls and basements with low levels of insulation might be upgraded, even if the AEP normally only accepts uninsulated walls and basements. This is decided on a case-by-case basis, after talking with the contractor and evaluating savings that could be obtained. There is no formal cost-effectiveness testing.

Table 5.2 - AEP's Metrics (2012/13)

	Actual	Planned
Societal Cost (SC) Ratio	2.76	1.76
Net Utility Benefit (NUB) Ratio	0.85	0.50
Utility Net Present Value (Utility NPV)	($259,002)	$ (1,079,217)
Customer Payback (CP)	-	0.07
Participating Customer (PC) Ratio	2.82	2.14
Participating Customer (PC) NPV	$ 2,670,961	$ 1,984,423

Figure 5.1 – Key Metrics



Manitoba Hydro currently uses the weighted average cost of capital (WACC) as its hurdle rate (discount rate). The Public Utility Board asked whether a risk-free rate of return could be used when assessing low income DSM. As we've seen, a few jurisdictions are using a social discount rate with the TRC for their low income program, even though the more common practice is to use a single rate for each test (e.g. a utility might use the societal discount rate for SCT, and the WACC for TRC, regardless of the programs for which these tests are calculated).

In our opinion, the use of the Social Cost Test (with a risk-free societal discount rate) would be more appropriate for AEP[38] than modifying the TRC, as it would allow for a more comprehensive valuation of all the benefits this program brings to the Manitoban society (including societal benefits) while keeping a more coherent test calculation methodology across the DSM portfolio.

Benefits actually included in Manitoba Hydro's TRC are limited to measurable non-energy benefits (i.e. water savings). For its SCT, Hydro uses a 10% adder on energy benefits to account for unquantified societal benefits. There are a lot of benefits to account for in a low income program. On top of regular home retrofit benefits such as increased comfort, improved health, and greenhouse gas emission reductions, a low income program brings specific benefits such as better affordability, reduced arrears and disconnects, and reduced calls from customers. As we've seen, other jurisdictions are using adders as high as 25% for their low income program, or are quantifying and monetizing a broad range of non-energy benefits in their tests. Manitoba Hydro should consider using a higher non-energy benefit adder for the AEP.

[38] The use of the Social Cost Test doesn't need to be restricted to low income initiatives. Some leading jurisdictions are using the SCT for their whole portfolio.

6. MAIN FINDINGS AND RECOMMENDATIONS

Our high-level assessment of the Affordable Energy Program (AEP) is that the program is well managed and is achieving solid results. AEP is drawing from best practices in many aspects of its program design, including a generally turnkey approach, free energy efficiency measures (or small co-payment with no interest on-bill financing), direct install of low-cost measures during the audit, coordination with other low income programs, etc. Results in terms of participation rates, install rates and savings are strong. AEP also reaches to a large low income population by including both single and multi-family buildings, by using an adder of 25% on Low income Cut-Offs (LICOs) for eligibility and by offering both gas and electric saving measures.

The AEP program has a strong marketing plan that includes a mixture of advertising tactics delivered across different types of media as well as community-based social marketing activities and targeted marketing strategies by channel. The current marketing plan is very thorough as is. There are potential strategies and tactics that could be further leveraged to help increase successful uptake of the program.

For the majority of channels, there is a very high level of both application acceptance and follow through to successful completion of the project. When reviewing the process for the individual channel, a number of bottlenecks were identified that likely result in incomplete projects. Recommendations were suggested to help remove those potential bottlenecks and ultimately increase the number of completed projects.

The AEP is offering a good range of energy efficient products and services, mainly covering heating equipment, building envelope, hot water and lighting. Furthermore, the program management is seeking opportunities to expand the product list, the newest additions being drain water heat recovery and light-emitting diode lighting (LEDs). Although the program offering is extensive, the reviewers have identified several additional measures that are worth considering.

The main gap in the current offering is the lack of a good alternative for homes heated with electric baseboards. The AEP is getting far less electric-heated participants than their actual market share, and savings per participant are also lower than for gas customers. Air source heat pumps are definitely worth considering as an addition to AEP's offering, both to increase participation rates and depth of savings for electric customers. Appliance replacement is part of other programs and should be considered as a way to drive electrical savings cost effectively by utilizing the existing infrastructure in place for the Refrigerator Retirement Program.

Co-payments from low income participants are only required for furnaces and boilers. All of the other products and services are free of charge for the participant. This generally free offering is in line with best practices for low income programs. Boiler replacement uptake could benefit from a higher incentive level and integrated financing offering.

The reviewers conducted an in-depth review of savings assumptions, as well as corresponding program documentation. Our general assessment is that overall savings assumptions seem reasonable. Our main

recommendation is to better document some of the assumptions used in algorithms and some of the deemed savings.

Manitoba Hydro conducts impact evaluation of the AEP on an annual basis. This evaluation is currently limited to a desk review of savings estimates using deemed savings and engineering algorithms. There is a risk associated with using only savings estimates. Empirical impact evaluations, using real consumption data, would help ensure that savings estimates are in line with reality. Another empirical mean of confirming savings for furnaces and boilers would be to conduct combustion tests before and after their replacement, to confirm starting and ending AFUE estimates.

Our main recommendations to Manitoba Hydro are to:

1. Review the income eligibility paperwork required and consider allowing alternative government issued forms, instead of income tax CRA forms only.
2. Review the suggested improvements to the marketing plan and continue expanding the outreach to landlords and property managers specifically.
3. Consider eligibility for multi-residential and apartment buildings for both the landlord and social housing channel based on more limited retrofit activity (i.e. no insulation, but boilers).
4. Continue to engage and train social agencies and traditional poverty relief organizations who already work with low income customers to promote the program and support their clients through the application (i.e. meals-on-wheels, senior orgs) and continue to engage and update stakeholders working with lower income customers.
5. Align eligibility for bill assistance programs with AEP so that mandatory enrolment happens automatically once customers are identified as challenged by paying bills or referred to NHN
6. Review the current program offering and consider the addition of new energy efficiency measures, especially for electrically-heated homes.
7. Review some savings assumptions, as further detailed in section 5.1, and better document assumptions and deemed savings.
8. Add empirical evaluation and data collection methods (billing analysis, combustion tests) to actual evaluation activities to confirm savings estimates.
9. Consider using the SCT as the main cost-effectiveness tests, and review the benefits adder currently used for unquantified benefits.

APPENDIX A – PROGRAMS DETAILS

Detailed information about selected programs is presented below. Summary tables include the following elements: type of measure, eligibility criteria, targeted participants, type of building, innovation, program delivery, cost-effectiveness, and results.

BRITISH COLUMBIA

BC HYDRO ENERGY SAVING KIT		
Type of measure	FREE Energy Savings Kit offering simple ways to help save energy, reduce monthly bill, increase comfort • Compact fluorescent light bulbs (CFLs) • Weather-stripping • Fridge and freezer thermometers • A high efficiency showerhead • Faucet aerators (kitchen and bath), water heater pipe wrap	• Outlet gaskets • Window film • LED nightlight, fridge/freezer thermometers, • hot water temperature gauge, • $25 furnace filter coupon from Home Hardware *funded by Fortis BC, • Collateral set (Power Smart energy saving tips, referral card, survey, instruction manual).
Eligibility	BC Hydro customers who have a combined household income (which includes the income of every 18 years or older member in the household) must be below the Low income Cut-Off (LICO) as published by Statistics Canada. Proof of income required. Households (determined by service address) are not eligible to receive the program more than once every 10 years.	
Target	Homeowners, tenants and housing providers	
Type of building	Houses or apartment buildings, multi-fuel	
Innovation	Now includes kits for apartments and is available for housing providers. Customizable kits to help optimize uptake (i.e. asking how many showers, windows, etc.)	
Program delivery	Program is managed by BC Hydro and customer service and kit delivery are handled by their energy partner ecofitt. 1. Customer submits an online application, 2. BC Hydro program representative will follow up if required 3. Kits are delivered directly in the mail to the customer 4. Customer service and kit delivery is handled by their energy partner eco-fit	
Cost-effectiveness	The program needs to pass cost effectiveness but the provincial demand side management regulations allows the program a 30% benefit adder	
Results	Participation targets: 8,500 and 8,000 for 2014-2015 (declining since 15,000 participants peak in 2011) Over 70,000 kits distributed to date, approximately 35% market penetration Evaluation conducted in 2009 – 2010 fiscal year programs. The total (gross) estimated savings for vendor-assisted installations was approximately 359 kWh/year compared to 203 kWh/yr for self-installed kits (per kit)	

ENERGY CONSERVATION ASSISTANCE PROGRAM		
Type of measure	Personalized home energy evaluation, installation of energy saving products by a qualified contractor and personalized energy efficiency advice. 100% free for participants. Some homes may qualify for ENERGY STAR® refrigerator, attic, walls or crawlspace insulation. Evaluator reviews each home individually and determines which products the home is eligible to receive.	• Energy saving light bulbs • Faucet aerators for the kitchen and bathroom • Water-saving showerheads • Water heater pipe wrap • Door weather-stripping
Eligibility	• Combined household income (for every member of the household who is 18 years or older) below the Low income Cut-Off (LICO) as published by Statistics Canada.	• Eligibility for product installation is based on the existing efficiency of the participants' home, as well as a number of other factors, including heating fuel type.
Target	• Low income BC Hydro, FortisBC Gas and City of New Westminster account holders who are homeowners or tenants in a house. • Homeowners, renters, housing providers and aboriginal communities	
Type of building	• Detached houses, duplexes, townhouses and mobile homes, gas and electric mix • Apartments and condos are not eligible for the ECAP program. • Only electrically-heated or FortisBC gas-heated single family, townhomes and duplexes are eligible for insulation upgrades. Apartments, mobile homes and homes with other heating fuels are not eligible for insulation measures.	
Innovation	Partnership and coordinated efforts between BC Hydro and Fortis BC to allow for coverage for the program across the Province.	
Program delivery	• Program is managed by BC Hydro and the ECAP Contractor is Carillion Canada. • Application form, landlord consent form (if tenant is a renter) and the signature of the hydro account holder required to qualify 1. Paper application submitted to ECAP Program 2. Contractor visits are scheduled with the homeowner, first visit includes an audit/evaluation and install of eligible products. Multiple visits maybe required 3. If the home is eligible for advanced work, a work order for the eligible upgrades is created. Contractors or subcontractors would complete the upgrades on follow-up visits	
Cost-effectiveness	The program needs to pass cost effectiveness but the provincial demand side management regulations allows the program a 30% benefit adder.	
Results	Over 8,000 (as of June 2014) basic ECAP participants (approximately 40% of participation has come from nonprofit housing providers and 40% from aboriginal communities); 250 homes received insulation upgrades	

CALIFORNIA

PG&E ENERGY SAVINGS ASSISTANCE PROGRAM		
Type of measure	Provides prescriptive measures through a direct install program. Participants receive all feasible measures for which they qualify for free. Energy education Measures: Lighting (hard-wired Compact Florescent Porch Lights and Interior hardwire CFLs, screw-in CFLs, torchieres) • Occupancy sensors • Refrigeration replacement • Central and Window/wall A/C	• Central AC tune up • Furnace and water heaters repair-replacement (home-owners only) • Hot-water conservative measures (faucet Aerators, pipe wraps, low-flow showerheads/thermostatic valves, water-heater blankets) • Air Infiltration measures (caulking, door weather-stripping, outlet gasket, evaporative cooler covers, minor home repair) • Duct-testing and sealing • Attic insulation • Microwaves • Smart AC Fan delay relay with premium motor
Eligibility	Customers at or below 200% of federal poverty guidelines. Income adjustments for family size.	
Target	Owners and renters	
Type of building	Single-family, multi-family and mobile	
Innovation	Objectives: • **Reach all eligible low income customers** and give them the opportunity to participate in the LIEE program by 2020 • Increase collaboration among and leveraging of other low income programs and services • Aims at integrating LIEE programs with energy efficiency and other demand-side management programs	• Improve customer outreach by using **customer segmentation analysis and social marketing tools** (i.e. info available in 7 languages, multilingual television and radio campaigns, Bilingual (English/Spanish) bill inserts, multilingual collateral including door-hangers, postcards and one-page flyers, events and presentation, targeted direct mails, calls and text messages) • Develop **recognizable statewide branding** • Grow # of trained ESA program workforce
Program delivery	**Whole-neighborhood approach**: Outreach team leverages various local government and community organizations' programs and knowledge of their communities to promote the ESA Program and enroll customers. Program is managed by Richard Heath and Associates (RHA).	
Cost-effectiveness	2011: • TRCT 0.46 • UCT 0.58 • MPT 0.64	Current framework used to determine the cost-effectiveness of the ESA program does not adequately account for both energy savings and quality of life improvements, such as health, comfort, and safety benefits. 2015-17 cycle: ESA program cost-effectiveness Working Group to determine a list of health, comfort and safety criteria

Results	In 2012: 115,229 homes Savings: 37,48 GWh; 7,8 MW; 1,208,745 therms	Leveraging Success Evaluation: coordinate outside the IOU, including programs offered by the public, private, non-profit or for-profit, local, state, and federal government sectors (e.g. LIHEAP) that result in EE measure installations in LI households.

MAINE

MULTIFAMILY ELECTRIC HEAT AND LOW INCOME PROGRAM	
Type of measure	Weatherization and installation heat pumps (paid 100%)
Eligibility	Based on LIHEAP eligibility (resident's household size and income level)
Target	Owners
Type of building	Multifamily, Electric
Innovation	Focus on heat pumps Probably biggest (successful) cold-climate heat pump program in the country
Program delivery	• Conservation Services Group (CSG) delivery team to negotiate directly with property owners and installers + communication (highly directed program) • Cooperation with Statewide Maine Housing, Regional housing authorities and Department of Housing and Urban Development (HUD) who provided names of landlords • CSG would reach out to them directly (Direct call to owners), no marketing or other type of communication
Cost-effectiveness	Savings to investment ratio: 1.31
Results	•Estimated savings: annual average per unit 2600 kwh/y (26% reduction) •2200 units weatherized, 1900 installed heat pumps •3000 units in total •Program is closing because they upgraded all eligible buildings (18 months –1 January 2012 – 30 June 2014)

MASSACHUSETTS

MASS SAVE INCOME ELIGIBLE PROGRAMS	
Type of measure	• **Fuel Assistance Program** provides eligible households with help in paying winter heating bills to their oil, propane, wood or coal, gas or electric utility or source vendor. Special provisions are made for those households whose heat is included in their rent and those living in subsidized housing. • **Home Energy Assessment**: audit and direct install of CFLs, LEDs, fridge and RAC replacement • **Payment Plans** that help reduce arrearages for customers. If payments are made every month, the arrearage is reduced.
Eligibility	Fuel Assistance: Households with incomes up to 60% of estimated State Median Income are eligible for the Fuel Assistance Program, this qualifies participants for other income eligible programs. This year, LIHEAP will provide fuel assistance to low income households with annual incomes up to $61,664 for a family of four. Benefits vary depending on income levels.
Target	Homeowners and renters are both eligible for Fuel Assistance and other income eligible programs
Type of building	Single home (multi- fuel). Separate program exists for multi-family units.
Innovation	Collaborative approach between multiple utilities and community based organizations throughout the state to offer the suite of programs.
Program delivery	The fuel assistance program qualifies participants for the other income eligible programs. The Program receives federal funding and is managed by the DHCD in conjunction with 23 regional nonprofit and local government organizations.
Cost-effectiveness	All energy efficient measures are approved through a cost benefit ratio and must be cost effective
Results	In 2012-2013, Department of Housing Community Development served over 190,000 Massachusetts households through the fuel assistance program.

LOW INCOME MULTI-FAMILY ENERGY RETROFIT PROGRAM		
Type of measure	Prescriptive measures: • Air Sealing , Attic Insulation , Floor Insulation, Domestic Hot Water (DHW), Thermostats, Wall Insulation, Refrigerators, Electrical system considerations, Lighting upgrades	Custom measures: • Boiler replacement, Ventilation upgrade • All measures installed at no costs for participant
Eligibility	At least 50% of the development households have income at or below 60% of the Area Median Income.	
Target	Low income multi-family properties owned by public housing authorities, non-profit or for-profit organizations.	The program prioritizes developments with high-energy usage and developments where a planned renovation or energy upgrade offers a significant opportunity to obtain cost-effective energy improvements.
Type of building	One or more multi-family (5+ units) residential building, multi-fuel	
Innovation	Program requires that Applicants participate in benchmarking their building's energy usage and tracking usage post-improvements. The system used to do so is called WegoWise, an independently operated online tool specifically designed for affordable housing Applicants.	
Program delivery	The project is administered by LEAN and the projects (including assessments, analysis, assigning contractor, and QA) are managed by each utilities' lead vendor. Process from start to finish includes 6 steps.	1. Owner completes online application (ownership and building information). 2. Owner creates WegoWise account for benchmarking (building and energy usage data). 3. Program approves projects for building assessments. 4. Program gathers additional information if needed and completes building assessments. 5. Energy efficiency measures are selected based on cost-effectiveness, scope is approved and contractor is hired. 6. Energy work is completed (owner makes co-payment, if required).
Cost-effectiveness	The program funds only those projects that meet a cost-effectiveness test. Cost-effective measures are identified through a streamlined building energy assessment process and an evaluation protocol established under utility and energy efficiency service provider. Gas projects must cost no more than $14/therm saved (on average), Electric projects must have 5-7 year payback.	
Results	Program is 3 years old, with 339 projects completed to date in almost 30,000 units.	

