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31	Deferral Financial Implications	PUB/MH I□080(b)

1

1 11 Financial Evaluation of Development Plans

2

3 11.0 Chapter Overview

4 This chapter presents the financial evaluation of eight representative development plans, with a
5 focus on the comparative impact on future customer rates and Manitoba Hydro's comparative
6 exposure to financial risk. The financial evaluation has been prepared using information from
7 pro forma financial statements that utilize the same framework for scenario uncertainty
8 analysis that is used in the economic uncertainty analysis.

9

10 The following is a summary of the primary financial evaluation conclusions:

11

12 Future Customer Rates

- 13 • Rate increases are required for all evaluated alternatives. The financial evaluation shows
14 that higher rates are required in the medium term under all of the development plans,
15 regardless of whether the plan is gas-based or hydro-based. New energy supply cannot
16 be provided at the same current low rates that Manitoba Hydro customers have
17 enjoyed over the last two decades.
- 18 • In the long term, development plans with both Keeyask and Conawapa generating
19 stations are projected to have the lowest cumulative rate increases which range
20 between 65% to 70% lower than the All Gas plan under the reference scenario.
21 Development plans with both Keeyask and Conawapa generating stations provide
22 incremental dependable and surplus energy which translate to savings for Manitoba
23 customers in the long run.
- 24 • In the medium term, the capital-intensive plans that include both Keeyask and
25 Conawapa generating stations are projected to have cumulative rate increases that are
26 generally higher than other alternatives. Cumulative rates under the Preferred
27 Development Plan “cross-over” compared to all other plans and begin to provide benefit

1 investments with export revenues. This chapter presents the financial evaluation of the
2 following eight development plans:¹

3

Pathway	Interconnection	Plan #	Development Plan Short Name
Pathway 1	No New Interconnection	1	All Gas
		7	Gas ² /C26
Pathway 2		2	K22/Gas
Pathway 3	250 MW Interconnection	4	K19/Gas/250
		13	K19/C25/250
Pathway 4	750 MW Interconnection	12	K19/C31/750
		6	K19/Gas/750
Pathway 5		14	K19/C25/750 Preferred Plan

4 In the context of this NFAT submission, the financial analysis will focus on the comparative
5 impact on future customer rates and Manitoba Hydro's comparative exposure to financial risk
6 of the various development plans.

7

8 The financial evaluation has been prepared using information from pro forma financial
9 statements that can be found in **Appendix 11.4 – Pro Forma Financial Statements**. Pro forma
10 financial statements are prepared each year as part of Manitoba Hydro's integrated planning
11 process and presented in the Integrated Financial Forecast (IFF) report. The Electric Operations
12 Financial Forecast (MH12) is the starting point for each set of pro forma financial statements
13 and has been extended to encompass the 50-year study period for evaluation purposes. A 50-
14 year study period was selected in order to be consistent with the long-term nature of hydro-
15 electricity assets and to provide a sufficient time frame to analyze the benefits and costs of
16 each development plan.

¹ The financial evaluations performed on these eight development plans provide a representative sample of the range of potential development plans with respect to the economics as well as mix of generation source. For the full description of these eight development plans, as well as a number of additional alternatives, see Table 9.3 of Chapter 9.

² The Gas/C26 development plan assumes gas generation with a simple-cycle gas turbine (SCGT).

1 **Approach to Comparative Rate Analysis**

2 Manitoba Hydro must recover its revenue requirements in order to maintain ongoing financial
3 integrity, and these requirements can be quite variable from year to year due to changing
4 conditions. In order to achieve rate stability for customers, Manitoba Hydro has a long-standing
5 strategy of gradualism in its approach to developing rate proposals. Similarly, in the financial
6 evaluation of each development plan, an even-annual rate increase over an extended period of
7 time has been calculated. During the capital investment period associated with new generation,
8 there will be downward pressure on the corporation's financial ratios. Given that a timely
9 return to the targeted 75:25 debt:equity ratio is prudent, similar to the IFF approach, the
10 financial analysis assumes even-annual rate increases in order to achieve the targeted
11 debt:equity ratio by the end of 2031/32.³ Once the debt:equity target is reached, the projected
12 comparative annual rates for the remainder of the 50-year financial forecast period utilize the
13 corporation's interest coverage ratio target of 1.20.

14

15 Please note that actual rate increases will vary from those projected in this analysis and will be
16 dependent upon future revenue requirements. Numerous factors, other than the choice of
17 development plan, may influence the revenue requirement, such as changing water flow
18 conditions, weather, costs to maintain the system, and economic variables. Future rate
19 proposals will be subject to full justification as part of General Rate Applications before the
20 Public Utilities Board.

³ Annual rate increases have been left unchanged from those projected in MH12 for the first two years.

1 Assumptions

2 The same flow-related revenues, thermal costs, power purchases, water rentals and capital
3 costs used in the economic evaluation are applied in the financial analysis to reflect the
4 appropriate generation supply options and timing of in-service for each particular development
5 plan. Tables detailing assumptions for net flow-related revenues and costs can be found in
6 **Appendix 9.3 – Economic Evaluation Documentation**, and current dollar net capital
7 expenditures can be found in **Appendix 11.1 – Net Capital Expenditures**. These variables, along
8 with the economic assumptions (projected escalation, interest and exchange rates found in
9 **Appendix 11.2 – Projected Escalation, Interest and Exchange Rates**) and energy market prices
10 for electricity and natural gas, are also applied. **Appendix 11.3 – Average Unit Revenue/Cost**
11 provides a calculation of average unit revenue and cost per kilowatt-hour for each development
12 plan and scenario. Note that the calculations in the tables found in **Appendix 11.3 – Average**
13 **Unit Revenue/Cost** are only an arithmetic derivation of market energy prices and costs based
14 on the revenue and cost data presented in the pro forma financial statements, and are not
15 source data directly inputted into electricity export price or revenue/cost forecast models.

16
17 As indicated in the methodology section of **Chapter 9 – Economic Evaluation – Reference**
18 **Scenario**, sunk costs are not included in the economic evaluations, as these represent past
19 expenditures and commitments that cannot be changed relative to the decision point when
20 choosing among plans. As such, all costs (incurred or estimated) prior to June 2014 that were
21 required to protect the in-service dates for Keeyask and Conawapa are considered as “sunk” in
22 the economic evaluation. The financial evaluation, however, recognizes these costs need to be
23 included in the revenue requirement at an appropriate point in time. For plans in which a
24 decision is made to proceed with Keeyask or Conawapa, the sunk costs form part of the cost to
25 acquire the asset and are amortized over the life of the asset. For plans in which Keeyask or
26 Conawapa is deferred beyond the evaluation period, sunk costs are assumed to be amortized
27 over an 18-year period to 2031-32. This 18-year period is consistent with the period of even-
28 annual rate increases, recognizing the significance of the quantum of the costs and the

1 objective of gradualism in the rate-setting process. For accounting purposes, the actual
2 amortization of these costs may occur over a shorter period of time.

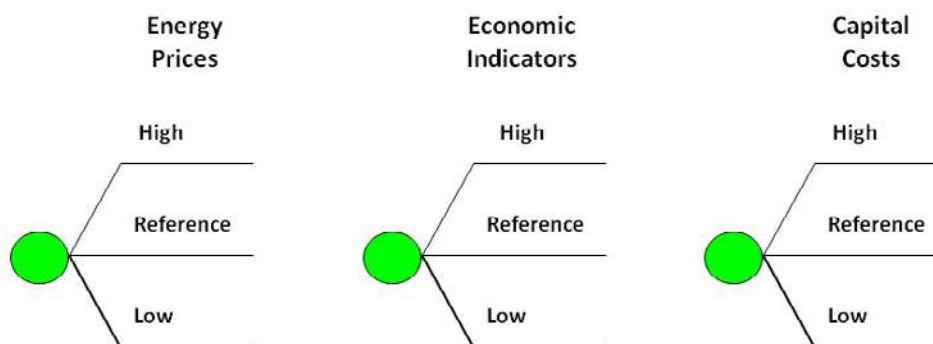
3

4 **Risks and Uncertainties**

5 From a risk perspective, the financial evaluation follows the same framework for scenario
6 uncertainty analysis that is used in the economic uncertainty analysis. The scenario framework
7 reflects each dimension of uncertainty that has been shown to have the greatest impact on the
8 economic analysis of the plan options, and, for consistency with the economic analysis, these
9 same dimensions have been used in the financial analysis. When combined with the
10 assumptions for reference, high and low scenarios, the analysis results in 27 discrete scenarios
11 that represent broad combinations of factors and assumptions.

12

DIAGRAM 11.1



13

$3^3 = 27$ distinct sets of pro forma financials for each development plan

14 Projected pro forma financial statements were developed for each of the 27 scenarios under all
15 eight development plans, resulting in 216 distinct sets of pro forma financial statements. In
16 addition, the financial analysis also considered the impact of adverse drought conditions under
17 selected development plans as outlined in Section 11.4.

18

19 As each of the possible combinations do not have the same likelihood of occurrence, the same
20 weightings used in the economic uncertainty analysis (see Figure 10.6) were assigned to each of
21 the factors and scenario assumptions, and a cumulative probability associated with each of the

1 possible combinations was applied to the values obtained from the pro forma financial
2 projections. In this manner, a probability distribution for each financial statement and metric
3 was derived and analyzed.

4

5 **11.2 Financial Evaluation Results – Customer Rates**

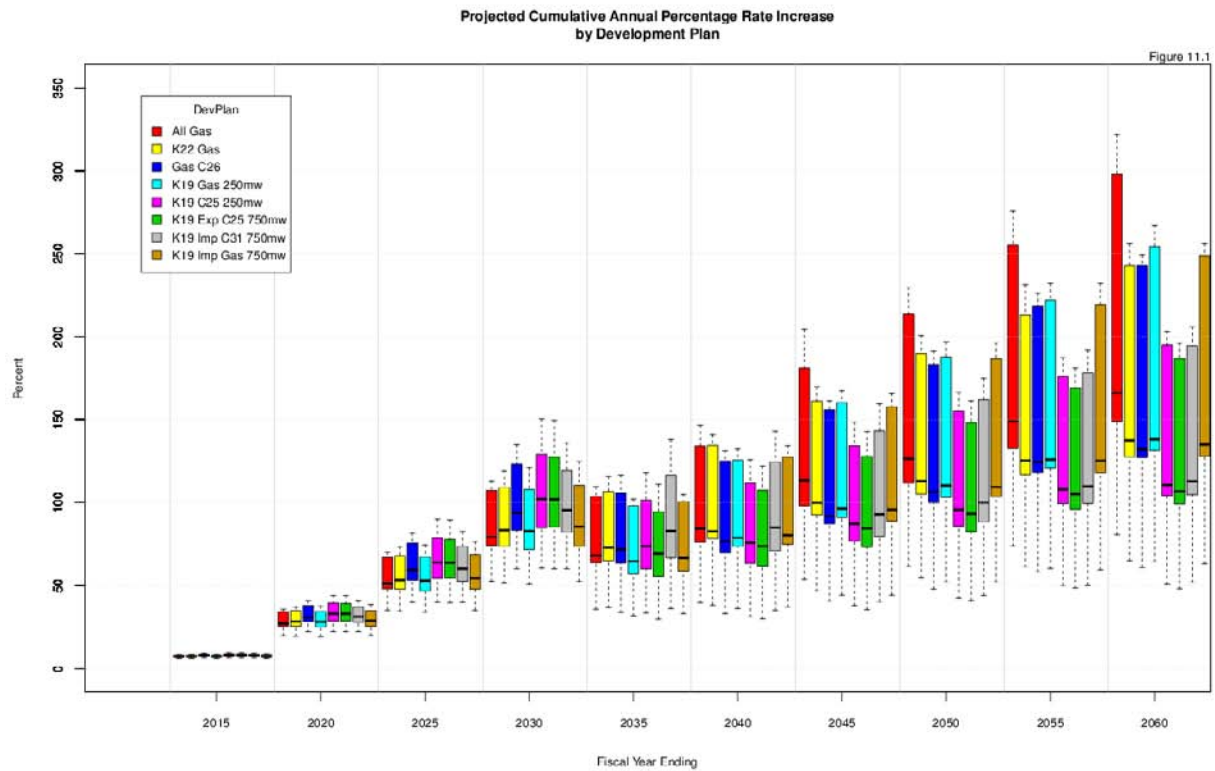
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7 **Projected Cumulative Annual Rates from 2015 to 2062**

8 Figure 11.1 shows a box plot of the projected cumulative nominal rate increases for the eight
9 development plans in 5-year intervals over the entire 50-year study period (enlarged Figures
10 11.1 to 11.7 are available in **Appendix 11.5 – Enlarged Figures 11.1-11.7**). It is important to
11 recognize that the projected rates are provided for the purpose of comparative rate analysis
12 and are not intended to convey the specific revenue requirements in future General Rate
13 Applications before the Public Utilities Board. The coloured “box” for each plan depicts the
14 range of cumulative nominal rates increases between the 25th and 75th percentile (P25 and
15 P75). The hash mark (dark line) across the box represents the median or 50% likelihood (P50)
16 that the cumulative rate in a particular time period will be higher or lower than that value. The
17 end points on the “whiskers” indicate the 10th and 90th percentile (P10 and P90).

1
2

Figure 11.1 **PROJECTED CUMULATIVE ANNUAL PERCENTAGE RATE INCREASE BY DEVELOPMENT PLAN**



3

4 This analysis demonstrates the following with respect to the projected rate increases:

- 5 • Rate increases are required for all evaluated alternatives. The financial evaluation shows
- 6 that higher rates are required in the medium term under all of the development plans,
- 7 regardless of whether the plan is gas-based or hydro-based. New energy supply cannot
- 8 be provided at the same current low rates that Manitoba Hydro customers have
- 9 enjoyed over the last two decades.
- 10 • In the near term, by 2020, the cumulative rate increases for the various alternatives are
- 11 relatively similar.
- 12 • By 2030, the cumulative rate increases for the capital-intensive plans that include both
- 13 Keyask and Conawapa are generally higher than other alternatives.
- 14 • By 2035, following the in-service of both Keyask and Conawapa, the cumulative rate
- 15 increases for the Preferred Development Plan (green) begin to beneficially separate
- 16 from the alternatives. By 2040, the cumulative rate increases for the Preferred

1 Development Plan are lower than all other development plans as measured by the P10,
2 P25, P50, P75 and P90 values.

3 • From 2045-2060, the development plans with both Keeyask and Conawapa (pink, green
4 and grey) have the lowest cumulative rate increases, which range between 65% to 70%
5 lower than the All Gas plan under the reference scenario.

6 • The range of potential cumulative rate increases expands through time for all evaluated
7 alternatives. By 2062, the All Gas plan (red) has the widest range (with a P25 of 159%
8 and a P75 of 326%). The wide range for the All Gas plan and the associated risk for
9 customer rates is even more pronounced when considering the whisker P10:P90 range.

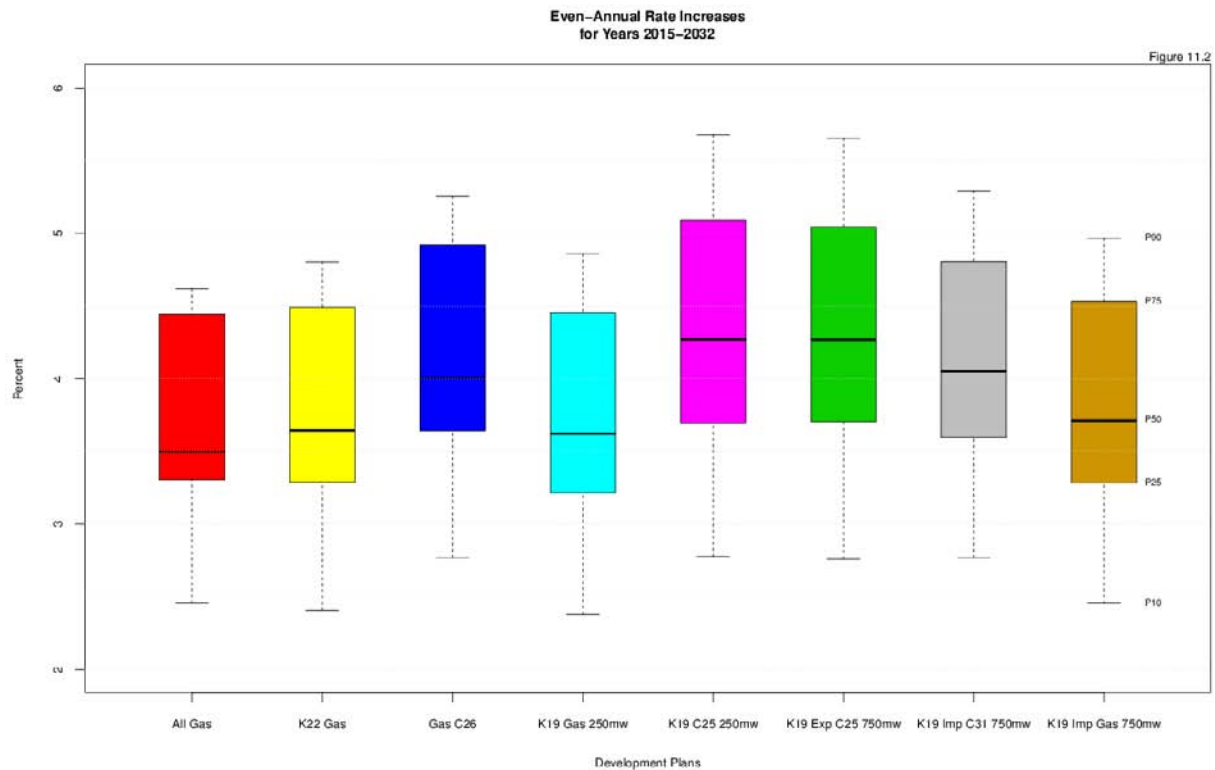
10

11 **Projected Even-Annual Rates from 2015 to 2032**

12 As outlined in Section 11.1, the financial analysis assumes even-annual rate increases in order
13 to achieve the targeted debt:equity ratio by the end of the 2031/32 fiscal year. Figure 11.2
14 provides the projected even-annual rate increases to 2031/32 underlying the cumulative rates
15 shown in Figure 11.1.

1

Figure 11.2 PROJECTED EVEN-ANNUAL RATE INCREASES FOR YEARS 2015-2032



2

3 This chart illustrates the following with respect to the projected even-annual rate increases for
4 years 2015 to 2032:

- 5 • Rate increases that are higher than the expected rate of inflation are required for all
6 evaluated alternatives.
- 7 • On a P50 basis, across all development plans, the even-annual rate increases for the
8 years 2015-2032 range from 3.5% to 4.3%.
- 9 • When considering the P25 to P75 values across all development plans, the even-annual
10 rate increases for the years 2015-2032 range from 3.2% to 5.1%.
- 11 • During this time frame, the even-annual rate increases for the Preferred Development
12 Plan (green) are generally higher, in keeping with its higher upfront capital investment.

13

14 It should be noted that the projected even-annual rate increases under the All Gas
15 development plan result in net losses in the short term. If rate increases were adjusted to

1 maintain positive levels of net income, the projected even-annual rate increases under the All
2 Gas plan would need to be higher during the 2015-2032 time frame.

3

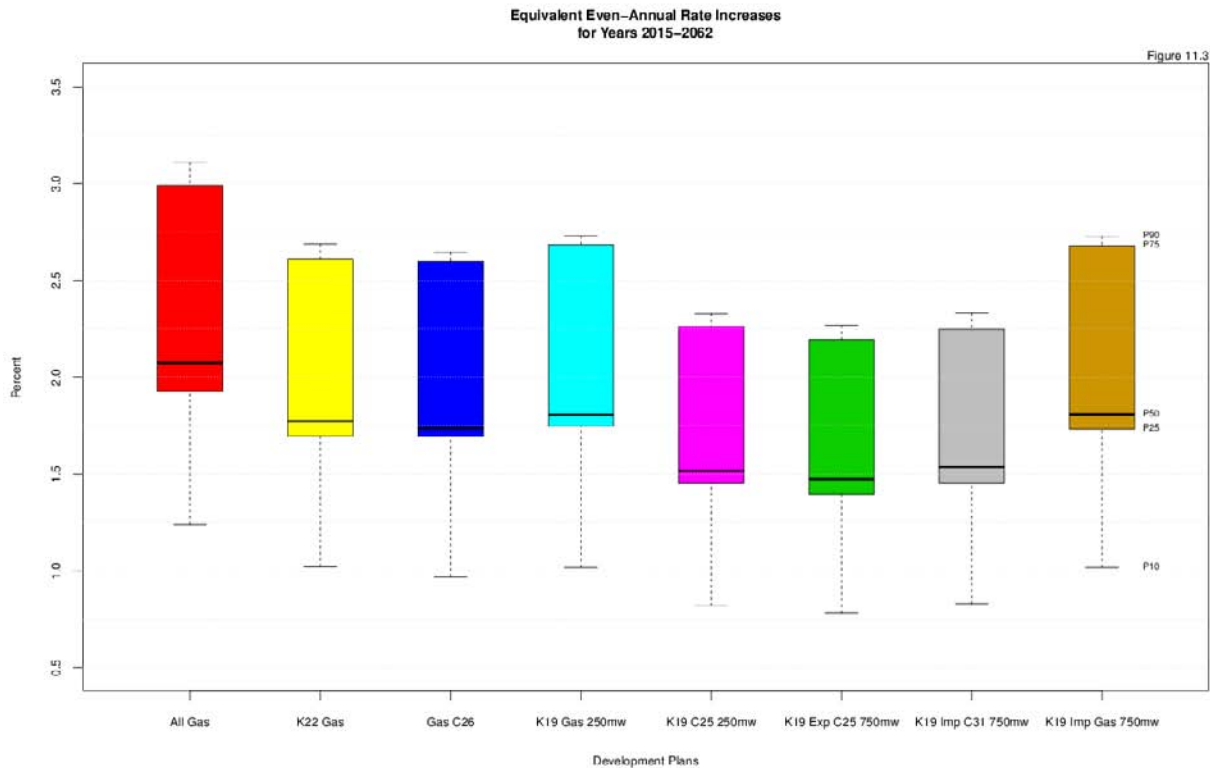
4 **Projected Equivalent Even-Annual Rates from 2015-2062**

5 In Figure 11.3, the projected cumulative rate increases from years 2015-2062 shown in Figure
6 11.1 were converted to an equivalent even-annual rate increase to provide a simplified basis of
7 comparison for all development plans over the entire study period.

8

9
10

Figure 11.3 PROJECTED EQUIVALENT EVEN-ANNUAL RATE INCREASES FOR YEARS 2015-2062



11

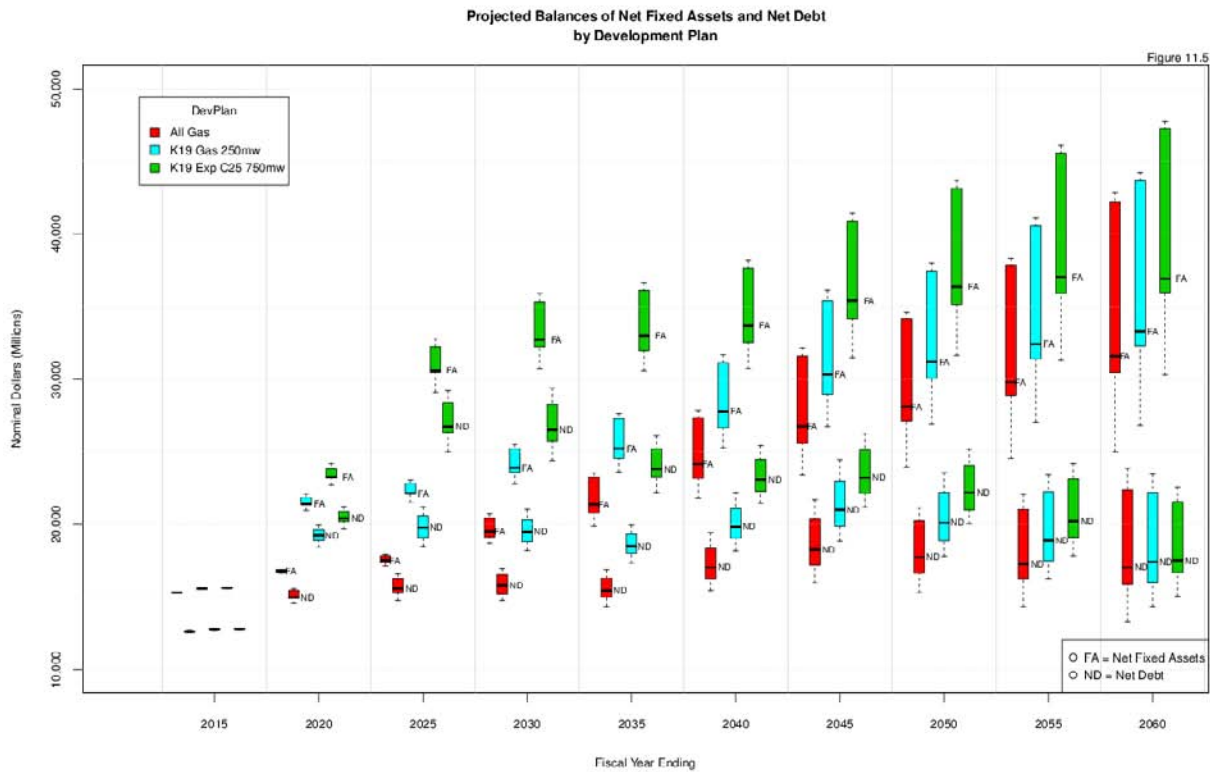
12 Figure 11.3 illustrates the following with respect to the projected equivalent even-annual rate
13 increases from 2015-2062:

- Once Conawapa is in service, net debt declines for these development plans due to the benefit from surplus energy and associated export sales.
- Net debt levels converge towards the end of the study period for all development plans.

Net Debt and Net Fixed Assets

The level of net debt must be considered in the context of the entire balance sheet, including the associated net assets that are under construction or in service. For illustrative purposes, the following chart shows the projected balances of net fixed assets and net debt for three representative development plans (All Gas in red, a hydro/gas option in blue, and the Preferred Development Plan in green).

Figure 11.5 PROJECTED BALANCES OF NET FIXED ASSETS AND NET DEBT BY DEVELOPMENT PLAN



1 11.5 Financial Evaluation - Conclusions

2 This chapter presents the financial evaluation of eight representative development plans, with a
3 focus on the comparative impact on future customer rates and Manitoba Hydro's comparative
4 exposure to financial risk. The following is a summary of the financial evaluation conclusions:
5

6 **Future Customer Rates**

- 7 • Rate increases are required for all evaluated alternatives. The financial evaluation shows
8 that higher rates are required in the medium term under all of the development plans,
9 regardless of whether the plan is gas-based or hydro-based. New energy supply cannot
10 be provided at the same current low rates that Manitoba Hydro customers have
11 enjoyed over the last two decades.
- 12 • In the long term, development plans with both Keeyask and Conawapa Generating
13 Stations are projected to have the lowest cumulative rate increases, which range
14 between 65% to 70% lower than the All Gas plan under the reference scenario.
15 Development plans with both Keeyask and Conawapa Generating Stations provide
16 incremental dependable and surplus energy which translate to savings for Manitoba
17 customers in the long run.
- 18 • In the medium term, the capital-intensive plans that include both Keeyask and
19 Conawapa generating stations are projected to have cumulative rate increases that are
20 generally higher than other alternatives. Cumulative rates under the Preferred
21 Development Plan "cross-over" compared to all other plans and begin to provide benefit
22 to customers in a relatively short time frame (10 to 15 years) following the in-service
23 date of the Conawapa generating station.
- 24 • The Preferred Development Plan is projected to have the lowest overall rates to
25 Manitoba customers in the long term.

1 **Financial Risk**

- 2 • In the long term, development plans that include Keeyask and Conawapa Generating
3 Stations have the strongest projected balance sheet, with high levels of fixed assets and
4 retained earnings. By the end of the study period, retained earnings are projected to be
5 between \$4.9 billion to \$6.1 billion higher than the All Gas plan.
- 6 • Net debt levels converge towards the end of the study period for all development plans.
- 7 • In the medium term, while net debt levels are the highest with the development plans
8 that include both Keeyask and Conawapa generating stations, as these plans have the
9 overall highest capital investment, they also have the highest fixed assets and retained
10 earnings.
- 11 • Development plans with both Keeyask and Conawapa generating stations are more
12 robust in their ability to absorb adverse financial impacts in the medium term and
13 extending through to the end of the study period, given their comparatively higher level
14 of retained earnings.

2

PUB/MH I-22 (Revised Based on IFF12)

Reference: IFF11-2 – Electric Operations

- a) **Please refile the IFF11-2 electric operations for the 20 year outlook including financial targets for each year.**

ANSWER:

Please note that while financial targets have been calculated based on electric operations only in the following attachment, as requested, Manitoba Hydro's financial targets apply to consolidated operations only.

