MANITOBA HYDRO

2012/13 & 2013/14 ELECTRIC GENERAL RATE APPLICATION

UNDERTAKING PROVIDED BY: D. RAINKIE

Manitoba Hydro Undertaking #31

Redo the analysis shown on pg. 293 of PUB Book of Documents and provide supporting calculations demonstrating the overall averages. Manitoba Hydro will also provide explanations for any significant changes for the weighted average comparison.

Response:

Please refer to the following tables, which provide a comparison of the weighted average remaining life for the asset components shown on Page 293 of the Board Council's Book of Documents.

Manitoba Hydro
Comparison of Remaining Life for Specified Components

Facility	2005: ASL Surviving Cost ($ 000's)	2005: ASL Probable Remaining Life (Years)	2010: ELG Surviving Cost ($ 000's)	2010: ELG Probable Remaining Life (Years)	Direct Change 2005 to 2010 Study Surviving Cost ($ 000's)	Direct Change 2005 to 2010 Study Probable Remaining Life	Effective Change Considering Elapsed Years Elapsed Years	Effective Change Considering Elapsed Years Effective Change to Probable Remaining Life
HYDRAULIC GENERATION								
Great Falls								
Civil	48,456	44.2						
Dams, Dykes & Weirs			17,303	51.3				
Powerhouse			7,991	50.6				
Powerhouse Renovations								
Spillway			9,676	39.2				
Water Control Systems			24,245	33.5				
Roads and Site Improvements			214	39.7				
	48,456	44.2	59,429	41.9	10,973	(2.3)	5.0	2.7
Pointe du Bois								
Civil	9,480	9.2						
Dams, Dykes & Weirs			11,263	21.0				
Powerhouse			6,243	21.0				
Powerhouse Renovations								
Spillway			3,105	6.9				
Water Control Systems			4,028	21.0				
Roads and Site Improvements			29	20.1				
	9,480	9.2	24,668	19.2	15,188	10.0	5.0	15.0

The primary reason for the increase in probable remaining life is the change in life span date from 2015 to 2017 for the Spillway and 2031 for the other components.

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Comparison of Remaining Life for Specified Components

Facility	2005: ASL Surviving Cost ($ 000's)	2005: ASL Probable Remaining Life (Years)	2010: ELG Surviving Cost ($ 000's)	2010: ELG Probable Remaining Life (Years)	Direct Change 2005 to 2010 Study Surviving Cost ($ 000's)	Direct Change 2005 to 2010 Study Probable Remaining Life	Effective Change Considering Elapsed Years Elapsed Years	Effective Change Considering Elapsed Years Effective Change to Probable Remaining Life
HYDRAULIC GENERATION								
Seven Sisters								
Civil	49,148	43.6						
Dams, Dykes & Weirs			31,498	59.1				
Powerhouse			13,654	57.5				
Powerhouse Renovations								
Spillway			2,841	40.7				
Water Control Systems			4,297	34.6				
Roads and Site Improvements			202	33.8				
	49,148	43.6	52,492	55.6	3,344	12.0	5.0	17.0
The primary reason for the increase in probable remaining life is the change in life span date from 2052 to 2072.								
Slave Falls								
Civil	44,432	55.8						
Dams, Dykes & Weirs			955	61.4				
Powerhouse			45,692	61.5				
Powerhouse Renovations								
Spillway			760	45.4				
Water Control Systems			319	44.7				
Roads and Site Improvements			770	39.4				
	44,432	55.8	48,496	60.8	4,064	5.0	5.0	10.0
The primary reason for the increase in probable remaining life is the change in life span date from 2063 to 2072.								

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Comparison of Remaining Life for Specified Components

Facility	2005: ASL Surviving Cost ($ 000's)	2005: ASL Probable Remaining Life (Years)	2010: ELG Surviving Cost ($ 000's)	2010: ELG Probable Remaining Life (Years)	Direct Change 2005 to 2010 Study Surviving Cost ($ 000's)	Direct Change 2005 to 2010 Study Probable Remaining Life	Effective Change Considering Elapsed Years Elapsed Years	Effective Change Considering Elapsed Years Effective Change to Probable Remaining Life
HYDRAULIC GENERATION								
Pine Falls								
Civil	21,433	42.3						
Dams, Dykes & Weirs			14,111	77.3				
Powerhouse			10,061	63.5				
Powerhouse Renovations								
Spillway			93	49.8				
Water Control Systems			3,564	30.8				
Roads and Site Improvements			1,179	10.5				
	21,433	42.3	29,008	64.0	7,575	21.7	5.0	26.7
The primary reason for the increase in probable remaining life is the change in life span date from 2052 to 2092.								
McArthur Falls								
Civil	26,227	45.2						
Dams, Dykes & Weirs			3,578	69.1				
Powerhouse			9,524	64.3				
Powerhouse Renovations								
Spillway			2,351	27.8				
Water Control Systems			11,703	33.3				
Roads and Site Improvements			235	29.0				
	26,227	45.2	27,391	48.2	1,164	3.0	5.0	8.0