NEW HAMPSHIRE

NHSAVES@HOME WITH HOME ENERGY ASSISTANCE		
Type of measure	• **Whole-house audit** • Incentives for **weatherization and learning** how to improve energy usage habits. • Up to $5,000 (increased to $8,000 in 2013-2014) in energy efficiency improvements to income-qualified households • All products and services provided by HEA are provided to qualified participants free of charge	Measures provided: • Air sealing • Health & safety measures (bathroom fans/vents, etc.) • Insulation • Lighting • Programmable thermostats • Refrigerators • Space heating equipment • Water heating equipment
Eligibility	• Eligibility includes customers who meet the eligibility criteria for Electric Assistance Program, Fuel Assistance Program, DOE Weatherization Program or anyone living in subsidized housing; determined by total household income and number of household members • Max gross household income established at 200% of the Federal Poverty Guideline (FPG)	• Electric or gas bill from one of the participating utility • Additional funds available to customers who qualify for the NH Weatherization Assistance Program. • Customers eligible for DOE Weatherization and who authorize data sharing between their Utility and CAA, will be eligible for funding from both programs
Target	Owners and tenants. Priority: electric heat (first priority) and high usage (second priority)	
Type of building	Single unit, electricity and gas.	
Innovation	Maximizing Potential Benefits To Income Eligible Customers Collaboration with the Community Action Agencies (CAAs) to bring more services to larger target audience	Marketing priority is based on electric heat and high usage, and then to all EAP participants
Program delivery	Administered by the five Community Action Agencies (CAA)	
Cost-effectiveness	Combined benefit-to-cost ratio for residential sector programs must be 1.0 or greater. TRC Benefit/cost, HEA programs: 1.21 – 1.62 (according to CORE plan 2013)	Utilities file periodic updates on the performance of the programs (including expenditures, resulting projected energy savings from implemented measures, and the number of customers served)
Results	Annual savings 956,949 kWh (in 2013) Program lifetime savings 12.6 GWh (2013 report) Participation 2012 (918): Multi-family 103, Statewide Single family 815	Participation 2013 (1,175): Multi-family 381, Statewide Single family 794

NEW YORK

EmPower NY		
Type of measure	**"Whole house" approach":** Home visit by BPI accredited participating contractors. EE measures installed: insulation, draft reduction, and upgraded lighting and replacement of inefficient refrigerators and freezers with ENERGY STAR certified models. Contractor may evaluate need for additional measures to reduce heating cost	Health and safety checks of carbon monoxide and smoke detectors, and more. Tips and strategies on how to better manage your energy usage on a daily basis Landlord investment may be required if EmPower is providing services to multiple units in a multifamily building.
Eligibility	Live in a building with 100 units or fewer. Eligible for regular HEAP benefits OR Participate in a utility payment assistance program OR	Household income is below 60% of the State Median Income. Must pay into SBC OR heat with oil, propane, kerosene, wood or coal.
Target	Homeowners or renters. Program covers fairly rural areas across NY state mostly owners (e.g. seniors low income owner)	70% owners – 30% renters (participate mostly because owner does not respond to NYSERDA solicitations)
Type of building	Electricity (incl. heating), Heating (oil, propane, kerosene, wood or coal)	
Innovation	Established reliable and qualified network of specialized contractors and agencies: • Accredited contractors (BPI) • QA and QC assured by independent inspectors	• Collaborative planning and on-going communications among key stakeholders. • More flexibility than Federal program, can choose different measures and champion energy innovation (educating people while doing work in their households)
Program delivery	• Honeywell International assists NYSERDA in running the EmPower New York program (energy efficiency professionals). They manage the process and send out qualified participating contractors. • Services provided by a BPI accredited contractor – 150 participating contractors in 2014 • New contractors can request waver for 6 months	• If approved, participant will be notified (within 4–6 weeks) and contacted by an accredited BPI contractor to schedule the energy assessment and upgrades. • Contractors perform final tests to ensure that the energy efficiency measures are performing exactly as they should • Quality Assurance and Quality Control inspectors work independently from participating contractors (QA by CSG)
Cost-effectiveness	Installed cost of each EE measure must meet an SIR of 1.1 or greater. Depending on the funding source, a TRC of 1.0 or greater may be required for specific measures. Program Evaluation currently on going.	

Results	Home provided with electric reduction measures saved an average of 1,172 KWh annually, or 13.1% of their electricity usage. Homes provided with home performance measures saved an average of 172 therms annually or 12.3% of their natural gas usage.	2010-2011: Served 11,277 homes with electric reduction services only, at an average cost of $866 and 4,076 homes with electric reduction and home performance (i.e., weatherization) measures, at an average cost of $3,126 per home. ~12,000 participants in 2013 (50% for improved insulation, 50% for electric reduction)

ONTARIO

HOME ASSISTANCE PROGRAM		
Type of measure	Program free to participants. Benefits are capped at $13,000 per home, and overall program average is closer to $500. Upgrades are based on an audited needs assessment. The program has two levels of home assessment: 1. Basic (plus or minus electric hot water measures) which includes lights, appliances, power bars, timers and hot water measure assessments and installs; and, 2. A weatherization audit, for electrically heated homes, which includes a simplified ecoEnergy home modelling audit to determine the TRC effectiveness of insulation and weatherization upgrades.	Measures include: • Compact fluorescent light bulbs(CFLs) - multiple varieties for virtually all domestic use • Smart timer power bar and block heater timers • Appliances – fridge, freezer, window a/c, and dehumidifiers • Hot water conservation measures (electric hot water) – aerators, showerheads, pipe wrap, tank wrap • Programmable thermostats (electric heat) • Insulation and draft proofing upgrades (low rise electrically heated homes) – batt, cellulous, and spray foam for basements, walls, headers, and attic
Eligibility	Combined household income (which includes the income of every 18 years or older member in the household) must be below 135% of Low income Cut-Off (LICO), as published annually by Statistics Canada (using local population criteria of urban areas of 500,000 or greater throughout the province). Applicants must either live in social housing, on a first nations reserve, or be listed as either first or second on the utility bill. HAP income eligibility is automatic with acceptance to other social program eligibility such as National Child Benefit Supplement (NCBS), Allowance for the Survivor, Guaranteed Income Supplement (GIS), Allowance for Seniors, Ontario Works (OW), Ontario Disability Support Program (ODSP), and the Low Income Energy Assistance Program (LEAP).	
Target	LDC customers in low income households, who rent or own, or live in low rise social housing, or are part of a first nation's reserve.	
Type of building	Homes, row houses, town homes, low rise apartments, and high rise apartment (except high rise social housing apartments)	
Innovation	The program is very inclusive, allowing more participation because it has differing participation levels (i.e. basic, extended and weatherization). This way few people are turned away from the program.	
Program Delivery	1. Customer submits an online application and gains support in process 2. A call centre rep schedules home installation appointment 3. Rep installs lights, power bars and hot water measures (electric hot water tanks only) and also assesses major appliances and models the insulation levels using HOT2000 (electrically heated homes only) to assess upgrade options 4. If eligible a second appointment scheduled for appliance delivery and potentially a third for home insulation upgrades. 5. Once complete a satisfaction survey is sent	

Cost-effectiveness	The program considered to be under funded, as installed pricing caps are sometimes below market purchase cost. Many utilities justify program on the social and community benefits, rather than purely on its conservation or demand savings. Program cost effectiveness assessment could be enhanced by a revision of its net to gross "free- ridership" calculations, as intuitively the low income sector should be significantly lower in free- ridership than the rest of the population.
Results	The program is on track to reach about 60,000 people province-wide over 4 years (currently at 50,000). Market uptake through word of mouth and earned media has driven stead participation increases. Revision of social housing application: now one single application by building manager for all units (increased # of participants). Estimated annual saving per participant are not clear but estimated average well above 1,500 kWh per participant.

SASKATCHEWAN

HOME AND RENTAL REPAIR PROGRAM		
Type of measure	**Rental Property Assistance:** • A forgivable loan to a maximum of $30,000 per unit in a multi-unit building, or $23,000 per unit for rooming house units or single family dwellings. • Rental property owners are required to contribute a minimum of 25 per cent of the eligible repair costs. **Home owner Assistance:** • A forgivable loan to a maximum of $23,000 to address health and safety standard issues and extend the useful life of the property by fifteen (15) years. • A maximum of $6,000 is available for emergency repairs.	Repairs to structural (including foundation), electrical (including knob and tube), plumbing, heating system, or for fire safety purposes. Relevant measures for energy efficiency include insulation replacement (i.e. if damage has been done by faulty roof), upgrades to high efficiency furnaces if they have been red-flagged by the gas utility. The homeowner is responsible for all costs greater than the approved amount.
Eligibility	**Home owner:** • The annual household income must be at or below the established income limits as determined by Saskatchewan Housing Corporation. • The property must be substandard or deficient and require major repairs or be lacking in basic facilities in at least one of these components structural, electrical, plumbing, heating system, or fire safety. **Rental:** • Applicants must keep rents affordable based on the Saskatchewan Housing Corporation rent schedule for the term of the loan. • Property must be below minimum health and safety standards to be eligible for funding.	
Target	Home Owner Applicants must own and occupy the property as their principal residence. Rental Applicants must own the property and house tenants with annual household income below the applicable income threshold as set by Saskatchewan Housing Corporation.	
Type of building	Single or multi-family, multi-fuel	
Innovation	Program offers generous forgivable loan amounts that cover comprehensive measures (broader than energy efficiency) including funding for emergency repairs during the winter.	
Program delivery	Program is managed by the Saskatchewan Housing Corporation. Applicants must complete a 7 page application. Once approval is granted, the homeowner must have all work completed within six months for health and safety repairs, and three months for emergency repairs.	
Cost-effectiveness	As this isn't a conservation demand management program, traditional cost-effectiveness is not calculated.	
Results	From 2011 to December 2013, approximately $17.2 million has been invested to assist in repairs to properties to meet health and safety standards.	

APPENDIX B – LIST OF INTERVIEWS

[NAMES OF INDIVIDUALS WERE REMOVED TO PRESERVE CONFIDENTIALITY]

Review of Manitoba Hydro's Affordable Energy Program:

1. Program Manager, Manitoba Hydro
2. Brandon Neighbourhood Renewal Corporation/ Brandon Energy Efficiency Program
3. North End Community Renewal Corporation
4. Community Canvasser, Brandon Neighbourhood Renewal Corporation
5. Executive Director, Social Enterprise Contractor
6. Rural participant, Portage La Prairie
7. Landlord
8. Social Housing provider
9. Individual participant
10. Housing Manager, First Nation
11. Advisory Committee Member
12. Advisory Committee Member
13. Advisory Committee Member
14. Advisory Committee Member
15. Advisory Committee Member

Review of other Low Income Programs:

1. Program Manager, Residential Marketing, BC Hydro, British Columbia.
2. Energy Programs Director, Action for Boston Community Development (ABCD), Massachusetts.
3. Project Assistant, Action for Boston Community Development, Massachusetts.
4. Residential Program Manager, Efficiency Maine, Maine.
5. Program Operations Manager, Energy and Housing Services, Maine Housing Authority, Maine.
6. Senior Project Manager, NYSERDA, New York.
7. Manager, Repair Grants, Saskatchewan Housing Corporation, Saskatchewan.

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www.dunsky.ca

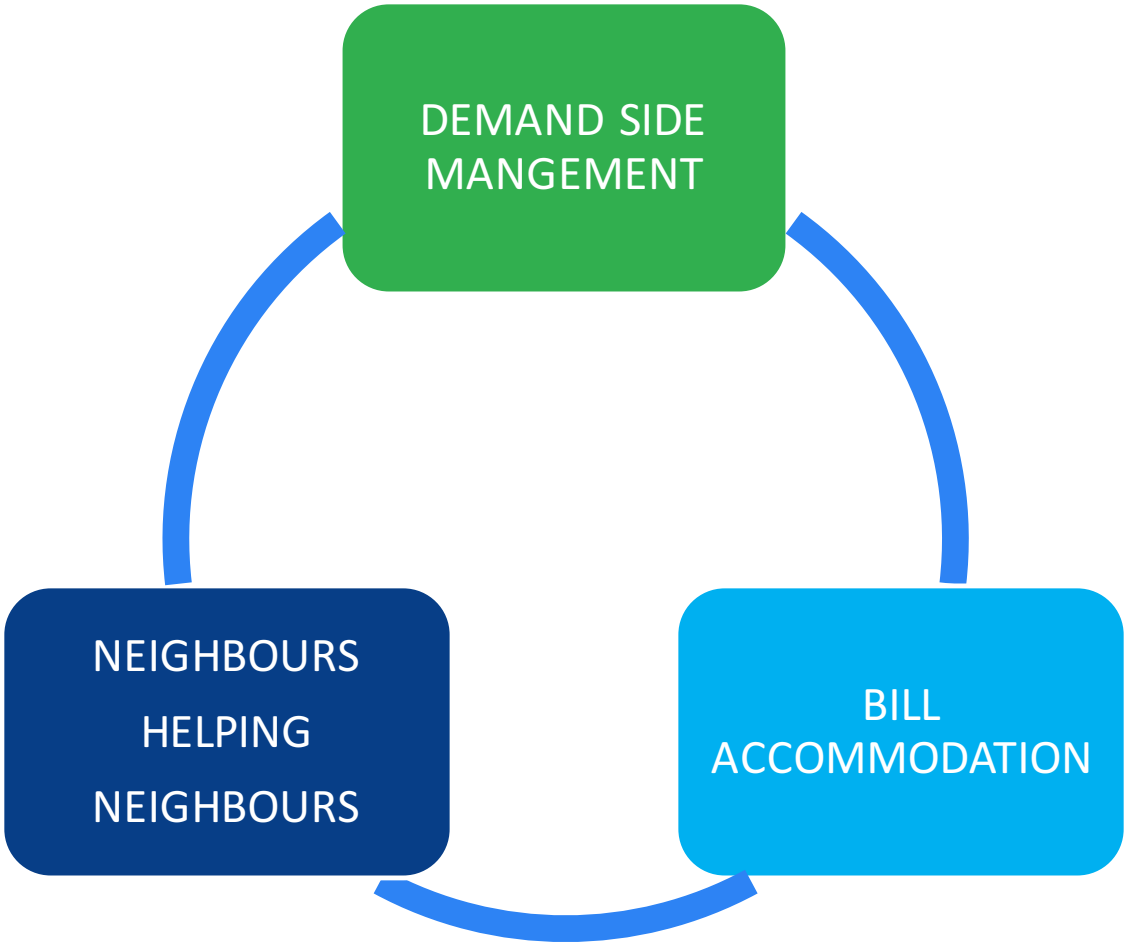
Affordable Energy Program & Neighbours Helping Neighbours

Colleen Galbraith – Department Manager

Affordable Energy

Manitoba Hydro

Affordable Energy Program



Eligibility

To qualify for the Affordable Energy Program, homeowners/home renters must:

- live in single detached homes, semi-detached homes or mobile homes on permanent foundations;
- live there on a year-round basis;
- have a total household income that falls within household size in the following chart:

Total Household Income Thresholds

Income qualifications are based on how many people live in your home and the total income (before deductions) of the household.

1 person	$30,750
2 persons	$38,281
3 persons	$47,063
4 persons	$57,140
5 persons	$64,808
6 persons	$73,091
7 or more persons	$81,376

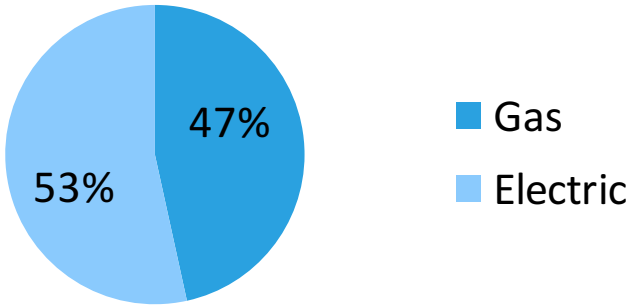
Manitoba Hydro

Program Offering

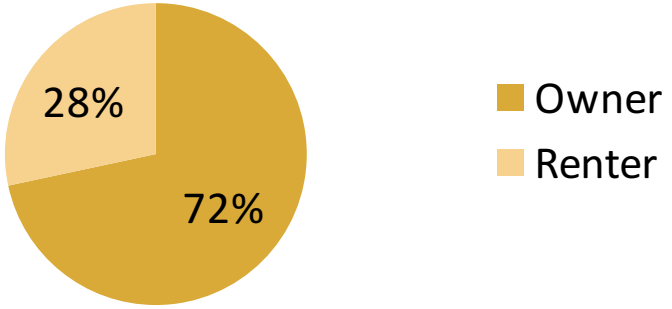
- Energy efficient upgrades for lower income customers
- Qualifying customers may receive:
  - FREE in-home energy efficiency review and basic energy saving items
  - Free insulation
  - New high-efficiency natural gas furnace for only $9.50/month for 5 years OR $3000 rebate for a high-efficiency natural gas boiler