ELECTRIC OPERATIONS (MH12)
PROJECTED OPERATING STATEMENT
 (In Millions of Dollars)

For the year ended March 31

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
REVENUES										
General Consumers										
at approved rates	1 331	1 361	1 374	1 390	1 404	1 424	1 447	1 462	1 485	1 506
additional*	0	48	104	165	228	297	371	447	531	619
Extraprovincial	357	344	343	380	406	435	441	464	711	839
Other	14	15	15	15	15	16	16	16	17	17
	<u>1 702</u>	<u>1 768</u>	<u>1 836</u>	<u>1 950</u>	<u>2 054</u>	<u>2 172</u>	<u>2 274</u>	<u>2 390</u>	<u>2 743</u>	<u>2 981</u>
EXPENSES										
Operating and Administrative	455	471	544	556	567	590	601	617	639	653
Finance Expense	452	444	492	524	586	656	767	781	1 001	1 097
Depreciation and Amortization	399	430	372	391	410	447	494	508	580	619
Water Rentals and Assessments	117	116	112	112	112	112	112	113	121	126
Fuel and Power Purchased	143	166	179	191	206	221	230	231	253	264
Capital and Other Taxes	88	96	101	110	119	129	136	143	149	158
Corporate Allocation	9	9	8	8	8	8	8	8	8	8
	<u>1 664</u>	<u>1 732</u>	<u>1 808</u>	<u>1 892</u>	<u>2 009</u>	<u>2 163</u>	<u>2 349</u>	<u>2 401</u>	<u>2 753</u>	<u>2 926</u>
Non-controlling Interest	14	24	21	16	13	10	6	3	4	(3)
Net Income	<u>53</u>	<u>60</u>	<u>50</u>	<u>73</u>	<u>57</u>	<u>19</u>	<u>(68)</u>	<u>(9)</u>	<u>(7)</u>	<u>52</u>
* Additional General Consumers Revenue										
Percent Increase	0.00%	3.50%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%
Cumulative Percent Increase	0.00%	3.50%	7.59%	11.84%	16.26%	20.85%	25.62%	30.58%	35.74%	41.10%
Financial Ratios										
Equity	25%	22%	17%	15%	14%	13%	12%	11%	10%	10%
Interest Coverage	1.09	1.10	1.07	1.09	1.06	1.02	0.94	0.99	0.99	1.04
Capital Coverage	1.09	0.89	0.77	0.90	1.21	1.37	1.11	1.53	1.49	1.61

ELECTRIC OPERATIONS (MH12)
PROJECTED OPERATING STATEMENT
 (In Millions of Dollars)

For the year ended March 31

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
REVENUES										
General Consumers										
at approved rates	1 529	1 552	1 575	1 598	1 621	1 644	1 669	1 693	1 717	1 741
additional*	713	814	921	1 035	1 155	1 283	1 419	1 564	1 716	1 878
Extraprovincial	873	863	851	937	1 209	1 288	1 304	1 312	1 331	1 341
Other	17	18	18	18	19	19	19	20	20	21
	<u>3 133</u>	<u>3 246</u>	<u>3 366</u>	<u>3 588</u>	<u>4 003</u>	<u>4 234</u>	<u>4 411</u>	<u>4 588</u>	<u>4 784</u>	<u>4 980</u>
EXPENSES										
Operating and Administrative	667	681	696	727	741	757	775	789	805	823
Finance Expense	1 087	1 086	1 076	1 193	1 440	1 622	1 589	1 546	1 552	1 482
Depreciation and Amortization	630	637	645	690	770	828	837	849	880	893
Water Rentals and Assessments	128	127	126	134	147	151	151	151	152	153
Fuel and Power Purchased	278	292	318	281	277	291	304	318	328	341
Capital and Other Taxes	167	176	183	188	192	193	196	198	203	203
Corporate Allocation	8	8	8	8	8	8	8	8	7	7
	<u>2 964</u>	<u>3 008</u>	<u>3 052</u>	<u>3 220</u>	<u>3 575</u>	<u>3 850</u>	<u>3 860</u>	<u>3 859</u>	<u>3 926</u>	<u>3 901</u>
Non-controlling Interest	(5)	(10)	(13)	(9)	(11)	(14)	(16)	(20)	(22)	(25)
Net Income	<u>163</u>	<u>228</u>	<u>301</u>	<u>358</u>	<u>418</u>	<u>370</u>	<u>534</u>	<u>710</u>	<u>835</u>	<u>1 054</u>
* Additional General Consumers Revenue										
Percent Increase	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%
Cumulative Percent Increase	46.68%	52.47%	58.49%	64.75%	71.26%	78.03%	85.06%	92.37%	99.97%	107.86%
Financial Ratios										
Equity	10%	10%	11%	12%	13%	14%	16%	18%	20%	24%
Interest Coverage	1.11	1.15	1.19	1.22	1.25	1.22	1.32	1.44	1.53	1.70
Capital Coverage	1.63	1.75	1.91	2.21	2.80	2.47	2.60	2.77	2.88	3.80

ELECTRIC OPERATIONS (MH12)
PROJECTED BALANCE SHEET
 (In Millions of Dollars)

For the year ended March 31

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
ASSETS										
Plant in Service	15 374	16 435	17 104	18 255	18 807	22 348	22 781	25 825	29 899	30 432
Accumulated Depreciation	(5 173)	(5 536)	(5 856)	(6 223)	(6 622)	(7 064)	(7 553)	(8 057)	(8 632)	(9 248)
Net Plant in Service	10 201	10 899	11 248	12 032	12 185	15 285	15 228	17 769	21 267	21 184
Construction in Progress	2 108	2 878	4 198	5 128	6 794	5 439	6 879	5 422	3 038	4 821
Current and Other Assets	1 869	1 735	1 391	1 578	1 790	2 027	1 844	1 974	2 059	1 725
Goodwill and Intangible Assets	180	165	150	134	123	113	105	98	92	88
Regulated Assets	231	225	-	-	-	-	-	-	-	-
	14 590	15 902	16 988	18 873	20 892	22 864	24 056	25 262	26 456	27 816
LIABILITIES AND EQUITY										
Long-Term Debt	9 428	11 199	12 741	14 614	16 304	18 077	19 972	20 739	22 062	23 412
Current and Other Liabilities	2 086	1 569	1 743	1 726	2 032	2 233	1 610	2 073	1 966	1 945
Contributions in Aid of Construction	336	345	350	355	359	369	375	382	389	396
Retained Earnings	2 442	2 502	2 295	2 368	2 425	2 444	2 376	2 368	2 361	2 413
Accumulated Other Comprehensive Income	299	287	(142)	(189)	(228)	(259)	(278)	(298)	(321)	(349)
	14 590	15 902	16 988	18 873	20 892	22 864	24 056	25 262	26 456	27 816
Equity Ratio	25%	22%	17%	15%	14%	13%	12%	11%	10%	10%

ELECTRIC OPERATIONS (MH12)
PROJECTED BALANCE SHEET
 (In Millions of Dollars)

For the year ended March 31

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
ASSETS										
Plant in Service	30 962	31 525	32 212	37 906	43 040	44 544	45 284	45 838	47 824	48 551
Accumulated Depreciation	(9 876)	(10 512)	(11 157)	(11 848)	(12 618)	(13 446)	(14 284)	(15 135)	(16 016)	(16 911)
Net Plant in Service	21 086	21 013	21 055	26 059	30 422	31 098	31 000	30 703	31 808	31 640
Construction in Progress	6 576	8 048	9 200	5 077	1 364	737	1 070	1 513	464	539
Current and Other Assets	1 802	2 215	2 362	2 205	2 492	2 880	3 337	3 663	3 749	4 896
Goodwill and Intangible Assets	85	83	82	82	81	80	79	78	77	76
Regulated Assets	-	-	-	-	-	-	-	-	-	-
	29 548	31 359	32 699	33 422	34 359	34 794	35 486	35 957	36 099	37 151
LIABILITIES AND EQUITY										
Long-Term Debt	25 414	27 217	27 770	28 572	28 974	29 115	29 066	28 369	28 358	27 931
Current and Other Liabilities	1 520	1 293	1 771	1 325	1 436	1 352	1 551	2 001	1 310	1 726
Contributions in Aid of Construction	403	411	418	426	433	441	449	457	466	474
Retained Earnings	2 576	2 804	3 105	3 463	3 881	4 251	4 785	5 495	6 330	7 384
Accumulated Other Comprehensive Income	(365)	(365)	(365)	(365)	(365)	(365)	(365)	(365)	(365)	(365)
	29 548	31 359	32 699	33 422	34 359	34 794	35 486	35 957	36 099	37 151
Equity Ratio	10%	10%	11%	12%	13%	14%	16%	18%	20%	24%

ELECTRIC OPERATIONS (MH12)
PROJECTED CASH FLOW STATEMENT
 (In Millions of Dollars)

For the year ended March 31

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
OPERATING ACTIVITIES										
Cash Receipts from Customers	1 692	1 768	1 836	1 950	2 054	2 172	2 274	2 390	2 743	2 981
Cash Paid to Suppliers and Employees	(782)	(822)	(909)	(941)	(975)	(1 020)	(1 047)	(1 069)	(1 126)	(1 162)
Interest Paid	(466)	(476)	(509)	(556)	(608)	(700)	(816)	(826)	(1 050)	(1 144)
Interest Received	28	17	24	26	31	39	41	39	35	32
	<u>472</u>	<u>486</u>	<u>442</u>	<u>478</u>	<u>502</u>	<u>491</u>	<u>453</u>	<u>533</u>	<u>602</u>	<u>707</u>
FINANCING ACTIVITIES										
Proceeds from Long-Term Debt	1 036	1 970	1 760	2 190	2 180	2 580	2 190	1 390	1 980	1 790
Sinking Fund Withdrawals	129	393	102	26	-	16	416	187	269	676
Retirement of Long-Term Debt	(180)	(808)	(176)	(312)	(347)	(530)	(829)	(306)	(635)	(679)
Other	(42)	(7)	(17)	(19)	(17)	(13)	(24)	(13)	(34)	(9)
	<u>943</u>	<u>1 548</u>	<u>1 670</u>	<u>1 886</u>	<u>1 817</u>	<u>2 053</u>	<u>1 753</u>	<u>1 258</u>	<u>1 580</u>	<u>1 777</u>
INVESTING ACTIVITIES										
Property, Plant and Equipment, net of contributions	(1 381)	(1 922)	(2 028)	(2 083)	(2 214)	(2 174)	(1 863)	(1 666)	(1 799)	(2 299)
Sinking Fund Payment	(107)	(208)	(124)	(188)	(166)	(227)	(219)	(224)	(248)	(343)
Other	(21)	(20)	(21)	(20)	(32)	(42)	(28)	(28)	(33)	(38)
	<u>(1 509)</u>	<u>(2 151)</u>	<u>(2 173)</u>	<u>(2 291)</u>	<u>(2 412)</u>	<u>(2 443)</u>	<u>(2 111)</u>	<u>(1 919)</u>	<u>(2 080)</u>	<u>(2 679)</u>
Net Increase (Decrease) in Cash	(94)	(117)	(62)	73	(94)	101	96	(128)	102	(195)
Cash at Beginning of Year	43	(51)	(168)	(230)	(157)	(251)	(150)	(54)	(182)	(80)
Cash at End of Year	<u>(51)</u>	<u>(168)</u>	<u>(230)</u>	<u>(157)</u>	<u>(251)</u>	<u>(150)</u>	<u>(54)</u>	<u>(182)</u>	<u>(80)</u>	<u>(275)</u>

ELECTRIC OPERATIONS (MH12)
PROJECTED CASH FLOW STATEMENT
 (In Millions of Dollars)

For the year ended March 31

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
OPERATING ACTIVITIES										
Cash Receipts from Customers	3 133	3 246	3 366	3 588	4 003	4 234	4 411	4 588	4 784	4 980
Cash Paid to Suppliers and Employees	(1 198)	(1 233)	(1 276)	(1 281)	(1 305)	(1 337)	(1 368)	(1 394)	(1 422)	(1 450)
Interest Paid	(1 115)	(1 101)	(1 108)	(1 239)	(1 490)	(1 689)	(1 668)	(1 640)	(1 661)	(1 567)
Interest Received	18	19	29	34	42	57	73	81	92	73
	<u>837</u>	<u>932</u>	<u>1 011</u>	<u>1 102</u>	<u>1 251</u>	<u>1 265</u>	<u>1 448</u>	<u>1 635</u>	<u>1 793</u>	<u>2 037</u>
FINANCING ACTIVITIES										
Proceeds from Long-Term Debt	1 970	1 780	990	790	390	190	190	(50)	(10)	(10)
Sinking Fund Withdrawals	156	-	-	450	-	-	60	250	700	13
Retirement of Long-Term Debt	(432)	-	-	(450)	-	-	(60)	(220)	(700)	(13)
Other	(1)	(0)	(1)	(1)	(0)	0	2	2	3	(16)
	<u>1 693</u>	<u>1 780</u>	<u>989</u>	<u>789</u>	<u>390</u>	<u>190</u>	<u>192</u>	<u>(18)</u>	<u>(7)</u>	<u>(26)</u>
INVESTING ACTIVITIES										
Property, Plant and Equipment, net of contributions	(2 268)	(2 018)	(1 822)	(1 553)	(1 403)	(858)	(1 054)	(977)	(918)	(781)
Sinking Fund Payment	(249)	(269)	(295)	(317)	(316)	(334)	(348)	(359)	(361)	(341)
Other	(29)	(32)	(25)	(25)	(28)	(26)	(26)	(26)	(26)	(26)
	<u>(2 546)</u>	<u>(2 319)</u>	<u>(2 142)</u>	<u>(1 896)</u>	<u>(1 746)</u>	<u>(1 217)</u>	<u>(1 428)</u>	<u>(1 362)</u>	<u>(1 305)</u>	<u>(1 148)</u>
Net Increase (Decrease) in Cash	(16)	393	(141)	(5)	(106)	238	211	254	481	862
Cash at Beginning of Year	(275)	(291)	102	(39)	(44)	(150)	89	300	555	1 036
Cash at End of Year	<u>(291)</u>	<u>102</u>	<u>(39)</u>	<u>(44)</u>	<u>(150)</u>	<u>89</u>	<u>300</u>	<u>555</u>	<u>1 036</u>	<u>1 898</u>

3

February 2014

Integrated Financial Forecast (IFF13)

2013/14 - 2032/33



Financial Planning
Finance & Regulatory



CONSOLIDATED INTEGRATED FINANCIAL FORECAST (IFF13)

KEY FINANCIAL RESULTS

(Dollars are in millions)

	Actual	IFF13 Forecast			
	2012/13	2013/14	2014/15	2015/16	2022/23
PROJECTED RATE INCREASES					
- ELECTRIC	4.50% ¹	3.50% ²	3.95%	3.95%	3.95%
- GAS (non-commodity)	-	1.07%	-	0.50%	0.00%
NET INCOME					
- ELECTRIC	\$ 78	\$ 116	\$ 55	\$ 12	\$ 6
- GAS	8	12	1	4	3
- SUBSIDIARIES	6	8	6	8	12
CAPITAL EXPENDITURES					
- ELECTRIC	\$ 1 033	\$ 1 597	\$ 2 013	\$ 2 422	\$ 2 280
- GAS	39	49	48	61	38
DEBT/EQUITY RATIO	75:25	76:24	78:22	82:18	89:11
INTEREST COVERAGE RATIO	1.15	1.22	1.09	1.03	1.01
CAPITAL COVERAGE RATIO (excl. major new generation & transmission)	1.25	1.06	0.87	0.80	1.52
RETAINED EARNINGS	\$2 542	\$ 2 678	\$ 2 739	\$ 2 705	\$2 575

¹ Includes a 2.0% rate increase effective April 1, 2012 and a 2.5% rate increase effective September 1, 2012.

² The 3.5% rate increase was implemented effective May 1, 2013. In accordance with PUB Order 43/13, 1.5% of the rate increase will be accrued to a deferral account to be utilized to mitigate the anticipated rate impact when Bipole III is placed in-service.

EXECUTIVE SUMMARY

The Consolidated Integrated Financial Forecast (IFF13) projects Manitoba Hydro's financial results and financial position for the 20-year period from 2013/14 to 2032/33. Segmented forecasts are also provided for the electricity (MH13), natural gas (CGM13), and corporate subsidiaries (CS13).

Financial results projected in IFF13 are less favourable than the financial results projected in IFF12. The projection of less favourable results is largely attributable to the following:

- Lower projected net revenue (\$1.0 billion) due to lower projected domestic Manitoba load somewhat offset by higher net extra-provincial revenue; and
- Higher projected capital costs (\$1.6 billion) due to the one year deferral of the Conawapa Generating Station, the re-instatement of Electric and Gas demand side management costs in the capital forecast and the update of a number of project cost estimates.

IFF13 includes further internal cost constraint provisions to mitigate the rate pressures as a result of the reduction in net revenue and capital requirements. These initiatives assist in offsetting the incremental rate impacts and therefore the projected even annual electric rate increases in IFF13 for each year up to 2031/32 are the same as projected in IFF12 at 3.95%, with one more additional year of 3.95% in 2032/33.

Consistent with IFF12, the equity ratio is reduced from the current 24% level to 11% equity by 2021/22 before gradually beginning to recover to reach the 25% equity target by 2033/34. This represents a two year deferral in attaining the 25% equity target compared to IFF12.

The other key financial targets – interest coverage and capital coverage – are also below target for several years but recover to the target range within the later years of the 20 year forecast.

Notwithstanding the changes in the projected financial results, Manitoba Hydro's proposed major capital expansion program remains as the best plan to meet the future electricity requirements of the Province in the most reliable, economic and environmentally sustainable way. While rate increases that are higher than inflation will be necessary to maintain a reasonable financial structure, the revenue generated by those rate increases will, in part, represent an investment in the future of the Province. This investment will pay dividends to current and future generations of Manitobans over the approximate 100-year service lives of the new generation and transmission facilities.

Also contributing to the need for higher rate increases is the requirement to replace distribution, transmission and substation assets that were installed up to 60 years ago. The aging infrastructure issue is facing all utilities in North America and is resulting in considerably higher rate increases than are being projected in Manitoba. For this reason, even with the rate increases being projected in IFF13, it is expected that

CONSOLIDATED INTEGRATED FINANCIAL FORECAST (IFF13)

Manitoba Hydro will maintain its status as having the lowest overall rate structure in North America.

The following is a summary of projected net income and key financial ratios over the 20-year period to 2032/33:

Years Ending March 31	Electric Rate Increases	Net Income	Retained Earnings	Debt / Equity	Interest Coverage	Capital Coverage
		(Millions)				
2014	-	\$136	\$2 678	76:24	1.22	1.06
2015	3.95%	62	2 739	78:22	1.09	0.87
2016	3.95%	24	2 705	82:18	1.03	0.80
2017	3.95%	31	2 736	84:16	1.03	0.87
2018	3.95%	(0)	2 736	85:15	1.00	1.17
2019	3.95%	(55)	2 681	86:14	0.95	1.07
2020	3.95%	(19)	2 662	87:13	0.98	1.18
2021	3.95%	(62)	2 600	88:12	0.95	1.20
2022	3.95%	(45)	2 555	89:11	0.97	1.35
2023	3.95%	20	2 575	89:11	1.01	1.52
2024	3.95%	82	2 658	89:11	1.05	1.68
2025	3.95%	148	2 806	89:11	1.09	1.79
2026	3.95%	184	2 990	89:11	1.10	1.86
2027	3.95%	297	3 287	89:11	1.16	2.14
2028	3.95%	293	3 579	88:12	1.15	2.27
2029	3.95%	275	3 854	87:13	1.14	2.32
2030	3.95%	425	4 280	86:14	1.22	2.59
2031	3.95%	550	4 830	84:16	1.29	2.81
2032	3.95%	760	5 589	82:18	1.42	3.18
2033	3.95%	970	6 560	78:22	1.56	3.53

1.0 INTRODUCTION

The Consolidated Integrated Financial Forecast (IFF13) provides projections of Manitoba Hydro's financial results and financial position for the 20-year period from 2013/14 to 2032/33. Its purpose is to project the Corporation's long-term financial direction and to serve as a baseline for the evaluation of Corporate Strategic Initiatives.

The detailed forecasts in the first two years of the IFF are used for monthly reporting and variance analysis. The IFF serves as the primary forecast to determine the need for rate increases that are necessary for the Corporation to attain its financial targets and objectives.

The forecast is the culmination of an extensive integrated planning cycle at Manitoba Hydro. It is based on the best available information at the time it is prepared and includes forward looking information that incorporates expectations, estimates and assumptions concerning the future which are subject to change. Key inputs to the Integrated Financial Forecast include:

- Economic Outlook
- Energy Price Outlook
- Electricity Export Price Forecast
- Power Smart Plan
- Electric Load Forecast
- Natural Gas Volume Forecast
- Domestic Revenue Forecast
- Power Resource Plan
- Generation Costs and Interchange Revenue Forecast
- Capital Expenditure Forecast
- Operating, Maintenance & Administrative Expense Forecast

This forecast supersedes the 2012 Integrated Financial Forecast (IFF12) which was finalized in November of 2012.

2.0 RATES and ECONOMIC VARIABLES

2.1 Electricity Rates

In accordance with Manitoba Public Utilities Board (PUB) Order 43/13, IFF13 assumes that 1.5% of the 3.5% Electric rate increase that was approved effective May 1, 2013 will be accrued to a deferral account to be utilized to mitigate the anticipated rate impact when Bipole III is placed in service. IFF13 further assumes that the 1.5% of the rate increase will continue to accrue until the time when Bipole III is placed in service (October 2017) and that the cumulative amount in this deferral account will be

CONSOLIDATED INTEGRATED FINANCIAL FORECAST (IFF13)

16.0 ELECTRIC OPERATIONS FINANCIAL FORECAST (MH13)

ELECTRIC OPERATIONS (MH13)
PROJECTED OPERATING STATEMENT
(In Millions of Dollars)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
REVENUES										
General Consumers at approved rates additional*	1 396	1 408	1 423	1 438	1 452	1 471	1 490	1 508	1 528	1 548
BPIII Reserve Account	0	56	115	177	243	314	390	470	555	646
Extraprovincial	(18)	(21)	(22)	(23)	(13)	0	0	0	0	0
Other	408	383	362	390	441	448	484	760	862	880
	13	13	13	14	14	14	14	15	15	15
	1 799	1 838	1 890	1 995	2 138	2 247	2 378	2 753	2 960	3 089
EXPENSES										
Operating and Administrative Finance Expense	485	494	542	548	567	574	586	612	620	633
Depreciation and Amortization	437	499	514	567	657	784	838	1 105	1 195	1 195
Water Rentals and Assessments	415	440	437	448	485	499	521	600	667	675
Fuel and Power Purchased	125	123	111	111	112	111	113	124	127	127
Capital and Other Taxes	144	142	174	189	203	214	217	250	265	273
Corporate Allocation	93	101	109	121	131	134	135	136	138	168
	9	9	9	9	9	9	9	9	9	9
	1 707	1 807	1 896	1 992	2 163	2 324	2 417	2 835	3 020	3 081
Non-controlling Interest	24	24	18	16	13	10	8	7	0	(2)
Net Income	116	55	12	19	(12)	(67)	(31)	(75)	(60)	6
* Additional General Consumers Revenue										
Percent Increase	0.00%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%
Cumulative Percent Increase	0.00%	3.95%	8.06%	12.32%	16.76%	21.37%	26.17%	31.15%	36.33%	41.72%

CONSOLIDATED INTEGRATED FINANCIAL FORECAST (IFF13)
ELECTRIC OPERATIONS (MH13)
PROJECTED OPERATING STATEMENT
(In Millions of Dollars)

For the year ended March 31

REVENUES

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
General Consumers at approved rates	1 568	1 588	1 609	1 629	1 649	1 672	1 694	1 715	1 737	1 758
additional*	742	844	952	1 067	1 188	1 317	1 454	1 599	1 751	1 913
BPill Reserve Account	0	0	0	0	0	0	0	0	0	0
Extraprovincial	881	867	795	976	1 238	1 344	1 342	1 342	1 358	1 360
Other	16	16	16	16	17	17	17	18	18	19
	3 206	3 315	3 373	3 688	4 091	4 350	4 507	4 674	4 865	5 050

EXPENSES

Operating and Administrative	646	660	673	705	720	735	748	762	778	794
Finance Expense	1 210	1 210	1 204	1 325	1 623	1 801	1 772	1 784	1 724	1 670
Depreciation and Amortization	679	684	694	741	829	886	895	911	918	921
Water Rentals and Assessments	127	127	127	135	148	151	151	152	153	153
Fuel and Power Purchased	284	300	298	283	271	291	301	299	311	321
Capital and Other Taxes	178	185	194	200	204	206	208	208	212	211
Corporate Allocation	9	9	9	9	9	9	9	7	6	6
	3 132	3 175	3 197	3 397	3 803	4 079	4 083	4 123	4 102	4 075
Non-controlling Interest	(6)	(8)	(8)	(10)	(11)	(13)	(16)	(18)	(20)	(23)
Net Income	68	133	168	281	277	259	408	532	742	952

* Additional General Consumers Revenue
Percent Increase
Cumulative Percent Increase

3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%
47.31%	53.13%	59.18%	65.47%	72.01%	78.80%	85.86%	93.20%	100.84%	108.77%	

CONSOLIDATED INTEGRATED FINANCIAL FORECAST (IFF13)
ELECTRIC OPERATIONS (MH13)
PROJECTED BALANCE SHEET
(In Millions of Dollars)

	<i>For the year ended March 31</i>										
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	
ASSETS											
Plant in Service	16 237	17 381	18 305	19 095	22 681	23 407	26 910	30 963	31 516	31 998	
Accumulated Depreciation	(5 434)	(5 814)	(6 168)	(6 564)	(7 003)	(7 508)	(8 019)	(8 609)	(9 236)	(9 875)	
Net Plant in Service	10 803	11 568	12 137	12 531	15 677	15 900	18 891	22 355	22 280	22 124	
Construction in Progress	2 425	3 296	4 743	6 454	5 200	6 525	4 779	1 967	3 154	4 978	
Current and Other Assets	1 649	1 669	1 534	1 742	2 172	2 055	2 375	2 440	2 057	2 111	
Goodwill and Intangible Assets	188	172	154	139	127	118	107	96	87	81	
Regulated Assets	220	213	203	190	180	169	159	149	142	134	
	15 285	16 918	18 770	21 056	23 357	24 767	26 310	27 007	27 720	29 428	
LIABILITIES AND EQUITY											
Long-Term Debt	10 464	11 904	14 123	16 197	17 426	19 926	21 298	22 231	23 207	24 903	
Current and Other Liabilities	1 653	1 760	1 726	1 870	2 890	1 848	2 093	1 978	1 795	1 805	
Contributions in Aid of Construction	362	372	382	391	401	413	425	437	449	462	
BPill Reserve Account	18	40	62	85	98	65	33	-	-	-	
Retained Earnings	2 584	2 638	2 592	2 611	2 599	2 533	2 502	2 427	2 366	2 372	
Accumulated Other Comprehensive Income	204	204	(115)	(98)	(57)	(19)	(41)	(66)	(97)	(114)	
	15 285	16 918	18 770	21 056	23 357	24 767	26 310	27 007	27 720	29 428	

CONSOLIDATED INTEGRATED FINANCIAL FORECAST (IFF13)
ELECTRIC OPERATIONS (MH13)
PROJECTED BALANCE SHEET
(In Millions of Dollars)

	<i>For the year ended March 31</i>										
	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	
ASSETS											
Plant in Service	32 572	33 228	33 848	40 307	44 992	46 716	47 170	49 034	49 786	50 231	
Accumulated Depreciation	(10 520)	(11 173)	(11 836)	(12 546)	(13 347)	(14 206)	(15 074)	(15 960)	(16 853)	(17 749)	
Net Plant in Service	22 052	22 055	22 012	27 760	31 645	32 510	32 095	33 074	32 933	32 482	
Construction in Progress	6 748	8 235	9 645	5 009	1 707	1 065	1 525	472	382	553	
Current and Other Assets	2 348	2 583	2 493	2 700	3 015	3 250	3 556	3 477	4 454	5 669	
Goodwill and Intangible Assets	77	72	68	63	58	54	49	45	40	36	
Regulated Assets	129	123	119	112	107	103	100	99	98	98	
	<u>31 353</u>	<u>33 069</u>	<u>34 336</u>	<u>35 645</u>	<u>36 533</u>	<u>36 982</u>	<u>37 325</u>	<u>37 166</u>	<u>37 906</u>	<u>38 837</u>	
LIABILITIES AND EQUITY											
Long-Term Debt	27 097	28 251	29 854	30 857	31 399	31 381	30 853	30 843	30 847	30 660	
Current and Other Liabilities	1 456	1 874	1 360	1 376	1 434	1 632	2 084	1 392	1 378	1 538	
Contributions in Aid of Construction	475	488	501	514	527	540	553	567	581	596	
BP/III Reserve Account	-	-	-	-	-	-	-	-	-	-	
Retained Earnings	2 440	2 572	2 741	3 022	3 299	3 558	3 967	4 499	5 241	6 193	
Accumulated Other Comprehensive Income	(114)	(117)	(120)	(123)	(126)	(129)	(132)	(135)	(141)	(150)	
	<u>31 353</u>	<u>33 069</u>	<u>34 336</u>	<u>35 645</u>	<u>36 533</u>	<u>36 982</u>	<u>37 325</u>	<u>37 166</u>	<u>37 906</u>	<u>38 837</u>	