Manitoba Hydro
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Facility	2005: ASL Surviving Cost ($ 000's)	2005: ASL Probable Remaining Life (Years)	2010: ELG Surviving Cost ($ 000's)	2010: ELG Probable Remaining Life (Years)	Direct Change 2005 to 2010 Study Surviving Cost ($ 000's)	Direct Change 2005 to 2010 Study Probable Remaining Life	Effective Change Considering Elapsed Years Elapsed Years	Effective Change Considering Elapsed Years Effective Change to Probable Remaining Life
HYDRAULIC GENERATION								
Kelsey								
Civil	50,162	49.7						
Dams, Dykes & Weirs			11,066	81.9				
Powerhouse			27,570	71.8				
Powerhouse Renovations								
Spillway			5,332	31.1				
Water Control Systems			11,793	37.6				
Roads and Site Improvements			6,443	28.5				
	50,162	49.7	62,204	59.1	12,042	9.4	5.0	14.4
The primary reason for the increase in probable remaining life is the change in life span date from 2062 to 2101, partially offset by $5 million in additions to components with an average service life shorter than the 91 years remaining to the life span date. Additions were made to the Water Control Systems component for the refurbishment of intake gates, and to the Roads and Site Improvements component for bridge modifications.								
Grand Rapids								
Civil	91,433	52.8						
Dams, Dykes & Weirs			53,469	71.3				
Powerhouse			24,507	69.2				
Powerhouse Renovations								
Spillway			5,308	34.1				
Water Control Systems			15,982	35.0				
Roads and Site Improvements			2,581	18.7				
	91,433	52.8	101,847	61.8	10,414	9.0	5.0	14.0
The primary reason for the increase in probable remaining life is the change in life span date from 2067 to 2091.								

Manitoba Hydro
Comparison of Remaining Life for Specified Components

Facility	2005: ASL Surviving Cost ($ 000's)	2005: ASL Probable Remaining Life (Years)	2010: ELG Surviving Cost ($ 000's)	2010: ELG Probable Remaining Life (Years)	Direct Change 2005 to 2010 Study Surviving Cost ($ 000's)	Direct Change 2005 to 2010 Study Probable Remaining Life	Effective Change Considering Elapsed Years Elapsed Years	Effective Change Considering Elapsed Years Effective Change to Probable Remaining Life
HYDRAULIC GENERATION								
Kettle								
Civil	230,277	57.1						
Dams, Dykes & Weirs			45,281	79.0				
Powerhouse			146,207	79.3				
Powerhouse Renovations								
Spillway			25,407	37.7				
Water Control Systems			17,835	15.1				
Roads and Site Improvements			11	35.5				
	230,277	57.1	234,741	69.9	4,464	12.8	5.0	17.8
The primary reason for the increase in probable remaining life is change in life span date from 2072 to 2111, partially offset by $1.9 million in additions to components with an average service life shorter than the 101 years remaining to the life span date. Additions were made to the Water Control Systems component relating to the replacement of riparian valves and a cylinder assembly.								
Laurie River								
Civil	4,978	48.8						
Dams, Dykes & Weirs			356	22.0				
Powerhouse			7,664	22.0				
Powerhouse Renovations								
Spillway			870	20.7				
Water Control Systems			458	21.7				
Roads and Site Improvements			1,442	19.9				
	4,978	48.8	10,790	21.6	5,812	(27.2)	5.0	(22.2)
The primary reason for the decrease in probable remaining life is the change in life span date from 2056 to 2032.								

Manitoba Hydro
Comparison of Remaining Life for Specified Components

Facility	2005: ASL Surviving Cost ($ 000's)	2005: ASL Probable Remaining Life (Years)	2010: ELG Surviving Cost ($ 000's)	2010: ELG Probable Remaining Life (Years)	Direct Change 2005 to 2010 Study Surviving Cost ($ 000's)	Direct Change 2005 to 2010 Study Probable Remaining Life	Effective Change Considering Elapsed Years Elapsed Years	Effective Change Considering Elapsed Years Effective Change to Probable Remaining Life
HYDRAULIC GENERATION								
Jenpeg								
Civil	121,633	62.7						
Dams, Dykes & Weirs			15,295	88.4				
Powerhouse			76,905	84.3				
Powerhouse Renovations								
Spillway			14,943	40.1				
Water Control Systems			16,762	17.4				
Roads and Site Improvements			1,563	25.8				
	121,633	62.7	125,468	69.9	3,835	7.2	5.0	12.2
The primary reason for the decrease in probable remaining life is the change in life span date from 2078 to 2118.								
Lake Winnipeg Regulation								
Civil	10,087	62.0						
Water Channels	86,720	61.4						
Dams, Dykes & Weirs			96,807	86.7				
	96,807	61.5	96,807	86.7	-	25.2	5.0	30.2
The primary reason for the increase in probable remaining life is the removal of the previous life span date.								