Affordable Energy Target Market

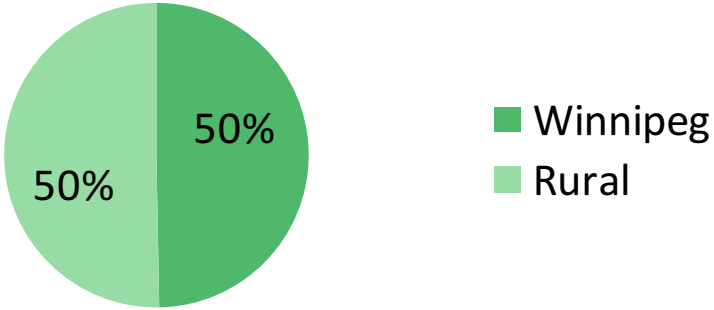
Gas vs. Electric



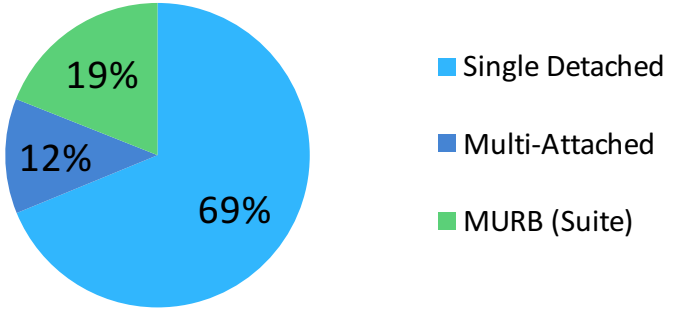
Owner vs. Renter



Winnipeg vs. Rural



Housing Type



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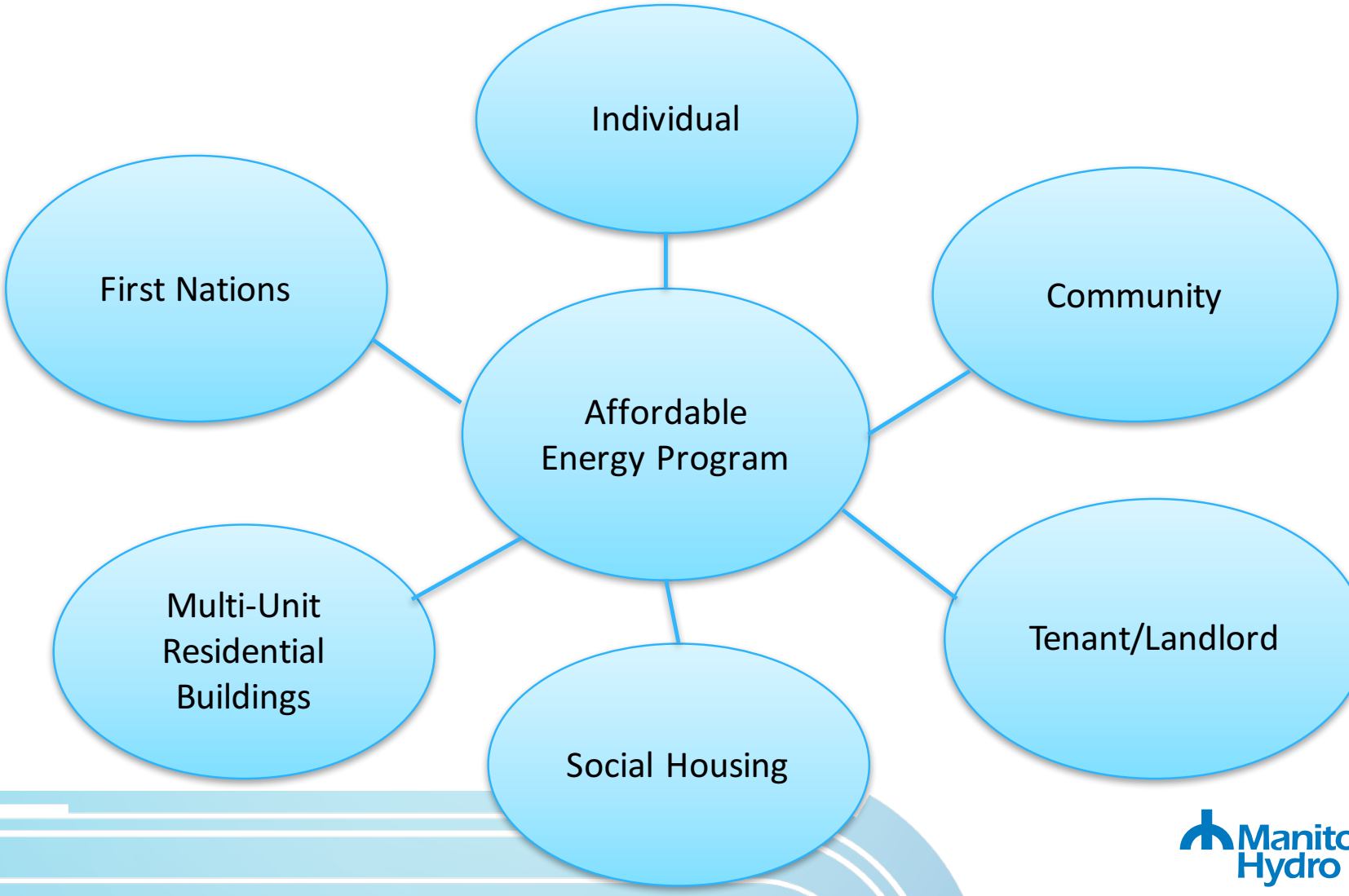
Multi-Pronged Approach



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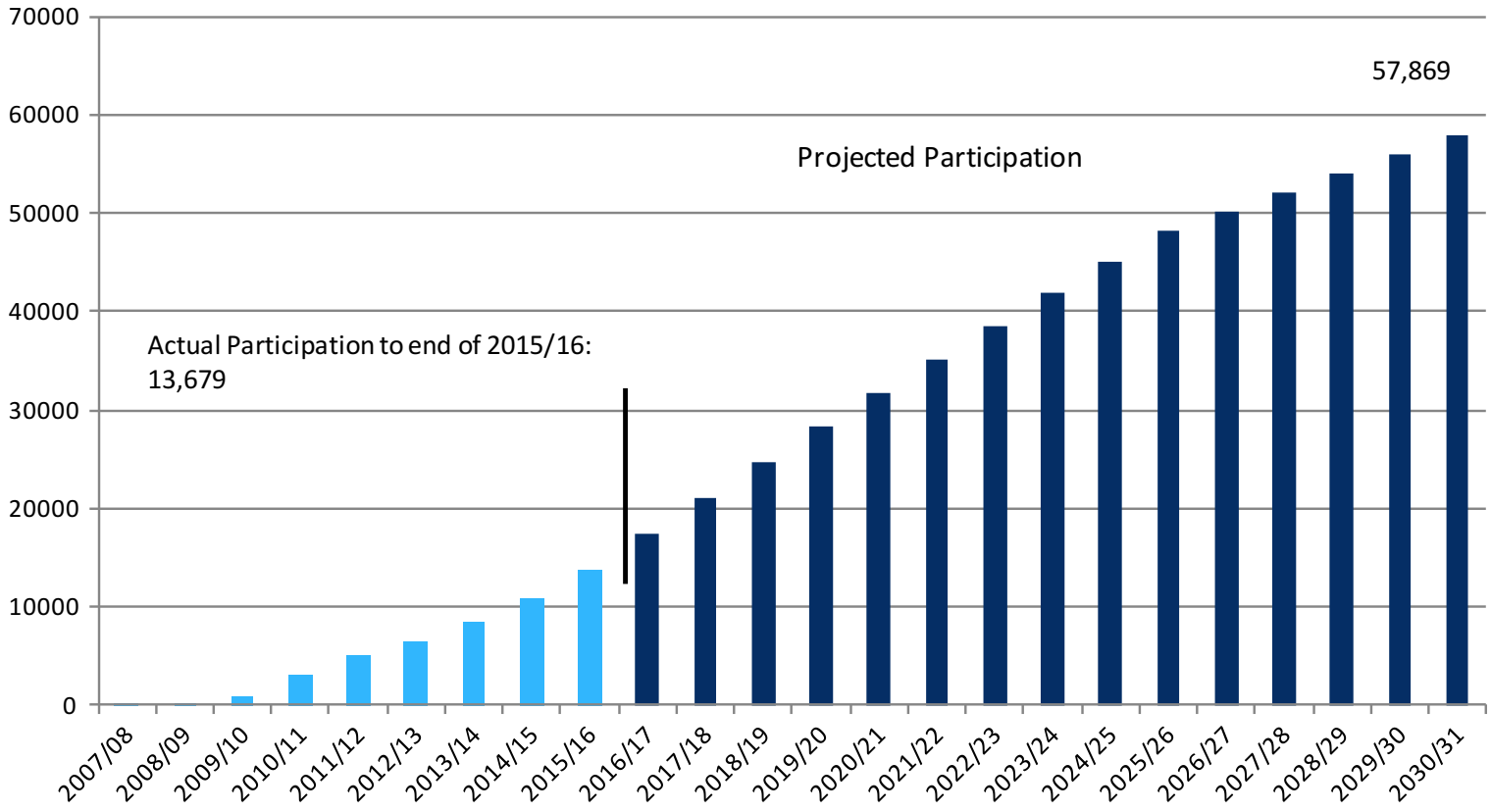
Affordable Energy Participation



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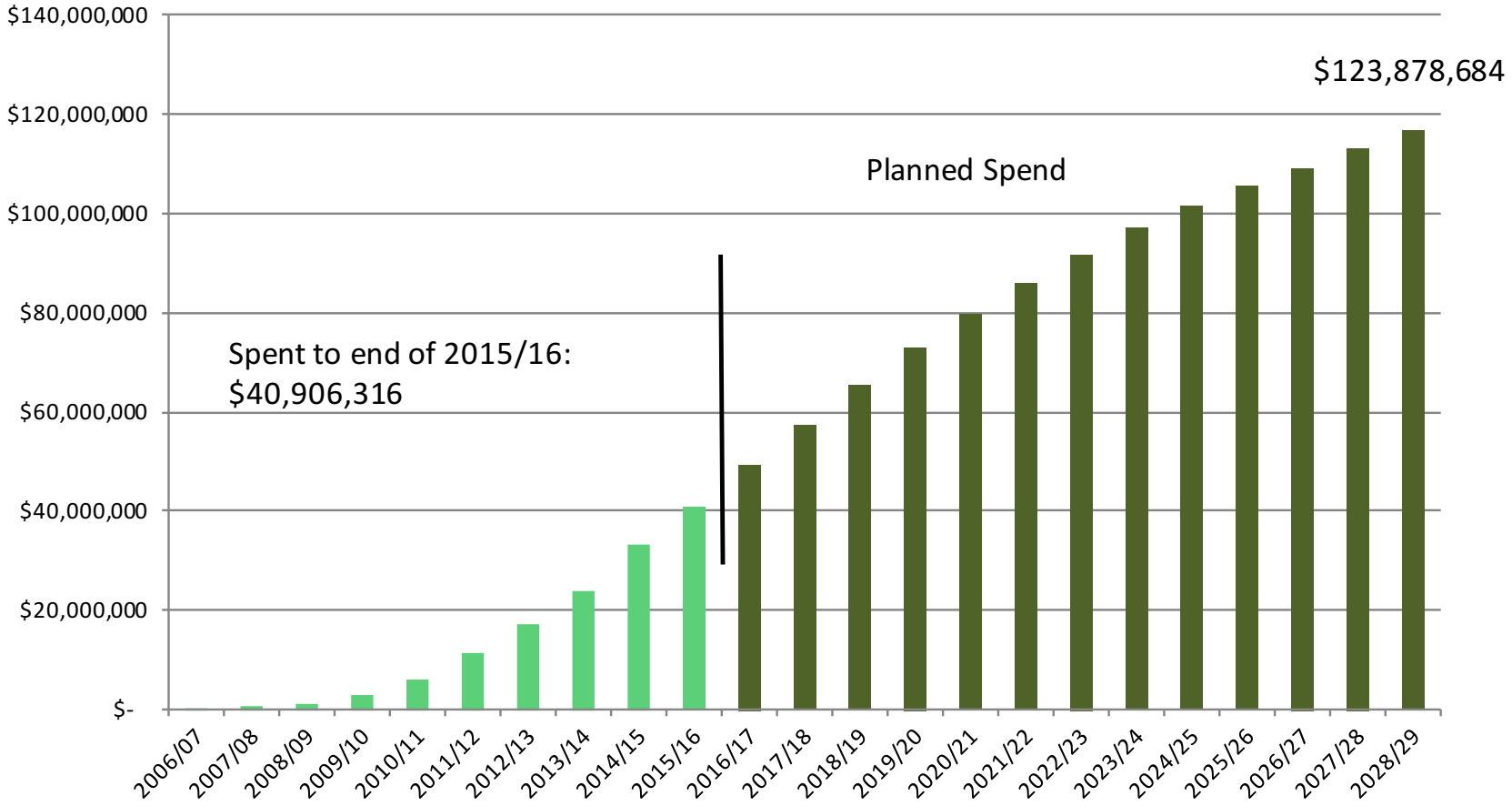
Affordable Energy Spend



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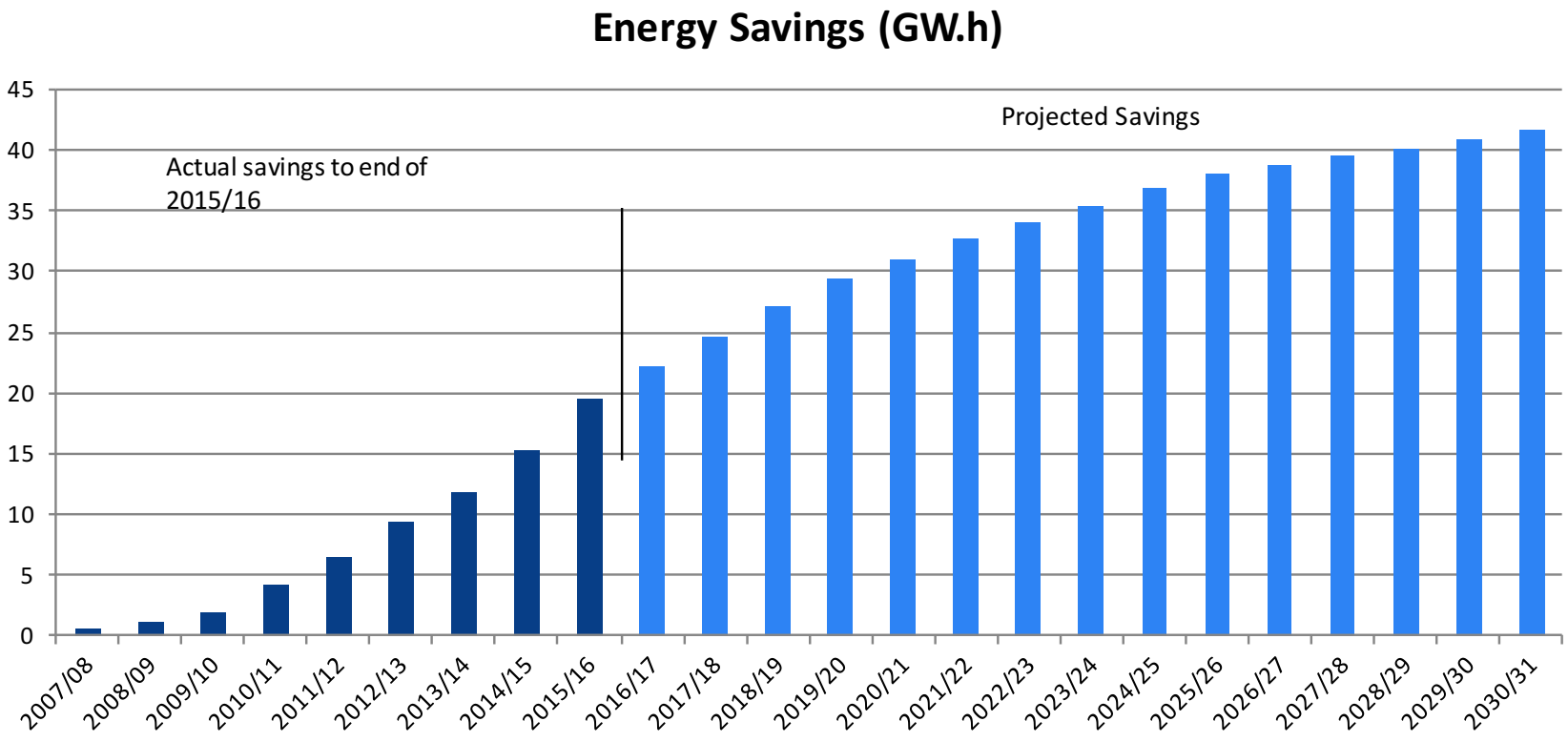
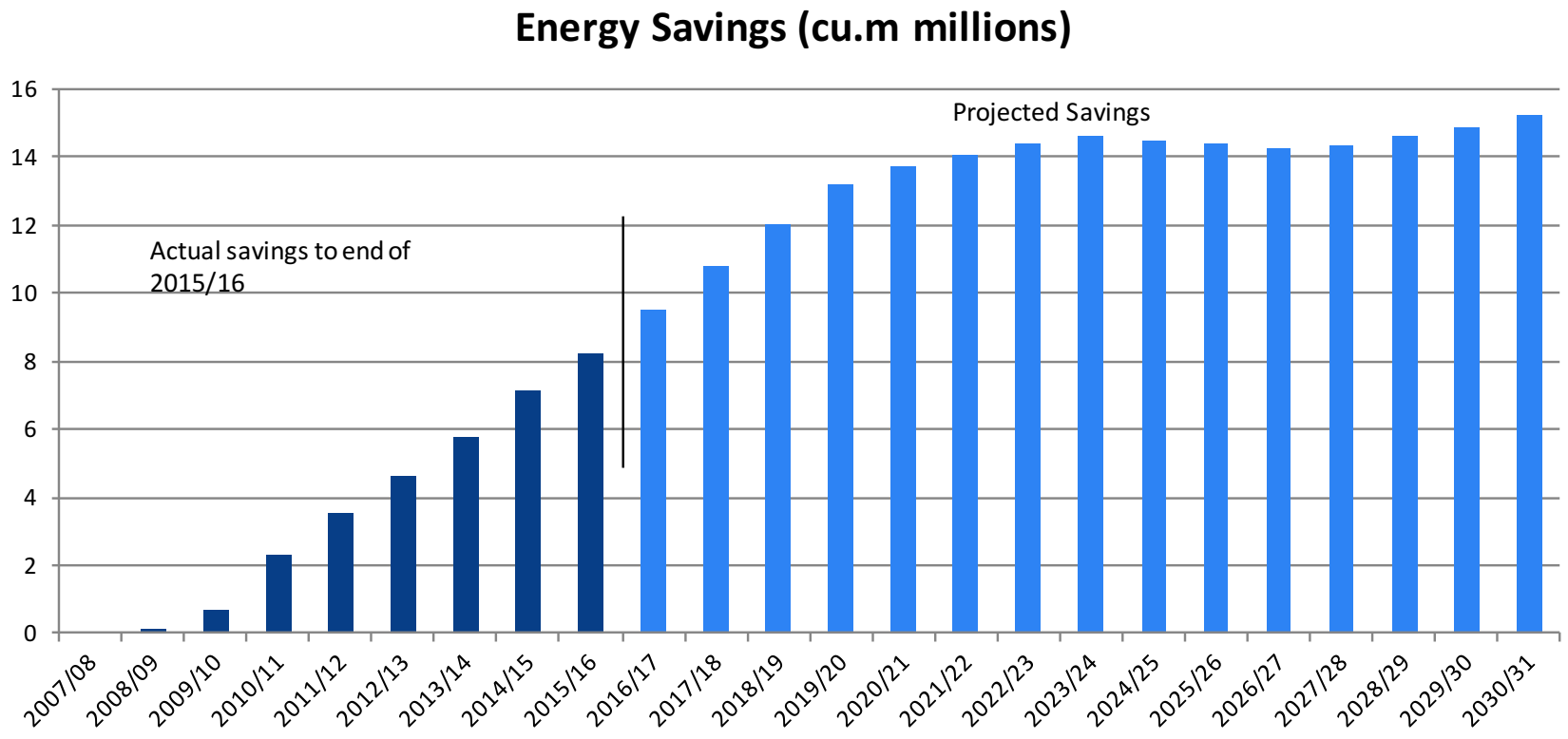
Electric Energy Savings