CONSOLIDATED INTEGRATED FINANCIAL FORECAST (IFF13)
ELECTRIC OPERATIONS (MH13)
PROJECTED CASH FLOW STATEMENT
(In Millions of Dollars)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
For the year ended March 31										
OPERATING ACTIVITIES										
Cash Receipts from Customers	1 818	1 859	1 913	2 019	2 151	2 247	2 378	2 753	2 960	3 089
Cash Paid to Suppliers and Employees	(809)	(817)	(902)	(932)	(971)	(988)	(1 003)	(1 072)	(1 097)	(1 147)
Interest Paid	(491)	(506)	(534)	(582)	(688)	(819)	(868)	(1 157)	(1 251)	(1 222)
Interest Received	26	13	16	23	34	37	35	32	29	16
	544	549	493	528	525	478	542	555	640	735
FINANCING ACTIVITIES										
Proceeds from Long-Term Debt	1 316	1 740	2 570	2 390	2 590	2 800	2 000	1 590	1 390	1 970
Sinking Fund Withdrawals	410	103	16	-	13	412	186	270	670	155
Retirement of Long-Term Debt	(610)	(217)	(312)	(336)	(330)	(1 442)	(305)	(633)	(673)	(431)
Other	(116)	(11)	(12)	(12)	(11)	(22)	(11)	(57)	15	(6)
	1 000	1 616	2 261	2 043	2 261	1 748	1 870	1 170	1 402	1 688
INVESTING ACTIVITIES										
Property, Plant and Equipment, net of contributions	(1 578)	(2 039)	(2 439)	(2 511)	(2 413)	(2 074)	(2 061)	(1 352)	(1 735)	(2 300)
Sinking Fund Payment	(194)	(114)	(184)	(159)	(224)	(218)	(225)	(245)	(338)	(245)
Other	(14)	(21)	(21)	(21)	(21)	(35)	(30)	(30)	(30)	(30)
	(1 786)	(2 175)	(2 644)	(2 691)	(2 658)	(2 326)	(2 315)	(1 627)	(2 103)	(2 574)
Net Increase (Decrease) in Cash	(243)	(10)	111	(120)	128	(101)	97	99	(61)	(151)
Cash at Beginning of Year	25	(218)	(227)	(117)	(237)	(109)	(209)	(112)	(14)	(74)
Cash at End of Year	(218)	(227)	(117)	(237)	(109)	(209)	(112)	(14)	(74)	(225)

CONSOLIDATED INTEGRATED FINANCIAL FORECAST (IFF13)
ELECTRIC OPERATIONS (MH13)
PROJECTED CASH FLOW STATEMENT
(In Millions of Dollars)

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
For the year ended March 31										
OPERATING ACTIVITIES										
Cash Receipts from Customers	3 206	3 315	3 373	3 688	4 091	4 350	4 507	4 674	4 865	5 050
Cash Paid to Suppliers and Employees	(1 177)	(1 211)	(1 227)	(1 256)	(1 273)	(1 311)	(1 331)	(1 341)	(1 369)	(1 390)
Interest Paid	(1 218)	(1 234)	(1 233)	(1 370)	(1 691)	(1 888)	(1 870)	(1 904)	(1 820)	(1 785)
Interest Received	17	26	32	42	59	78	87	101	82	102
	828	897	945	1 105	1 186	1 229	1 393	1 530	1 758	1 976
FINANCING ACTIVITIES										
Proceeds from Long-Term Debt	2 190	1 580	1 590	980	590	180	160	(10)	(20)	(50)
Sinking Fund Withdrawals	29	-	437	-	-	60	250	700	13	30
Retirement of Long-Term Debt	(290)	-	(450)	-	-	(60)	(220)	(700)	(13)	-
Other	1	1	0	1	1	1	2	3	(16)	(16)
	1 931	1 581	1 577	981	591	181	192	(7)	(36)	(36)
INVESTING ACTIVITIES										
Property, Plant and Equipment, net of contributions	(2 338)	(2 135)	(2 021)	(1 812)	(1 372)	(1 070)	(901)	(798)	(650)	(603)
Sinking Fund Payment	(265)	(294)	(321)	(326)	(350)	(370)	(384)	(388)	(368)	(382)
Other	(30)	(30)	(26)	(26)	(26)	(26)	(26)	(27)	(27)	(27)
	(2 633)	(2 459)	(2 368)	(2 164)	(1 749)	(1 466)	(1 312)	(1 213)	(1 045)	(1 013)
Net Increase (Decrease) in Cash	125	19	154	(78)	28	(56)	273	310	677	928
Cash at Beginning of Year	(225)	(100)	(81)	73	(6)	23	(33)	240	550	1 228
Cash at End of Year	(100)	(81)	73	(6)	23	(33)	240	550	1 228	2 155

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Needs For and Alternatives To
Appendix 11.4 Pro Forma Financial Statements
 K19 Sales C25 750 MW
 Economics:REF Rev:REF Cap:REF
 Development Plan Scenario
 Development Plan Scenario
 ELECTRIC OPERATIONS
 PROJECTED OPERATING STATEMENT
 In Millions of Dollars

	For the year ended March 31																										
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037		
REVENUES																											
General Consumers Revenue at approved rates	1 331	1 361	1 374	1 390	1 404	1 424	1 447	1 462	1 485	1 506	1 529	1 552	1 575	1 598	1 621	1 644	1 669	1 693	1 717	1 741	1 765	1 790	1 814	1 838	1 862	1 882	
Additional General Consumers Revenue	-	48	104	164	228	297	370	447	530	619	713	814	921	1 034	1 154	1 282	1 418	1 562	1 715	1 876	1 057	1 076	1 123	1 157	1 211	1 211	
Extrajurisdictional	357	344	333	370	388	412	402	439	473	517	569	629	695	765	834	904	974	1 044	1 114	1 184	1 254	1 324	1 394	1 464	1 534	1 604	
Other	14	15	15	15	15	16	16	16	17	17	17	18	18	18	19	19	19	20	20	21	21	21	22	22	23	23	
Total Revenue	1 702	1 768	1 826	1 939	2 035	2 148	2 236	2 364	2 745	2 959	3 088	3 191	3 309	3 484	3 892	4 110	4 280	4 443	4 628	4 818	4 020	4 060	4 110	4 131	4 178	4 178	
EXPENSES																											
Operating and Administrative	455	471	546	559	570	593	605	621	678	690	703	716	730	760	773	788	804	817	832	849	866	887	905	924	945	945	
Finance Expense	452	442	491	519	572	638	774	783	969	1 083	1 075	1 083	1 077	1 182	1 403	1 584	1 553	1 515	1 523	1 459	1 413	1 407	1 412	1 408	1 394	1 394	
Depreciation and Amortization	359	450	372	391	400	412	456	461	518	555	559	558	561	600	668	721	724	712	758	766	764	768	764	764	764	764	
Water Rentals and Assessments	117	116	112	112	114	112	114	114	114	114	114	114	114	114	114	114	114	114	114	114	114	114	114	114	114	114	
Fuel and Power Purchases	143	166	107	109	109	119	132	147	142	149	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	
Capital and Other Taxes	89	9	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	
Corporate Allocation	9	9	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	
Total Expenses	1 663	1 729	1 798	1 877	1 978	2 121	2 297	2 395	2 688	2 959	2 887	2 924	2 955	3 105	3 428	3 700	3 701	3 695	3 756	3 728	3 709	3 739	3 801	3 821	3 820	3 820	
Net Income	(14)	(24)	(23)	(17)	(14)	(13)	(9)	(9)	(7)	1	3	7	9	5	7	9	11	14	16	18	20	22	24	25	26	26	
Additional General Consumers Revenue Percent Increase	0.00%	3.50%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	-23.04%	0.14%	1.12%	0.63%	1.30%	1.30%		
Cumulative General Consumers Revenue Percent Increase	0.00%	3.50%	7.59%	11.83%	16.52%	20.83%	25.60%	30.56%	35.72%	41.07%	46.66%	52.43%	58.45%	64.70%	71.20%	77.96%	84.98%	92.28%	99.87%	107.76%	59.89%	60.12%	61.90%	62.93%	65.05%		
Debt Ratio	76	78	84	85	86	87	88	89	89	90	90	89	88	87	86	85	83	81	78	75	74	73	72	71	70	70	
Interest Coverage Ratio	1.09	1.10	1.07	1.10	1.08	1.04	0.95	1.03	1.05	1.08	1.14	1.17	1.22	1.23	1.28	1.25	1.35	1.46	1.55	1.72	1.20	1.20	1.20	1.20	1.20		
Capital Coverage Ratio	1.09	0.90	0.77	0.90	1.21	1.36	1.08	1.55	1.52	1.57	1.58	1.66	1.84	2.07	2.67	2.33	2.45	2.61	2.72	3.61	1.84	1.59	1.54	1.48	1.42		

Needs For and Alternatives To
Appendix 11.4 Pro Forma Financial Statements
K19 Sales C25 750 MW
Economics:REF Rev:REF Cap:REF

Development Plan Scenario ELECTRIC OPERATIONS PROJECTED OPERATING STATEMENT In Millions of Dollars		For the year ended March 31																									
		2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	
REVENUES																											
General Consumers Revenue at approved rates		1 886	1 910	1 935	1 959	1 983	2 007	2 031	2 056	2 080	2 104	2 128	2 128	2 128	2 128	2 128	2 128	2 128	2 128	2 128	2 128	2 128	2 128	2 128	2 128	2 128	2 128
Additional General Consumers Revenue		1 260	1 275	1 310	1 345	1 430	1 526	1 559	1 609	1 712	1 844	1 868	1 852	1 871	1 868	2 001	2 027	2 108	2 077	2 131	2 128	2 165	2 144	2 170	2 207	2 228	2 256
Extraordinary		1 002	981	962	974	961	954	954	964	954	995	928	868	985	1 003	1 021	1 040	1 058	1 077	1 097	1 117	1 137	1 157	1 178	1 199	1 221	
Other		23	24	24	24	24	25	25	25	26	26	26	27	27	29	29	30	30	30	31	31	32	33	34	35	36	37
Total Revenue		4 171	4 190	4 231	4 302	4 399	4 513	4 594	4 655	4 758	4 911	4 952	4 977	5 013	5 129	5 181	5 225	5 326	5 369	5 385	5 443	5 443	5 443	5 490	5 549	5 591	5 641
EXPENSES																											
Operating and Administrative		956	987	1 010	1 032	1 052	1 087	1 113	1 146	1 174	1 210	1 240	1 259	1 300	1 331	1 364	1 385	1 418	1 439	1 460	1 482	1 504	1 504	1 526	1 549	1 564	1 588
Finance Expense		1 375	1 355	1 339	1 347	1 355	1 347	1 333	1 333	1 321	1 300	1 326	1 311	1 291	1 274	1 254	1 246	1 222	1 195	1 148	1 129	1 077	1 049	1 025	995	963	933
Depreciation and Amortization		834	838	844	857	872	845	822	822	815	805	792	784	777	764	752	737	727	716	704	691	678	664	651	638	625	611
Water Rentals and Assessments		335	330	335	336	336	336	336	336	336	336	336	336	336	336	336	336	336	336	336	336	336	336	336	336	336	336
Fuel and Power Purchases		317	320	325	328	328	328	328	328	328	328	328	328	328	328	328	328	328	328	328	328	328	328	328	328	328	328
Capital and Other Taxes		210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210
Capital Allocation		7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Total Expenses		3 863	3 884	3 924	3 993	4 098	4 200	4 248	4 337	4 438	4 588	4 635	4 653	4 702	4 817	4 871	4 918	5 021	5 068	5 094	5 154	5 162	5 212	5 273	5 319	5 373	
Net Income		28	30	32	34	36	38	41	43	45	47	49	49	50	51	53	53	54	55	57	59	59	61	63	64	66	69
Non-Controlling Interest		280	277	275	275	276	275	275	275	275	276	268	265	261	260	257	255	251	245	235	230	220	215	211	205		
Additional General Consumers Revenue Percent Increase		1.04%	-0.02%	0.58%	0.56%	2.27%	2.27%	0.23%	1.03%	2.28%	2.92%	0.05%	-0.39%	0.46%	2.43%	0.82%	0.63%	1.95%	0.55%	-0.08%	0.88%	-0.45%	0.59%	0.87%	0.48%	0.64%	
Cumulative General Consumers Revenue Percent Increase		66.78%	66.74%	67.70%	68.66%	72.12%	76.03%	76.43%	78.25%	82.33%	87.66%	87.76%	87.04%	87.89%	92.45%	94.02%	95.24%	99.04%	100.14%	99.98%	101.75%	100.76%	101.95%	103.21%	104.69%	106.00%	
Debt Ratio		69	69	68	67	67	66	65	65	64	63	63	62	61	60	59	58	57	56	55	54	53	52	50	49	48	
Interest Coverage Ratio		1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	
Capital Coverage Ratio		1.40	1.33	1.28	1.20	1.22	1.31	1.37	1.33	1.21	1.48	1.48	1.50	1.52	1.46	1.47	1.46	1.50	1.49	1.49	1.50	1.48	1.48	1.48	1.49	1.48	

Development Plan
Development Plan Scenario
ELECTRIC OPERATIONS
PROJECTED BALANCE SHEET
In Millions of Dollars

K19 Sales C25 750 MW
Economics:REF Rev:REF Cap:REF
Needs For and Alternatives To
Appendix 11.4 Pro Forma Financial Statements

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	
ASSETS																										
Plant in Service	15 374	16 436	17 108	18 261	18 821	22 520	22 947	25 701	29 723	30 257	30 788	31 353	32 042	37 329	42 227	43 649	44 399	44 951	46 932	47 662	48 943	49 688	50 210	50 754	52 076	
Accumulated Depreciation	5 173	5 536	5 856	6 223	6 612	7 028	7 482	7 998	8 450	8 997	9 552	10 107	10 666	11 264	11 990	12 650	13 373	14 108	14 861	15 626	16 390	17 157	17 948	18 743	19 545	
Net Plant in Service	10 201	10 900	11 251	12 038	12 209	15 492	15 465	17 702	21 273	21 259	21 237	21 246	21 376	26 065	30 237	30 999	31 021	30 848	32 072	32 035	31 954	32 532	32 262	32 011	32 532	
Construction in Progress	2 105	2 866	4 164	5 048	6 617	5 069	6 411	5 209	2 873	4 555	6 192	7 589	8 716	5 044	1 293	744	1 075	1 515	472	545	642	106	395	702	269	
Current and Other Assets	1 889	1 735	1 391	1 579	1 791	2 029	1 945	1 968	2 032	1 666	1 782	2 083	2 335	2 173	2 461	2 758	3 115	3 351	3 539	4 380	4 443	2 686	2 779	2 737	2 549	
Goodwill and Intangible Assets	180	165	151	136	128	116	140	147	231	224	218	214	210	207	203	199	186	192	188	185	181	177	174	170	166	
Regulated Assets	231	225	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	
Total Assets	14 587	15 890	16 958	18 802	20 742	22 707	23 861	25 086	26 409	27 735	29 430	31 133	32 637	33 488	34 235	34 700	35 406	35 906	36 671	37 145	37 220	35 511	35 610	35 621	35 516	
LIABILITIES AND EQUITY																										
Long Term Debt	9 289	11 240	12 802	14 474	16 170	17 762	19 438	20 404	21 727	23 077	25 080	26 482	27 235	28 608	28 239	28 380	28 231	27 634	27 623	27 286	25 199	23 671	22 920	22 521	21 573	
Current and Other Liabilities	2 231	1 503	1 659	1 795	2 007	2 381	1 904	2 140	2 092	1 986	1 401	1 523	1 921	1 590	1 690	1 586	1 766	2 219	1 531	1 751	3 724	3 315	3 800	3 915	4 465	
Contributions in Aid of Construction	325	334	339	344	348	358	364	371	378	385	392	400	407	415	422	430	438	446	455	463	472	482	492	502	512	
Retained Earnings	2 442	2 505	2 299	2 378	2 650	2 490	2 437	2 475	2 538	2 638	2 837	3 097	3 443	3 816	4 278	4 672	5 241	5 975	6 832	7 904	8 194	8 483	8 767	9 052	9 335	
Accumulated Other Comprehensive Income	299	282	(142)	(189)	(232)	(264)	(283)	(303)	(326)	(354)	(370)	(370)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	
Total Liabilities and Equity	14 587	15 890	16 958	18 802	20 742	22 707	23 861	25 086	26 409	27 735	29 430	31 133	32 637	33 488	34 235	34 700	35 406	35 906	36 671	37 145	37 220	35 511	35 610	35 621	35 516	

Development Plan
Development Plan Scenario
ELECTRIC OPERATIONS
PROJECTED BALANCE SHEET
In Millions of Dollars

K19 Sales C25 750 MW
Economics:REF Rev:REF Cap:REF
Needs For and Alternatives To
Appendix 11.4 Pro Forma Financial Statements

	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	
ASSETS																										
Plant in Service	52,660	53,263	54,262	55,013	57,700	58,375	59,079	61,113	62,510	63,579	64,597	65,298	67,994	69,231	70,603	71,980	73,389	74,915	76,463	77,836	79,198	80,623	82,045	83,525	85,359	
Accumulated Depreciation	20,378	21,215	22,059	22,917	23,792	24,735	25,688	26,658	27,674	28,719	29,781	30,866	31,966	33,152	34,364	35,580	36,874	38,207	39,575	40,985	42,417	43,888	45,405	46,966	48,570	
Net Plant in Service	32,282	32,048	32,202	32,096	33,908	33,640	33,392	34,455	34,836	34,859	34,816	34,432	36,028	36,079	36,240	36,400	36,515	36,708	36,889	36,850	36,781	36,735	36,641	36,559	36,788	
Construction in Progress	621	997	1,205	1,808	272	851	1,440	712	955	1,077	1,212	1,651	137	158	128	122	215	139	29	56	72	97	140	200	(89)	
Current and Other Assets	2,598	2,549	2,591	2,541	2,516	2,468	2,699	2,748	2,584	2,884	3,079	3,100	2,969	3,175	3,315	3,415	3,304	1,871	1,273	972	866	723	284	336	198	
Goodwill and Intangible Assets	163	159	155	152	148	144	141	137	133	130	126	123	119	115	112	108	104	101	97	94	90	86	83	79	76	
Regulated Assets	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	
Total Assets	35,664	35,753	36,154	36,597	36,844	37,103	37,671	38,053	38,489	38,950	39,233	39,306	39,253	39,527	39,794	40,045	40,138	38,818	38,289	37,972	37,809	37,642	37,147	37,174	36,973	
LIABILITIES AND EQUITY																										
Long Term Debt	21,975	22,277	22,029	22,179	22,078	22,827	22,425	23,824	24,422	24,820	24,819	24,492	24,480	24,409	24,439	24,229	22,638	20,638	19,827	18,429	18,629	18,202	17,202	17,202	16,852	
Current and Other Liabilities	3,922	3,422	3,785	3,792	3,854	3,078	2,761	2,467	2,088	1,784	1,790	1,913	1,590	1,593	1,648	1,817	3,227	3,650	3,664	4,502	3,956	3,818	4,090	3,889	3,915	
Contributions in Aid of Construction	52	53	54	55	56	57	58	60	61	62	63	64	65	66	67	70	72	75	78	79	80	81	82	83	90	
Retained Earnings	9,614	9,891	10,166	10,441	10,716	10,991	11,267	11,542	11,817	12,092	12,367	12,642	12,887	13,147	13,404	13,659	13,909	14,154	14,398	14,620	14,840	15,055	15,266	15,471	15,671	
Accumulated Other Comprehensive Income	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	
Total Liabilities and Equity	35,664	35,753	36,154	36,597	36,844	37,103	37,671	38,053	38,489	38,950	39,233	39,306	39,253	39,527	39,794	40,045	40,138	38,818	38,289	37,972	37,809	37,642	37,147	37,174	36,973	

Development Plan
 Development Plan Scenario
 ELECTRIC OPERATIONS
 PROJECTED CASH FLOW STATEMENT
 In Millions of Dollars

K19 Sales C25 750 MW
 Economics:REF Rev:REF Cap:REF
 Needs For and Alternatives To
 Appendix 11.4 Pro Forma Financial Statements

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	
OPERATING ACTIVITIES																										
Cash Receipts from Customers	1 692	1 768	1 826	1 939	2 035	2 148	2 236	2 364	2 745	2 959	3 088	3 191	3 309	3 484	3 892	4 110	4 280	4 443	4 628	4 818	4 020	4 050	4 110	4 131	4 128	
Cash Paid to Suppliers and Employees	(782)	(822)	(900)	(931)	(963)	(1 001)	(1 024)	(1 048)	(1 136)	(1 175)	(1 202)	(1 230)	(1 262)	(1 266)	(1 297)	(1 331)	(1 357)	(1 378)	(1 402)	(1 427)	(1 452)	(1 477)	(1 505)	(1 521)	(1 522)	
Interest Paid	(466)	(474)	(510)	(558)	(604)	(699)	(814)	(816)	(1 031)	(1 127)	(1 091)	(1 093)	(1 097)	(1 218)	(1 441)	(1 639)	(1 652)	(1 596)	(1 619)	(1 590)	(1 502)	(1 487)	(1 475)	(1 469)		
Other	28	17	24	26	31	39	41	38	35	33	17	19	28	33	41	55	71	78	89	70	86	64	61	60	68	
Cash from Operating Activities	473	488	440	476	499	487	439	539	613	690	812	886	978	1 033	1 195	1 196	1 369	1 547	1 696	1 931	1 152	1 151	1 189	1 195	1 205	
FINANCING ACTIVITIES																										
Proceeds from Long Term Debt	836	2 170	1 760	1 990	2 180	2 380	1 990	1 590	1 990	1 790	1 960	1 390	1 190	790	190	190	190	(40)	(10)	(10)	(40)	140	1 520	1 980	1 920	
Retirement of Long Term Debt	(129)	(393)	(102)	(26)	-	15	416	184	265	676	156	-	-	450	-	-	60	250	700	13	230	800	200	352	355	
Other Financing Activities	(119)	(808)	(176)	(312)	(347)	(530)	(829)	(308)	(659)	(679)	(432)	(1)	(1)	(450)	(1)	(9)	(60)	(230)	(700)	(13)	(230)	(2 350)	(1 750)	(2 350)		
Cash from Financing Activities	(42)	(17)	(18)	(88)	(139)	(182)	(249)	(133)	(328)	(562)	(907)	(510)	(250)	(110)	(110)	(110)	(110)	(110)	(110)	(110)	(110)	(110)	(110)	(110)	(110)	
INVESTING ACTIVITIES																										
Property Plant and Equipment net of contributions	(1 378)	(1 913)	(2 010)	(2 041)	(2 124)	(2 023)	(1 791)	(1 635)	(1 865)	(2 198)	(2 151)	(1 943)	(1 798)	(1 596)	(1 128)	(853)	(1 056)	(977)	(919)	(781)	(758)	(788)	(788)	(830)	(866)	
Other Investing Activities	(17)	(16)	(21)	(20)	(42)	(42)	(28)	(28)	(93)	(18)	(29)	(42)	(25)	(18)	(25)	(25)	(19)	(20)	(26)	(26)	(27)	(27)	(27)	(27)	(27)	
Cash from Investing Activities	(14)	(15)	(15)	(15)	(15)	(16)	(16)	(16)	(17)	(17)	(17)	(18)	(18)	(18)	(18)	(18)	(18)	(18)	(18)	(18)	(18)	(18)	(18)	(18)	(18)	
Net Increase (Decrease) in Cash	(1 502)	(2 138)	(2 155)	(2 229)	(2 321)	(2 282)	(2 055)	(1 884)	(2 146)	(2 575)	(2 425)	(2 239)	(2 111)	(1 932)	(1 467)	(1 204)	(1 420)	(1 355)	(1 298)	(1 138)	(1 127)	(1 160)	(1 123)	(1 168)	(1 200)	
Cash at Beginning of Year	(125)	99	(44)	(87)	(5)	48	(42)	110	54	(108)	69	37	57	(111)	(83)	172	130	174	381	757	(12)	(12)	27	38	(76)	
Cash at End of Year	(183)	(84)	(128)	(215)	(220)	(172)	(215)	(105)	(51)	(160)	(90)	(53)	4	(107)	(190)	(18)	113	287	668	1 425	1 412	1 412	1 412	1 412	1 412	

Development Plan
Development Plan Scenario
ELECTRIC OPERATIONS
PROJECTED CASH FLOW STATEMENT
In Millions of Dollars

K19 Sales C25 750 MW
Economics:REF Rev:REF Cap:REF
Needs For and Alternatives To
Appendix 11.4 Pro Forma Financial Statements

	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	
OPERATING ACTIVITIES																										
Cash Receipts from Customers	4 171	4 190	4 231	4 302	4 399	4 513	4 564	4 655	4 758	4 911	4 952	4 977	5 013	5 129	5 181	5 225	5 326	5 369	5 385	5 443	5 443	5 490	5 549	5 591	5 641	
Cash Paid to Suppliers and Employees	(1 547)	(1 578)	(1 622)	(1 664)	(1 725)	(1 770)	(1 817)	(1 880)	(1 940)	(2 013)	(2 069)	(2 079)	(2 113)	(2 149)	(2 187)	(2 224)	(2 261)	(2 297)	(2 380)	(2 373)	(2 411)	(2 451)	(2 491)	(2 544)	(2 566)	
Interest Paid	(1 446)	(1 437)	(1 417)	(1 432)	(1 443)	(1 448)	(1 443)	(1 444)	(1 489)	(1 470)	(1 470)	(1 462)	(1 447)	(1 420)	(1 413)	(1 412)	(1 402)	(1 378)	(1 296)	(1 264)	(1 215)	(1 194)	(1 166)	(1 126)	(1 105)	
Other	69	73	83	84	90	96	103	114	122	127	140	141	151	145	156	166	178	171	137	142	139	148	140	134	137	
Cash from Operating Activities	1 247	1 248	1 276	1 290	1 321	1 401	1 418	1 440	1 496	1 541	1 553	1 577	1 604	1 704	1 736	1 755	1 838	1 864	1 891	1 948	1 956	1 987	2 032	2 076	2 108	
FINANCING ACTIVITIES																										
Proceeds from Long Term Debt	2 740	2 180	1 950	2 380	2 180	2 130	1 770	1 880	780	570	180	(20)	(60)	(20)	(20)	(50)	(70)	(90)	180	180	1 310	2 340	1 770	1 350	2 180	
Shifting Fund Withdrawals	287	100	290	192	154	134	50	100	400	-	100	200	325	-	-	100	800	800	355	200	148	355	399	-	124	
Retirement of Long Term Debt	(2 900)	(2 350)	(1 880)	(2 240)	(2 340)	(2 480)	(1 440)	(1 190)	(790)	(190)	(130)	(50)	(285)	10	10	(40)	(40)	(40)	(40)	(40)	(40)	(40)	(40)	(40)	(2 180)	
Other Financing Activities	(27)	(27)	(25)	(29)	(50)	(51)	(51)	(59)	(60)	(49)	(41)	(42)	(42)	(43)	(44)	(45)	(46)	(47)	(48)	(49)	(50)	(53)	(53)	(54)	(59)	
Cash from Financing Activities	80	(137)	351	303	104	53	329	51	350	335	49	(52)	(62)	(59)	(54)	(59)	(58)	(57)	(49)	(49)	(310)	(280)	(378)	(334)	(334)	
INVESTING ACTIVITIES																										
Property Plant and Equipment net of contributions	(913)	(956)	(1 183)	(1 320)	(1 126)	(1 229)	(1 268)	(1 280)	(1 612)	(1 164)	(1 127)	(1 113)	(1 157)	(1 231)	(1 317)	(1 341)	(1 472)	(1 418)	(1 408)	(1 367)	(1 346)	(1 417)	(1 430)	(1 505)	(1 510)	
Other Investing Activities	(28)	(28)	(28)	(28)	(28)	(29)	(29)	(29)	(29)	(30)	(30)	(30)	(30)	(31)	(31)	(31)	(32)	(32)	(32)	(32)	(33)	(34)	(35)	(36)	(38)	
Other	(23)	(24)	(24)	(24)	(24)	(25)	(25)	(25)	(27)	(27)	(28)	(29)	(29)	(30)	(30)	(31)	(31)	(32)	(32)	(33)	(34)	(35)	(36)	(37)	(37)	
Cash from Investing Activities	(1 241)	(1 283)	(1 518)	(1 666)	(1 469)	(1 576)	(1 620)	(1 646)	(1 989)	(1 540)	(1 367)	(1 357)	(1 400)	(1 471)	(1 565)	(1 582)	(1 719)	(1 669)	(1 621)	(1 564)	(1 561)	(1 630)	(1 639)	(1 699)	(1 707)	
Net Increase (Decrease) in Cash	86	(172)	109	(73)	(43)	(122)	126	(154)	(43)	336	235	168	142	180	117	118	(37)	(661)	(222)	(75)	84	90	15	123	66	
Cash at Beginning of Year	156	242	69	178	106	62	(60)	66	(88)	(232)	105	340	508	650	830	947	1 064	1 028	366	144	69	153	248	257	381	
Cash at End of Year	242	69	178	106	62	(60)	66	(88)	(232)	105	340	508	650	830	947	1 064	1 028	366	144	69	153	248	257	381	447	

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Needs For and Alternatives To
Appendix 11.4 Pro Forma Financial Statements

Development Plan
Development Plan Scenario
ELECTRIC OPERATIONS
PROJECTED OPERATING STATEMENT
In Millions of Dollars