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Comparison of Remaining Life for Specified Components

Facility	2005: ASL Surviving Cost ($ 000's)	2005: ASL Probable Remaining Life (Years)	2010: ELG Surviving Cost ($ 000's)	2010: ELG Probable Remaining Life (Years)	Direct Change 2005 to 2010 Study Surviving Cost ($ 000's)	Direct Change 2005 to 2010 Study Probable Remaining Life	Effective Change Considering Elapsed Years Elapsed Years	Effective Change Considering Elapsed Years Effective Change to Probable Remaining Life
HYDRAULIC GENERATION								
Churchill River Diversion								
Civil	132,121	62.2						
Water Channels	92,713	62.0						
Dams, Dykes & Weirs			114,718	87.1				
Spillway			56,442	40.0				
Water Control Systems			17,584	16.7				
Roads and Site Improvements			6,799	19.0				
	224,834	62.1	195,543	64.8	(29,291)	2.7	5.0	7.7
The increase in probable remaining life reflects the removal of the previous life span date, offset by transfer of costs to other categories for non-civil items identified in the detailed review of the historical records for Churchill River Diversion.								
Long Spruce								
Civil	304,589	62.6						
Dams, Dykes & Weirs			64,744	85.2				
Powerhouse			143,780	85.2				
Powerhouse Renovations								
Spillway			42,274	41.0				
Water Control Systems			57,946	17.5				
Roads and Site Improvements			1,173	22.0				
	304,589	62.6	309,917	66.3	5,328	3.7	5.0	8.7

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Comparison of Remaining Life for Specified Components

	2005: ASL		2010: ELG		Direct Change 2005 to 2010 Study		Effective Change Considering Elapsed Years	
Facility	Surviving Cost ($ 000's)	Probable Remaining Life (Years)	Surviving Cost ($ 000's)	Probable Remaining Life (Years)	Surviving Cost ($ 000's)	Probable Remaining Life	Elapsed Years	Change to Probable Remaining Life
HYDRAULIC GENERATION								
Limestone								
Civil	808,766	75.9						
Dams, Dykes & Weirs			33,258	96.8				
Powerhouse			461,430	96.9				
Powerhouse Renovations								
Spillway			201,241	47.6				
Water Control Systems			116,224	29.6				
Roads and Site Improvements			17,164	28.5				
	808,766	75.9	829,317	74.1	20,551	(1.8)	5.0	3.2
THERMAL GENERATION								
Brandon Units 6 & 7								
Brandon Combustion Turbine	181,414	22.5						
Powerhouse			14,925	53.9				
Powerhouse Renovations								
Thermal Turbines and Generators			9,824	39.2				
Governors and Excitation System								
Combustion Turbine			143,284	15.9				
Licence Renewal								
Combustion Turbine Overhauls								
A/C Electrical Power Systems			6,253	37.2				
Instrumentation, Control and D/C Systems			1,114	14.8				
Auxiliary Station Processes			10,640	27.7				
	181,414	22.5	186,040	21.6	4,626	(0.9)	5.0	4.1

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TRANSMISSION LINES								
Metal Towers and Concrete Poles	243,314	70.0	340,022	59.8				
Metal Towers - HVDC Purchase	79,091	53.6						
	322,405	66.0	340,022	59.8	17,617	(6.2)	5.0	(1.2)
Overhead Conductor and Devices	221,374	43.8	304,577	44.1				
Overhead Conductor - HVDC Purchase	56,582	22.0						
	277,956	39.4	304,577	44.1	26,621	4.7	5.0	9.7
SUB-STATIONS								
Synchronous Condenser Overhauls			11,321	9.8				
HVDC Converter Equipment			214,982	14.4				
HVDC Serialized Equipment	309,389	20.8	646,220	14.1				
HVDC Accessory Station Equipment	591,979	16.4	55,177	25.2				
HVDC Serialized Equipment - HVDC Purchase	30,076	10.3						
HVDC Accessory Station Equipment - HVDC Purchase	21,098	3.4						
	952,542	17.3	927,700	14.8	(24,842)	(2.6)	5.0	2.4