Natural Gas Savings

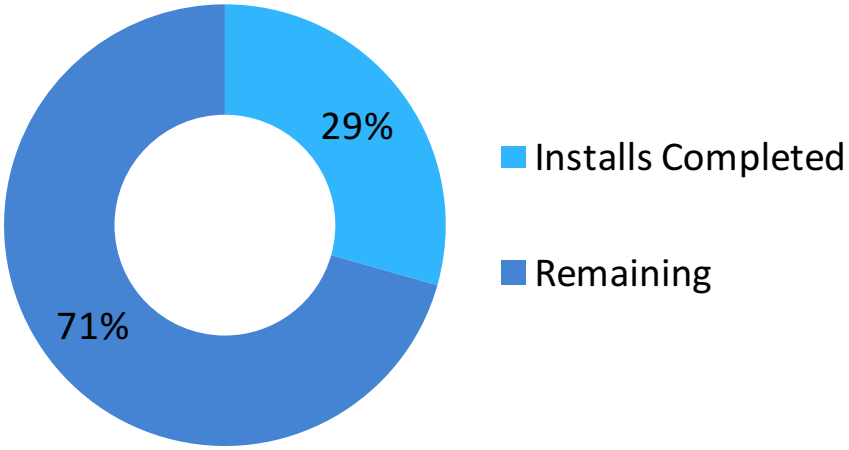


Bill Reductions per Measure

- Estimated average bill reduction per Customer:
  - Basic Measures (electric): $37
  - Basic Measures (natural gas): $ 25
  - Insulation (electric): $556
  - Insulation (natural gas): $230
  - Furnace (natural gas): $243

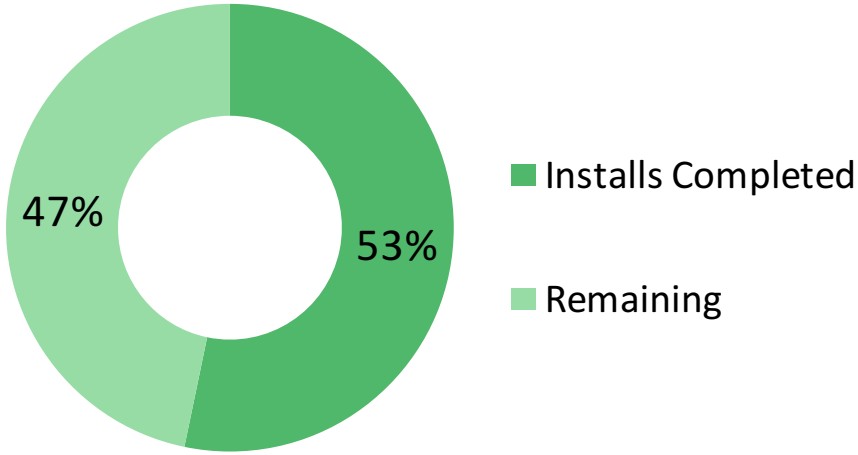
Upgrades Market and Participation

Insulation



Total Market: 30,051
Installs Completed: 8,832
*Includes First Nations

Furnace



Total Market: 8,635
Installs Completed: 4,599

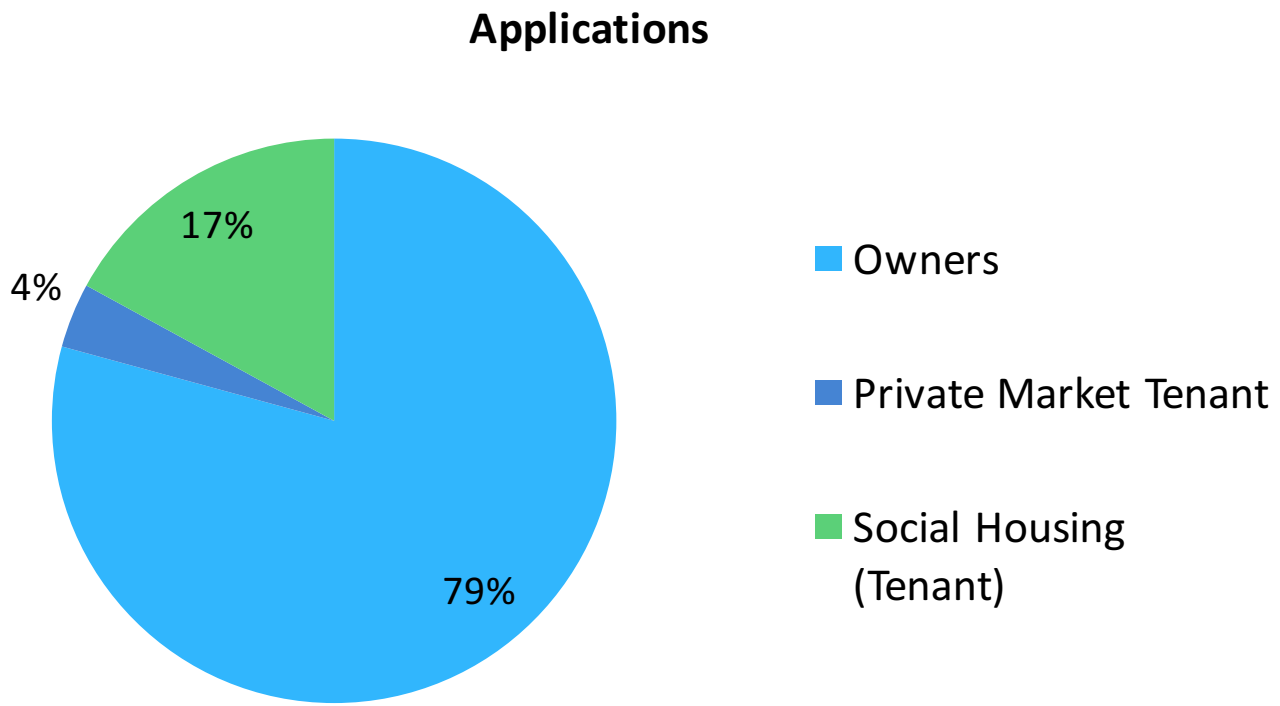
Free Insulation Upgrades

Insulation Cost Range	Number of Customers
$0.00 - $999.99	2167
$1,000.00 - $1,999.99	2956
$2,000.00 - $2,999.99	824
$3,000.00 - $3,999.99	579
$4,000.00 - $4,999.99	553
$5,000.00 - $5,999.99	471
$6,000.00 - $6,999.99	311
$7,000.00 - $7,999.99	225
$8,000.00 - $8,999.99	142
$9,000.00 - $9,999.99	119
$10,000.00 - $10,999.99	43
$11,000.00 - $11,999.99	38
$12,000.00 - $12,999.99	24
$13,000.00 - $13,999.99	17
$14,000.00 - $14,999.99	6
$15,000.00 - $15,999.99	4
$16,000.00 - $16,999.99	4
$17,000.00 - $17,999.99	2

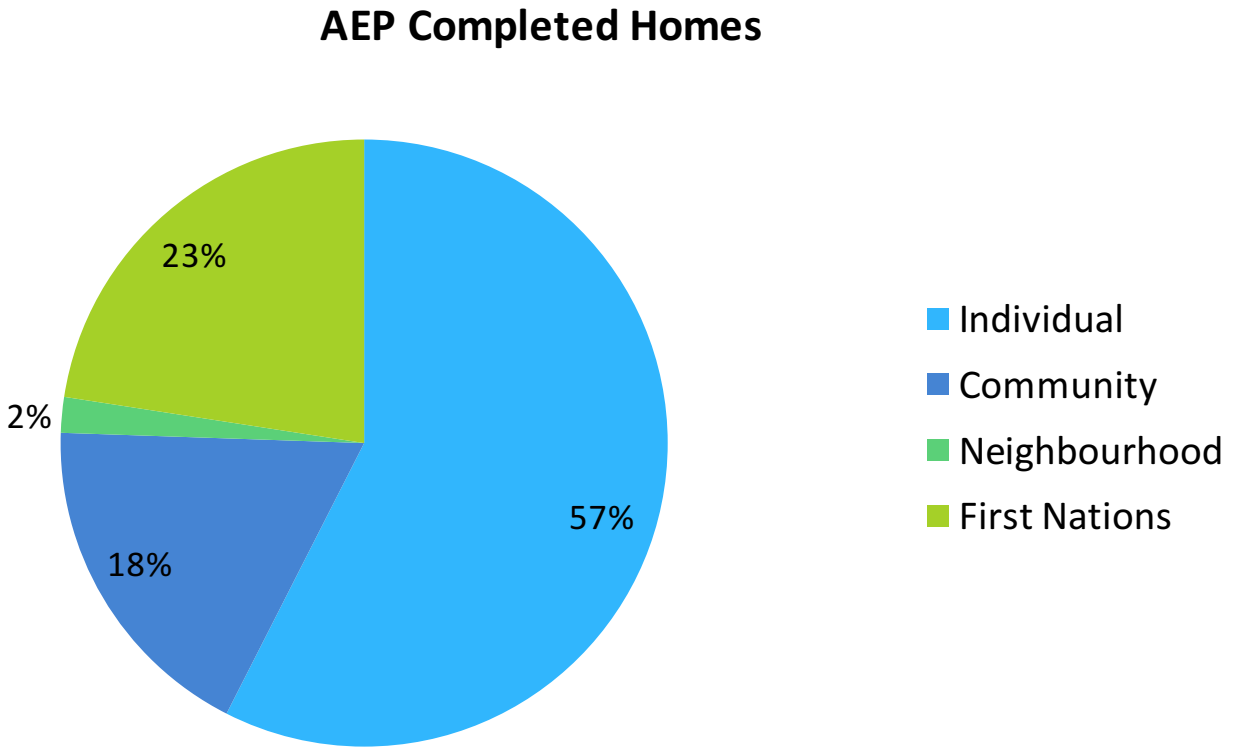
As of Mar. 31, 2016

Manitoba Hydro

Owners vs. Landlord/Tenants

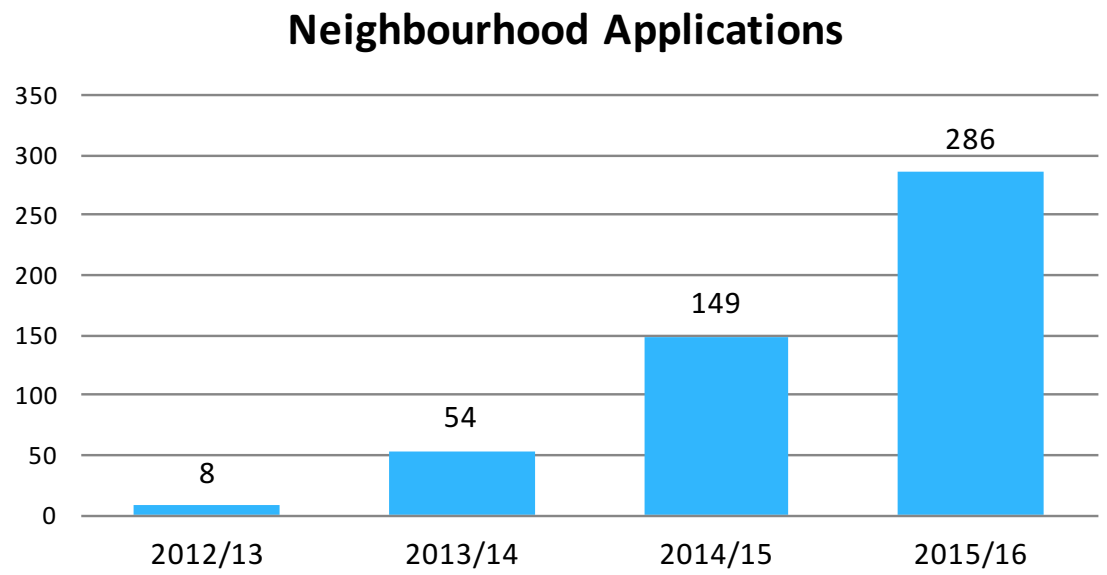


Participants by Delivery Channel



Neighbourhood – Street by Street

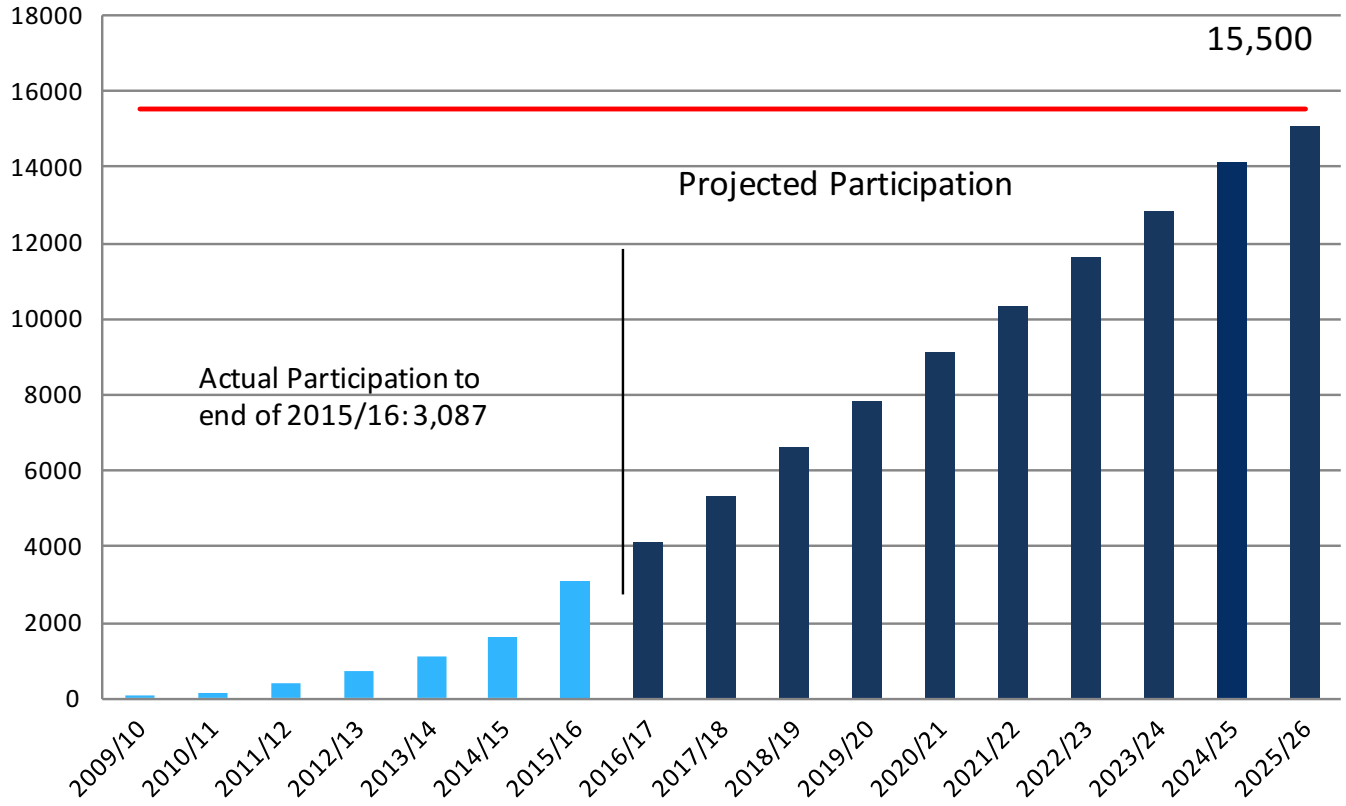
- Partnerships with North End Community Renewal Corporation & Brandon Neighbourhood Renewal Corporation
  - New partnership with Portage la Prairie Community Renewal Corporation



First Nations

- Provide energy efficiency upgrades to First Nations Communities
  - Insulation
  - Direct Install
- Materials and funding for labour
- Dedicated First Nations Energy Advisor

First Nations Participation



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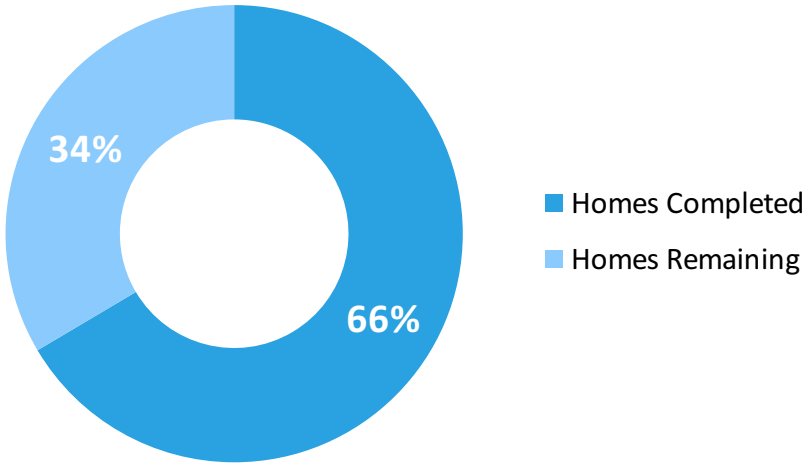
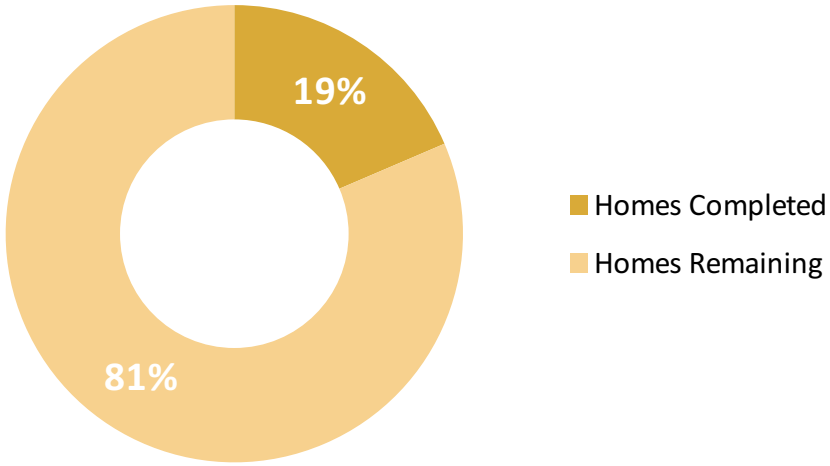
First Nations Delivery Channel