K19 Sales C25 750 MW
Economics:REF Rev:LOW Cap:REF

For the year ended March 31	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
REVENUES																									
General Consumers Revenue at approved rates	1331	1361	1374	1390	1404	1424	1447	1462	1485	1506	1529	1552	1575	1598	1621	1644	1669	1693	1717	1741	1765	1790	1814	1838	1862
Additional General Consumers Revenue	-	48	113	183	258	339	427	518	618	725	839	962	1094	1234	1383	1542	1713	1896	2089	2296	1319	1326	1360	1414	1494
Extraprovincial	357	344	264	287	301	319	317	340	526	622	634	634	645	587	774	825	841	842	849	854	853	849	844	784	681
Other	14	15	15	15	16	16	16	16	17	17	17	18	18	18	19	19	19	20	20	21	21	21	22	22	23
Total Revenue	1702	1768	1766	1876	1978	2098	2206	2336	2645	2870	3019	3166	3332	3438	3795	4031	4243	4451	4676	4911	3959	3986	4039	4058	4060
EXPENSES																									
Operating and Administrative	455	471	546	559	570	593	605	621	678	690	703	716	730	760	773	788	804	817	832	849	866	887	906	924	945
Finance Expense	452	442	493	522	583	666	783	791	988	1087	1087	1098	1091	1194	1417	1602	1573	1535	1543	1474	1425	1418	1422	1416	1402
Depreciation and Amortization	399	430	372	391	400	422	458	461	518	553	559	558	561	600	668	721	724	732	758	766	764	768	792	796	802
Water Rentals and Assessments	117	116	112	112	112	112	114	124	127	128	127	127	135	147	150	151	151	152	153	153	153	153	154	154	154
Fuel and Power Purchased	143	166	145	155	166	172	176	176	182	192	197	203	215	197	200	210	216	223	228	235	242	249	256	257	252
Capital and Other Taxes	87	95	101	109	119	127	134	141	148	157	166	174	181	187	191	193	196	198	203	204	205	207	208	209	211
Corporate Allocation	9	9	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	7	7	7	7	7	7
Total Expenses	1663	1729	1777	1856	1958	2100	2276	2312	2657	2815	2848	2886	2914	3081	3404	3673	3672	3663	3723	3687	3662	3688	3744	3764	3773
Non-Controlling Interest	(14)	(24)	(27)	(21)	(19)	(18)	(13)	(14)	(16)	(10)	(8)	(3)	(1)	(8)	(7)	(5)	(3)	(1)	1	3	5	7	9	8	4
Net Income	54	63	15	41	40	15	(57)	38	4	64	179	283	418	365	398	363	574	788	952	1221	292	291	287	286	284
Additional General Consumers Revenue Percent Increase	0.00%	3.50%	4.58%	4.58%	4.58%	4.58%	4.58%	4.58%	4.58%	4.58%	4.58%	4.58%	4.58%	4.58%	4.58%	4.58%	4.58%	4.58%	4.58%	4.58%	-24.64%	-0.36%	0.50%	1.12%	1.88%
Cumulative General Consumers Revenue Percent Increase	0.00%	3.50%	8.24%	13.20%	18.39%	23.82%	29.49%	35.43%	41.63%	48.12%	54.91%	62.01%	69.43%	77.20%	85.32%	93.81%	102.69%	111.98%	121.70%	131.86%	74.73%	74.10%	74.96%	76.93%	80.25%
Debt Ratio	76	78	84	85	87	88	89	89	90	91	90	89	88	87	86	84	82	79	75	74	73	72	71	70	
Interest Coverage Ratio	1.09	1.10	1.02	1.05	1.04	1.02	0.95	1.03	1.00	1.05	1.13	1.19	1.26	1.22	1.24	1.22	1.35	1.49	1.60	1.81	1.20	1.20	1.20	1.20	
Capital Coverage Ratio	1.09	0.90	0.70	0.82	1.12	1.27	1.05	1.52	1.35	1.47	1.51	1.69	1.98	2.01	2.51	2.22	2.43	2.68	2.83	3.84	1.80	1.56	1.51	1.44	1.38

Needs For and Alternatives To
Appendix 11.4 Pro Forma Financial Statements

Development Plan
Development Plan Scenario
ELECTRIC OPERATIONS
PROJECTED OPERATING STATEMENT
In Millions of Dollars

K19 Sales C25 750 MW
Economics:REF Rev:LOW Cap:REF

For the year ended March 31	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	
REVENUES																										
General Consumers Revenue at approved rates	1886	1910	1935	1959	1983	2007	2031	2056	2080	2104	2128	2128	2128	2128	2128	2128	2128	2128	2128	2128	2128	2128	2128	2128	2128	2128
Additional General Consumers Revenue	1536	1541	1562	1620	1693	1778	1784	1816	1897	1999	2005	2021	2042	2141	2178	2195	2284	2304	2311	2350	2359	2371	2412	2445	2477	
Extraprovincial	655	642	630	608	590	584	581	586	566	562	557	583	593	604	615	626	637	648	660	672	684	696	709	722	735	
Other	23	24	24	24	25	25	26	26	27	27	28	29	29	30	30	31	31	32	33	33	34	35	35	36	37	
Total Revenue	4100	4117	4150	4212	4291	4394	4422	4484	4570	4692	4719	4761	4793	4903	4951	4979	5080	5112	5132	5183	5205	5230	5284	5331	5376	
EXPENSES																										
Operating and Administrative	966	987	1010	1032	1062	1087	1113	1146	1173	1210	1239	1269	1299	1331	1364	1384	1418	1439	1460	1481	1503	1526	1548	1563	1587	
Finance Expense	1384	1366	1349	1358	1365	1356	1333	1320	1308	1336	1302	1294	1273	1254	1235	1215	1195	1162	1120	1098	1069	1026	1001	978	945	
Depreciation and Amortization	834	838	844	857	875	943	952	971	1015	1045	1061	1084	1099	1184	1210	1228	1305	1343	1377	1420	1441	1479	1525	1569	1611	
Water Rentals and Assessments	155	155	155	156	155	156	156	157	156	157	157	163	165	168	171	175	178	181	184	187	191	194	198	201	205	
Fuel and Power Purchased	258	267	286	298	319	334	348	369	390	417	437	430	437	445	453	461	470	478	487	496	505	514	523	532	542	
Capital and Other Taxes	212	214	217	221	223	226	229	232	237	239	241	243	243	244	246	248	249	251	253	254	254	256	257	259	260	
Corporate Allocation	7	7	7	7	7	7	7	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
Total Expenses	3816	3834	3868	3929	4007	4109	4138	4201	4286	4409	4442	4487	4522	4633	4684	4717	4820	4859	4886	4942	4968	5000	5057	5107	5156	
Non-Controlling Interest	3	4	5	6	7	8	9	10	11	13	13	12	13	13	14	14	15	15	16	17	19	20	21	22	23	
Net Income	281	279	277	277	278	277	275	273	273	271	263	262	258	256	253	248	245	238	229	224	219	211	206	202	196	
Additional General Consumers Revenue Percent Increase	0.66%	-0.44%	0.04%	1.11%	1.46%	1.72%	-0.39%	0.27%	1.52%	1.99%	-0.40%	0.39%	0.51%	2.37%	0.86%	0.38%	2.06%	0.46%	0.16%	0.88%	0.21%	0.25%	0.91%	0.74%	0.69%	
Cumulative General Consumers Revenue Percent Increase	81.44%	80.65%	80.72%	82.73%	85.39%	88.57%	87.83%	88.34%	91.19%	95.00%	94.22%	94.99%	95.97%	100.62%	102.35%	103.13%	107.30%	108.26%	108.59%	110.42%	110.86%	111.40%	113.32%	114.91%	116.38%	
Debt Ratio	70	69	68	68	67	66	66	65	65	64	63	62	62	61	60	59	59	58	57	56	55	54	53	52	51	
Interest Coverage Ratio	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	
Capital Coverage Ratio	1.34	1.29	1.24	1.16	1.17	1.26	1.32	1.27	1.16	1.40	1.40	1.42	1.44	1.38	1.39	1.38	1.42	1.41	1.41	1.41	1.40	1.39	1.39	1.39	1.40	

Needs For and Alternatives To
Appendix 11.4 Pro Forma Financial Statements

Development Plan
Development Plan Scenario
ELECTRIC OPERATIONS
PROJECTED BALANCE SHEET
In Millions of Dollars

K19 Sales C25 750 MW
Economics:REF Rev:LOW Cap:REF

For the year ended March 31	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
ASSETS																									
Plant in Service	15 374	16 436	17 108	18 261	18 821	22 520	22 947	25 701	29 723	30 257	30 788	31 353	32 042	37 329	42 227	43 649	44 393	44 951	46 932	47 662	48 344	49 689	50 210	50 754	52 077
Accumulated Depreciation	5 173	5 536	5 856	6 223	6 612	7 028	7 482	7 938	8 450	8 997	9 552	10 107	10 666	11 264	11 930	12 650	13 373	14 103	14 861	15 626	16 390	17 157	17 948	18 743	19 545
Net Plant in Service	10 201	10 900	11 251	12 038	12 209	15 492	15 465	17 762	21 273	21 259	21 237	21 246	21 376	26 065	30 297	30 999	31 021	30 848	32 072	32 035	31 954	32 532	32 262	32 011	32 532
Construction in Progress	2 105	2 866	4 164	5 048	6 617	5 069	6 411	5 209	2 873	4 555	6 192	7 589	8 716	5 044	1 293	744	1 075	1 515	472	545	642	106	395	702	269
Current and Other Assets	1 869	1 735	1 391	1 584	1 802	2 045	1 868	1 997	2 067	1 743	1 843	2 161	2 422	2 278	2 587	2 904	3 276	3 770	3 853	5 043	5 108	3 363	3 447	3 201	3 208
Goodwill and Intangible Assets	180	165	151	136	126	116	140	147	231	224	218	214	210	207	203	199	196	192	188	185	181	177	174	170	166
Regulated Assets	231	225	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Total Assets	14 587	15 890	16 958	18 807	20 753	22 723	23 884	25 115	26 444	27 782	29 491	31 210	32 725	33 593	34 380	34 846	35 568	36 325	36 585	37 808	37 885	36 178	36 277	36 084	36 176
LIABILITIES AND EQUITY																									
Long Term Debt	9 289	11 260	12 802	14 474	16 370	17 942	19 638	20 604	21 727	23 277	25 280	26 682	27 435	28 238	28 639	28 780	28 731	28 234	28 223	27 996	25 799	24 201	23 520	22 721	22 173
Current and Other Liabilities	2 231	1 503	1 694	1 874	1 923	2 327	1 862	2 103	2 320	2 065	1 601	1 628	1 963	1 657	1 636	1 591	1 779	2 236	1 548	1 767	3 740	3 332	3 815	4 124	4 469
Contributions in Aid of Construction	325	334	339	344	348	358	364	371	378	385	392	400	407	415	422	430	438	446	455	463	472	482	492	502	512
Retained Earnings	2 442	2 505	2 264	2 305	2 344	2 359	2 302	2 340	2 344	2 408	2 587	2 870	3 288	3 653	4 051	4 415	4 989	5 777	6 729	7 950	8 243	8 534	8 820	9 106	9 390
Accumulated Other Comprehensive Income	299	287	(142)	(189)	(232)	(264)	(283)	(303)	(326)	(354)	(370)	(370)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)
Total Liabilities and Equity	14 587	15 890	16 958	18 807	20 753	22 723	23 884	25 115	26 444	27 782	29 491	31 210	32 725	33 593	34 380	34 846	35 568	36 325	36 585	37 808	37 885	36 178	36 277	36 084	36 176

Needs For and Alternatives To
Appendix 11.4 Pro Forma Financial Statements

Development Plan
Development Plan Scenario
ELECTRIC OPERATIONS
PROJECTED BALANCE SHEET
In Millions of Dollars

K19 Sales C25 750 MW
Economics:REF Rev:LOW Cap:REF

For the year ended March 31	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062
ASSETS																									
Plant in Service	52 660	53 263	54 262	55 013	57 700	58 375	59 080	61 114	62 510	63 579	64 597	65 298	67 994	69 231	70 603	71 980	73 389	74 915	76 463	77 836	79 198	80 623	82 045	83 525	85 358
Accumulated Depreciation	20 378	21 215	22 059	22 917	23 792	24 735	25 688	26 658	27 674	28 720	29 781	30 866	31 966	33 152	34 364	35 580	36 874	38 207	39 575	40 985	42 417	43 888	45 405	46 966	48 570
Net Plant in Service	32 282	32 048	32 202	32 096	33 909	33 640	33 392	34 455	34 836	34 859	34 816	34 432	36 028	36 079	36 240	36 400	36 515	36 708	36 889	36 850	36 781	36 735	36 640	36 559	36 788
Construction in Progress	621	997	1 205	1 808	272	851	1 440	712	955	1 077	1 212	1 651	137	158	128	122	215	139	29	56	72	97	140	200	(89)
Current and Other Assets	3 052	3 209	3 251	3 205	3 174	3 264	3 404	3 382	3 554	3 936	4 125	4 144	4 007	4 207	4 342	4 436	4 322	2 977	2 692	2 586	2 482	2 361	2 315	2 170	2 251
Goodwill and Intangible Assets	163	159	155	152	148	144	141	137	133	130	126	123	119	115	112	108	104	101	97	94	90	86	83	79	76
Regulated Assets	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Total Assets	36 117	36 413	36 814	37 261	37 502	37 899	38 376	38 686	39 479	40 002	40 279	40 349	40 291	40 559	40 822	41 065	41 156	39 924	39 708	39 586	39 425	39 281	39 178	39 008	39 026
LIABILITIES AND EQUITY																									
Long Term Debt	22 375	22 877	22 829	22 579	22 678	23 627	24 025	24 424	25 222	25 820	25 819	25 292	25 490	25 490	25 439	25 239	23 638	21 838	20 837	20 229	19 829	19 903	19 502	18 902	18 652
Current and Other Liabilities	3 917	3 422	3 584	3 992	3 846	3 006	2 798	2 425	2 136	1 778	1 782	2 106	1 581	1 583	1 633	1 805	3 229	3 536	4 068	4 307	4 305	3 854	3 923	4 129	4 177
Contributions in Aid of Construction	522	533	543	554	565	577	588	600	611	622	634	645	656	666	677	700	722	745	768	791	813	836	859	881	904
Retained Earnings	9 672	9 951	10 228	10 505	10 783	11 059	11 335	11 607	11 880	12 151	12 414	12 676	12 933	13 190	13 443	13 691	13 937	14 175	14 404	14 628	14 847	15 057	15 263	15 465	15 662
Accumulated Other Comprehensive Income	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)	(369)
Total Liabilities and Equity	36 117	36 413	36 814	37 261	37 502	37 899	38 376	38 686	39 479	40 002	40 279	40 349	40 291	40 559	40 822	41 065	41 156	39 924	39 708	39 586	39 425	39 281	39 178	39 008	39 026

Needs For and Alternatives To
Appendix 11.4 Pro Forma Financial Statements

Development Plan
Development Plan Scenario
ELECTRIC OPERATIONS
PROJECTED CASH FLOW STATEMENT
In Millions of Dollars

K19 Sales C25 750 MW
Economics:REF Rev:LOW Cap:REF

For the year ended March 31	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
OPERATING ACTIVITIES																									
Cash Receipts from Customers	1 692	1 768	1 766	1 876	1 978	2 098	2 206	2 336	2 645	2 870	3 019	3 166	3 332	3 438	3 795	4 031	4 243	4 451	4 676	4 911	3 959	3 986	4 039	4 058	4 060
Cash Paid to Suppliers and Employees	(782)	(822)	(878)	(908)	(937)	(973)	(994)	(1 017)	(1 095)	(1 127)	(1 152)	(1 177)	(1 207)	(1 230)	(1 258)	(1 285)	(1 309)	(1 327)	(1 350)	(1 371)	(1 393)	(1 415)	(1 438)	(1 455)	(1 467)
Interest Paid	(466)	(474)	(510)	(558)	(606)	(709)	(825)	(828)	(1 041)	(1 127)	(1 107)	(1 108)	(1 102)	(1 235)	(1 457)	(1 663)	(1 651)	(1 621)	(1 648)	(1 556)	(1 526)	(1 512)	(1 503)	(1 505)	(1 495)
Interest Received	28	17	24	26	31	39	41	38	35	33	18	19	29	34	41	56	72	80	90	72	88	67	64	64	71
Cash from Operating Activities	473	488	402	435	466	455	428	529	544	649	777	900	1 052	1 007	1 122	1 139	1 355	1 583	1 768	2 056	1 129	1 126	1 162	1 162	1 169
FINANCING ACTIVITIES																									
Proceeds from Long Term Debt	836	2 170	1 760	1 990	2 380	2 380	1 990	1 590	1 790	1 990	1 960	1 390	1 190	790	390	190	190	160	(10)	(10)	(40)	140	1 520	1 780	2 320
Sinking Fund Withdrawals	129	393	102	26	-	15	416	185	267	676	156	-	-	450	-	-	60	250	700	13	230	800	200	458	200
Retirement of Long Term Debt	(119)	(808)	(176)	(312)	(347)	(530)	(829)	(306)	(635)	(679)	(432)	-	-	(450)	-	-	(60)	(220)	(700)	(13)	(200)	(2 150)	(1 730)	(2 273)	(2 530)
Other Financing Activities	(42)	(7)	(17)	(19)	(17)	(13)	(24)	(13)	(34)	(9)	1	1	1	1	1	(7)	(6)	(5)	(5)	(24)	(24)	(24)	(25)	(25)	(22)
Cash from Financing Activities	804	1 748	1 670	1 685	2 017	1 852	1 553	1 456	1 387	1 977	1 684	1 391	1 191	791	391	183	184	185	(15)	(34)	(34)	(1 234)	(35)	(60)	(32)
INVESTING ACTIVITIES																									
Property Plant and Equipment net of contributions	(1 378)	(1 913)	(2 010)	(2 041)	(2 124)	(2 023)	(1 791)	(1 636)	(1 865)	(2 199)	(2 151)	(1 943)	(1 798)	(1 596)	(1 129)	(853)	(1 056)	(977)	(919)	(781)	(758)	(788)	(788)	(830)	(866)
Other Investing Activities	(17)	(16)	(21)	(20)	(32)	(42)	(28)	(28)	(33)	(38)	(29)	(32)	(25)	(25)	(28)	(26)	(26)	(26)	(26)	(27)	(27)	(27)	(27)	(27)	(27)
Other	(14)	(15)	(15)	(15)	(15)	(16)	(16)	(16)	(17)	(17)	(17)	(18)	(18)	(18)	(19)	(19)	(19)	(20)	(20)	(21)	(21)	(21)	(22)	(22)	(23)
Cash from Investing Activities	(1 502)	(2 138)	(2 155)	(2 249)	(2 322)	(2 292)	(2 037)	(1 886)	(2 146)	(2 576)	(2 428)	(2 242)	(2 114)	(1 935)	(1 469)	(1 208)	(1 424)	(1 358)	(1 303)	(1 146)	(1 135)	(1 168)	(1 131)	(1 175)	(1 202)
Net Increase (Decrease) in Cash	(225)	99	(83)	(128)	160	15	(55)	99	(215)	50	33	49	129	(137)	44	114	115	409	450	877	(40)	(1 276)	(3)	(74)	(65)
Cash at Beginning of Year	43	(183)	(84)	(167)	(295)	(135)	(119)	(174)	(76)	(290)	(241)	(207)	(158)	(29)	(167)	(123)	(9)	105	515	965	1 841	1 801	525	522	448
Cash at End of Year	(183)	(84)	(167)	(295)	(135)	(119)	(174)	(76)	(290)	(241)	(207)	(158)	(29)	(167)	(123)	(9)	105	515	965	1 841	1 801	525	522	448	383

Needs For and Alternatives To
Appendix 11.4 Pro Forma Financial Statements

Development Plan
Development Plan Scenario
ELECTRIC OPERATIONS
PROJECTED CASH FLOW STATEMENT
In Millions of Dollars

K19 Sales C25 750 MW
Economics:REF Rev:LOW Cap:REF

For the year ended March 31	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062
OPERATING ACTIVITIES																									
Cash Receipts from Customers	4 100	4 117	4 150	4 212	4 291	4 394	4 422	4 484	4 570	4 692	4 719	4 761	4 793	4 903	4 951	4 979	5 080	5 112	5 132	5 183	5 205	5 230	5 284	5 331	5 376
Cash Paid to Suppliers and Employees	(1 490)	(1 517)	(1 556)	(1 588)	(1 635)	(1 671)	(1 707)	(1 757)	(1 801)	(1 858)	(1 900)	(1 920)	(1 951)	(1 985)	(2 019)	(2 054)	(2 087)	(2 121)	(2 156)	(2 191)	(2 226)	(2 262)	(2 299)	(2 328)	(2 367)
Interest Paid	(1 483)	(1 464)	(1 452)	(1 468)	(1 489)	(1 483)	(1 466)	(1 475)	(1 460)	(1 509)	(1 498)	(1 498)	(1 480)	(1 455)	(1 451)	(1 442)	(1 436)	(1 410)	(1 331)	(1 305)	(1 284)	(1 248)	(1 226)	(1 200)	(1 171)
Interest Received	74	77	88	89	95	102	109	121	126	139	154	155	156	150	161	171	182	177	145	145	148	150	154	144	150
Cash from Operating Activities	1 200	1 212	1 230	1 245	1 262	1 342	1 358	1 374	1 435	1 465	1 474	1 498	1 518	1 613	1 643	1 654	1 739	1 758	1 790	1 832	1 844	1 870	1 913	1 947	1 988
FINANCING ACTIVITIES																									
Proceeds from Long Term Debt	2 540	2 380	1 950	2 180	2 380	2 330	1 570	1 180	1 180	770	180	(20)	140	(20)	(20)	(50)	(70)	(90)	1 380	1 910	1 940	2 170	1 750	1 780	2 190
Sinking Fund Withdrawals	304	100	293	194	197	197	50	300	100	-	100	200	525	-	-	50	100	800	355	200	148	195	125	261	124
Retirement of Long Term Debt	(2 900)	(2 390)	(1 860)	(2 040)	(2 440)	(2 240)	(1 440)	(1 190)	(790)	(390)	(190)	(190)	(485)	10	10	(10)	(140)	(1 520)	(1 780)	(2 320)	(2 547)	(2 380)	(2 075)	(2 180)	(2 380)
Other Financing Activities	(23)	(23)	(24)	(24)	(25)	(25)	(46)	(25)	(25)	(30)	(25)	(26)	(26)	(27)	(27)	(28)	(27)	(27)	(28)	(29)	(29)	(30)	(31)	(31)	(45)
Cash from Financing Activities	(79)	67	359	310	112	261	134	265	465	350	65	(36)	154	(37)	(37)	(38)	(137)	(837)	(73)	(239)	(489)	(45)	(231)	(170)	(111)
INVESTING ACTIVITIES																									
Property Plant and Equipment net of contributions	(913)	(956)	(1 183)	(1 330)	(1 126)	(1 229)	(1 268)	(1 280)	(1 612)	(1 164)	(1 127)	(1 113)	(1 157)	(1 231)	(1 317)	(1 341)	(1 472)	(1 418)	(1 408)	(1 367)	(1 346)	(1 417)	(1 430)	(1 505)	(1 510)
Other Investing Activities	(28)	(28)	(28)	(28)	(28)	(29)	(29)	(29)	(29)	(30)	(30)	(30)	(30)	(31)	(30)	(15)	(15)	(14)	(14)	(13)	(36)	(37)	(37)	(38)	(38)
Other	(23)	(24)	(24)	(24)	(25)	(25)	(26)	(26)	(27)	(27)	(28)	(29)	(29)	(30)	(30)	(31)	(31)	(32)	(33)	(33)	(34)	(35)	(35)	(36)	(37)
Cash from Investing Activities	(1 251)	(1 292)	(1 527)	(1 676)	(1 479)	(1 588)	(1 633)	(1 659)	(1 994)	(1 560)	(1 377)	(1 368)	(1 410)	(1 472)	(1 567)	(1 586)	(1 723)	(1 675)	(1 625)	(1 574)	(1 573)	(1 643)	(1 653)	(1 728)	(1 726)
Net Increase (Decrease) in Cash	(129)	(13)	61	(121)	(105)	15	(141)	(20)	(94)	256	162	94	262	104	39	31	(121)	(754)	92	20	(217)	182	29	49	151
Cash at Beginning of Year	383	254	241	302	181	76	91	(50)	(70)	(164)	92	253	347	609	713	752	783	662	(92)	(0)	20	(197)	(15)	14	63
Cash at End of Year	254	241	302	181	76	91	(50)	(70)	(164)	92	253	347	609	713	752	783	662	(92)	(0)	20	(197)	(15)	14	63	215

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Development Plan
Development Plan Scenario
ELECTRIC OPERATIONS
PROJECTED OPERATING STATEMENT
In Millions of DollarsAll Gas
Economics:REF Rev:REF Cap:REF

For the year ended March 31	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	
REVENUES																										
General Consumers Revenue at approved rates	1 331	1 361	1 374	1 390	1 404	1 424	1 447	1 462	1 485	1 506	1 529	1 552	1 575	1 598	1 621	1 644	1 669	1 693	1 717	1 741	1 765	1 790	1 814	1 838	1 862	
Additional General Consumers Revenue	-	48	97	149	204	263	325	390	461	535	614	698	787	880	979	1 083	1 194	1 311	1 434	1 564	999	1 054	1 223	1 281	1 309	
Extraprovincial	357	344	335	374	391	418	403	401	447	457	451	442	440	359	343	328	312	297	320	349	327	305	291	280	282	
Other	14	15	15	15	15	16	16	16	17	17	17	18	18	18	19	19	19	20	20	21	21	21	22	22	23	
Total Revenue	1 702	1 768	1 821	1 928	2 014	2 120	2 192	2 270	2 409	2 516	2 611	2 709	2 820	2 856	2 961	3 074	3 194	3 321	3 491	3 674	3 113	3 170	3 349	3 421	3 476	
EXPENSES																										
Operating and Administrative	455	471	546	559	570	593	605	616	628	641	660	675	690	708	721	737	761	776	792	825	844	867	894	916	936	
Finance Expense	451	440	536	589	658	737	857	849	849	836	844	859	857	866	843	827	811	789	815	802	779	789	857	863	867	
Depreciation and Amortization	399	430	439	479	488	509	544	541	537	547	558	559	564	581	590	598	608	635	663	598	582	615	621	627		
Water Rentals and Assessments	117	116	112	112	112	113	112	112	114	114	113	113	113	114	115	115	114	114	118	117	116	116	116	117	119	
Fuel and Power Purchased	143	166	167	178	191	197	206	209	218	233	257	278	296	277	286	307	339	362	357	421	454	488	527	554	568	
Capital and Other Taxes	87	95	99	104	108	110	110	110	111	113	114	116	118	119	121	123	128	132	135	137	139	142	145	149	152	
Corporate Allocation	9	9	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	7	7	7	7	7	7	
Total Expenses	1 662	1 728	1 907	2 030	2 135	2 267	2 442	2 445	2 465	2 491	2 555	2 608	2 646	2 674	2 685	2 707	2 759	2 788	2 859	2 970	2 938	2 991	3 161	3 226	3 274	
Non-Controlling Interest	(14)	(24)	(22)	(17)	(14)	(13)	(10)	(5)	(2)	1	2	5	6	9	1	2	3	5	7	9	11	12	13	15	17	
Net Income	54	65	(65)	(85)	(106)	(134)	(241)	(170)	(54)	24	54	96	167	173	275	365	432	527	625	695	164	167	175	180	185	
Additional General Consumers Revenue Percent Increase	0.00%	3.50%	3.43%	3.43%	3.43%	3.43%	3.43%	3.43%	3.43%	3.43%	3.43%	3.43%	3.43%	3.43%	3.43%	3.43%	3.43%	3.43%	3.43%	3.43%	-17.51%	1.46%	5.39%	1.35%	0.34%	
Cumulative General Consumers Revenue Percent Increase	0.00%	3.50%	7.05%	10.72%	14.51%	18.44%	22.49%	26.69%	31.03%	35.53%	40.17%	44.97%	49.94%	55.08%	60.40%	65.89%	71.58%	77.46%	83.54%	89.83%	56.59%	58.88%	67.44%	69.71%	70.29%	
Debt Ratio	76	78	84	86	87	88	90	91	91	92	91	91	90	89	87	85	84	81	78	75	74	74	74	73	73	
Interest Coverage Ratio	1.09	1.11	0.90	0.89	0.87	0.84	0.72	0.80	0.94	1.03	1.06	1.11	1.19	1.19	1.31	1.42	1.49	1.59	1.71	1.83	1.20	1.20	1.20	1.20	1.20	
Capital Coverage Ratio	1.09	0.90	0.67	0.76	0.96	1.04	0.76	1.12	1.23	1.33	1.25	1.32	1.48	1.61	2.04	1.96	1.95	2.02	2.12	2.67	1.34	1.16	1.14	1.11	1.08	

Development Plan
Development Plan Scenario
ELECTRIC OPERATIONS
PROJECTED OPERATING STATEMENT
In Millions of DollarsAll Gas
Economics:REF Rev:REF Cap:REF

For the year ended March 31	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	
REVENUES																										
General Consumers Revenue at approved rates	1 886	1 910	1 935	1 959	1 983	2 007	2 031	2 056	2 080	2 104	2 128	2 128	2 128	2 128	2 128	2 128	2 128	2 128	2 128	2 128	2 128	2 128	2 128	2 128	2 128	2 128
Additional General Consumers Revenue	1 471	1 551	1 597	1 779	1 895	2 039	2 085	2 257	2 409	2 540	2 620	2 628	2 675	2 804	2 875	2 963	3 096	3 158	3 236	3 308	3 350	3 440	3 525	3 614	3 754	
Extraprovincial	298	280	277	298	287	283	290	310	300	295	284	304	309	315	321	326	332	338	344	351	357	363	370	377	383	
Other	23	24	24	24	25	25	26	26	27	27	28	29	29	30	30	31	31	32	33	33	34	35	35	36	37	
Total Revenue	3 679	3 765	3 833	4 061	4 191	4 355	4 432	4 648	4 816	4 966	5 060	5 088	5 142	5 277	5 354	5 448	5 588	5 657	5 741	5 820	5 869	5 966	6 058	6 154	6 302	
EXPENSES																										
Operating and Administrative	973	997	1 020	1 060	1 087	1 114	1 141	1 185	1 216	1 247	1 281	1 311	1 343	1 376	1 410	1 432	1 467	1 489	1 512	1 535	1 558	1 582	1 606	1 631	1 656	
Finance Expense	902	905	903	967	975	975	1 021	1 022	1 044	1 022	1 019	1 001	989	977	998	996	978	976	961	937	933	918	908	942		
Depreciation and Amortization	682	690	696	733	747	813	823	859	905	922	940	964	979	1 065	1 090	1 113	1 191	1 226	1 262	1 306	1 326	1 369	1 417	1 461	1 519	
Water Rentals and Assessments	118	118	120	119	118	119	121	120	120	120	121	125	127	129	131	134	136	139	141	144	146	149	151	154	157	
Fuel and Power Purchased	636	678	706	787	861	921	949	1 033	1 119	1 194	1 259	1 233	1 256	1 278	1 301	1 325	1 348	1 373	1 397	1 423	1 448	1 474	1 501	1 528	1 555	
Capital and Other Taxes	155	159	163	165	169	174	178	180	183	185	187	188	190	192	195	197	200	202	204	206	208	211	215	218	219	
Corporate Allocation	7	7	7	7	7	7	7	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
Total Expenses	3 472	3 553	3 615	3 839	3 965	4 122	4 192	4 404	4 569	4 718	4 816	4 845	4 901	5 035	5 111	5 204	5 343	5 412	5 497	5 578	5 629	5 724	5 814	5 905	6 053	
Non-Controlling Interest	18	20	22	24	25	27	29	32	33	35	36	37	38	38	39	40	40	41	43	44	46	47	49	51	53	
Net Income	188	192	196	198	201	205	211	213	213	208	207	203	204	204	205	205	203	201	198	195	194	195	199	196		
Additional General Consumers Revenue Percent Increase	4.53%	1.77%	0.76%	4.55%	2.49%	3.08%	0.51%	3.53%	2.88%	2.26%	1.08%	0.17%	0.99%	2.69%	1.43%	1.76%	2.62%	1.19%	1.46%	1.35%	0.78%	1.62%	1.53%	1.58%	2.43%	
Cumulative General Consumers Revenue Percent Increase	78.01%	81.16%	82.53%	90.83%	95.58%	101.60%	102.63%	109.78%	115.83%	120.71%	123.09%	123.48%	125.70%	131.78%	135.09%	139.22%	145.50%	148.41%	152.04%	155.45%	157.44%	161.62%	165.62%	169.81%	176.38%	
Debt Ratio	73	72	72	72	71	71	71	70	70	69	68	67	66	66	65	64	64	63	62	61	60	60	60	59	58	
Interest Coverage Ratio	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	
Capital Coverage Ratio	1.10	1.07	1.02	1.00	1.01	1.09	1.16	1.15	1.04	1.27	1.28	1.30	1.32	1.28	1.30	1.30	1.35	1.35	1.35	1.36	1.36	1.36	1.37	1.38	1.40	

Development Plan
Development Plan Scenario
ELECTRIC OPERATIONS
PROJECTED BALANCE SHEET
In Millions of DollarsAll Gas
Economics:REF Rev:REF Cap:REF

For the year ended March 31

ASSETS

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Plant in Service	15 374	16 436	18 685	19 839	20 398	23 980	24 407	24 800	25 342	25 938	26 692	27 257	28 038	28 877	29 539	30 026	31 028	31 581	33 575	35 016	35 698	37 132	37 949	38 489	39 811
Accumulated Depreciation	5 173	5 536	5 922	6 377	6 853	7 357	7 897	8 434	8 968	9 515	10 075	10 637	11 205	11 790	12 384	12 978	13 581	14 194	14 833	15 501	16 104	16 691	17 311	17 937	18 569
Net Plant in Service	10 201	10 900	12 763	13 462	13 545	16 623	16 510	16 366	16 374	16 423	16 617	16 620	16 833	17 087	17 156	17 048	17 447	17 388	18 742	19 515	19 594	20 441	20 638	20 552	21 243
Construction in Progress	2 106	2 867	2 331	2 516	3 042	167	219	243	286	406	293	459	548	408	509	979	1 282	2 038	1 167	545	752	376	633	1 307	1 070
Current and Other Assets	1 869	1 735	1 386	1 570	1 767	2 006	1 784	1 843	1 829	1 450	1 470	1 662	1 798	1 741	1 847	1 964	2 146	1 983	1 590	2 133	1 792	1 676	1 469	1 526	1 382
Goodwill and Intangible Assets	180	165	150	134	123	113	105	98	92	88	85	83	82	81	80	79	78	77	76	76	75	74	74	73	72
Regulated Assets	231	225	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Total Assets	14 587	15 891	16 630	17 682	18 477	18 910	18 618	18 550	18 580	18 366	18 465	18 824	19 262	19 318	19 592	20 071	20 953	21 488	21 577	22 270	22 214	22 568	22 814	23 458	23 767

LIABILITIES AND EQUITY

Long Term Debt	9 289	11 260	12 419	13 704	14 404	14 777	15 272	15 038	15 161	15 312	15 914	16 116	15 870	16 272	16 274	16 214	16 565	16 068	16 258	16 031	13 805	14 793	14 320	15 321	14 973
Current and Other Liabilities	2 231	1 502	1 845	1 752	1 997	2 213	1 680	2 028	2 005	1 638	1 089	1 142	1 652	1 125	1 114	1 279	1 370	1 866	1 132	1 349	3 346	2 535	3 070	2 521	2 982
Contributions in Aid of Construction	325	334	339	344	348	358	364	371	378	385	392	400	407	415	422	430	438	446	455	463	472	482	492	502	512
Retained Earnings	2 443	2 508	2 186	2 101	1 995	1 860	1 620	1 449	1 396	1 420	1 474	1 570	1 737	1 910	2 186	2 550	2 983	3 510	4 136	4 831	4 995	5 162	5 337	5 518	5 703
Accumulated Other Comprehensive Income	299	287	(159)	(219)	(267)	(298)	(317)	(337)	(360)	(388)	(404)	(404)	(404)	(404)	(404)	(404)	(404)	(404)	(404)	(404)	(404)	(404)	(404)	(404)	(404)
Total Liabilities and Equity	14 587	15 891	16 630	17 682	18 477	18 910	18 618	18 550	18 580	18 366	18 465	18 824	19 262	19 318	19 592	20 071	20 953	21 488	21 577	22 270	22 214	22 568	22 814	23 458	23 767

Development Plan
Development Plan Scenario
ELECTRIC OPERATIONS
PROJECTED BALANCE SHEET
In Millions of DollarsAll Gas
Economics:REF Rev:REF Cap:REF

For the year ended March 31

ASSETS

	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062
Plant in Service	41 216	41 819	42 813	44 358	46 695	47 370	48 166	50 790	52 041	52 713	53 909	54 609	57 300	58 533	59 902	61 666	63 072	64 431	66 237	67 595	68 957	70 797	72 342	73 784	76 630
Accumulated Depreciation	19 255	19 951	20 653	21 392	22 144	22 963	23 792	24 657	25 568	26 497	27 444	28 415	29 401	30 474	31 572	32 679	33 865	35 087	36 344	37 647	38 970	40 337	41 751	43 211	44 729
Net Plant in Service	21 960	21 869	22 160	22 966	24 551	24 407	24 374	26 133	26 473	26 216	26 465	26 195	27 899	28 059	28 330	28 987	29 207	29 345	29 892	29 948	29 988	30 461	30 591	30 573	31 901
Construction in Progress	877	1 646	1 899	1 489	553	1 425	2 043	566	662	1 239	1 212	1 651	134	297	439	19	178	407	25	196	442	395	954	1 256	(89)
Current and Other Assets	1 221	1 236	1 125	1 076	1 001	928	989	1 101	796	893	989	431	143	137	128	79	(328)	(660)	(785)	(1 172)	(1 241)	(1 451)	(1 644)	(1 905)	(1 883)
Goodwill and Intangible Assets	71	71	70	69	68	67	66	66	65	64	63	62	61	61	60	59	58	57	57	56	55	54	53	53	52
Regulated Assets	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Total Assets	24 129	24 820	25 254	25 599	26 173	26 826	27 472	27 866	27 996	28 412	28 729	28 339	28 237	28 554	28 957	29 144	29 115	29 149	29 189	29 027	29 244	29 459	29 955	29 976	29 981

LIABILITIES AND EQUITY

Long Term Debt	15 775	16 677	16 629	16 779	17 278	18 227	18 825	18 824	19 022	19 220	18 819	18 292	18 090	18 490	18 639	16 239	17 038	15 838	16 637	15 629	16 029	16 503	16 702	16 302	16 252
Current and Other Liabilities	2 345	1 932	2 207	2 193	2 056	1 544	1 368	1 539	1 247	1 240	1 740	1 659	1 545	1 248	1 286	3 647	2 590	3 599	2 617	3 242	2 842	2 366	2 444	2 644	2 481
Contributions in Aid of Construction	522	533	543	554	565	577	588	600	611	622	634	645	656	666	677	700	722	745	768	791	813	836	859	881	904
Retained Earnings	5 891	6 083	6 279	6 477	6 677	6 883	7 093	7 306	7 519	7 732	7 940	8 147	8 350	8 554	8 758	8 962	9 167	9 371	9 571	9 769	9 964	10 158	10 354	10 552	10 748
Accumulated Other Comprehensive Income	(404)	(404)	(404)	(404)	(404)	(404)	(404)	(404)	(404)	(404)	(404)	(404)	(404)	(404)	(404)	(404)	(404)	(404)	(404)	(404)	(404)	(404)	(404)	(404)	(404)
Total Liabilities and Equity	24 129	24 820	25 254	25 599	26 173	26 826	27 472	27 866	27 996	28 412	28 729	28 339	28 237	28 554	28 957	29 144	29 115	29 149	29 189	29 027	29 244	29 459	29 955	29 976	29 981

7

1 **REFERENCE: Chapter 11: Financial Evaluation of Development Plans; Section: 11.2;**
 2 **Page No.: 7; Ratepayer Impacts**

3

4 **PREAMBLE:** Cumulative Rates under the Preferred Development Plan “cross-over”
 5 compared to all other plans and begin to provide benefits to customers in a relatively
 6 short time frame following the in-service date of the Conawapa generating station.

7

8 **QUESTION:**

9 Please provide a narrative comparison of the cumulative rates of each of the analyzed plans on
 10 a net present value basis in 2014 dollars, utilizing the 5.05% discount rate used in the NFAT.

11

12 **RESPONSE:**

13 This response addresses the following Round I information requests relating to the net present
 14 value of general consumers’ revenue:

15

16	Round 1 PUB-149b-d	Round 1 CAC-141a-b
17	Round 1 PUB-150b	Round 1 CAC-142
18	Round 1 PUB-198a	Round 1 CAC-155b
19	Round 1 CAC-163	Round 1 MMF-054
20	Round 1 PUB-243a-b	

21

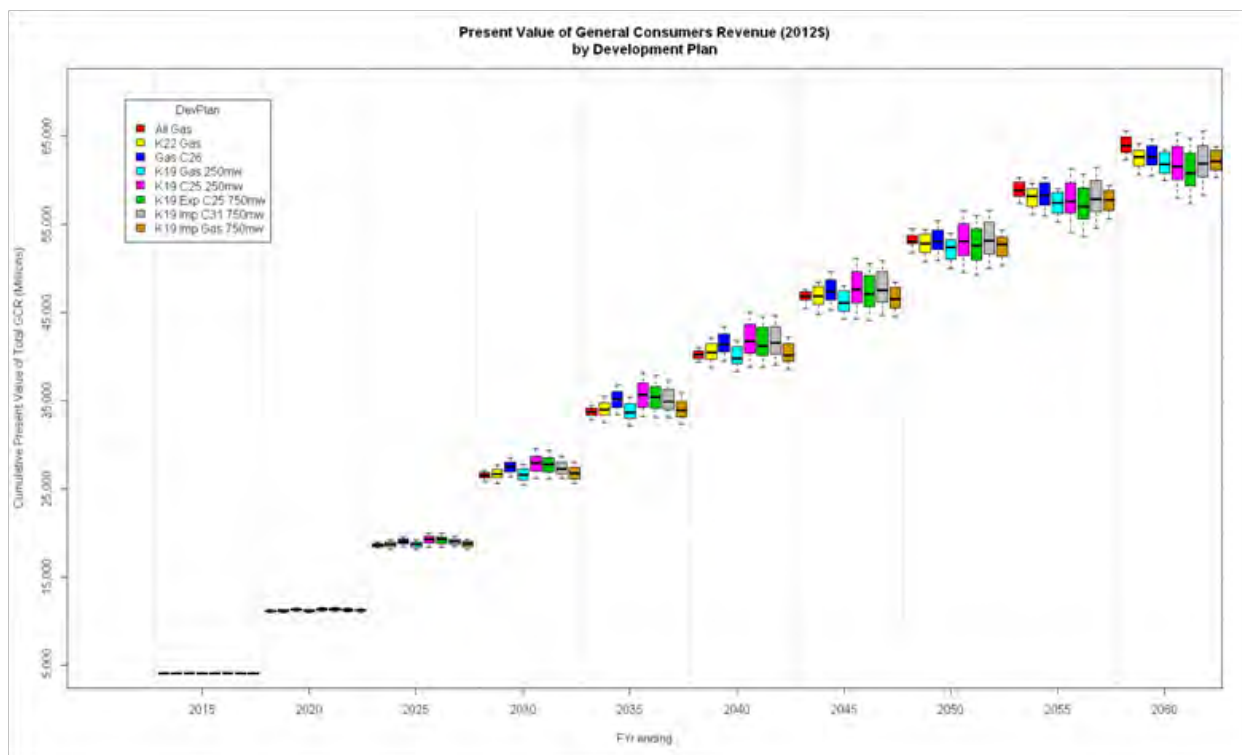
22 Please see the attachment to this response, for enlarged figures 11.10, 11.11 and 11.12.

1 Figure 11.10 shows the impacts on customer rates (seen in Figure 11.1, Chapter 11, page 8) on
 2 a present value basis and represents the projected cumulative present value of total general
 3 consumers' revenue for the 50 year study period. Figure 11.10 shows that:

- 4 • In the near term, by 2020, the cumulative present values for the various alternatives are
 5 relatively similar.
- 6 • By 2030, the cumulative present value of the capital-intensive plans that include both
 7 Keeyask and Conawapa are generally higher than the other alternatives.
- 8 • Between 2030 and 2050, K19/Gas/250 (light blue) is projected to have the lowest
 9 cumulative present value at the P50 value.
- 10 • From 2050 to the end of the study period, the preferred development plan (green) is
 11 projected to have the lowest cumulative present value at the P50 value.

12

Figure 11.10



13 Total general consumers' revenue, comprised of 'General Consumers Revenue at approved
 14 rates' and 'Additional General Consumers Revenue' from the pro forma financial projections
 15 found in Appendix 11.4, were discounted using a real discount rate of 1.86% which represents
 16 the real return on risk free savings of the customer, which reflects the compensation customers
 17

1 receive for saving. While it is not appropriate to discount customer bill impacts using Manitoba
 2 Hydro's real weighted average cost of capital (5.05%), Manitoba Hydro has provided discount
 3 rate sensitivity analysis in a subsequent portion of this response (Figure 11.13). Manitoba
 4 Hydro's cost of capital and the uncertainty around it has already been captured in the projected
 5 annual revenue requirements for each development plan and scenario by incorporating the
 6 projections of high, reference and low interest and escalation rates in the uncertainty analysis.
 7 The 1.86% real discount rate was calculated as follows:

8
 9 $(A - B) / (1 + B) (\%)$ where,

10
 11 **A** = Manitoba Hydro's Projected Short Term Canadian T-Bill Rate¹
 12 less Provincial Guarantee Fee = (4.80% - 1.00%) = 3.80%

13 **B** = Manitoba Hydro's Projected Consumers Price Index² = 1.90%

14
 15 $(3.80\% - 1.90\%) / (1 + 1.90\%) = 1.86\%$

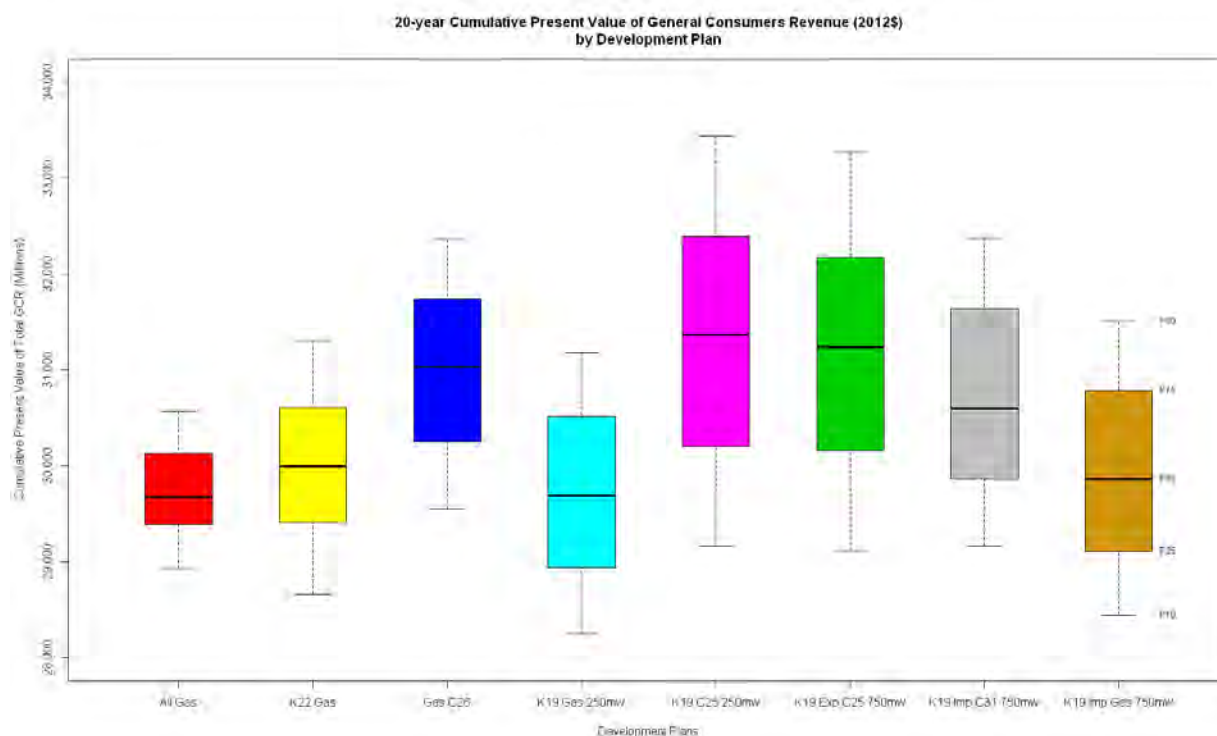
¹ MH Short Term Canadian T-Bill Rate includes the Provincial Guarantee Fee (*Appendix 11.2 - Projected Escalation, Interest and Exchange Rates, page 1*)

² MB CPI (*Appendix 11.2 - Projected Escalation, Interest and Exchange Rates, page 1*)

1 Figure 11.11 shows the projected 20 year cumulative present value of total general consumers'
 2 revenue for 2012/13 to 2031/32.

- 3
- 4 • During this time frame, the projected 20 year cumulative present values for the
 5 Preferred Development Plan (green) are generally higher, in keeping with its higher
 6 upfront capital investment.
 - 7 • The rank order of the development plans are very similar to what was presented in
 8 Figure 11.2 of the main submission which is the result of the even-annual rate setting
 9 methodology to achieve the targeted debt/equity ratio of 75:25 by the end of 2031/32.

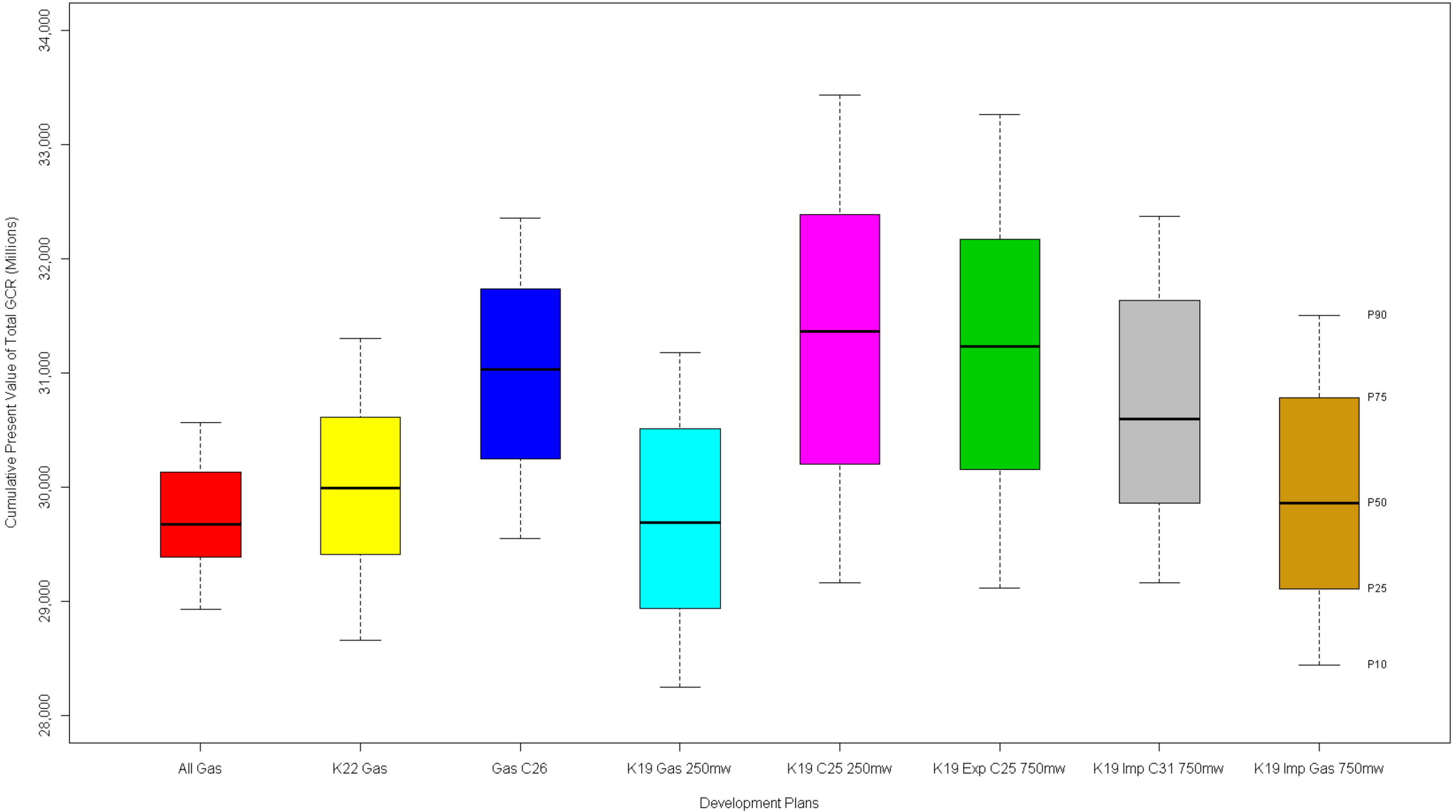
Figure 11.11



10

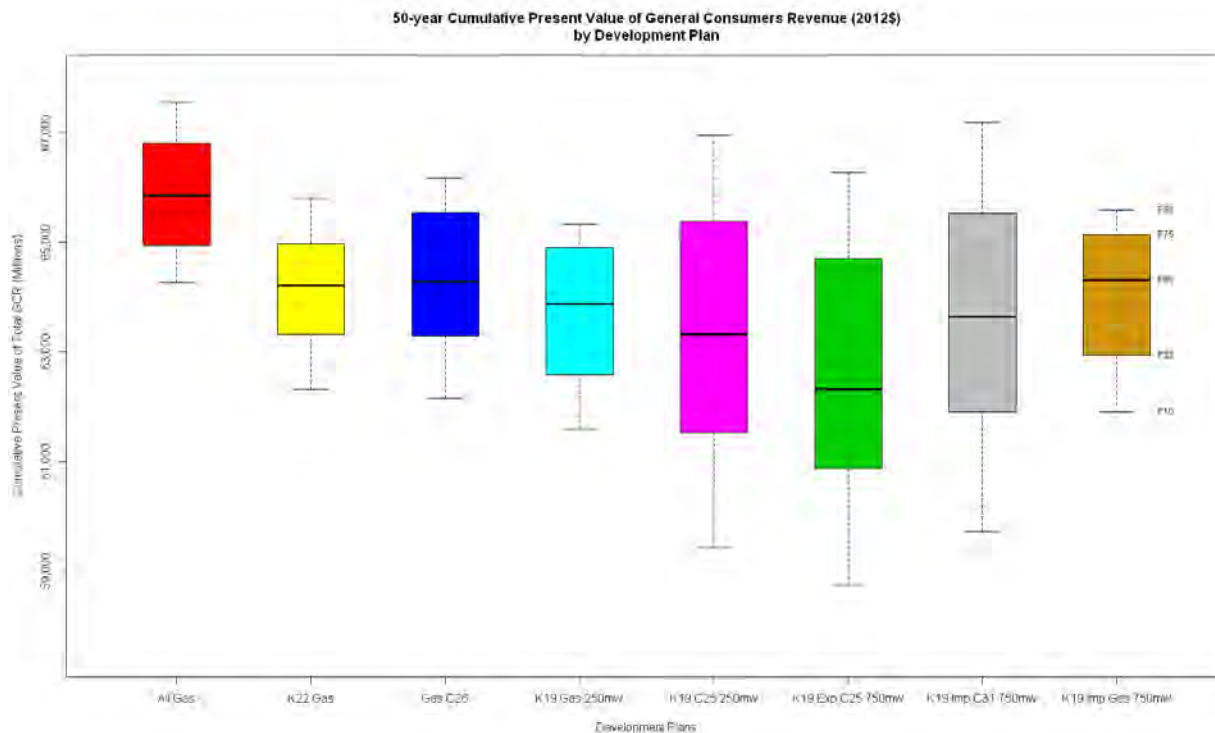
11

20-year Cumulative Present Value of General Consumers Revenue (2012\$) by Development Plan



1 Figure 11.12 shows the projected 50 year cumulative present value of total general consumers’
 2 revenue for 2012/13 to 2061/62. The Preferred Development Plan (green) has the lowest 50
 3 year cumulative present value across the P25, P50 and P75 probability values.