Insulation



Total Market	3,279 Homes
Completed	2,180 Homes

Direct Install



Total Market	15,500
Completed	2,877 Homes

Program Marketing

- Annual Marketing Budget - $500,000
- Marketing tools include the following:
  - Hydro bill inserts
  - Hydro website
  - Brochures
  - Radio Ad 
  - Television commercial
  - Print ad
  - Social media (Facebook & Twitter)
  - Outdoor digital billboards
  - Transit bus shelters
  - Autodialer to customers in arrears
- Upcoming year: new program branding, community energy advocate plan
- Realize the need for an education component
  - First Nations Community Presentations
  - Plan to present in schools

Community Outreach

- Community Energy Advocates
- Expansion of Neighbourhood Initiative
- Partnership with Manitoba Metis Federation
- Workshops and information sessions
- Exhibitor booths at community events
- Increased Effort with Landlords and Social Housing Groups Through Additional Staff

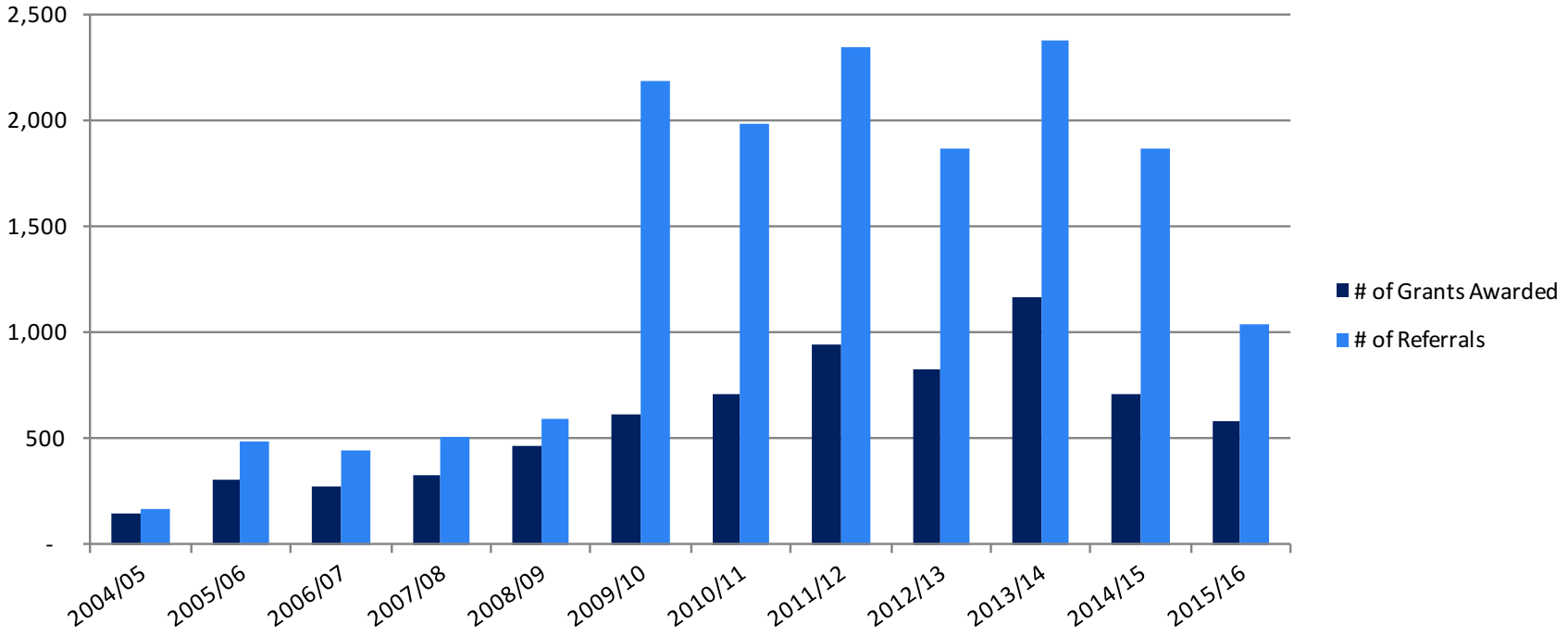
Neighbours Helping Neighbours

- Partnered with the Salvation Army
- Provides one-time emergency funding
- Provide referrals to community programs
- Grants range from $125 to $400
  - Recently changed; previously only up to $300

NHN - Eligibility

- Lives in the Manitoba Hydro service area
- Has an arrears notice (60 days or greater) and/or a Shut off/Disconnection Notice
- Cannot be on social assistance
- Apply to the Affordable Energy Program where appropriate

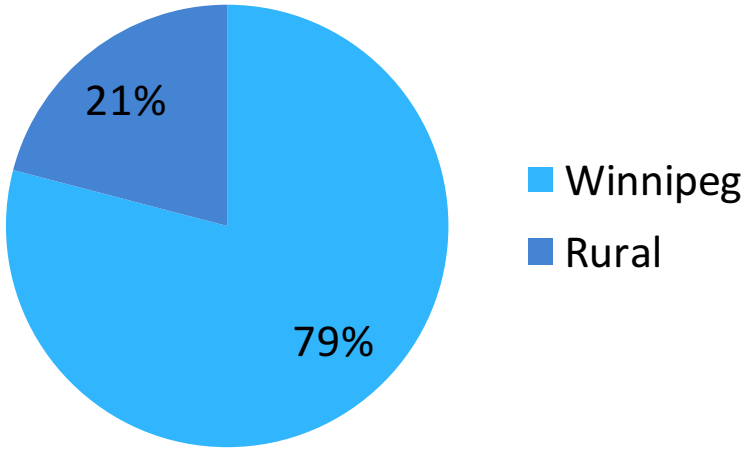
NHN Participation



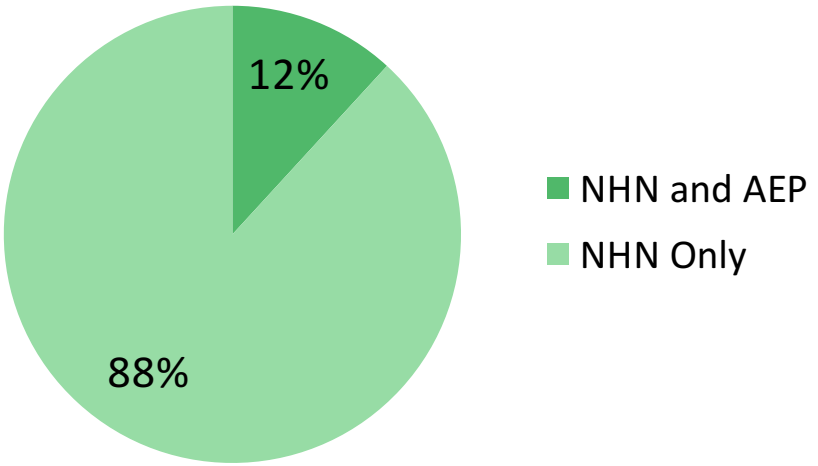
- Approximately 7,100 families have participated in the program with the overall program average grant being $341.
- 752 NHN participants have also become Affordable Energy participants.

NHN Participation

Winnipeg vs. Rural



AEP & NHN



Neighbours Helping Neighbours

$2,412,415 Distributed

- 7,067 grants awarded
- Average grant: $341

$3,352,246 Total Contributions

- $361,564 in customer contributions
- $2,176,268 Manitoba Hydro grant contributions
- $814,415 Manitoba Hydro admin contributions

Manitoba Hydro

Dunsky Recommendations

Recommendation	Progress
• Consider allowing alternative income verification forms	• Started exploring income alternatives • income verification forms December 2015
• Expand the outreach to landlords and property managers	• Added staff • Members of Manitoba Non Profit Housing Association • Updated Landlord/Tenant guidelines to make the program more accessible
• Consider eligibility for multi-residential and apartment buildings for both landlord and social housing channels	• Launched MURB program in 2015/16

Manitoba Hydro

Dunsky Recommendations

Recommendation	Progress
• Continue to engage and train social agencies	• Looking to create partnerships in Portage la Prairie, Morden/Winkler, Steinbach, Selkirk and Thompson
• Align eligibility for bill assistance programs with AEP so mandatory enrolment happens automatically once customer is identified	• Already done •When eligible customers apply through Neighbours Helping Neighbours, an AEP application form must also be filled out and forwarded to the program
• Consider the addition of new energy efficiency measures	• Always exploring new alternatives

Focus Group

- Conducted February 25, 2015
- Consisted of AEP participants and non-AEP participants
- Marketing material well received; clearly communicates the process and benefits
- The tagline “It’s True” catches attention, causes customers to want to investigate further
- Biggest barrier identified is basic inertia

Barriers

Barrier	How we're overcoming the obstacle
Lack of Trust	Working with Community Groups (NECRC, BNRC, Energy Advocates)
Not a priority, set aside and later forgotten	Following up with customers either in person (with community groups) or on the phone to assist with application process
Ineffective Messaging	Tailoring marketing to specific customer segments
Pride	Name changed from "Lower Income Energy Efficiency Program" to "Affordable Energy Program"

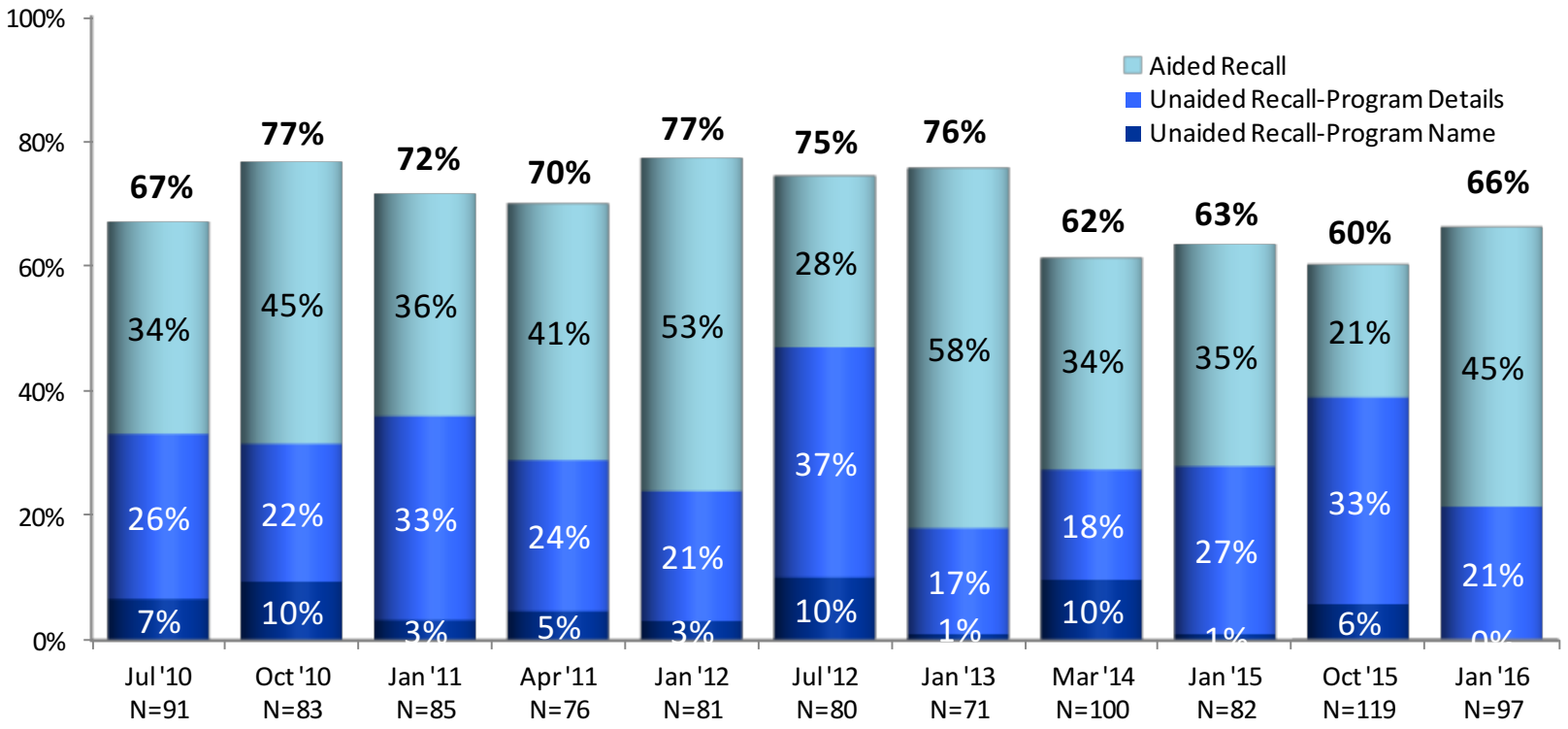
Barriers

Barrier	How we're overcoming the obstacle
Nothing is Free	"It's True" messaging reinforces that the offer is actually true
Rural Market barrier	Working on expanding our Community Groups network
Ineffective Placement/location	Some marketing materials targeted to specific areas where there is higher incidence of lower income (bus shelters, convenience store posters)
Decision Maker Resistance	Partnering with local community groups

Program Partners

- Work with groups such as:
  - Residential Tenancies Branch
  - Employment and Income Assistance
  - Supporting Employment and Economic Development Winnipeg (SEED)
  - Winnipeg Harvest
  - Manitoba Non Profit Housing Association
- Referrals to other Power Smart Programs, Homeowner Renovation Assistance Program, Manitoba Emergency Repair Program

Affordable Energy Program Awareness



Affordable Energy Program Awareness

- Primary media sources were:
  - television
  - bill inserts
  - newspaper ads
  - word of mouth
  - radio ads
- Key barriers are:
  - no need for energy efficient upgrades (24%)
  - not convinced of value of savings (16%)
  - believe they won't be eligible since they rent (10%),
  - don't have time to learn about AEP at the time (8%).

Credit & Recovery

- Credit & Recovery referrals
  - Credit Staff
  - AEP Referrals tracked
  - Formal tracking system launched for AEP & NHN March 2016
- Autodialer to customers in arrears
- Affordable Energy Program Furnace Loan *New*

Questions?


Manitoba
Hydro

LICO vs. LIM

- LICO (Low Income Cut Offs) is established using data from Survey of Household Spending. The survey indicates an income threshold below which a family is likely to spend significantly more (20%) of its income on food, shelter, and clothing than the average family. Varies by family & community size.
- LIM (Low Income Measure) is a pure measure of relative low income and is defined as half the median family income (adjusted for family size). Most frequently used measure internationally, particularly when comparing between countries.
- The Affordable Energy Programs uses LICO 125, and removes the community size.

REFERENCE:

Appendix 10.5, 4.3, Page 102 of 242

PREAMBLE TO IR (IF ANY):

CITATION:

Focus group research with AEP participants and non-participants examined the perceived benefits as well as possible barriers to enrollment in the AEP (Enns, 2015; Galbraith, 2016). Benefits identified included the free insulation and low-cost furnaces; increased housing value; and saving money. The primary barrier to enrollment was identified as simple inertia. Those consulted did not experience a sense of urgency in acquiring a new furnace or insulation. On the other hand, immediate need for one of these items, in the case of furnace breakdown for example, was identified as an important motivation for enrolling in the program. However, there were also doubts expressed about possible hidden costs and the trustworthiness of Manitoba Hydro, fueled by the feeling that "nothing is free" among the non-participant group. A concern common to both groups was the degree of choice involved in the selection of contractors to do the work. Another concern identified was that application materials were sometimes difficult to understand (Dunsky Energy Consulting & Summerhill Group, 2015).

QUESTION:

a) Please elaborate on the extent to which the benefits and barriers identified in the citation are applicable to on-reserve First Nations households, particularly with respect to the observation of page 88 of 242 to the effect that First Nations' housing may be in such a poor state that retrofits to increase energy efficiency may have little impact on reducing energy burden;
b) Please describe any other benefits and barriers that apply particularly to these on-reserve First Nations households.

RATIONALE FOR QUESTION:

RESPONSE:

a) The benefits cited above are available to on-reserve First Nations households through Manitoba Hydro's Indigenous Power Smart Program. The program provides those households with the supply and installation of insulation at no cost and other energy and water saving measures, which both increases housing value and saves the residents money on their electricity bill.

The barriers cited above have been addressed by the customized approach taken by Manitoba Hydro in delivering the Indigenous Power Smart Program to First Nation communities. Manitoba Hydro's customized approach enables the Indigenous Energy Advisor and the individual community Band Housing Managers to work together and decide the order in which community homes participate. As one phase of insulation or direct install is completed, the next phase is immediately undertaken.

The direct and ongoing working relationship between the Indigenous Energy Advisor and each Band Housing Manager serves to address the barriers around possible hidden costs and the trustworthiness of Manitoba Hydro. The Band Housing Manager selects local band members to complete the installation of insulation, and that work is done in multiple stages with payments provided as work progresses. The Indigenous Energy Advisor coordinates all administrative paperwork, which includes use of a BCR and Agreement as opposed to application forms directly with the Band Housing Manager. Thus, through this customized approach, these barriers are removed.

Please see AMC/MH I-27 for information regarding the observation that First Nations' housing may be in such a poor state that retrofits to increase energy efficiency may have little impact on reducing energy burden.

b) Further benefits of participation in the Indigenous Power Smart Program include increased home comfort from added insulation (warmer in the winter and cooler in the summer) and a decreased impact on the local water system as a result of the low-flow showerheads and faucet aerators. The Indigenous Power Smart Program also provides the funding for the labour to complete the installations of both the insulation and basic measures which creates employment for members of the community. As of June 30th,

2017, over 5,300 homes have received retrofits through the program, generating the equivalent of 22 full time jobs of Indigenous employment.

Please see PUB/MH I-126e for further information on perceived barriers and customized solutions to facilitate participation for on-reserve First Nation households.

REFERENCE:

Appendix 10.5, 4.3, Page 103-104 of 242

PREAMBLE TO IR (IF ANY):

Tables 20 and 21 describe the awareness and use of nine MH programs (Equal Payment Plan, Home Insulation Program, Water and Energy Saver Program, Power Smart Residential Loan Program, Homeowner Renovation Assistance Program, Affordable Energy Program, Flexible payment options, Neighbours Helping Neighbours Program, Manitoba Emergency Repair Program) in the sample and various subsets thereof.