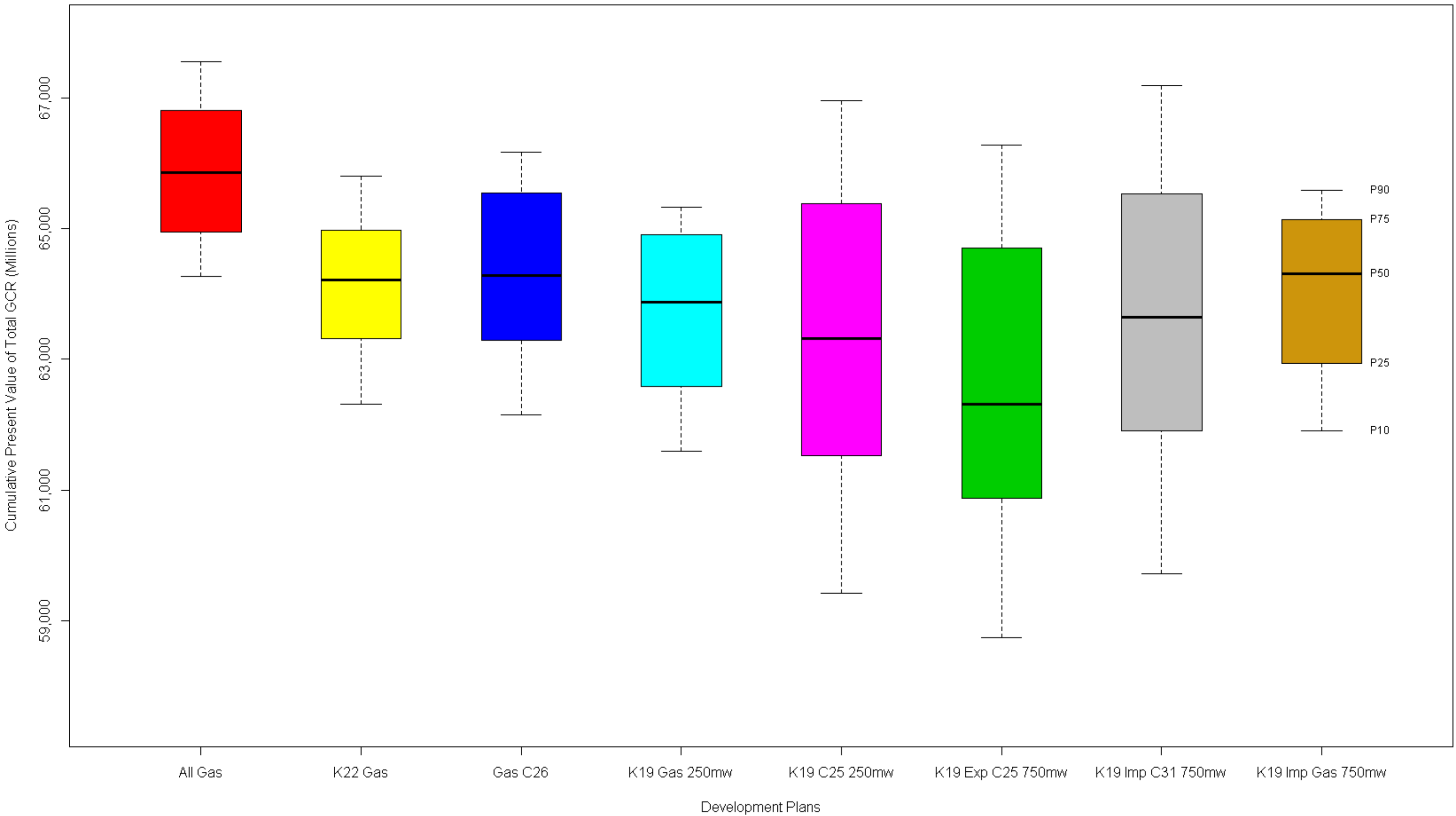
4 **Figure 11.12**



5

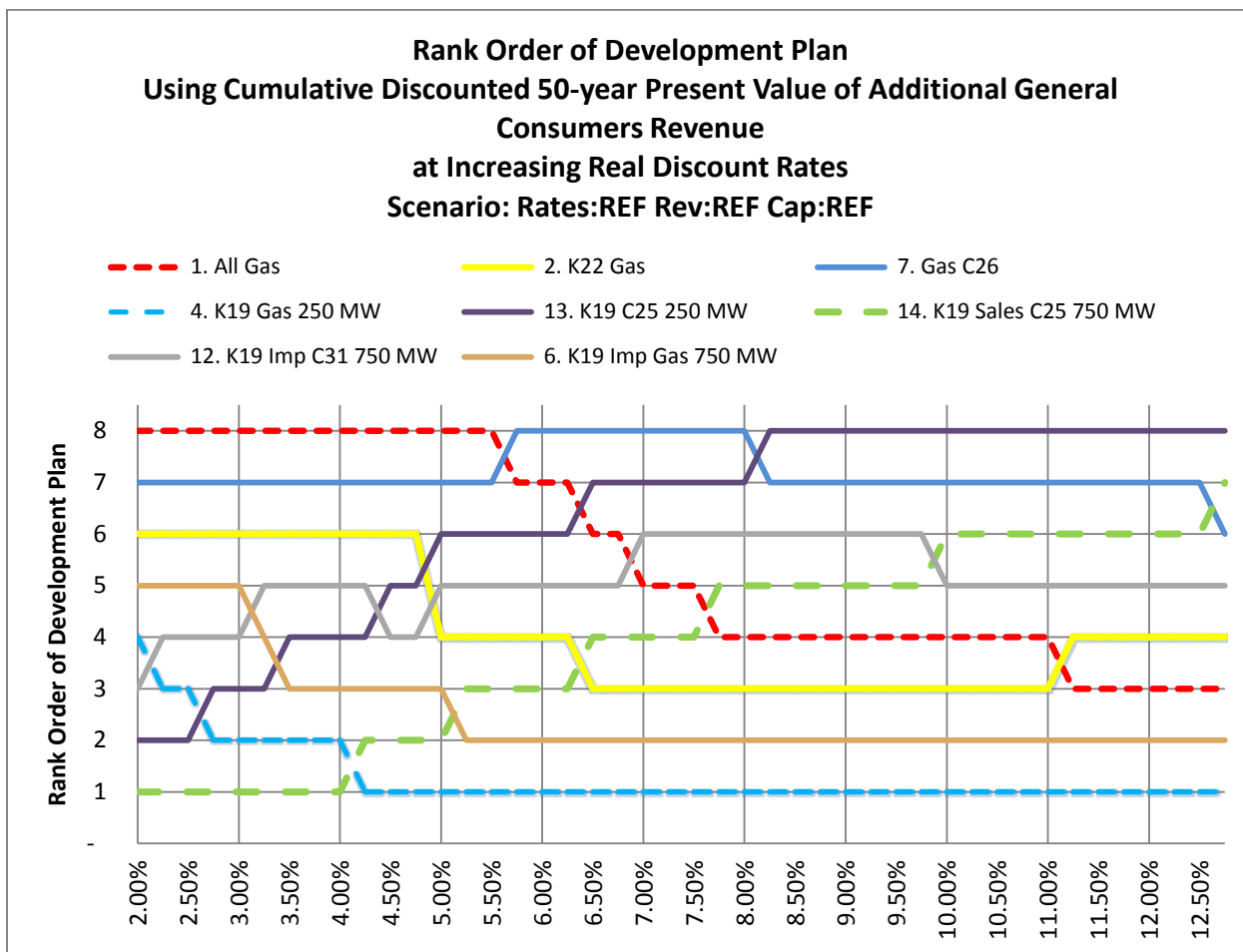
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**50-year Cumulative Present Value of General Consumers Revenue (2012\$)
by Development Plan**



1 Figure 11.13 identifies the ranking of development plans based on present value of discounted
 2 Additional General Consumers Revenue for each development plan under the reference
 3 scenario at various discount rates. This figure illustrates the sensitivity of the present value of
 4 relative rate impacts for each development plan using the social discount rate. The plot
 5 demonstrates that the Preferred Development Plan provides the lowest customer bill impacts
 6 on a present value basis up to a real discount rate of approximately 4.15%.

7 Figure 11.13



8

9

- 1 Table 11.1 updates Table 14.8 (NFAT Chapter 14, page 19) , summarizing key financial results under the reference scenario,
2 providing additional information regarding cumulative nominal rate increases (Columns J and K), debt/equity ratios (Columns L and
3 M) and present values of consumers revenue (Columns N and O).

4

5

Table 11.1

Table 14.8 Financial Evaluation Summary under Reference Scenario WITH ADDITIONAL INFORMATION IN YELLOW

Pathway	Interconnection	Plan #	Development Plan	(A) Cumulative Nominal Rate Increases by 2061/62 - Compared to All Gas	(B) Projected Even-Annual Rate Increases (2014/15 to 2031/32)	(C) Equivalent Even-Annual Rate Increases over the Forecast Period (50 Years)	(J) Cumulative Nominal Rate Increases at at 2031/32	(K) Cumulative Nominal Rate Increases as at 2061/62	As at 2031/32 in Billions of Nominal Dollars				As at 2061/62 in Billions of Nominal Dollars				(N) * 20 year Present Value of Consumers Revenue (2031/32 back to 2012/13) in Billions of 2012PV\$	(O) * 50 year Present Value of Consumers Revenue (2061/62 back to 2012/13) in Billions of 2012PV\$
									(D) Net Fixed Assets	(E) Net Debt	(F) Retained Earnings	(L) Debt:Equity Ratio as at 2031/32	(G) Net Fixed Assets	(H) Net Debt	(I) Retained Earnings	(M) Debt:Equity Ratio as at 2061/62		
1	No New	1	All Gas	-	3.43%	2.07%	90%	176%	\$20.2	\$14.7	\$4.8	75%	\$31.8	\$15.5	\$10.7	58%	\$29.6	\$65.9
		7	Gas C26	-42%	3.86%	1.72%	105%	134%	\$28.1	\$20.4	\$6.7	75%	\$34.4	\$14.6	\$13.7	51%	\$30.7	\$64.3
2		2	K22 Gas	-36%	3.49%	1.77%	92%	140%	\$25.3	\$18.4	\$6.0	75%	\$33.9	\$15.3	\$12.8	53%	\$29.7	\$64.3
		3	250 MW	4	K19 Gas 250 MW	-33%	3.42%	1.80%	90%	\$24.8	\$18.1	\$5.9	75%	\$34.0	\$15.6	\$12.6	54%	\$29.6
3	250 MW	13	K19 C25 250 MW	-65%	3.98%	1.50%	109%	111%	\$32.7	\$23.8	\$7.9	75%	\$36.7	\$15.0	\$15.6	48%	\$31.0	\$63.1
		4	750 MW	12	K19 Imp C31 750 MW	-65%	3.80%	1.50%	102%	\$35.2	\$25.7	\$8.5	75%	\$38.6	\$15.6	\$16.8	47%	\$30.5
5		6	K19 Imp Gas 750 MW	-33%	3.50%	1.79%	92%	143%	\$25.0	\$18.2	\$6.0	75%	\$33.6	\$15.2	\$12.6	54%	\$29.8	\$63.7
		14	K19 Sales C25 750 MW	-70%	3.95%	1.44%	108%	106%	\$32.9	\$24.0	\$7.9	75%	\$36.8	\$15.1	\$15.7	48%	\$30.9	\$62.4

6

* 2012 Constant dollar Consumers' Revenue discounted at 1.86% real discount rate

1 Tables 11.2 to 11.7 and Figures 11.14 to 11.16 provide (i) the projected absolute cumulative
2 present value of total general consumers' revenue and (ii) the projected incremental
3 cumulative present value of total general consumers' revenue (compared to the Preferred
4 Development Plan) for the following three scenarios:

- 5 1. Economic Indicators: Reference, Energy Prices: Reference, Capital Costs: Reference
- 6 2. Economic Indicators: High, Energy Prices: Low, Capital Costs: High
- 7 3. Economic Indicators: Low, Energy Prices: High, Capital Costs: Low

8

1

Table 11.2

CUMULATIVE PRESENT VALUE OF TOTAL GENERAL CONSUMERS' REVENUE

REAL DISCOUNT RATE - 1.86%

DEVELOPMENT PLANS FROM CHAPTER 11 - FINANCIAL EVALUATION

SCENARIO: Economics:REF Rev:REF Cap:REF

IN MILLIONS OF DOLLARS

Fiscal Year Ending	1 - All Gas	7 - Gas C26	2 - K22 Gas	4 - K19 Gas 250 MW	13 - K19 C25 250 MW	12 - K19 Imp C31 750 MW	6 - K19 Imp Gas 750 MW	14 - K19 C25 750 MW
2013	1,331	1,331	1,331	1,331	1,331	1,331	1,331	1,331
2014	2,689	2,689	2,689	2,689	2,689	2,689	2,689	2,689
2015	4,057	4,062	4,058	4,057	4,064	4,062	4,058	4,064
2016	5,436	5,454	5,439	5,436	5,458	5,451	5,439	5,457
2017	6,827	6,861	6,832	6,826	6,871	6,856	6,832	6,868
2018	8,232	8,290	8,241	8,231	8,306	8,282	8,242	8,302
2019	9,654	9,742	9,668	9,653	9,767	9,730	9,669	9,761
2020	11,087	11,210	11,106	11,085	11,245	11,193	11,107	11,237
2021	12,536	12,702	12,561	12,533	12,749	12,679	12,563	12,738
2022	14,001	14,216	14,034	13,998	14,277	14,187	14,036	14,263
2023	15,482	15,754	15,524	15,478	15,831	15,717	15,527	15,812
2024	16,981	17,316	17,031	16,975	17,410	17,269	17,036	17,388
2025	18,496	18,902	18,558	18,490	19,017	18,846	18,563	18,990
2026	20,029	20,512	20,102	20,021	20,649	20,445	20,108	20,617
2027	21,577	22,146	21,663	21,568	22,307	22,067	21,670	22,269
2028	23,142	23,804	23,242	23,131	23,993	23,712	23,250	23,948
2029	24,724	25,488	24,840	24,712	25,706	25,382	24,849	25,654
2030	26,324	27,197	26,456	26,311	27,447	27,076	26,467	27,388
2031	27,941	28,932	28,090	27,926	29,215	28,794	28,103	29,148
2032	29,574	30,692	29,743	29,557	31,012	30,536	29,756	30,936
2033	30,891	32,074	31,085	30,856	32,396	31,863	31,068	32,280
2034	32,195	33,426	32,395	32,137	33,748	33,262	32,360	33,595
2035	33,537	34,767	33,751	33,424	35,087	34,658	33,665	34,892
2036	34,865	36,078	35,094	34,714	36,402	36,038	34,975	36,167
2037	36,166	37,357	36,416	35,990	37,689	37,384	36,268	37,428
2038	37,493	38,617	37,701	37,233	38,956	38,706	37,550	38,671
2039	38,810	39,867	38,997	38,489	40,193	39,993	38,794	39,884
2040	40,105	41,097	40,282	39,736	41,401	41,252	40,051	41,074
2041	41,426	42,313	41,546	40,968	42,609	42,485	41,309	42,241
2042	42,746	43,531	42,825	42,212	43,793	43,709	42,552	43,403
2043	44,073	44,752	44,115	43,469	44,968	44,926	43,800	44,561
2044	45,374	45,965	45,386	44,708	46,118	46,113	45,040	45,694
2045	46,686	47,161	46,626	45,921	47,259	47,280	46,251	46,809
2046	48,002	48,365	47,883	47,161	48,389	48,441	47,480	47,921
2047	49,314	49,563	49,136	48,377	49,521	49,602	48,707	49,036
2048	50,606	50,733	50,364	49,580	50,626	50,730	49,910	50,124
2049	51,853	51,858	51,543	50,736	51,687	51,811	51,066	51,167
2050	53,066	52,952	52,689	51,858	52,716	52,857	52,189	52,177
2051	54,267	54,033	53,820	52,965	53,728	53,884	53,299	53,174
2052	55,439	55,086	54,921	54,042	54,710	54,880	54,378	54,142
2053	56,589	56,115	55,984	55,087	55,663	55,845	55,428	55,080
2054	57,726	57,133	57,019	56,117	56,600	56,790	56,459	56,002
2055	58,834	58,121	58,022	57,124	57,509	57,705	57,461	56,895
2056	59,917	59,079	58,995	58,103	58,381	58,590	58,434	57,754
2057	60,975	60,010	59,938	59,058	59,227	59,449	59,386	58,589
2058	62,002	60,911	60,853	59,980	60,042	60,273	60,303	59,390
2059	63,007	61,786	61,741	60,876	60,834	61,071	61,195	60,166
2060	63,990	62,637	62,611	61,754	61,605	61,844	62,064	60,920
2061	64,953	63,465	63,459	62,612	62,353	62,593	62,910	61,650
2062	65,902	64,271	64,285	63,448	63,079	63,320	63,744	62,358

Manitoba Hydro - NFAT
Culmulative PV of Total General Consumer Revenue - Real Discount Rate 1.86%

TABLE 11.2 - IN MILLIONS OF DOLLARS

Calendar Year End	1 - All Gas	7 - Gas C26	2 - K22 Gas	4 - K19 Gas 250 MW	13 - K19 C25 250 MW	12 - K19 Imp C31 750 MW	6 - K19 Imp Gas 750 MW	14 - K19 C25 750 MW
2013	1,331	1,331	1,331	1,331	1,331	1,331	1,331	1,331
2014	2,689	2,689	2,689	2,689	2,689	2,689	2,689	2,689
2015	4,057	4,062	4,058	4,057	4,064	4,062	4,058	4,064
2016	5,436	5,454	5,439	5,436	5,458	5,451	5,439	5,457
2017	6,827	6,861	6,832	6,826	6,871	6,856	6,832	6,868
2018	8,232	8,290	8,241	8,231	8,306	8,282	8,242	8,302
2019	9,654	9,742	9,668	9,653	9,767	9,730	9,669	9,761
2020	11,087	11,210	11,106	11,085	11,245	11,193	11,107	11,237
2021	12,536	12,702	12,561	12,533	12,749	12,679	12,563	12,738
2022	14,001	14,216	14,034	13,998	14,277	14,187	14,036	14,263
2023	15,482	15,754	15,524	15,478	15,831	15,717	15,527	15,812
2024	16,981	17,316	17,031	16,975	17,410	17,269	17,036	17,388
2025	18,496	18,902	18,558	18,490	19,017	18,846	18,563	18,990
2026	20,029	20,512	20,102	20,021	20,649	20,445	20,108	20,617
2027	21,577	22,146	21,663	21,568	22,307	22,067	21,670	22,269
2028	23,142	23,804	23,242	23,131	23,993	23,712	23,250	23,948
2029	24,724	25,488	24,840	24,712	25,706	25,382	24,849	25,654
2030	26,324	27,197	26,456	26,311	27,447	27,076	26,467	27,388
2031	27,941	28,932	28,090	27,926	29,215	28,794	28,103	29,148
2032	29,574	30,692	29,743	29,557	31,012	30,536	29,756	30,936
2033	30,891	32,074	31,085	30,856	32,396	31,863	31,068	32,280
2034	32,195	33,426	32,395	32,137	33,748	33,262	32,360	33,595
2035	33,537	34,767	33,751	33,424	35,087	34,658	33,665	34,892
2036	34,865	36,078	35,094	34,714	36,402	36,038	34,975	36,167
2037	36,166	37,357	36,416	35,990	37,689	37,384	36,268	37,428
2038	37,493	38,617	37,701	37,233	38,956	38,706	37,550	38,671
2039	38,810	39,867	38,997	38,489	40,193	39,993	38,794	39,884
2040	40,105	41,097	40,282	39,736	41,401	41,252	40,051	41,074
2041	41,426	42,313	41,546	40,968	42,609	42,485	41,309	42,241
2042	42,746	43,531	42,825	42,212	43,793	43,709	42,552	43,403
2043	44,073	44,752	44,115	43,469	44,968	44,926	43,800	44,561
2044	45,374	45,965	45,386	44,708	46,118	46,113	45,040	45,694
2045	46,686	47,161	46,626	45,921	47,259	47,280	46,251	46,809
2046	48,002	48,365	47,883	47,161	48,389	48,441	47,480	47,921
2047	49,314	49,563	49,136	48,377	49,521	49,602	48,707	49,036
2048	50,606	50,733	50,364	49,580	50,626	50,730	49,910	50,124
2049	51,853	51,858	51,543	50,736	51,687	51,811	51,066	51,167
2050	53,066	52,952	52,689	51,858	52,716	52,857	52,189	52,177
2051	54,267	54,033	53,820	52,965	53,728	53,884	53,299	53,174
2052	55,439	55,086	54,921	54,042	54,710	54,880	54,378	54,142
2053	56,589	56,115	55,984	55,087	55,663	55,845	55,428	55,080
2054	57,726	57,133	57,019	56,117	56,600	56,790	56,459	56,002
2055	58,834	58,121	58,022	57,124	57,509	57,705	57,461	56,895
2056	59,917	59,079	58,995	58,103	58,381	58,590	58,434	57,754
2057	60,975	60,010	59,938	59,058	59,227	59,449	59,386	58,589
2058	62,002	60,911	60,853	59,980	60,042	60,273	60,303	59,390
2059	63,007	61,786	61,741	60,876	60,834	61,071	61,195	60,166
2060	63,990	62,637	62,611	61,754	61,605	61,844	62,064	60,920
2061	64,953	63,465	63,459	62,612	62,353	62,593	62,910	61,650
2062	65,902	64,271	64,285	63,448	63,079	63,320	63,744	62,358

Source: PUB/MH I-149a - Revised

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Table 11.3

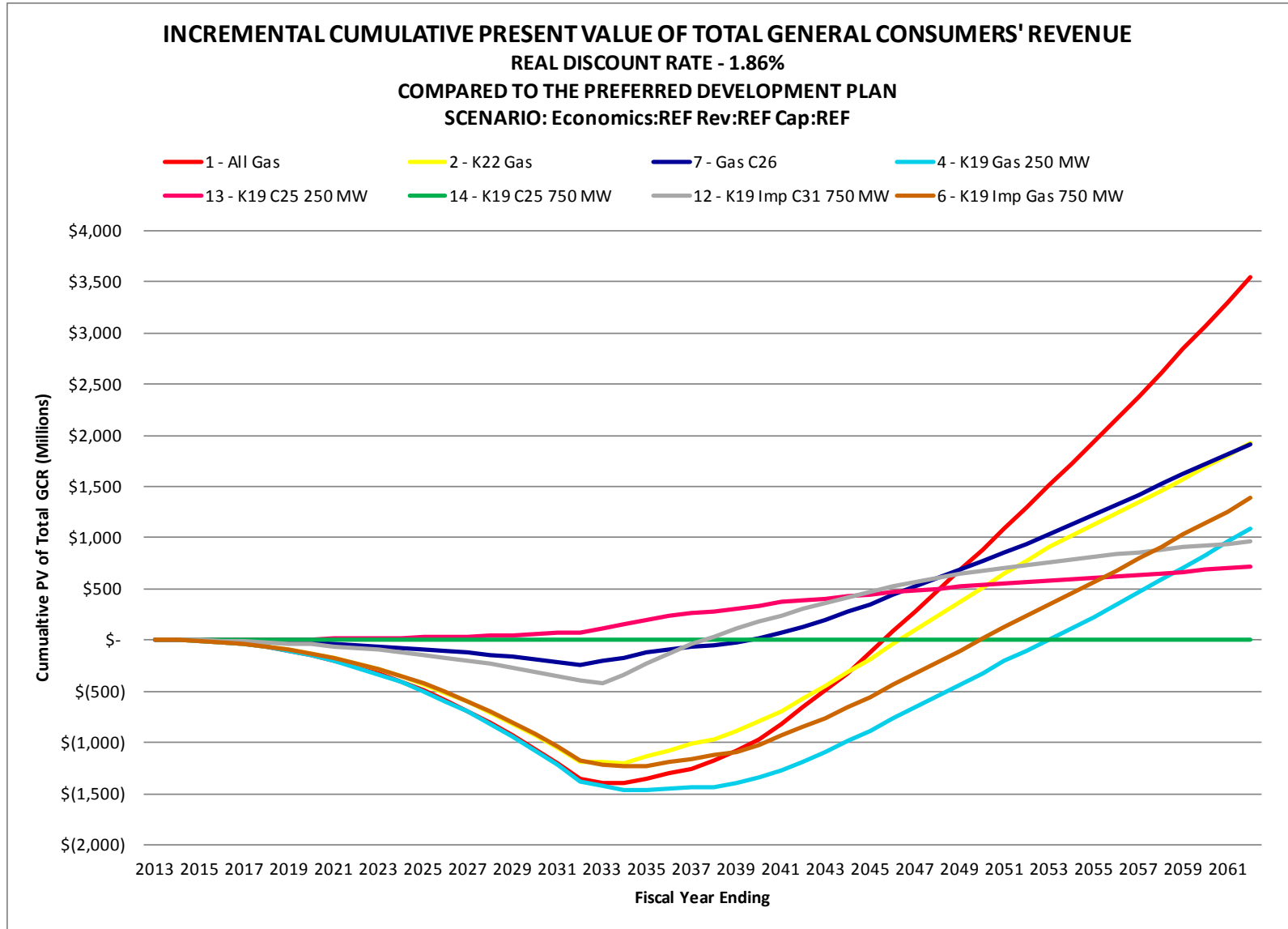
INCREMENTAL CUMULATIVE PRESENT VALUE OF TOTAL GENERAL CONSUMERS' REVENUE
REAL DISCOUNT RATE - 1.86%
COMPARED TO THE PREFERRED DEVELOPMENT PLAN
SCENARIO: Economics:REF Rev:REF Cap:REF

IN MILLIONS OF DOLLARS

Fiscal Year Ending	1 - All Gas	7 - Gas C26	2 - K22 Gas	4 - K19 Gas 250 MW	13 - K19 C25 250 MW	12 - K19 Imp C31 750 MW	6 - K19 Imp Gas 750 MW	14 - K19 C25 750 MW
2013	-	-	-	-	-	-	-	-
2014	-	-	-	-	-	-	-	-
2015	(7)	(1)	(6)	(7)	0	(2)	(6)	-
2016	(21)	(4)	(18)	(21)	1	(6)	(18)	-
2017	(42)	(7)	(37)	(42)	2	(12)	(36)	-
2018	(70)	(12)	(61)	(71)	4	(20)	(61)	-
2019	(106)	(19)	(93)	(108)	6	(31)	(92)	-
2020	(150)	(27)	(131)	(152)	8	(43)	(130)	-
2021	(202)	(36)	(177)	(205)	11	(59)	(174)	-
2022	(262)	(46)	(229)	(265)	14	(76)	(226)	-
2023	(330)	(59)	(289)	(335)	18	(96)	(286)	-
2024	(407)	(72)	(356)	(413)	22	(119)	(352)	-
2025	(493)	(88)	(432)	(500)	27	(144)	(427)	-
2026	(588)	(105)	(515)	(596)	32	(172)	(509)	-
2027	(693)	(124)	(606)	(701)	38	(202)	(599)	-
2028	(806)	(144)	(706)	(817)	45	(236)	(698)	-
2029	(930)	(166)	(815)	(942)	52	(272)	(805)	-
2030	(1,064)	(191)	(932)	(1,077)	59	(312)	(921)	-
2031	(1,208)	(217)	(1,058)	(1,223)	67	(354)	(1,046)	-
2032	(1,362)	(245)	(1,194)	(1,379)	76	(400)	(1,180)	-
2033	(1,390)	(207)	(1,195)	(1,425)	116	(417)	(1,212)	-
2034	(1,400)	(169)	(1,200)	(1,458)	154	(333)	(1,235)	-
2035	(1,355)	(126)	(1,141)	(1,468)	194	(234)	(1,228)	-
2036	(1,302)	(89)	(1,074)	(1,453)	234	(130)	(1,192)	-
2037	(1,262)	(71)	(1,012)	(1,438)	261	(44)	(1,160)	-
2038	(1,179)	(54)	(971)	(1,439)	285	34	(1,122)	-
2039	(1,074)	(17)	(887)	(1,395)	310	109	(1,090)	-
2040	(968)	23	(792)	(1,338)	327	179	(1,023)	-
2041	(815)	72	(695)	(1,273)	368	244	(932)	-
2042	(657)	128	(578)	(1,191)	390	306	(851)	-
2043	(488)	190	(447)	(1,093)	407	364	(761)	-
2044	(320)	272	(308)	(985)	425	419	(654)	-
2045	(123)	352	(183)	(888)	450	471	(558)	-
2046	81	444	(38)	(760)	468	520	(441)	-
2047	278	527	100	(659)	485	566	(330)	-
2048	483	609	241	(543)	502	606	(214)	-
2049	686	691	376	(432)	520	643	(101)	-
2050	889	775	511	(320)	539	680	12	-
2051	1,093	859	646	(209)	554	710	126	-
2052	1,298	944	779	(100)	569	738	237	-
2053	1,509	1,035	904	7	583	765	348	-
2054	1,724	1,131	1,017	115	598	789	458	-
2055	1,939	1,227	1,127	230	614	811	566	-
2056	2,163	1,325	1,241	349	627	836	680	-
2057	2,386	1,421	1,349	469	638	860	796	-
2058	2,612	1,521	1,462	590	652	883	913	-
2059	2,841	1,620	1,574	710	668	905	1,029	-
2060	3,070	1,717	1,691	834	685	924	1,144	-
2061	3,302	1,815	1,809	962	703	943	1,259	-
2062	3,544	1,913	1,927	1,090	721	962	1,386	-

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Figure 11.14



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Table 11.4

CUMULATIVE PRESENT VALUE OF TOTAL GENERAL CONSUMERS' REVENUE
REAL DISCOUNT RATE - 1.86%
DEVELOPMENT PLANS FROM CHAPTER 11 - FINANCIAL EVALUATION
SCENARIO: Economics:HIGH Rev:LOW Cap:HIGH
IN MILLIONS OF DOLLARS

Fiscal Year Ending	1 - All Gas	7 - Gas C26	2 - K22 Gas	4 - K19 Gas 250 MW	13 - K19 C25 250 MW	12 - K19 Imp C31 750 MW	6 - K19 Imp Gas 750 MW	14 - K19 C25 750 MW
2013	1,331	1,331	1,331	1,331	1,331	1,331	1,331	1,331
2014	2,689	2,689	2,689	2,689	2,689	2,689	2,689	2,689
2015	4,071	4,082	4,076	4,077	4,090	4,084	4,079	4,090
2016	5,479	5,510	5,492	5,496	5,535	5,515	5,502	5,534
2017	6,906	6,970	6,933	6,941	7,021	6,980	6,952	7,018
2018	8,358	8,467	8,404	8,417	8,554	8,484	8,437	8,548
2019	9,834	9,999	9,903	9,923	10,131	10,025	9,952	10,122
2020	11,324	11,558	11,421	11,450	11,746	11,595	11,492	11,733
2021	12,837	13,153	12,969	13,007	13,408	13,203	13,064	13,390
2022	14,373	14,784	14,543	14,593	15,117	14,849	14,668	15,094
2023	15,931	16,451	16,146	16,209	16,875	16,533	16,303	16,844
2024	17,512	18,156	17,778	17,856	18,682	18,257	17,973	18,645
2025	19,117	19,899	19,440	19,535	20,542	20,023	19,677	20,496
2026	20,745	21,681	21,131	21,245	22,454	21,830	21,414	22,399
2027	22,396	23,502	22,851	22,986	24,419	23,678	23,186	24,353
2028	24,070	25,363	24,601	24,759	26,439	25,569	24,993	26,362
2029	25,770	27,265	26,383	26,565	28,516	27,505	26,836	28,426
2030	27,494	29,210	28,197	28,406	30,652	29,485	28,716	30,548
2031	29,242	31,196	30,041	30,279	32,847	31,512	30,634	32,728
2032	31,014	33,226	31,918	32,187	35,103	33,584	32,588	34,967
2033	32,811	35,301	33,815	34,074	37,496	35,558	34,562	37,264
2034	34,634	37,422	35,724	35,963	39,995	37,637	36,645	39,599
2035	36,483	39,589	37,649	37,852	42,599	39,834	38,814	41,974
2036	38,357	41,800	39,599	39,960	45,308	42,023	41,008	44,388
2037	40,256	44,055	41,574	42,063	48,122	44,311	43,297	46,841
2038	42,179	46,354	43,583	44,162	51,041	46,700	45,680	49,332
2039	44,126	48,697	45,626	46,256	54,065	49,183	48,168	51,861
2040	46,097	51,084	47,703	48,345	57,194	51,772	50,756	54,429
2041	48,091	53,514	49,796	50,428	60,428	54,416	53,344	57,026
2042	50,107	56,000	51,885	52,505	63,767	57,115	56,032	59,662
2043	52,145	58,541	53,969	54,576	67,211	59,864	58,720	62,337
2044	54,205	61,134	56,048	56,641	70,861	62,663	61,468	65,051
2045	56,286	63,780	58,122	58,699	74,611	65,562	64,217	67,804
2046	58,388	66,479	60,191	60,752	78,514	68,511	66,976	70,595
2047	60,511	69,231	62,255	62,799	82,571	71,510	69,784	73,424
2048	62,655	72,036	64,314	64,839	86,783	74,559	72,632	76,292
2049	64,819	74,894	66,368	66,878	91,151	77,658	75,729	79,200
2050	67,003	77,805	68,417	68,912	95,675	80,807	78,866	82,148
2051	69,206	80,768	70,461	70,941	100,355	84,006	82,054	85,136
2052	71,428	83,783	72,499	72,965	105,191	87,255	85,292	88,164
2053	73,668	86,850	74,532	74,984	110,183	90,554	88,579	91,232
2054	75,926	89,969	76,560	76,998	115,332	93,903	91,916	94,340
2055	78,201	93,140	78,583	78,997	120,639	97,302	95,303	97,488
2056	80,593	96,363	80,601	80,981	126,105	100,751	98,740	100,676
2057	83,002	99,638	82,614	82,950	131,731	104,250	102,227	103,904
2058	85,428	102,964	84,622	84,904	137,517	107,800	105,764	107,172
2059	87,871	106,341	86,625	86,843	143,465	111,400	109,351	110,480
2060	90,331	109,768	88,623	88,767	149,575	115,050	112,988	113,828
2061	92,807	113,245	90,616	90,676	155,947	118,750	116,675	117,216
2062	95,300	116,772	92,604	92,570	162,581	122,500	120,412	120,644

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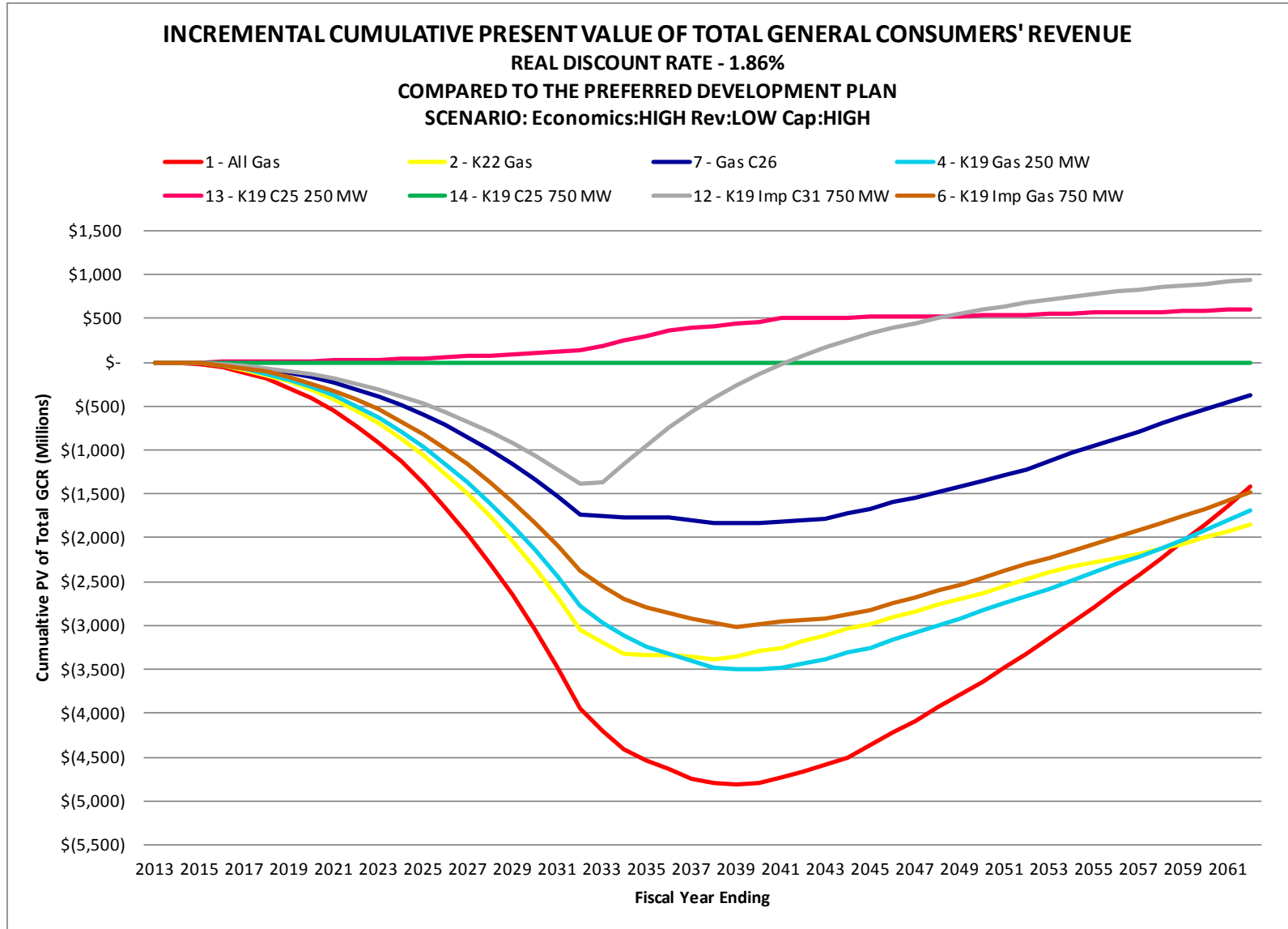
Table 11.5

INCREMENTAL CUMULATIVE PRESENT VALUE OF TOTAL GENERAL CONSUMERS' REVENUE
REAL DISCOUNT RATE - 1.86%
COMPARED TO THE PREFERRED DEVELOPMENT PLAN
SCENARIO: Economics:HIGH Rev:LOW Cap:HIGH
IN MILLIONS OF DOLLARS

Fiscal Year Ending	1 - All Gas	7 - Gas C26	2 - K22 Gas	4 - K19 Gas 250 MW	13 - K19 C25 250 MW	12 - K19 Imp C31 750 MW	6 - K19 Imp Gas 750 MW	14 - K19 C25 750 MW
2013	-	-	-	-	-	-	-	-
2014	-	-	-	-	-	-	-	-
2015	(18)	(8)	(14)	(12)	1	(6)	(11)	-
2016	(55)	(23)	(42)	(38)	2	(18)	(32)	-
2017	(112)	(47)	(85)	(77)	4	(37)	(65)	-
2018	(189)	(80)	(144)	(131)	6	(64)	(111)	-
2019	(288)	(123)	(219)	(199)	9	(97)	(169)	-
2020	(409)	(175)	(311)	(283)	13	(138)	(241)	-
2021	(553)	(237)	(422)	(383)	18	(187)	(326)	-
2022	(721)	(310)	(550)	(500)	24	(245)	(426)	-
2023	(914)	(393)	(698)	(635)	30	(311)	(541)	-
2024	(1,133)	(489)	(867)	(788)	38	(387)	(672)	-
2025	(1,380)	(597)	(1,056)	(961)	46	(473)	(820)	-
2026	(1,654)	(717)	(1,268)	(1,154)	55	(569)	(985)	-
2027	(1,957)	(851)	(1,502)	(1,367)	66	(675)	(1,168)	-
2028	(2,291)	(999)	(1,760)	(1,603)	77	(792)	(1,369)	-
2029	(2,657)	(1,161)	(2,043)	(1,861)	90	(922)	(1,590)	-
2030	(3,055)	(1,339)	(2,352)	(2,143)	104	(1,063)	(1,832)	-
2031	(3,486)	(1,532)	(2,687)	(2,449)	119	(1,217)	(2,095)	-
2032	(3,953)	(1,741)	(3,050)	(2,780)	136	(1,383)	(2,379)	-
2033	(4,200)	(1,760)	(3,195)	(2,963)	191	(1,363)	(2,552)	-
2034	(4,412)	(1,773)	(3,317)	(3,120)	245	(1,162)	(2,703)	-
2035	(4,537)	(1,771)	(3,335)	(3,237)	300	(949)	(2,798)	-
2036	(4,639)	(1,774)	(3,338)	(3,315)	360	(736)	(2,850)	-
2037	(4,754)	(1,808)	(3,361)	(3,401)	389	(565)	(2,915)	-
2038	(4,797)	(1,839)	(3,390)	(3,488)	415	(410)	(2,967)	-
2039	(4,806)	(1,840)	(3,352)	(3,502)	440	(267)	(3,011)	-
2040	(4,802)	(1,830)	(3,296)	(3,492)	464	(133)	(2,987)	-
2041	(4,737)	(1,821)	(3,253)	(3,481)	504	(20)	(2,950)	-
2042	(4,672)	(1,804)	(3,185)	(3,437)	512	79	(2,937)	-
2043	(4,595)	(1,779)	(3,113)	(3,379)	511	165	(2,919)	-
2044	(4,505)	(1,723)	(3,037)	(3,312)	511	247	(2,872)	-
2045	(4,366)	(1,670)	(2,985)	(3,259)	521	322	(2,832)	-
2046	(4,219)	(1,598)	(2,901)	(3,157)	523	388	(2,749)	-
2047	(4,084)	(1,538)	(2,835)	(3,081)	524	448	(2,679)	-
2048	(3,938)	(1,479)	(2,766)	(2,997)	527	502	(2,605)	-
2049	(3,790)	(1,420)	(2,698)	(2,915)	529	553	(2,532)	-
2050	(3,639)	(1,357)	(2,627)	(2,832)	534	600	(2,457)	-
2051	(3,483)	(1,290)	(2,549)	(2,750)	539	641	(2,380)	-
2052	(3,321)	(1,217)	(2,467)	(2,667)	544	681	(2,304)	-
2053	(3,145)	(1,130)	(2,394)	(2,582)	550	719	(2,227)	-
2054	(2,965)	(1,039)	(2,334)	(2,496)	557	752	(2,148)	-
2055	(2,788)	(950)	(2,282)	(2,400)	564	782	(2,070)	-
2056	(2,605)	(868)	(2,233)	(2,304)	567	809	(1,991)	-
2057	(2,419)	(786)	(2,182)	(2,210)	572	833	(1,911)	-
2058	(2,234)	(704)	(2,128)	(2,116)	577	855	(1,830)	-
2059	(2,038)	(620)	(2,068)	(2,020)	582	876	(1,749)	-
2060	(1,841)	(539)	(1,999)	(1,914)	589	897	(1,666)	-
2061	(1,640)	(457)	(1,926)	(1,803)	598	915	(1,581)	-
2062	(1,420)	(377)	(1,854)	(1,692)	606	932	(1,475)	-

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Figure 11.15



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Table 11.6

CUMULATIVE PRESENT VALUE OF TOTAL GENERAL CONSUMERS' REVENUE
REAL DISCOUNT RATE - 1.86%
DEVELOPMENT PLANS FROM CHAPTER 11 - FINANCIAL EVALUATION
SCENARIO: Economics:LOW Rev:HIGH Cap:LOW
IN MILLIONS OF DOLLARS

Fiscal Year Ending	1 - All Gas	7 - Gas C26	2 - K22 Gas	4 - K19 Gas 250 MW	13 - K19 C25 250 MW	12 - K19 Imp C31 750 MW	6 - K19 Imp Gas 750 MW	14 - K19 C25 750 MW
2013	1,331	1,331	1,331	1,331	1,331	1,331	1,331	1,331
2014	2,689	2,689	2,689	2,689	2,689	2,689	2,689	2,689
2015	4,043	4,044	4,039	4,037	4,038	4,041	4,038	4,038
2016	5,398	5,399	5,385	5,380	5,382	5,392	5,381	5,383
2017	6,754	6,756	6,728	6,718	6,722	6,741	6,720	6,724
2018	8,118	8,122	8,076	8,058	8,066	8,097	8,062	8,068
2019	9,494	9,500	9,430	9,403	9,415	9,461	9,410	9,418
2020	10,873	10,882	10,784	10,746	10,763	10,828	10,756	10,767
2021	12,264	12,275	12,144	12,093	12,116	12,203	12,107	12,122
2022	13,664	13,679	13,509	13,444	13,474	13,586	13,461	13,481
2023	15,074	15,092	14,880	14,799	14,836	14,976	14,820	14,844
2024	16,495	16,517	16,257	16,157	16,203	16,374	16,184	16,213
2025	17,926	17,954	17,640	17,520	17,575	17,781	17,552	17,587
2026	19,368	19,400	19,028	18,886	18,951	19,195	18,923	18,966
2027	20,819	20,856	20,421	20,255	20,330	20,616	20,298	20,348
2028	22,279	22,323	21,819	21,627	21,714	22,045	21,677	21,734
2029	23,751	23,801	23,222	23,002	23,102	23,482	23,060	23,125
2030	25,232	25,289	24,631	24,382	24,495	24,926	24,447	24,521
2031	26,724	26,788	26,045	25,764	25,891	26,378	25,838	25,921
2032	28,224	28,297	27,463	27,148	27,291	27,837	27,231	27,325
2033	29,518	29,496	28,694	28,338	28,414	28,905	28,437	28,427
2034	30,801	30,675	29,880	29,513	29,520	29,994	29,626	29,513
2035	32,105	31,843	31,092	30,691	30,616	31,085	30,815	30,587
2036	33,396	32,989	32,299	31,875	31,692	32,170	32,012	31,644
2037	34,660	34,112	33,495	33,050	32,752	33,240	33,198	32,685
2038	35,946	35,228	34,655	34,188	33,805	34,300	34,381	33,721
2039	37,226	36,338	35,825	35,336	34,841	35,342	35,525	34,739
2040	38,486	37,438	36,992	36,482	35,858	36,373	36,679	35,749
2041	39,768	38,532	38,144	37,616	36,885	37,390	37,844	36,736
2042	41,060	39,638	39,310	38,763	37,903	38,413	39,008	37,727
2043	42,369	40,759	40,501	39,934	38,927	39,444	40,190	38,728
2044	43,656	41,881	41,688	41,102	39,939	40,462	41,369	39,718
2045	44,955	42,999	42,854	42,252	40,955	41,473	42,526	40,702
2046	46,273	44,138	44,042	43,437	41,977	42,498	43,703	41,701
2047	47,598	45,283	45,236	44,601	43,008	43,533	44,889	42,711
2048	48,912	46,413	46,420	45,768	44,026	44,550	46,065	43,706
2049	50,182	47,502	47,559	46,891	45,006	45,528	47,196	44,664
2050	51,427	48,569	48,675	47,989	45,964	46,483	48,304	45,601
2051	52,667	49,633	49,787	49,081	46,917	47,429	49,404	46,532
2052	53,886	50,678	50,879	50,150	47,850	48,354	50,480	47,443
2053	55,080	51,701	51,941	51,191	48,757	49,251	51,528	48,328
2054	56,266	52,718	52,989	52,224	49,657	50,140	52,567	49,207
2055	57,426	53,711	54,007	53,233	50,536	51,004	53,579	50,065
2056	58,564	54,676	55,000	54,220	51,384	51,845	54,570	50,893
2057	59,680	55,620	55,972	55,189	52,211	52,669	55,542	51,700
2058	60,769	56,538	56,917	56,128	53,012	53,465	56,485	52,479
2059	61,836	57,435	57,844	57,049	53,793	54,240	57,409	53,240
2060	62,884	58,314	58,754	57,953	54,556	54,999	58,314	53,984
2061	63,913	59,175	59,645	58,840	55,304	55,739	59,200	54,710
2062	64,935	60,025	60,527	59,717	56,042	56,469	60,080	55,427

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Table 11.7

INCREMENTAL CUMULATIVE PRESENT VALUE OF TOTAL GENERAL CONSUMERS' REVENUE

REAL DISCOUNT RATE - 1.86%

COMPARED TO THE PREFERRED DEVELOPMENT PLAN

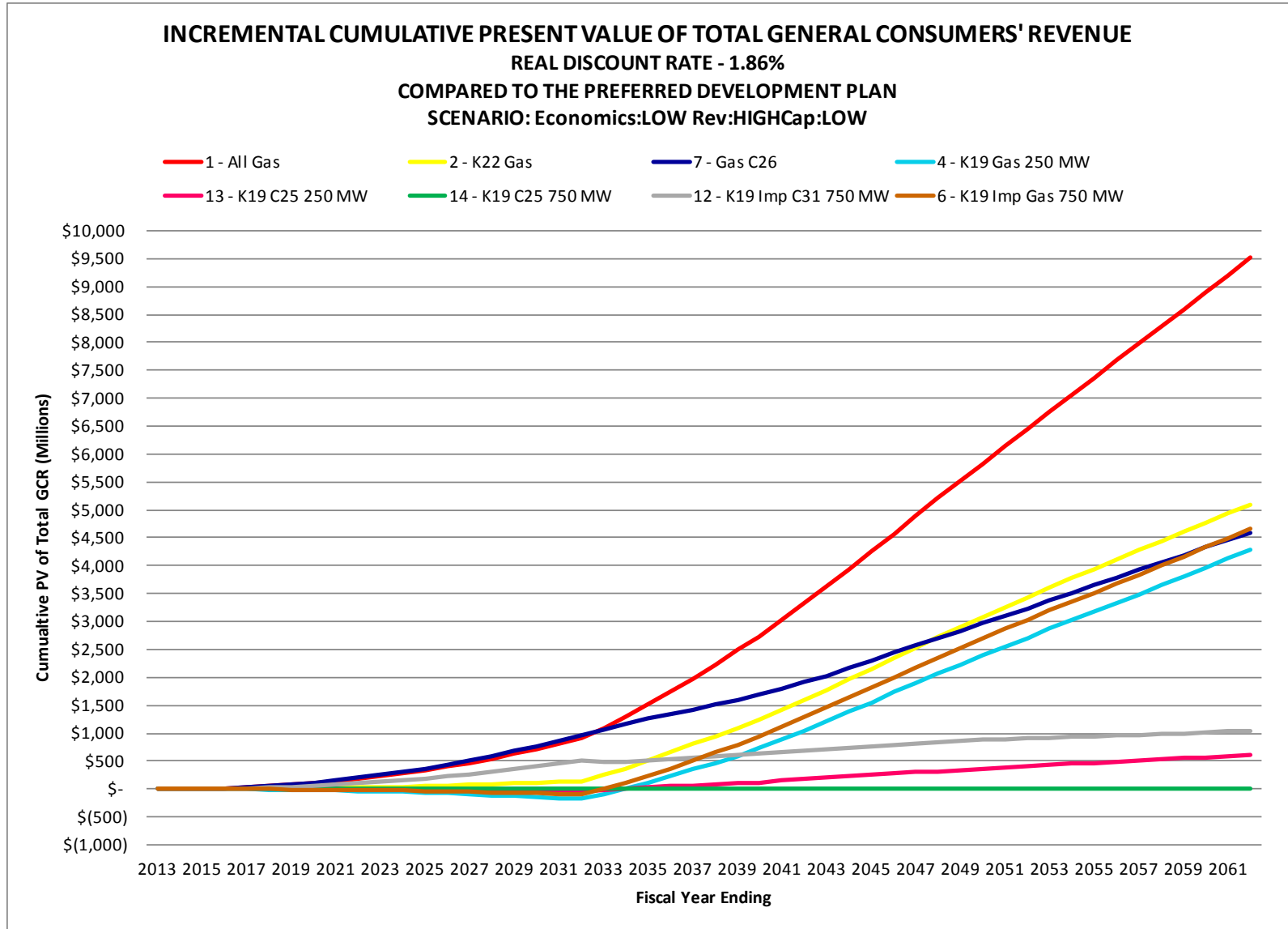
SCENARIO: Economics:LOW Rev:HIGH Cap:LOW

IN MILLIONS OF DOLLARS

Fiscal Year Ending	1 - All Gas	7 - Gas C26	2 - K22 Gas	4 - K19 Gas 250 MW	13 - K19 C25 250 MW	12 - K19 Imp C31 750 MW	6 - K19 Imp Gas 750 MW	14 - K19 C25 750 MW
2013	-	-	-	-	-	-	-	-
2014	-	-	-	-	-	-	-	-
2015	5	5	1	(1)	(0)	3	(1)	-
2016	15	16	2	(3)	(1)	9	(2)	-
2017	30	33	5	(6)	(1)	17	(3)	-
2018	50	54	8	(10)	(2)	29	(5)	-
2019	76	82	12	(15)	(3)	43	(8)	-
2020	106	115	17	(21)	(4)	61	(11)	-
2021	142	153	22	(28)	(5)	81	(15)	-
2022	183	198	29	(36)	(7)	105	(19)	-
2023	230	248	36	(46)	(9)	131	(24)	-
2024	282	304	44	(56)	(11)	161	(30)	-
2025	339	366	53	(67)	(13)	194	(36)	-
2026	402	435	63	(79)	(15)	230	(42)	-
2027	471	509	73	(93)	(18)	269	(49)	-
2028	545	589	85	(107)	(20)	311	(57)	-
2029	625	675	97	(123)	(23)	356	(65)	-
2030	711	768	110	(140)	(27)	405	(74)	-
2031	803	867	124	(157)	(30)	457	(84)	-
2032	900	973	139	(176)	(33)	512	(94)	-
2033	1,091	1,069	267	(89)	(13)	477	10	-
2034	1,287	1,162	367	(0)	7	481	113	-
2035	1,518	1,256	505	104	29	498	227	-
2036	1,753	1,345	655	231	49	526	368	-
2037	1,975	1,427	810	365	68	555	513	-
2038	2,225	1,507	934	467	84	579	660	-
2039	2,486	1,599	1,086	597	101	602	786	-
2040	2,737	1,689	1,243	733	108	624	930	-
2041	3,032	1,797	1,408	880	150	654	1,108	-
2042	3,334	1,912	1,584	1,037	177	686	1,281	-
2043	3,641	2,031	1,773	1,206	199	716	1,462	-
2044	3,938	2,164	1,971	1,384	221	744	1,651	-
2045	4,253	2,297	2,152	1,550	253	771	1,823	-
2046	4,573	2,438	2,341	1,736	276	798	2,002	-
2047	4,887	2,572	2,525	1,890	297	822	2,178	-
2048	5,206	2,707	2,714	2,061	320	843	2,359	-
2049	5,518	2,837	2,895	2,226	342	863	2,532	-
2050	5,827	2,968	3,074	2,389	364	882	2,703	-
2051	6,135	3,101	3,255	2,549	386	897	2,872	-
2052	6,443	3,235	3,436	2,706	407	911	3,037	-
2053	6,752	3,373	3,612	2,863	429	923	3,200	-
2054	7,059	3,511	3,781	3,017	450	932	3,360	-
2055	7,362	3,647	3,943	3,168	471	939	3,514	-
2056	7,671	3,783	4,107	3,327	491	953	3,677	-
2057	7,981	3,920	4,272	3,489	512	969	3,842	-
2058	8,289	4,059	4,438	3,649	532	985	4,005	-
2059	8,596	4,195	4,604	3,809	553	1,000	4,169	-
2060	8,899	4,329	4,770	3,969	572	1,014	4,329	-
2061	9,203	4,465	4,935	4,130	594	1,029	4,490	-
2062	9,508	4,598	5,100	4,290	614	1,042	4,653	-

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Figure 11.16



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- 1 Tables 11.8 to 11.15 provide projected general consumers' revenue in nominal dollars, constant
- 2 2012 dollars, present value 2012 dollars (discounted at 1.86%) and the cumulative present
- 3 value 2012 dollars under the reference scenario for all development plans.

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Table 11.8

Development Plan: 1 - All Gas
Real Discount Rate - 1.86%
Scenario: Economics:REF Rev:REF Cap:REF
In Millions of Dollars

Fiscal Year Ending	(A) Additional General Consumers' Percent Increase	(B) Cumulative General Consumers' Percent Increase	(C) General Consumers' Revenue at Approved Rates (Nominal \$s)	(D) Additional General Consumers' Revenue (Nominal \$s)	(E) Total General Consumers' Revenue (Nominal \$s)	(F) Total General Consumers' Revenue (2012 Constant \$s)	(G) Discounted Constant Dollar Total Consumers' Revenue	(H) Cumulative Present Value of Total Consumers' Revenue
2013	0.00%	0.00%	\$ 1,331	\$ -	\$ 1,331	\$ 1,331	\$ 1,331	\$ 1,331
2014	3.50%	3.50%	\$ 1,361	\$ 48	\$ 1,409	\$ 1,384	\$ 1,358	\$ 2,689
2015	3.43%	7.05%	\$ 1,374	\$ 97	\$ 1,470	\$ 1,419	\$ 1,367	\$ 4,057
2016	3.43%	10.72%	\$ 1,390	\$ 149	\$ 1,539	\$ 1,458	\$ 1,380	\$ 5,436
2017	3.43%	14.51%	\$ 1,404	\$ 204	\$ 1,607	\$ 1,497	\$ 1,390	\$ 6,827
2018	3.43%	18.44%	\$ 1,424	\$ 263	\$ 1,687	\$ 1,541	\$ 1,405	\$ 8,232
2019	3.43%	22.49%	\$ 1,447	\$ 325	\$ 1,772	\$ 1,589	\$ 1,423	\$ 9,654
2020	3.43%	26.69%	\$ 1,462	\$ 390	\$ 1,852	\$ 1,630	\$ 1,432	\$ 11,087
2021	3.43%	31.03%	\$ 1,485	\$ 461	\$ 1,945	\$ 1,680	\$ 1,449	\$ 12,536
2022	3.43%	35.53%	\$ 1,506	\$ 535	\$ 2,041	\$ 1,730	\$ 1,465	\$ 14,001
2023	3.43%	40.17%	\$ 1,529	\$ 614	\$ 2,143	\$ 1,782	\$ 1,481	\$ 15,482
2024	3.43%	44.97%	\$ 1,552	\$ 698	\$ 2,249	\$ 1,836	\$ 1,498	\$ 16,981
2025	3.43%	49.94%	\$ 1,575	\$ 787	\$ 2,362	\$ 1,892	\$ 1,516	\$ 18,496
2026	3.43%	55.08%	\$ 1,598	\$ 880	\$ 2,478	\$ 1,948	\$ 1,532	\$ 20,029
2027	3.43%	60.40%	\$ 1,621	\$ 979	\$ 2,599	\$ 2,005	\$ 1,548	\$ 21,577
2028	3.43%	65.89%	\$ 1,644	\$ 1,083	\$ 2,727	\$ 2,065	\$ 1,565	\$ 23,142
2029	3.43%	71.58%	\$ 1,669	\$ 1,194	\$ 2,863	\$ 2,127	\$ 1,583	\$ 24,724
2030	3.43%	77.46%	\$ 1,693	\$ 1,311	\$ 3,004	\$ 2,190	\$ 1,600	\$ 26,324
2031	3.43%	83.54%	\$ 1,717	\$ 1,434	\$ 3,151	\$ 2,255	\$ 1,617	\$ 27,941
2032	3.43%	89.83%	\$ 1,741	\$ 1,564	\$ 3,305	\$ 2,321	\$ 1,634	\$ 29,574
2033	-17.51%	56.59%	\$ 1,765	\$ 999	\$ 2,765	\$ 1,905	\$ 1,316	\$ 30,891
2034	1.46%	58.88%	\$ 1,790	\$ 1,054	\$ 2,843	\$ 1,922	\$ 1,304	\$ 32,195
2035	5.39%	67.44%	\$ 1,814	\$ 1,223	\$ 3,037	\$ 2,015	\$ 1,342	\$ 33,537
2036	1.35%	69.71%	\$ 1,838	\$ 1,281	\$ 3,119	\$ 2,031	\$ 1,328	\$ 34,865
2037	0.34%	70.29%	\$ 1,862	\$ 1,309	\$ 3,171	\$ 2,026	\$ 1,301	\$ 36,166
2038	4.53%	78.01%	\$ 1,886	\$ 1,471	\$ 3,358	\$ 2,106	\$ 1,327	\$ 37,493
2039	1.77%	81.16%	\$ 1,910	\$ 1,551	\$ 3,461	\$ 2,130	\$ 1,318	\$ 38,810
2040	0.76%	82.53%	\$ 1,935	\$ 1,597	\$ 3,531	\$ 2,133	\$ 1,295	\$ 40,105
2041	4.55%	90.83%	\$ 1,959	\$ 1,779	\$ 3,738	\$ 2,216	\$ 1,321	\$ 41,426
2042	2.49%	95.58%	\$ 1,983	\$ 1,895	\$ 3,878	\$ 2,256	\$ 1,320	\$ 42,746
2043	3.08%	101.60%	\$ 2,007	\$ 2,039	\$ 4,047	\$ 2,310	\$ 1,327	\$ 44,073
2044	0.51%	102.63%	\$ 2,031	\$ 2,085	\$ 4,116	\$ 2,306	\$ 1,300	\$ 45,374
2045	3.53%	109.78%	\$ 2,056	\$ 2,257	\$ 4,312	\$ 2,370	\$ 1,312	\$ 46,686
2046	2.88%	115.83%	\$ 2,080	\$ 2,409	\$ 4,489	\$ 2,421	\$ 1,316	\$ 48,002
2047	2.26%	120.71%	\$ 2,104	\$ 2,540	\$ 4,644	\$ 2,458	\$ 1,312	\$ 49,314
2048	1.08%	123.09%	\$ 2,128	\$ 2,620	\$ 4,748	\$ 2,467	\$ 1,292	\$ 50,606
2049	0.17%	123.48%	\$ 2,128	\$ 2,628	\$ 4,756	\$ 2,425	\$ 1,247	\$ 51,853
2050	0.99%	125.70%	\$ 2,128	\$ 2,675	\$ 4,803	\$ 2,403	\$ 1,213	\$ 53,066
2051	2.69%	131.78%	\$ 2,128	\$ 2,804	\$ 4,933	\$ 2,422	\$ 1,200	\$ 54,267
2052	1.43%	135.09%	\$ 2,128	\$ 2,875	\$ 5,003	\$ 2,411	\$ 1,173	\$ 55,439
2053	1.76%	139.22%	\$ 2,128	\$ 2,963	\$ 5,091	\$ 2,407	\$ 1,150	\$ 56,589
2054	2.62%	145.50%	\$ 2,128	\$ 3,096	\$ 5,225	\$ 2,424	\$ 1,137	\$ 57,726
2055	1.19%	148.41%	\$ 2,128	\$ 3,158	\$ 5,287	\$ 2,407	\$ 1,108	\$ 58,834
2056	1.46%	152.04%	\$ 2,128	\$ 3,236	\$ 5,364	\$ 2,397	\$ 1,083	\$ 59,917
2057	1.35%	155.45%	\$ 2,128	\$ 3,308	\$ 5,436	\$ 2,384	\$ 1,058	\$ 60,975
2058	0.78%	157.44%	\$ 2,128	\$ 3,350	\$ 5,479	\$ 2,358	\$ 1,027	\$ 62,002
2059	1.62%	161.62%	\$ 2,128	\$ 3,440	\$ 5,568	\$ 2,352	\$ 1,005	\$ 63,007
2060	1.53%	165.62%	\$ 2,128	\$ 3,525	\$ 5,653	\$ 2,343	\$ 983	\$ 63,990
2061	1.58%	169.81%	\$ 2,128	\$ 3,614	\$ 5,742	\$ 2,336	\$ 962	\$ 64,953
2062	2.43%	176.38%	\$ 2,128	\$ 3,754	\$ 5,882	\$ 2,348	\$ 950	\$ 65,902