QUESTION:

a) Please identify for which of these nine programs on-reserve First Nations households are eligible; and
b) Please provide tables similar to Tables 20 and 21 for the on-reserve First Nations households in the sample.

RATIONALE FOR QUESTION:

RESPONSE:

a) On-reserve First Nations households are eligible for the programs offered by Manitoba Hydro listed in tables 20 and 21 of Appendix 10.5. While First Nation households are eligible for the Home Insulation and Water and Energy Saver programs (HIP and WESP), it is more beneficial for First Nation communities to receive these technologies through the Affordable Energy Program (AEP) under the Indigenous stream. First Nation homes receive free insulation upgrades, with the entire material cost being covered under the AEP as opposed to a rebate on material costs as offered by HIP. In addition, through the Indigenous stream only, Manitoba Hydro provides funding for local labour to install the insulation. Funding is also provided for the installation of the water and energy saver devices generating local economic development. Further, four LED bulbs are also installed in each home which is beyond the scope of the regular WESP kit items. First

Nation households are also eligible for the Power Smart Residential Loan Program, Neighbours Helping Neighbours, the Equal Payment Plan and Flexible payment options.

The Homeowner Renovation Assistance Program and the Manitoba Emergency Repair Program are Provincial Government Programs which are not administered by Manitoba Hydro; therefore Manitoba Hydro cannot comment on First Nation eligibility.

b) Please see tables 20 and 21 from Appendix 10.5, reproduced below, which describe the awareness and use of the nine Bill Affordability programs with a separate column for on-reserve First Nation households only. The following limitation is mentioned in the PRA report in Section 1.3.3: "the customer survey did not set regional quotas. As a result, relatively few customers in northern Manitoba were among the survey respondents, and those who completed the survey resided primarily in urban centres in the north. The ability to undertake regional analysis and/or analysis of customers residing in northern and remote First Nations communities was therefore limited." Given this limitation, it is important to note that only 13 respondents to the survey self-identified or indicated that their spouse self-identified as First Nations, live on-reserve, and agreed to have their data separately identified. Therefore, these results should be reviewed with caution and are for information purposes only. No conclusions should be made from these results.

Table 1: Awareness of Bill Affordability programs among customer survey respondents

Programs	General sample	Energy poor at 6%	Energy poor at 6% and not poor payer	Arrears sample	Arrears and not energy poor at 6%	Arrears and energy poor at 6%	On-reserve First Nation households
	n = 786	**n = 58**	**n = 46**	**n = 315**	**n = 223**	**n = 37**	**n = 13**
Equal Payment Plan	77%	74%	76%	71%	74%	62%	39%
Home Insulation Program	66%	59%	65%	67%	71%	60%	8%
Water and Energy Saver Program	57%	50%	50%	51%	51%	62%	31%
Power Smart Residential Loan Program	53%	38%	39%	48%	51%	35%	15%

Table 1: Awareness of Bill Affordability programs among customer survey respondents							
Programs	**General sample**	**Energy poor at 6%**	**Energy poor at 6% and not poor payer**	**Arrears sample**	**Arrears and not energy poor at 6%**	**Arrears and energy poor at 6%**	**On-reserve First Nation households**
	n = 786	**n = 58**	**n = 46**	**n = 315**	**n = 223**	**n = 37**	**n = 13**
Homeowner Renovation Assistance Program*	33%	24%	24%	26%	25%	30%	15%
Affordable Energy Program	31%	26%	24%	29%	29%	30%	8%
Flexible payment options	22%	28%	24%	22%	21%	32%	15%
Neighbours Helping Neighbours Program	8%	19%	13%	10%	7%	27%	-
Manitoba Emergency Repair Program*	7%	10%	11%	10%	7%	19%	15%

*Programs offered by the Province of Manitoba

Table 2: Use of bill affordability programs in Manitoba							
Programs	**General sample**	**Energy poor at 6%**	**Energy poor at 6% and not poor payer**	**Arrears sample**	**Arrears and not energy poor at 6%**	**Arrears and energy poor at 6%**	**On-reserve First Nation households**
	n = 786	**n = 58**	**n = 46**	**n = 315**	**n = 223**	**n = 37**	**n = 13**
Equal Payment Plan	40%	38%	44%	27%	28%	22%	23%
Home Insulation Program	9%	9%	11%	9%	10%	8%	-
Water and Energy Saver Program	28%	21%	22%	24%	20%	41%	8%
Power Smart Residential Loan Program	10%	7%	7%	11%	12%	5%	-

Table 2: Use of bill affordability programs in Manitoba							
Programs	**General sample**	**Energy poor at 6%**	**Energy poor at 6% and not poor payer**	**Arrears sample**	**Arrears and not energy poor at 6%**	**Arrears and energy poor at 6%**	**On-reserve First Nation households**
Homeowner Renovation Assistance Program*	3%	2%	-	1%	1%	-	-
Affordable Energy Program	4%	3%	4%	4%	5%	3%	-
Flexible payment options	4%	7%	-	10%	8%	19%	15%
Neighbours Helping Neighbours Program	1%	5%	-	4%	2%	16%	-
Manitoba Emergency Repair Program*	1%	3%	4%	3%	2%	5%	-

*Programs offered by the Province of Manitoba

REFERENCE:

Appendix 10.5, 4.4, Page 105 of 242

PREAMBLE TO IR (IF ANY):

CITATION:
The AEP evaluation observed that the main gap in the program's current offerings is a lack of alternatives for homes heated with electric baseboards, noting that the program has received few electrically heated participants relative to their market share, an outcome that may be driven by the fact that savings for such customers are lower than for their gas-heated counterparts (Dunsky Energy Consulting & Summerhill Group, 2015).

QUESTION:

a) Please describe in detail the AEP program's current offerings for electric baseboard heating customers;

RATIONALE FOR QUESTION:

RESPONSE:

Please see the response to PUB/MH I-126b which provides details on all Affordable Energy Program current offerings.

REFERENCE:

Appendix 10.5, 4.4, Page 105 of 242

PREAMBLE TO IR (IF ANY):

CITATION:
The AEP evaluation observed that the main gap in the program's current offerings is a lack of alternatives for homes heated with electric baseboards, noting that the program has received few electrically heated participants relative to their market share, an outcome that may be driven by the fact that savings for such customers are lower than for their gas-heated counterparts (Dunsky Energy Consulting & Summerhill Group, 2015).

QUESTION:

b) Please indicate or estimate the percentage of on-reserve First Nations households using electric baseboard heating.

RATIONALE FOR QUESTION:

RESPONSE:

Based on the 2014 Residential Energy Use Survey, 51.9% of on-reserve First Nations customers use electric baseboard heating.

REFERENCE:

Appendix 10.5, 4.4, Page 105 of 242

PREAMBLE TO IR (IF ANY):

CITATION:
Furthermore, while the AEP was expanded in 2013 to include tenants, penetration in the private landlord/tenant channel remains low (Dunsky Energy Consulting & Summerhill Group, 2015; Galbraith, 2016), which may motivate CAC Manitoba's (2016) observation that current initiatives have failed to address energy poverty in the rental sector.

QUESTION:

Please indicate or estimate the percentage of on-reserve First Nations households that are considered tenants, and explain the relationship between the categories used in this study and the particular way that housing stock is owned on First Nations reserves. Please comment specifically on how those living in Band-owned housing were treated in the study.

RATIONALE FOR QUESTION:

RESPONSE:

The Dunsky Energy Consulting & Summerhill Group study referenced above pertains to off-reserve landlord/tenants in the private rental market.

Under Manitoba Hydro's Indigenous Power Smart Program, all residential dwellings regardless of ownership, are eligible to participate. By working directly with Housing Managers from each community, Manitoba Hydro is targeting to complete upgrades in all residential dwellings and provide insulation to those homes who meet the qualifying criteria. Please see the response to PUB/MH I-126b for further details on the Indigenous Power Smart Program.

REFERENCE:

Appendix 10.5, 4.4, Page 106 of 242

PREAMBLE TO IR (IF ANY):

CITATION:
MKO has similarly reported that DSM measures were historically not available to First Nations accounts that were in arrears (Ross, 2014), although Manitoba Hydro representatives indicated that households experiencing arrears in First Nations communities could participate in DSM programming upon entering into a payment arrangement with the utility, and that even this requirement has since been lifted (Kuczek, Morrison, Barnlund, Chard, & Galbraith, 2015).

QUESTION:

Please provide copies of the two documents referenced in the citation.

RATIONALE FOR QUESTION:

RESPONSE:

Please see Transcript Page 10817 from May 14, 2014 from the 2014 Needs For and Alternatives To (NFAT) proceeding for the reference regarding First nations accounts in arrears.

http://www.pubmanitoba.ca/v1/nfat/pdf/conferences/presentations_05_14_2014.pdf

Please see Exhibit MH-67 (26 of 70 PDF page number) from the 2015/16 & 2016/17 Electric General Rate Application regarding the removal of a payment arrangement requirement for customers in arrears.

http://www.pubmanitoba.ca/v1/exhibits/mh_gra_2015/mh-67.pdf

REFERENCE:

Appendix 10.5, 5.2, Page 117 of 242

PREAMBLE TO IR (IF ANY):

Section 5.2 evaluates the impacts of three affordable rate designs on low-income beneficiaries. Results are described in Tables 23 through 28.

CITATION:
The quantitative modelling exercise examined the potential impacts of three affordable rate designs on low-income beneficiaries,68 as well as on non-beneficiaries who may be required to finance the rate designs' implementation and maintenance through higher electricity and/or natural gas rates.

QUESTION:

Please confirm that the analysis carried out in this section concerns the impacts of the three affordable rate designs based on current rates, and does not address their impacts under the three rate increase scenarios described on page 89 of 242.

If the affirmation is correct (i.e., if Tables 23 through 28 do not reflect any of the three rate increase scenarios), please provide equivalent tables for 2020 for each of the three rate increase scenarios.

If this affirmation is incorrect (i.e., if Tables 23 through 28 reflect one of the three rate increase scenarios), please clarify what rate increase scenario is modelled in the results described in Tables 23 through 28, and provide corresponding tables for the other two scenarios.

RATIONALE FOR QUESTION:

RESPONSE:

The following response was prepared by Prairie Research Associates:

The affirmation is correct in that the analysis of affordable rate designs did not consider the impacts of the three rate increase scenarios concurrently. It should be noted that the decision to segment the analysis in this way drew from the guidance and direction provided by the Bill Affordability Working Group. The requested information is presented in Table 1 through Table 6 below. The cost of implementing bill affordability programming in 2020 is generally increasing in the magnitude of the annual rate increases, reflecting that a greater proportion of customers would be positioned to claim eligibility for assistance. In interpreting these results, it is important to emphasize the following assumptions:

- PRA used the rate structure approved as of August 1st, 2016 (refer to the table in PRA's response to AMC/MH I-31a for more details). As such, they may not accurately reflect revenue losses resulting from implementing equivalent bill affordability programming today (the same statement applies to the results presented in the original report).
- As in the original analysis of affordable rate design options, we assume all customers eligible to participate in such programming would do so, which does not generally occur. This implies that the results presented below overstate both the magnitude of reductions in energy poverty attributable to affordable rate design as well as the revenue lost through such rate designs.
- Table 1 through Table 6 do not account for the costs of program administration. As such, they understate the cost of implementing affordable rate design in Manitoba as well as the rate increases that could be imposed on other Manitoba Hydro customers.
- While Table 5 and Table 6 are calculated directly from the results of the survey of Manitoba Hydro customers (N=606), Table 2, Table 3 and Table 4 constitute extrapolations to Manitoba Hydro's overall customer base, using information obtained from the Residential Energy Use Survey 2014.[1] As noted in PRA's original report (pg. 122 of 242 of Appendix 10.5), the two sets of results are not directly comparable.

[1] MB Hydro. (2016, May 6). Residential Energy Use Survey 2014.

The increases reported in Table 5 and Table 6 might yield slightly less revenue than required to implement affordable rate designs in Manitoba.

Rates of energy poverty reported in the Residential Energy Use Survey 2014 are slightly higher than those estimated through the survey undertaken as part of this research.

We note that due to a calculation error, Table 1 originally did not accurately reflect the projected impact of the straight rate discount upon the number and proportion of Manitoba Hydro customers experiencing energy poverty in 2020. This error has been corrected in the revised version of Table 1 presented below.

Table 1: Impact of affordable rate design options upon the proportion of Manitoba Hydro customers experiencing energy poverty in 2020

Rate design option	6% threshold			10% threshold		
	Households experiencing energy poverty		% decline relative to no intervention	Households experiencing energy poverty		% decline relative to no intervention
	#	%		#	%	
3.95% nominal rate increases for 12 years						
No intervention	67	11.1%		21	3.5%	
Straight rate discount—25%	30	5.0%	-55.2%	11	1.8%	-47.6%
Straight rate discount—35%	24	4.0%	-64.2%	9	1.5%	-57.1%
Straight rate discount—45%	19	3.1%	-71.6%	5	0.8%	-76.2%
Fixed charge waiver	58	9.6%	-13.4%	20	3.3%	-4.8%
Percentage of income payment plan (PIPP)	0	0.0%	-100.0%	0	0.0%	-100.0%
5.95% nominal rate increases for 6 years						
No intervention	72	11.9%		22	3.6%	
Straight rate discount—25%	36	5.9%	-50.0%	12	2.0%	-45.5%
Straight rate discount—35%	24	4.0%	-66.7%	9	1.5%	-59.1%
Straight rate discount—45%	21	3.5%	-70.8%	5	0.8%	-77.3%
Fixed charge waiver	65	10.7%	-9.7%	21	3.5%	-4.5%
Percentage of income payment plan (PIPP)	0	0.0%	-100.0%	0	0.0%	-100.0%
7.95% nominal rate increases for 4 years						
No intervention	80	13.2%		24	4.0%	
Straight rate discount—25%	39	6.4%	-51.3%	12	2.0%	-50.0%
Straight rate discount—35%	27	4.5%	-66.3%	11	1.8%	-54.2%
Straight rate discount—45%	22	3.6%	-72.5%	8	1.3%	-66.7%
Fixed charge waiver	73	12.0%	-8.8%	21	3.5%	-12.5%
Percentage of income payment plan (PIPP)	0	0.0%	-100.0%	0	0.0%	-100.0%

Source: PRA calculations based on survey of Manitoba Hydro customers (N=606)

Table 2: Estimated total revenue losses associated with energy affordability programs ($ millions)				
Rate design option	**Threshold**	**Source of lost revenue**		
		Energy sales	**Tax revenue***	**Total**
3.95% nominal rate increases for 12 years				
Straight rate discount (25%)	6%	$29.6	$4.2	$33.8
	10%	$10.1	$1.5	$11.6
Fixed charge waiver	6%	$11.7	$1.5	$13.1
	10%	$3.2	$0.4	$3.6
Percentage of Income Payment Plan (PIPP)	6%	$39.2	$5.5	$44.7
	10%	$14.5	$2.1	$16.6
5.95% nominal rate increases for 6 years				
Straight rate discount (25%)	6%	$33.4	$4.7	$38.1
	10%	$11.0	$1.6	$12.6
Fixed charge waiver	6%	$12.1	$1.5	$13.7
	10%	$3.3	$0.4	$3.7
Percentage of Income Payment Plan (PIPP)	6%	$46.2	$6.6	$52.8
	10%	$17.4	$2.5	$19.9
7.95% nominal rate increases for 4 years				
Straight rate discount (25%)	6%	$38.4	$5.5	$43.9
	10%	$12.8	$1.8	$14.6
Fixed charge waiver	6%	$13.2	$1.7	$14.9
	10%	$3.8	$0.5	$4.3
Percentage of Income Payment Plan (PIPP)	6%	$54.6	$7.9	$62.6
	10%	$20.7	$3.0	$23.7

* This refers to revenues lost as a consequence of reduced revenues from the sale of electricity and natural gas. For electricity, city and provincial taxes are 2.5% and 8.0%, respectively, while for natural gas, these are 2.5% and 1.4%, respectively; 5.0% GST is applied to both electricity and natural gas expenditures, as well as to the city tax.

Source: PRA calculations based on survey of Manitoba Hydro customers (N=606) and the Residential Energy Use Survey 2014.[2]

2 MB Hydro. (2016, May 6). Residential Energy Use Survey 2014.

Table 3: Estimated total electricity revenue losses associated with energy affordability programs ($ millions)				
Rate design option	Threshold	Source of lost revenue		
		Energy sales	Tax revenue*	Total
3.95% nominal rate increases for 12 years				
Straight rate discount (25%)	6%	$22.4	$3.5	$25.9
	10%	$8.3	$1.3	$9.6
Fixed charge waiver	6%	$6.2	$1.0	$7.2
	10%	$1.9	$0.3	$2.2
Percentage of Income Payment Plan (PIPP)	6%	$29.7	$4.6	$34.4
	10%	$11.5	$1.8	$13.3
5.95% nominal rate increases for 6 years				
Straight rate discount (25%)	6%	$26.2	$4.1	$30.3
	10%	$9.2	$1.4	$10.6
Fixed charge waiver	6%	$6.7	$1.0	$7.7
	10%	$2.0	$0.3	$2.3
Percentage of Income Payment Plan (PIPP)	6%	$36.7	$5.7	$42.4
	10%	$14.3	$2.2	$16.6
7.95% nominal rate increases for 4 years				
Straight rate discount (25%)	6%	$30.9	$4.8	$35.7
	10%	$10.5	$1.6	$12.1
Fixed charge waiver	6%	$7.4	$1.2	$8.6
	10%	$2.2	$0.3	$2.5
Percentage of Income Payment Plan (PIPP)	6%	$45.2	$7.1	$52.2
	10%	$17.6	$2.8	$20.4

***** This refers to revenues lost as a consequence of reduced revenues from the sale of electricity. City and provincial taxes are 2.5% and 8.0%, respectively; furthermore, 5.0% GST is applied to electricity expenditures, as well as to the city tax.

Source: PRA calculations based on survey of Manitoba Hydro customers (N=606) and the Residential Energy Use Survey 2014.[3]

3 MB Hydro. (2016, May 6). Residential Energy Use Survey 2014.

Table 4: Estimated total natural gas revenue losses associated with energy affordability programs ($ millions)

Rate design option	Threshold	Source of lost revenue		
		Energy sales	Tax revenue*	Total
3.95% nominal rate increases for 12 years				
Straight rate discount (25%)	6%	$7.2	$0.6	$7.8
	10%	$1.8	$0.2	$2.0
Fixed charge waiver	6%	$5.5	$0.5	$6.0
	10%	$1.3	$0.1	$1.4
Percentage of Income Payment Plan (PIPP)	6%	$9.5	$0.9	$10.3
	10%	$3.1	$0.3	$3.3
5.95% nominal rate increases for 6 years				
Straight rate discount (25%)	6%	$7.2	$0.6	$7.8
	10%	$1.8	$0.2	$2.0
Fixed charge waiver	6%	$5.5	$0.5	$6.0
	10%	$1.3	$0.1	$1.4
Percentage of Income Payment Plan (PIPP)	6%	$9.5	$0.9	$10.3
	10%	$3.1	$0.3	$3.3
7.95% nominal rate increases for 4 years				
Straight rate discount (25%)	6%	$7.5	$0.7	$8.2
	10%	$2.3	$0.2	$2.5
Fixed charge waiver	6%	$5.8	$0.5	$6.3
	10%	$1.6	$0.1	$1.8
Percentage of Income Payment Plan (PIPP)	6%	$9.5	$0.9	$10.3
	10%	$3.1	$0.3	$3.3

***** This refers to revenues lost as a consequence of reduced revenues from the sale of natural gas. City and provincial taxes are 2.5% and 1.4%, respectively; furthermore, 5.0% GST is applied to natural gas expenditures, as well as to the city tax.

Source: PRA calculations based on survey of Manitoba Hydro customers (N=606) and the Residential Energy Use Survey 2014.[4]

4 MB Hydro. (2016, May 6). Residential Energy Use Survey 2014.

Table 5: Electricity rate increases required from residential ratepayers to recover revenues lost as a consequence of affordable rate design (per kWh)

Rate design option	Threshold	Source of lost revenue		
		Energy sales	Tax revenue*	Total
3.95% nominal rate increases for 12 years				
Straight rate discount (25%)	6%	$0.0037	$0.0006	$0.0042
	10%	$0.0013	$0.0002	$0.0015
Fixed charge waiver	6%	$0.0010	$0.0002	$0.0012
	10%	$0.0003	$0.0000	$0.0003
Percentage of Income Payment Plan (PIPP)	6%	$0.0049	$0.0008	$0.0056
	10%	$0.0018	$0.0003	$0.0020
5.95% nominal rate increases for 6 years				
Straight rate discount (25%)	6%	$0.0043	$0.0007	$0.0050
	10%	$0.0014	$0.0002	$0.0016
Fixed charge waiver	6%	$0.0011	$0.0002	$0.0013
	10%	$0.0003	$0.0000	$0.0004
Percentage of Income Payment Plan (PIPP)	6%	$0.0061	$0.0010	$0.0070
	10%	$0.0022	$0.0003	$0.0025
7.95% nominal rate increases for 4 years				
Straight rate discount (25%)	6%	$0.0052	$0.0008	$0.0060
	10%	$0.0016	$0.0003	$0.0019
Fixed charge waiver	6%	$0.0013	$0.0002	$0.0014
	10%	$0.0003	$0.0001	$0.0004
Percentage of Income Payment Plan (PIPP)	6%	$0.0076	$0.0012	$0.0088
	10%	$0.0027	$0.0004	$0.0031

* This refers to revenues lost as a consequence of reduced revenues from the sale of electricity and natural gas. For electricity, city and provincial taxes are 2.5% and 8.0%, respectively, while for natural gas, these are 2.5% and 1.4%, respectively; 5.0% GST is applied to both electricity and natural gas expenditures, as well as to the city tax.

Source: PRA calculations based on survey of Manitoba Hydro customers (N=606)

Table 6: Natural gas rate increases required from residential ratepayers to recover revenues lost as a consequence of affordable rate design (per m^3)

Rate design option	Threshold	Source of lost revenue		
		Energy sales	Tax revenue*	Total
3.95% nominal rate increases for 12 years				
Straight rate discount (25%)	6%	$0.0126	$0.0011	$0.0137
	10%	$0.0030	$0.0003	$0.0033
Fixed charge waiver	6%	$0.0096	$0.0009	$0.0105
	10%	$0.0021	$0.0002	$0.0023
Percentage of Income Payment Plan (PIPP)	6%	$0.0166	$0.0015	$0.0181
	10%	$0.0051	$0.0005	$0.0055
5.95% nominal rate increases for 6 years				
Straight rate discount (25%)	6%	$0.0126	$0.0011	$0.0137
	10%	$0.0030	$0.0003	$0.0033
Fixed charge waiver	6%	$0.0096	$0.0009	$0.0105
	10%	$0.0021	$0.0002	$0.0023
Percentage of Income Payment Plan (PIPP)	6%	$0.0166	$0.0015	$0.0181
	10%	$0.0051	$0.0005	$0.0055
7.95% nominal rate increases for 4 years				
Straight rate discount (25%)	6%	$0.0133	$0.0012	$0.0145
	10%	$0.0039	$0.0004	$0.0042
Fixed charge waiver	6%	$0.0102	$0.0009	$0.0112
	10%	$0.0027	$0.0002	$0.0029
Percentage of Income Payment Plan (PIPP)	6%	$0.0167	$0.0015	$0.0182
	10%	$0.0051	$0.0005	$0.0056

* This refers to revenues lost as a consequence of reduced revenues from the sale of electricity and natural gas. For electricity, city and provincial taxes are 2.5% and 8.0%, respectively, while for natural gas, these are 2.5% and 1.4%, respectively; 5.0% GST is applied to both electricity and natural gas expenditures, as well as to the city tax.

Source: PRA calculations based on survey of Manitoba Hydro customers (N=606)

REFERENCE:

Appendix 10.5, 5.2.2, Page 120-121 of 242

PREAMBLE TO IR (IF ANY):

Tables 24, 25 and 26 present total revenue losses resulting from each affordability program, including reduced revenues from both energy sales and resulting taxes.

QUESTION:

Please explain why reduced taxes collected by municipal and provincial governments are relevant to setting of Manitoba Hydro rates.

RATIONALE FOR QUESTION:

RESPONSE:

While taxes are not relevant to the setting of rates, taxes are relevant to the calculation of energy burden. The consultant to the Working Group examined utility bills and household incomes in determining the energy burdens experienced by various groups of customers. Utility bills include charges for electricity service and the relevant government taxes applied to those charges.

The results of the analysis shown on pages 120 -121 of Appendix 10.5 represents the level of bill subsidy or foregone revenue associated with each of the various measures described. It also indicates the amount of government tax revenues associated with foregone revenue.

REFERENCE:

Appendix 10.5, 5.2.2, Page 122 of 242

PREAMBLE TO IR (IF ANY):

CITATION:
As noted above, it is not expected that Manitoba Hydro would itself absorb revenue losses resulting from the implementation of a program incorporating an affordable rate design initiative. One possibility is that ratepayers not participating in the program would be required to finance its implementation and ongoing operation through higher electricity and/or natural gas rates. While acknowledging that this is not the only possible, or necessarily even the most likely, funding option, PRA employed quantitative modelling techniques to calculate what increases Manitoba Hydro would hypothetically need to impose upon residential ratepayers who do not satisfy the definition of energy poverty to recover revenues lost as a result of programming implemented to assist those who do.74 In particular, PRA assumed that lost electricity and natural gas revenues would be recovered through the introduction of a fee levied upon each unit of the corresponding energy type consumed by non-beneficiaries (e.g., lost electricity revenues would be recovered through a fee levied upon each kWh of energy consumed by non-energy poor households). (underlining added)

QUESTION:

a) Please describe in detail the other possible funding options to which the citation alludes;

RATIONALE FOR QUESTION:

RESPONSE:

This response was prepared by Prairie Research Associates:

Any number of funding options are possible and PRA chooses not to speculate on what is feasible or desirable.

REFERENCE:

Appendix 10.5, 5.2.2, Page 122 of 242

PREAMBLE TO IR (IF ANY):

CITATION:
As noted above, it is not expected that Manitoba Hydro would itself absorb revenue losses resulting from the implementation of a program incorporating an affordable rate design initiative. One possibility is that ratepayers not participating in the program would be required to finance its implementation and ongoing operation through higher electricity and/or natural gas rates. While acknowledging that this is not the only possible, or necessarily even the most likely, funding option, PRA employed quantitative modelling techniques to calculate what increases Manitoba Hydro would hypothetically need to impose upon residential ratepayers who do not satisfy the definition of energy poverty to recover revenues lost as a result of programming implemented to assist those who do.74 In particular, PRA assumed that lost electricity and natural gas revenues would be recovered through the introduction of a fee levied upon each unit of the corresponding energy type consumed by non-beneficiaries (e.g., lost electricity revenues would be recovered through a fee levied upon each kWh of energy consumed by non-energy poor households). (underlining added)

QUESTION:

b) Please confirm that the modelling presented assumes that all revenue losses resulting from the affordable rate design initiative would be recover from non-energy-poor residential customers;
c) Please clarify if the revenue losses to be recovered from other customers include the lost tax revenues set out in Tables 24-26 and, if so, please restate the conclusions excluding the lost tax revenues.

RATIONALE FOR QUESTION:

RESPONSE:

The following response was prepared by Prairie Research Associates:

b) Confirmed.

c) As they are currently configured (in PRA's report), the tables in question (and also Tables 27-28) focus on energy sales and tax revenues individually. The final column in each table presents both together; it is these results (which include lost tax revenues) that serve as the basis for the conclusions presented on page 120 of 242 of Appendix 10.5. Therefore the restated conclusions appears as:

As shown, the results suggest that if a 6% threshold is used as the basis for defining energy poverty in Manitoba, introducing a 25% straight rate discount, a fixed charge waiver, or a PIPP would generate lost revenues ***to Manitoba Hydro*** *amounting to* ***$23.8*** *million,* ***$10.1*** *million, and* ***$32.1*** *million, respectively. By contrast, if a 10% threshold is applied, each form of rate assistance would result in lost revenues amounting to* ***$8.8*** *million,* ***$3.1*** *million, and* ***$12.0*** *million, respectively.*

REFERENCE:

Appendix 10.5, 5.2.2, Page 123 of 242

PREAMBLE TO IR (IF ANY):

Table 27 describes the rate impacts on non-energy-poor residential customers, assuming that they are called upon to fund the full revenue shortfall resulting from the affordable rate design initiative.

QUESTION:

a) Please confirm that the rate impacts on non-energy-poor residential customers, assuming that they are called upon to fund the full revenue shortfall resulting from the affordable rate design initiative, range from 0.1 cents/kWh to 0.48 cents/kWh, assuming a threshold of 6% to define energy poverty, and from 0.03 cents/kWh to 0.17 cents/kWh, assuming a threshold of 10%;
b) Please confirm that these results refer to current rates, and present equivalent figures for the year 2020, based on each of the three rate increase scenarios described on page 89 of 242.

RATIONALE FOR QUESTION:

RESPONSE:

The following response was prepared by Prairie Research Associates:

a) Confirmed.

b) PRA used the rate structure approved as of August 1st, 2016 (refer to the table in PRA's response to AMC/MH I-31a for more details). The requested results were presented as Table 5 in PRA's response to AMC/MH I-43.

REFERENCE:

Appendix 10.5, Appendix F, Page 226-227 of 242

PREAMBLE TO IR (IF ANY):

CITATION 1 (p. 226):

The PIPP was not originally identified for modelling, but, upon further review, the research subcommittee recommend it be modelled in place of the fixed credit approach, a similar option for which data required for modelling was not available.
…
[T]he Working Group agreed that despite high costs** shown in modelling, the PIPP best delivers on principles of accuracy and equity and is an attractive model that may deserve further study by Manitoba Hydro due to its ability to so precisely target, and essentially eliminate, energy poverty. The Working Group noted several items for further consideration, including potential opportunities to lower the costs of the PIPP (see Section 5.7 of the final report) or securing provincial funding in accordance with the PUB recommendation in its NFAT report, "that the Government of Manitoba direct a portion of the incremental capital taxes and water rental fees from the development of the Keeyask Project to be used to mitigate the impact of rate increases on lower income consumers, northern and Aboriginal communities."

CITATION 2 (p. 227):

Fixed credit approach
Similar to PIPP, but functions by applying a fixed credit to bring annual bill down.

By considering both household income and consumption, this approach is targeted to energy poor, but it relies on estimates of consumption from historic data.

This option can be adapted to include "made-in-Manitoba" criteria for eligibility that target specific subsets of customers as it does in Ontario's program (e.g., targeting individuals with higher usage for medical reasons, First Nations, Metis).

…
Rationale

One of three rate options originally targeted for modelling by PRA to understand cost and impact on bill affordability for energy poor Manitobans.

Originally agreed to be one of three rate options modelled, but upon review by research subcommittee it was determined the data^ required for modelling was not available. Research subcommittee recommended the PIPP, a similar option but without the same data input requirements, be modelled.

Similar to the PIPP, this option provides a targeted form of bill assistance to those most in need but with the added benefit of preserving a conservation incentive.

Relying on the preliminary investigation and modelling of the PIPP (which is similar in magnitude of benefits), it was determined that costs** could not be sufficiently offset by cost savings from improved customer payments and bill collection savings and consensus to recommend this option was therefore not achieved.

On the other hand, if the province were to accept PUB's recommendation to direct a portion of its incremental revenues from the Keeyask project to lower-income bill mitigation, this option for providing the benefit best accords with the evaluative principles adopted by the Working Group. (underlining added)

QUESTION:

a) Please confirm that, while it is not mentioned in the Summary Report and Recommendations, the Fixed Credit Approach was deemed by the Working Group to "best accord with the evaluative principles" that it adopted;
b) Please confirm that the Fixed Credit Approach would allow a targeted approach to benefit First Nations households, should the PUB determine that such targeting is warranted;
c) Please specify which, if any, of the other rate design options reviewed would also allow for such targeting of specific subsets of customers.

RATIONALE FOR QUESTION:

RESPONSE:

a) Manitoba Hydro cannot confirm the Fixed Credit Approach was deemed by the Working Group to "best accord with the evaluative principles." Ignoring cost effectiveness, it was ranked high among the evaluative principles in comparison to other rate design options considered and was therefore initially selected by the Working Group to be modeled as was Straight Rate Discount and Fixed Charge Waiver.

b) All of the rate design options considered, including Fixed Credit, may theoretically allow for a targeted approach to benefit First Nations or any other specific subset of a customer group identified for targeting through the development of tailored eligibility and qualifying criteria. However, the targeting of any such programs or options would require Manitoba Hydro to have access to robust, reliable and verifiable data on a customer-specific basis with regards to household income and other personal financial status.

c) Please see the response to part b) above.

REFERENCE:

EXPLORING CONSERVATION RATES, Residential Conservation Rates Sub-Group, Jan. 12, 2017 (PowerPoint presentation), 9.1, Page 10-13 of 18

PREAMBLE TO IR (IF ANY):

Slides 10-13 present bar graphs showing a) the % distribution of monthly billed kWh and b) the average median monthly summer and winter energy use, for four groups:

- Electric heat, single detached homes, all First Nations communities (Slide 10);
- Electric heat, single detached homes, MKO communities (Slide 11);
- Electric heat, all dwelling types, LICO-125 (Slide 12); and
- Electric heat, all dwelling types, non-LICO-125 (Slide 13).

QUESTION:

a) Please explain how the Average Median Monthly SUMMER and WINTER Energy Use values are to be read from these charts;
b) Do these values represent the average median energy use for the population described in the chart title, or for all customers?;
c) Please provide the Excel spreadsheets used to generate these charts.

RATIONALE FOR QUESTION:

RESPONSE:

a) Summer season includes the months from April to September and the winter season includes the months from October to March. One median kWh use value is calculated specific for the entire summer season (represented by the "S") and the other one value is calculated for the entire winter period (represented by the "W"). The bars for each month show the distribution of monthly bills within each month that fall within the kWh ranges presented with the "S" and "W" showing the percent of customer above and below the one seasonal median kWh for any given month.

b) The distributions of monthly bills within each month represent the population as described in the chart titles. The Average Median Monthly Summer Energy Use ("S") and Average Median Monthly Winter Energy Use ("W") values are derived based on all electrically heated single detached homes as shown on Slide 7 of the referenced presentation.

c) Please see attached for the spreadsheets supporting the referenced charts.

REFERENCE:

EXPLORING CONSERVATION RATES, Residential Conservation Rates Sub-Group, Jan. 12, 2017 (PowerPoint presentation), 9.1, Page 10-13 of 18

PREAMBLE TO IR (IF ANY):

The "Over 4000 kWh/month" bin includes a very large proportion (up to 66.6%) of winter usage in First Nations communities.

QUESTION:

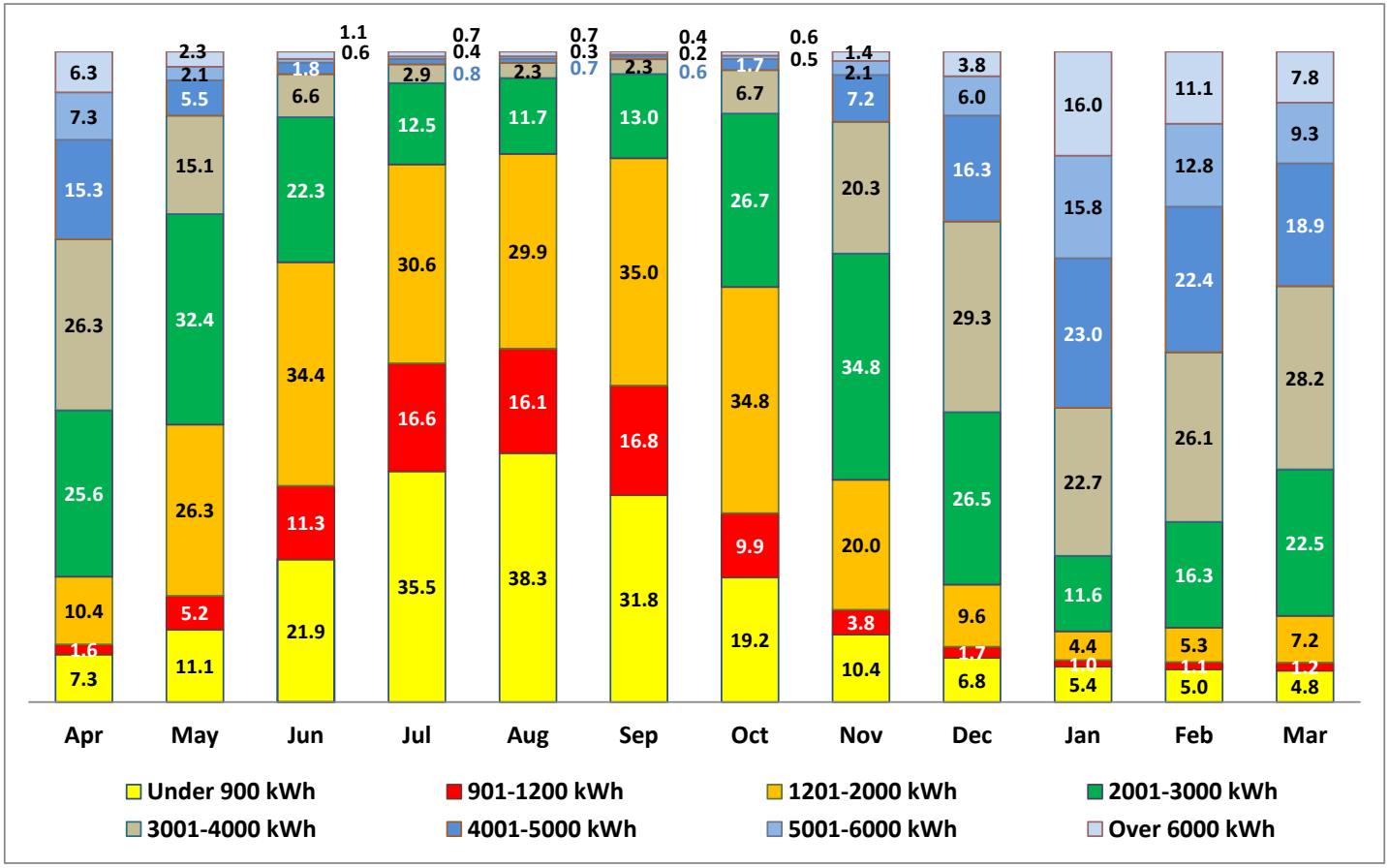
Please provide new charts which break down the "over 4000 kWh/month" bin into a) 4000-5000 kWh/month, b) 5000-6000 kWh/month, and c) over 6000 kWh/month bins.

RATIONALE FOR QUESTION:

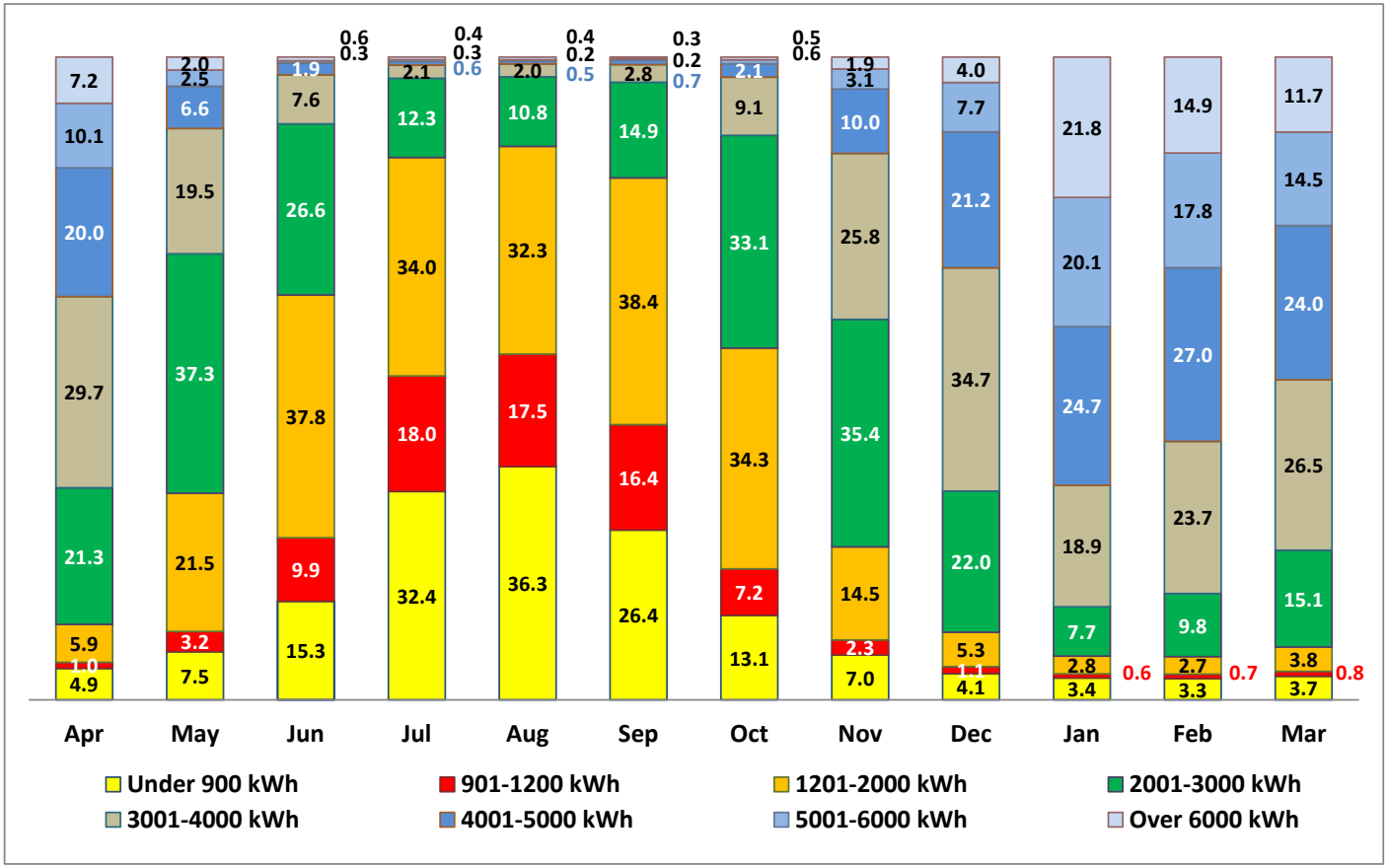
RESPONSE:

Please see attached for the requested charts extending the kWh/month bins for First Nations Communities.

% Distribution of 2015/16 Billed kWh Ranges by Month for Electric Heat Single Detached Usage
All first Nations Communities (n=15,373)



% Distribution of 2015/16 Billed kWh Ranges by Month for Electric Heat Single Detached Usage
Manitoba Keewatinowi Okimakanak Communities (n=7,153)



REFERENCE:

EXPLORING CONSERVATION RATES, Residential Conservation Rates Sub-Group, Jan. 12, 2017 (PowerPoint presentation), 9.1, Page 2 of 18

PREAMBLE TO IR (IF ANY):

Winter energy usage in MKO communities appears to be substantially higher than in All First Nations communities.

QUESTION:

a) confirm whether energy usage in MKO communities is higher than in all First Nations communities.
b) provide an explanation, to the best of Manitoba Hydro's understanding, why energy consumption for electrically heated single detached homes is greater in MKO communities than in First Nations communities as a whole.

RATIONALE FOR QUESTION:

RESPONSE:

a) Confirmed. The average energy usage for customers in MKO communities is higher compared to the average energy usage for customers in all First Nations.

b) The average energy consumption for electrically heated single detached homes is greater in MKO communities compared to the average consumption in First Nations communities overall. The higher consumption is mainly due to the colder weather associated with MKO communities being located in Northern Manitoba.

REFERENCE:

EXPLORING CONSERVATION RATES, Residential Conservation Rates Sub-Group, Jan. 12, 2017 (PowerPoint presentation), 9.1, Page 2 of 18

PREAMBLE TO IR (IF ANY):

QUESTION:

Please indicate:

a) What percentage of on-reserve First Nations households are electrically heated;
b) The average annual electricity consumption (in kWh and in $) for electrically-heated on-reserve First Nations households, under current rates;
c) The breakdown, by decile, of annual electricity consumption (in kWh and in $) for electrically-heated on-reserve First Nations households, under current rates.

RATIONALE FOR QUESTION:

RESPONSE:

a) 82% of on-reserve First Nation households are identified as All-Electric as of March 2017.

b) The average annual electricity consumption and revenue for all households identified as All-Electric on-reserve residential households for 2016/17 was 30,179 kWh and $2,462, respectively.

c) The following table contains the breakdown by decile for households identified as All-Electric as of March 2017.

Customer Decile Sorted by Lowest to Highest Annual Consumption

Decile	2016/17 Annual Average Use (kWh)	2016/17 Average Annual Bill (excl taxes)
0-10	6,505	$587
11-20	17,136	$1,436
21-30	21,524	$1,783
31-40	24,874	$2,046
41-50	27,732	$2,271
51-60	30,363	$2,478
61-70	33,161	$2,698
71-80	36,540	$2,963
81-90	40,887	$3,305
91-100	52,030	$4,180

REFERENCE:

EXPLORING CONSERVATION RATES, Residential Conservation Rates Sub-Group, Jan. 12, 2017 (PowerPoint presentation), 9.1, Page 2 of 18

PREAMBLE TO IR (IF ANY):

In the July 13, 2017 workshop on Development of an Alternative Rate Design Proposal for the Residential Customer Class, Hydro representatives explained that Hydro interprets the Rate Stability and Gradualism principle to mean that no individual should experience rate impacts more than 2% greater than the overall proposed increase.

CITATION:
3. Rate Stability and Gradualism – In conformity with the principles of gradualism and sensitivity to customer impacts, annual adjustments to revenues by customer class should be less than two percentage points greater than the overall proposed increase.

QUESTION:

Please confirm or correct the statement in the preamble.

RATIONALE FOR QUESTION:

RESPONSE:

Please see the response to Coalition/MH I-119.

REFERENCE:

EXPLORING CONSERVATION RATES, Residential Conservation Rates Sub-Group, Jan. 12, 2017 (PowerPoint presentation), 9.0, Page 1 of 18

PREAMBLE TO IR (IF ANY):

For a non-governmental Diesel General Service customer, the actual rate increase experienced will depend on the proportion of its consumption that is included in the grid portion of the rate.

CITATION:
Manitoba Hydro is proposing to apply the 7.9% increases to only the grid portion of the rate structure (equal to that proposed for grid customers) for general service and government customers in the four remote communities served by diesel generation (Shamattawa, Brochet, Lac Brochet and Tadoule Lake).

For General Service non-government customers, the first 2,000 kWh per month will be the same for the grid-rate equivalent as being proposed for the General Service Small and Medium customer class first block rate. Energy usage in excess of 2,000 kWh per month will remain at the current rate of $0.42617 per kWh. For General Service government customers, including First Nation Education accounts, all energy is proposed to be charged at the same current rate of $2.59382 per kWh.

QUESTION:

a) Please estimate the annual bill impact for a non-governmental Diesel General Service customer with average monthly consumption of a) under 2,000 kWh, b) between 2,000 and 4,000 kWh, c) between 4,000 and 6,000 kWh, and d) over 6,000 kWh.
b) Please complete the following table, for each diesel First Nation in the province, for 2016 (or the most recent data available):

Name of First Nation	Number of general service customers	% with average monthly consumption			
		< 2,000 kWh	Between 2,000 and 4,000 kWh	Between 4,000 and 6,000 kWh	> 6,000 kWh

RATIONALE FOR QUESTION:

RESPONSE:

a) Table 1 below provides bill calculations based on the August 1, 2016 rates compared to the interim-approved August 1, 2017 rates for varying levels of consumption. Customers consuming in excess of 2,000 kWh per month will see the same dollar increase of $6.31 per month.

Table 2 compares the interim August 1, 2017 rates to the updated proposed April 1, 2018 rates. If approved, customers consuming in excess of 2,000 kWh per month will see the same dollar increase of $15.33 per month.

Table 1

kWh	August 1, 2016 $ / Month	August 1, 2017 $ / Month	Difference in $ / Month	Percent Change
250	$42.02	$43.43	$1.41	3.36%
500	$62.85	$64.96	$2.11	3.36%
750	$83.67	$86.48	$2.81	3.36%
1,000	$104.49	$108.00	$3.51	3.36%
1,250	$125.31	$129.52	$4.21	3.36%
1,500	$146.14	$151.05	$4.91	3.36%
1,750	$166.96	$172.57	$5.61	3.36%
2,000	$187.78	$194.09	$6.31	3.36%

kWh	August 1, 2016 $ / Month	August 1, 2017 $ / Month	Difference in $ / Month	Percent Change
3,000	$613.95	$620.26	$6.31	1.03%
4,000	$1,040.12	$1,046.43	$6.31	0.61%
5,000	$1,466.29	$1,472.60	$6.31	0.43%
6,000	$1,892.46	$1,898.77	$6.31	0.33%
7,000	$2,318.63	$2,324.94	$6.31	0.27%
8,000	$2,744.80	$2,751.11	$6.31	0.23%
9,000	$3,170.97	$3,177.28	$6.31	0.20%
10,000	$3,597.14	$3,603.45	$6.31	0.18%

Table 2

kWh	August 1, 2017 $ / Month	April 1, 2018 $ / Month	Difference in $ / Month	Percent Change
250	$43.43	$46.86	$3.43	7.90%
500	$64.96	$70.09	$5.13	7.90%
750	$86.48	$93.31	$6.83	7.90%
1,000	$108.00	$116.53	$8.53	7.90%
1,250	$129.52	$139.75	$10.23	7.90%
1,500	$151.05	$162.98	$11.93	7.90%
1,750	$172.57	$186.20	$13.63	7.90%
2,000	$194.09	$209.42	$15.33	7.90%
3,000	$620.26	$635.59	$15.33	2.47%
4,000	$1,046.43	$1,061.76	$15.33	1.46%
5,000	$1,472.60	$1,487.93	$15.33	1.04%
6,000	$1,898.77	$1,914.10	$15.33	0.81%
7,000	$2,324.94	$2,340.27	$15.33	0.66%
8,000	$2,751.11	$2,766.44	$15.33	0.56%
9,000	$3,177.28	$3,192.61	$15.33	0.48%
10,000	$3,603.45	$3,618.78	$15.33	0.43%

b) The table below provides information on Government and Non-Government First Nation customers based on actual 2016/17 fiscal year billing data.

Name of First Nation	Number of general service customers	% with average monthly consumption			
		< 2,000 kWh	Between 2,000 and 4,000 kWh	Between 4,000 and 6,000 kWh	> 6,000 kWh
Barrens Lands FN	16	68.8%	12.5%	6.3%	12.5%
Northlands Dene FN	44	84.1%	6.8%	2.3%	6.8%
Sayisi Dene FN	29	79.3%	3.4%	6.9%	10.3%
Shamattawa FN	27	44.4%	18.5%	7.4%	29.6%

REFERENCE:

Appendix 10.7, Page 1 of 4

PREAMBLE TO IR (IF ANY):

CITATION:
1. Low-Income Energy Efficiency and Weatherization Initiatives:
Recommendation – Maintain or enhance funding: Emphasis on existing Manitoba Hydro low-income energy-efficiency and weatherization initiatives be maintained at their current level, or enhanced with additional funding or programming where possible, whether those initiatives or funding are provided by Manitoba Hydro or otherwise.

Manitoba Hydro Response - Manitoba Hydro routinely investigates new technologies for incorporation into existing programs or the development of new programs to assist lower income customers. When strategic opportunities arise, such as ecoENERGY, Manitoba Hydro has leveraged these relationships to further promote energy efficiency upgrades.

QUESTION:

Does Manitoba Hydro accept the Working Recommendation to maintain or enhance funding for low-income energy-efficiency and weatherization initiatives?

RATIONALE FOR QUESTION:

RESPONSE:

Manitoba Hydro accepts the Working Group Recommendation to maintain the Affordable Energy Program's current offerings and Manitoba Hydro will continue to investigate new technologies or approaches to further assist lower income customers.

REFERENCE:

Tab 8, 8.5, Page 29-30 of 34

PREAMBLE TO IR (IF ANY):

CITATION:
Secondly COS [cost of service] and its resultant RCC [revenue to cost coverage] ratios is a tool that may (or may not) be used when evaluating and setting rates for various customer classes. The translation of cost to serve to pricing should reasonably balance a utility's ratemaking objectives. This means that rate equity is not achieved by using the results of a cost of service study to set rates purely in a mechanistic manner. Hence, a COS study is more a guide than a prescription in setting rates. Apportioned costs are rarely offered as final measures of fair and equitable rates and rate relationships in most jurisdictions.

In this jurisdiction, the PUB has broad discretion in the finding of just and reasonable rates for Manitoba Hydro. While a COSS is a very useful tool in assessing the fairness of rates and is the primary tool used by Manitoba Hydro to assess the allocation of costs between customer classes, its use is not mandated by legislation nor are costs the only measure by which to test the reasonableness of rates. In addition to considering the cost of service (including an appropriate net income for the maintenance of financial reserves), the PUB may consider other compelling policy considerations and other factors that the PUB may determine to be relevant. Therefore, apportioned costs by class are not the only factor to be considered, and a zone of reasonableness provides additional latitude in which to address non-cost related rate setting considerations.

QUESTION:

Please elaborate on the other compelling policy considerations that may enter into the setting of fair and equitable rates, and in particular bill affordability, in general and for vulnerable subsets of the population.

RESPONSE:

Please see the response to PUB/MH I-137a.

REFERENCE:

Tab 8, 8.5.1, Page 31 of 34

PREAMBLE TO IR (IF ANY):

CITATION:
It is generally recognized that efficient price signals are those which are related to relevant marginal cost. While this theoretical standard for utility price setting is rarely strictly adhered to, marginal costs and concepts may be a consideration in both cost of service and rate setting. For Manitoba Hydro, with significant fixed hydraulic investment and export revenue, that potential is much more pronounced than most utilities, as a result of its substantial heritage plants significantly below marginal cost as well as export revenues which are used to further reduce embedded costs recovered from customers.

A simplified marginal cost evaluation by class is provided in Figure 8.14.

QUESTION:

Please provide detailed justification, including source materials and spreadsheets, for the marginal costs presented in Figure 8.14.

RATIONALE FOR QUESTION:

RESPONSE:

Please see Manitoba Hydro's response to PUB/MH I-131b which provides details of the calculation of the marginal costs used in Figure 8.14.