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Table 11.9

Development Plan: 7 - Gas C26

Real Discount Rate - 1.86%

Scenario: Economics:REF Rev:REF Cap:REF

In Millions of Dollars

Fiscal Year Ending	(A) Additional General Consumers' Percent Increase	(B) Cumulative General Consumers' Percent Increase	(C) General Consumers' Revenue at Approved Rates (Nominal \$s)	(D) Additional General Consumers' Revenue (Nominal \$s)	(E) Total General Consumers' Revenue (Nominal \$s)	(F) Total General Consumers' Revenue (2012 Constant \$s)	(G) Discounted Constant Dollar Total Consumers' Revenue	(H) Cumulative Present Value of Total Consumers' Revenue
2013	0.00%	0.00%	\$ 1,331	\$ -	\$ 1,331	\$ 1,331	\$ 1,331	\$ 1,331
2014	3.50%	3.50%	\$ 1,361	\$ 48	\$ 1,409	\$ 1,384	\$ 1,358	\$ 2,689
2015	3.86%	7.49%	\$ 1,374	\$ 103	\$ 1,477	\$ 1,425	\$ 1,373	\$ 4,062
2016	3.86%	11.64%	\$ 1,390	\$ 162	\$ 1,551	\$ 1,471	\$ 1,391	\$ 5,454
2017	3.86%	15.94%	\$ 1,404	\$ 224	\$ 1,627	\$ 1,515	\$ 1,407	\$ 6,861
2018	3.86%	20.41%	\$ 1,424	\$ 291	\$ 1,715	\$ 1,567	\$ 1,429	\$ 8,290
2019	3.86%	25.05%	\$ 1,447	\$ 362	\$ 1,809	\$ 1,622	\$ 1,452	\$ 9,742
2020	3.86%	29.88%	\$ 1,462	\$ 437	\$ 1,899	\$ 1,671	\$ 1,468	\$ 11,210
2021	3.86%	34.88%	\$ 1,485	\$ 518	\$ 2,002	\$ 1,729	\$ 1,492	\$ 12,702
2022	3.86%	40.09%	\$ 1,506	\$ 604	\$ 2,110	\$ 1,788	\$ 1,514	\$ 14,216
2023	3.86%	45.49%	\$ 1,529	\$ 695	\$ 2,224	\$ 1,850	\$ 1,538	\$ 15,754
2024	3.86%	51.10%	\$ 1,552	\$ 793	\$ 2,344	\$ 1,914	\$ 1,562	\$ 17,316
2025	3.86%	56.92%	\$ 1,575	\$ 897	\$ 2,472	\$ 1,980	\$ 1,586	\$ 18,902
2026	3.86%	62.97%	\$ 1,598	\$ 1,006	\$ 2,604	\$ 2,047	\$ 1,610	\$ 20,512
2027	3.86%	69.26%	\$ 1,621	\$ 1,122	\$ 2,743	\$ 2,116	\$ 1,634	\$ 22,146
2028	3.86%	75.79%	\$ 1,644	\$ 1,246	\$ 2,890	\$ 2,188	\$ 1,658	\$ 23,804
2029	3.86%	82.56%	\$ 1,669	\$ 1,378	\$ 3,046	\$ 2,263	\$ 1,684	\$ 25,488
2030	3.86%	89.60%	\$ 1,693	\$ 1,517	\$ 3,210	\$ 2,340	\$ 1,709	\$ 27,197
2031	3.86%	96.91%	\$ 1,717	\$ 1,664	\$ 3,381	\$ 2,419	\$ 1,735	\$ 28,932
2032	3.86%	104.51%	\$ 1,741	\$ 1,820	\$ 3,561	\$ 2,500	\$ 1,760	\$ 30,692
2033	-19.60%	64.42%	\$ 1,765	\$ 1,137	\$ 2,903	\$ 2,000	\$ 1,382	\$ 32,074
2034	0.19%	64.73%	\$ 1,790	\$ 1,158	\$ 2,948	\$ 1,993	\$ 1,352	\$ 33,426
2035	1.55%	67.28%	\$ 1,814	\$ 1,220	\$ 3,034	\$ 2,013	\$ 1,341	\$ 34,767
2036	0.19%	67.59%	\$ 1,838	\$ 1,242	\$ 3,080	\$ 2,006	\$ 1,311	\$ 36,078
2037	-0.10%	67.43%	\$ 1,862	\$ 1,256	\$ 3,118	\$ 1,992	\$ 1,279	\$ 37,357
2038	0.98%	69.08%	\$ 1,886	\$ 1,303	\$ 3,189	\$ 2,000	\$ 1,260	\$ 38,617
2039	1.60%	71.78%	\$ 1,910	\$ 1,371	\$ 3,282	\$ 2,020	\$ 1,249	\$ 39,867
2040	0.89%	73.32%	\$ 1,935	\$ 1,418	\$ 3,353	\$ 2,025	\$ 1,230	\$ 41,097
2041	1.40%	75.74%	\$ 1,959	\$ 1,484	\$ 3,443	\$ 2,040	\$ 1,216	\$ 42,313
2042	2.65%	80.40%	\$ 1,983	\$ 1,594	\$ 3,577	\$ 2,081	\$ 1,218	\$ 43,531
2043	2.83%	85.51%	\$ 2,007	\$ 1,716	\$ 3,724	\$ 2,125	\$ 1,221	\$ 44,752
2044	1.95%	89.13%	\$ 2,031	\$ 1,810	\$ 3,842	\$ 2,152	\$ 1,214	\$ 45,965
2045	1.04%	91.09%	\$ 2,056	\$ 1,872	\$ 3,928	\$ 2,159	\$ 1,196	\$ 47,161
2046	3.35%	97.48%	\$ 2,080	\$ 2,027	\$ 4,107	\$ 2,216	\$ 1,204	\$ 48,365
2047	2.03%	101.50%	\$ 2,104	\$ 2,135	\$ 4,239	\$ 2,244	\$ 1,198	\$ 49,563
2048	0.26%	102.03%	\$ 2,128	\$ 2,171	\$ 4,300	\$ 2,234	\$ 1,170	\$ 50,733
2049	-0.19%	101.66%	\$ 2,128	\$ 2,163	\$ 4,292	\$ 2,188	\$ 1,125	\$ 51,858
2050	0.90%	103.48%	\$ 2,128	\$ 2,202	\$ 4,330	\$ 2,167	\$ 1,094	\$ 52,952
2051	2.58%	108.73%	\$ 2,128	\$ 2,314	\$ 4,442	\$ 2,181	\$ 1,081	\$ 54,033
2052	1.10%	111.03%	\$ 2,128	\$ 2,363	\$ 4,491	\$ 2,164	\$ 1,053	\$ 55,086
2053	1.52%	114.24%	\$ 2,128	\$ 2,431	\$ 4,559	\$ 2,156	\$ 1,030	\$ 56,115
2054	2.55%	119.70%	\$ 2,128	\$ 2,547	\$ 4,675	\$ 2,170	\$ 1,017	\$ 57,133
2055	0.89%	121.65%	\$ 2,128	\$ 2,589	\$ 4,717	\$ 2,148	\$ 989	\$ 58,121
2056	0.57%	122.92%	\$ 2,128	\$ 2,616	\$ 4,744	\$ 2,120	\$ 958	\$ 59,079
2057	0.88%	124.88%	\$ 2,128	\$ 2,658	\$ 4,786	\$ 2,099	\$ 931	\$ 60,010
2058	0.45%	125.89%	\$ 2,128	\$ 2,679	\$ 4,807	\$ 2,069	\$ 901	\$ 60,911
2059	0.79%	127.67%	\$ 2,128	\$ 2,717	\$ 4,845	\$ 2,046	\$ 875	\$ 61,786
2060	0.99%	129.93%	\$ 2,128	\$ 2,765	\$ 4,893	\$ 2,028	\$ 851	\$ 62,637
2061	0.98%	132.18%	\$ 2,128	\$ 2,813	\$ 4,941	\$ 2,010	\$ 828	\$ 63,465
2062	0.96%	134.41%	\$ 2,128	\$ 2,860	\$ 4,989	\$ 1,991	\$ 805	\$ 64,271

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Table 11.10

Development Plan: 2 - K22 Gas
Real Discount Rate - 1.86%
Scenario: Economics:REF Rev:REF Cap:REF
In Millions of Dollars

Fiscal Year Ending	(A) Additional General Consumers' Percent Increase	(B) Cumulative General Consumers' Percent Increase	(C) General Consumers' Revenue at Approved Rates (Nominal \$)	(D) Additional General Consumers' Revenue (Nominal \$)	(E) Total General Consumers' Revenue (Nominal \$)	(F) Total General Consumers' Revenue (2012 Constant \$)	(G) Discounted Constant Dollar Total Consumers' Revenue	(H) Cumulative Present Value of Total Consumers' Revenue
2013	0.00%	0.00%	\$ 1,331	\$ -	\$ 1,331	\$ 1,331	\$ 1,331	\$ 1,331
2014	3.50%	3.50%	\$ 1,361	\$ 48	\$ 1,409	\$ 1,384	\$ 1,358	\$ 2,689
2015	3.49%	7.12%	\$ 1,374	\$ 98	\$ 1,471	\$ 1,420	\$ 1,368	\$ 4,058
2016	3.49%	10.86%	\$ 1,390	\$ 151	\$ 1,541	\$ 1,460	\$ 1,382	\$ 5,439
2017	3.49%	14.73%	\$ 1,404	\$ 207	\$ 1,610	\$ 1,500	\$ 1,393	\$ 6,832
2018	3.49%	18.74%	\$ 1,424	\$ 267	\$ 1,691	\$ 1,545	\$ 1,409	\$ 8,241
2019	3.49%	22.89%	\$ 1,447	\$ 331	\$ 1,778	\$ 1,594	\$ 1,427	\$ 9,668
2020	3.49%	27.18%	\$ 1,462	\$ 397	\$ 1,859	\$ 1,636	\$ 1,438	\$ 11,106
2021	3.49%	31.62%	\$ 1,485	\$ 469	\$ 1,954	\$ 1,687	\$ 1,456	\$ 12,561
2022	3.49%	36.22%	\$ 1,506	\$ 546	\$ 2,052	\$ 1,739	\$ 1,473	\$ 14,034
2023	3.49%	40.98%	\$ 1,529	\$ 626	\$ 2,155	\$ 1,792	\$ 1,490	\$ 15,524
2024	3.49%	45.90%	\$ 1,552	\$ 712	\$ 2,264	\$ 1,848	\$ 1,508	\$ 17,031
2025	3.49%	51.00%	\$ 1,575	\$ 803	\$ 2,379	\$ 1,905	\$ 1,526	\$ 18,558
2026	3.49%	56.27%	\$ 1,598	\$ 899	\$ 2,497	\$ 1,963	\$ 1,544	\$ 20,102
2027	3.49%	61.73%	\$ 1,621	\$ 1,000	\$ 2,621	\$ 2,022	\$ 1,561	\$ 21,663
2028	3.49%	67.38%	\$ 1,644	\$ 1,108	\$ 2,752	\$ 2,083	\$ 1,579	\$ 23,242
2029	3.49%	73.23%	\$ 1,669	\$ 1,222	\$ 2,890	\$ 2,147	\$ 1,598	\$ 24,840
2030	3.49%	79.28%	\$ 1,693	\$ 1,342	\$ 3,035	\$ 2,213	\$ 1,616	\$ 26,456
2031	3.49%	85.54%	\$ 1,717	\$ 1,469	\$ 3,186	\$ 2,279	\$ 1,634	\$ 28,090
2032	3.49%	92.02%	\$ 1,741	\$ 1,602	\$ 3,343	\$ 2,347	\$ 1,652	\$ 29,743
2033	-16.84%	59.69%	\$ 1,765	\$ 1,054	\$ 2,819	\$ 1,942	\$ 1,342	\$ 31,085
2034	-0.10%	59.52%	\$ 1,790	\$ 1,065	\$ 2,855	\$ 1,930	\$ 1,310	\$ 32,395
2035	6.11%	69.26%	\$ 1,814	\$ 1,256	\$ 3,070	\$ 2,037	\$ 1,357	\$ 33,751
2036	1.34%	71.54%	\$ 1,838	\$ 1,315	\$ 3,153	\$ 2,053	\$ 1,342	\$ 35,094
2037	0.93%	73.13%	\$ 1,862	\$ 1,362	\$ 3,224	\$ 2,060	\$ 1,322	\$ 36,416
2038	-0.44%	72.37%	\$ 1,886	\$ 1,365	\$ 3,251	\$ 2,039	\$ 1,285	\$ 37,701
2039	3.39%	78.22%	\$ 1,910	\$ 1,494	\$ 3,405	\$ 2,095	\$ 1,296	\$ 38,997
2040	1.59%	81.05%	\$ 1,935	\$ 1,568	\$ 3,503	\$ 2,115	\$ 1,285	\$ 40,282
2041	0.93%	82.74%	\$ 1,959	\$ 1,621	\$ 3,580	\$ 2,122	\$ 1,265	\$ 41,546
2042	3.66%	89.43%	\$ 1,983	\$ 1,773	\$ 3,756	\$ 2,185	\$ 1,279	\$ 42,825
2043	3.42%	95.91%	\$ 2,007	\$ 1,925	\$ 3,932	\$ 2,245	\$ 1,290	\$ 44,115
2044	1.12%	98.12%	\$ 2,031	\$ 1,993	\$ 4,025	\$ 2,254	\$ 1,271	\$ 45,386
2045	0.07%	98.25%	\$ 2,056	\$ 2,020	\$ 4,075	\$ 2,240	\$ 1,240	\$ 46,626
2046	3.94%	106.07%	\$ 2,080	\$ 2,206	\$ 4,286	\$ 2,312	\$ 1,257	\$ 47,883
2047	2.29%	110.79%	\$ 2,104	\$ 2,331	\$ 4,435	\$ 2,348	\$ 1,253	\$ 49,136
2048	0.63%	112.12%	\$ 2,128	\$ 2,386	\$ 4,514	\$ 2,345	\$ 1,228	\$ 50,364
2049	-0.38%	111.31%	\$ 2,128	\$ 2,369	\$ 4,497	\$ 2,293	\$ 1,179	\$ 51,543
2050	0.84%	113.08%	\$ 2,128	\$ 2,407	\$ 4,535	\$ 2,269	\$ 1,145	\$ 52,689
2051	2.51%	118.44%	\$ 2,128	\$ 2,521	\$ 4,649	\$ 2,283	\$ 1,131	\$ 53,820
2052	1.06%	120.76%	\$ 2,128	\$ 2,570	\$ 4,698	\$ 2,264	\$ 1,101	\$ 54,921
2053	0.16%	121.12%	\$ 2,128	\$ 2,578	\$ 4,706	\$ 2,225	\$ 1,063	\$ 55,984
2054	1.12%	123.59%	\$ 2,128	\$ 2,630	\$ 4,758	\$ 2,208	\$ 1,035	\$ 57,019
2055	0.49%	124.68%	\$ 2,128	\$ 2,653	\$ 4,782	\$ 2,177	\$ 1,002	\$ 58,022
2056	0.77%	126.41%	\$ 2,128	\$ 2,690	\$ 4,818	\$ 2,153	\$ 973	\$ 58,995
2057	0.68%	127.95%	\$ 2,128	\$ 2,723	\$ 4,851	\$ 2,128	\$ 944	\$ 59,938
2058	0.55%	129.21%	\$ 2,128	\$ 2,750	\$ 4,878	\$ 2,099	\$ 914	\$ 60,853
2059	0.82%	131.10%	\$ 2,128	\$ 2,790	\$ 4,918	\$ 2,077	\$ 888	\$ 61,741
2060	1.72%	135.07%	\$ 2,128	\$ 2,874	\$ 5,003	\$ 2,074	\$ 870	\$ 62,611
2061	1.24%	137.97%	\$ 2,128	\$ 2,936	\$ 5,064	\$ 2,060	\$ 849	\$ 63,459
2062	0.93%	140.19%	\$ 2,128	\$ 2,984	\$ 5,112	\$ 2,040	\$ 825	\$ 64,285

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Table 11.11

Development Plan: 4 - K19 Gas 250 MW

Real Discount Rate - 1.86%

Scenario: Economics:REF Rev:REF Cap:REF

In Millions of Dollars

Fiscal Year Ending	(A) Additional General Consumers' Percent Increase	(B) Cumulative General Consumers' Percent Increase	(C) General Consumers' Revenue at Approved Rates (Nominal \$s)	(D) Additional General Consumers' Revenue (Nominal \$s)	(E) Total General Consumers' Revenue (Nominal \$s)	(F) Total General Consumers' Revenue (2012 Constant \$s)	(G) Discounted Constant Dollar Total Consumers' Revenue	(H) Cumulative Present Value of Total Consumers' Revenue
2013	0.00%	0.00%	\$ 1,331	\$ -	\$ 1,331	\$ 1,331	\$ 1,331	\$ 1,331
2014	3.50%	3.50%	\$ 1,361	\$ 48	\$ 1,409	\$ 1,384	\$ 1,358	\$ 2,689
2015	3.42%	7.04%	\$ 1,374	\$ 97	\$ 1,470	\$ 1,419	\$ 1,367	\$ 4,057
2016	3.42%	10.70%	\$ 1,390	\$ 149	\$ 1,538	\$ 1,458	\$ 1,380	\$ 5,436
2017	3.42%	14.49%	\$ 1,404	\$ 203	\$ 1,607	\$ 1,496	\$ 1,390	\$ 6,826
2018	3.42%	18.40%	\$ 1,424	\$ 262	\$ 1,686	\$ 1,541	\$ 1,405	\$ 8,231
2019	3.42%	22.45%	\$ 1,447	\$ 325	\$ 1,772	\$ 1,589	\$ 1,422	\$ 9,653
2020	3.42%	26.64%	\$ 1,462	\$ 389	\$ 1,851	\$ 1,629	\$ 1,432	\$ 11,085
2021	3.42%	30.98%	\$ 1,485	\$ 460	\$ 1,944	\$ 1,679	\$ 1,448	\$ 12,533
2022	3.42%	35.46%	\$ 1,506	\$ 534	\$ 2,040	\$ 1,729	\$ 1,464	\$ 13,998
2023	3.42%	40.09%	\$ 1,529	\$ 613	\$ 2,141	\$ 1,781	\$ 1,480	\$ 15,478
2024	3.42%	44.88%	\$ 1,552	\$ 696	\$ 2,248	\$ 1,835	\$ 1,497	\$ 16,975
2025	3.42%	49.84%	\$ 1,575	\$ 785	\$ 2,360	\$ 1,891	\$ 1,515	\$ 18,490
2026	3.42%	54.96%	\$ 1,598	\$ 878	\$ 2,476	\$ 1,947	\$ 1,531	\$ 20,021
2027	3.42%	60.26%	\$ 1,621	\$ 977	\$ 2,597	\$ 2,003	\$ 1,547	\$ 21,568
2028	3.42%	65.74%	\$ 1,644	\$ 1,081	\$ 2,725	\$ 2,063	\$ 1,564	\$ 23,131
2029	3.42%	71.41%	\$ 1,669	\$ 1,192	\$ 2,860	\$ 2,125	\$ 1,581	\$ 24,712
2030	3.42%	77.28%	\$ 1,693	\$ 1,308	\$ 3,001	\$ 2,188	\$ 1,598	\$ 26,311
2031	3.42%	83.34%	\$ 1,717	\$ 1,431	\$ 3,148	\$ 2,252	\$ 1,615	\$ 27,926
2032	3.42%	89.61%	\$ 1,741	\$ 1,560	\$ 3,301	\$ 2,318	\$ 1,632	\$ 29,557
2033	-18.54%	54.45%	\$ 1,765	\$ 961	\$ 2,727	\$ 1,879	\$ 1,298	\$ 30,856
2034	1.02%	56.03%	\$ 1,790	\$ 1,003	\$ 2,792	\$ 1,888	\$ 1,281	\$ 32,137
2035	2.98%	60.67%	\$ 1,814	\$ 1,100	\$ 2,914	\$ 1,934	\$ 1,288	\$ 33,424
2036	2.60%	64.84%	\$ 1,838	\$ 1,192	\$ 3,030	\$ 1,973	\$ 1,290	\$ 34,714
2037	1.35%	67.07%	\$ 1,862	\$ 1,249	\$ 3,111	\$ 1,988	\$ 1,276	\$ 35,990
2038	-0.24%	66.66%	\$ 1,886	\$ 1,257	\$ 3,144	\$ 1,971	\$ 1,242	\$ 37,233
2039	3.63%	72.72%	\$ 1,910	\$ 1,389	\$ 3,300	\$ 2,031	\$ 1,256	\$ 38,489
2040	1.78%	75.80%	\$ 1,935	\$ 1,466	\$ 3,401	\$ 2,054	\$ 1,247	\$ 39,736
2041	1.20%	77.91%	\$ 1,959	\$ 1,526	\$ 3,485	\$ 2,066	\$ 1,231	\$ 40,968
2042	3.65%	84.40%	\$ 1,983	\$ 1,674	\$ 3,657	\$ 2,127	\$ 1,245	\$ 42,212
2043	3.52%	90.89%	\$ 2,007	\$ 1,824	\$ 3,832	\$ 2,187	\$ 1,256	\$ 43,469
2044	1.19%	93.16%	\$ 2,031	\$ 1,892	\$ 3,924	\$ 2,198	\$ 1,240	\$ 44,708
2045	0.38%	93.90%	\$ 2,056	\$ 1,930	\$ 3,986	\$ 2,191	\$ 1,213	\$ 45,921
2046	4.80%	103.21%	\$ 2,080	\$ 2,147	\$ 4,226	\$ 2,280	\$ 1,239	\$ 47,161
2047	0.73%	104.70%	\$ 2,104	\$ 2,203	\$ 4,307	\$ 2,280	\$ 1,217	\$ 48,377
2048	1.48%	107.73%	\$ 2,128	\$ 2,293	\$ 4,421	\$ 2,297	\$ 1,203	\$ 49,580
2049	-0.32%	107.05%	\$ 2,128	\$ 2,278	\$ 4,406	\$ 2,247	\$ 1,155	\$ 50,736
2050	0.82%	108.76%	\$ 2,128	\$ 2,315	\$ 4,443	\$ 2,223	\$ 1,122	\$ 51,858
2051	2.44%	113.86%	\$ 2,128	\$ 2,423	\$ 4,551	\$ 2,235	\$ 1,107	\$ 52,965
2052	0.89%	115.76%	\$ 2,128	\$ 2,464	\$ 4,592	\$ 2,213	\$ 1,076	\$ 54,042
2053	0.84%	117.58%	\$ 2,128	\$ 2,502	\$ 4,630	\$ 2,190	\$ 1,046	\$ 55,087
2054	2.18%	122.32%	\$ 2,128	\$ 2,603	\$ 4,731	\$ 2,196	\$ 1,029	\$ 56,117
2055	1.58%	125.83%	\$ 2,128	\$ 2,678	\$ 4,806	\$ 2,189	\$ 1,007	\$ 57,124
2056	0.82%	127.68%	\$ 2,128	\$ 2,717	\$ 4,845	\$ 2,165	\$ 978	\$ 58,103
2057	1.37%	130.79%	\$ 2,128	\$ 2,783	\$ 4,912	\$ 2,154	\$ 956	\$ 59,058
2058	0.13%	131.08%	\$ 2,128	\$ 2,790	\$ 4,918	\$ 2,117	\$ 922	\$ 59,980
2059	0.94%	133.25%	\$ 2,128	\$ 2,836	\$ 4,964	\$ 2,097	\$ 896	\$ 60,876
2060	1.69%	137.20%	\$ 2,128	\$ 2,920	\$ 5,048	\$ 2,092	\$ 878	\$ 61,754
2061	1.41%	140.55%	\$ 2,128	\$ 2,991	\$ 5,119	\$ 2,082	\$ 858	\$ 62,612
2062	1.14%	143.30%	\$ 2,128	\$ 3,050	\$ 5,178	\$ 2,067	\$ 836	\$ 63,448

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Table 11.12

Development Plan: 13 - K19 C25 250 MW

Real Discount Rate - 1.86%

Scenario: Economics:REF Rev:REF Cap:REF

In Millions of Dollars

Fiscal Year Ending	(A) Additional General Consumers' Percent Increase	(B) Cumulative General Consumers' Percent Increase	(C) General Consumers' Revenue at Approved Rates (Nominal \$s)	(D) Additional General Consumers' Revenue (Nominal \$s)	(E) Total General Consumers' Revenue (Nominal \$s)	(F) Total General Consumers' Revenue (2012 Constant \$s)	(G) Discounted Constant Dollar Total Consumers' Revenue	(H) Cumulative Present Value of Total Consumers' Revenue
2013	0.00%	0.00%	\$ 1,331	\$ -	\$ 1,331	\$ 1,331	\$ 1,331	\$ 1,331
2014	3.50%	3.50%	\$ 1,361	\$ 48	\$ 1,409	\$ 1,384	\$ 1,358	\$ 2,689
2015	3.98%	7.61%	\$ 1,374	\$ 105	\$ 1,478	\$ 1,426	\$ 1,375	\$ 4,064
2016	3.98%	11.89%	\$ 1,390	\$ 165	\$ 1,555	\$ 1,474	\$ 1,394	\$ 5,458
2017	3.98%	16.34%	\$ 1,404	\$ 229	\$ 1,633	\$ 1,521	\$ 1,412	\$ 6,871
2018	3.98%	20.97%	\$ 1,424	\$ 299	\$ 1,723	\$ 1,574	\$ 1,435	\$ 8,306
2019	3.98%	25.77%	\$ 1,447	\$ 373	\$ 1,820	\$ 1,632	\$ 1,461	\$ 9,767
2020	3.98%	30.77%	\$ 1,462	\$ 450	\$ 1,912	\$ 1,682	\$ 1,478	\$ 11,245
2021	3.98%	35.97%	\$ 1,485	\$ 534	\$ 2,019	\$ 1,743	\$ 1,504	\$ 12,749
2022	3.98%	41.38%	\$ 1,506	\$ 623	\$ 2,130	\$ 1,805	\$ 1,528	\$ 14,277
2023	3.98%	47.00%	\$ 1,529	\$ 718	\$ 2,247	\$ 1,869	\$ 1,554	\$ 15,831
2024	3.98%	52.84%	\$ 1,552	\$ 820	\$ 2,372	\$ 1,936	\$ 1,580	\$ 17,410
2025	3.98%	58.92%	\$ 1,575	\$ 928	\$ 2,504	\$ 2,005	\$ 1,607	\$ 19,017
2026	3.98%	65.24%	\$ 1,598	\$ 1,043	\$ 2,641	\$ 2,076	\$ 1,632	\$ 20,649
2027	3.98%	71.80%	\$ 1,621	\$ 1,164	\$ 2,784	\$ 2,148	\$ 1,658	\$ 22,307
2028	3.98%	78.63%	\$ 1,644	\$ 1,293	\$ 2,937	\$ 2,223	\$ 1,685	\$ 23,993
2029	3.98%	85.73%	\$ 1,669	\$ 1,431	\$ 3,099	\$ 2,302	\$ 1,713	\$ 25,706
2030	3.98%	93.12%	\$ 1,693	\$ 1,576	\$ 3,269	\$ 2,383	\$ 1,741	\$ 27,447
2031	3.98%	100.80%	\$ 1,717	\$ 1,731	\$ 3,448	\$ 2,467	\$ 1,769	\$ 29,215
2032	3.98%	108.78%	\$ 1,741	\$ 1,894	\$ 3,635	\$ 2,552	\$ 1,797	\$ 31,012
2033	-21.15%	64.63%	\$ 1,765	\$ 1,141	\$ 2,906	\$ 2,003	\$ 1,384	\$ 32,396
2034	0.07%	64.75%	\$ 1,790	\$ 1,159	\$ 2,948	\$ 1,993	\$ 1,352	\$ 33,748
2035	1.34%	66.96%	\$ 1,814	\$ 1,214	\$ 3,028	\$ 2,009	\$ 1,338	\$ 35,087
2036	0.66%	68.06%	\$ 1,838	\$ 1,251	\$ 3,089	\$ 2,011	\$ 1,315	\$ 36,402
2037	0.33%	68.60%	\$ 1,862	\$ 1,277	\$ 3,140	\$ 2,006	\$ 1,288	\$ 37,689
2038	0.80%	69.95%	\$ 1,886	\$ 1,319	\$ 3,206	\$ 2,010	\$ 1,267	\$ 38,956
2039	0.09%	70.11%	\$ 1,910	\$ 1,339	\$ 3,250	\$ 2,000	\$ 1,237	\$ 40,193
2040	0.03%	70.16%	\$ 1,935	\$ 1,357	\$ 3,292	\$ 1,988	\$ 1,207	\$ 41,401
2041	2.62%	74.62%	\$ 1,959	\$ 1,462	\$ 3,421	\$ 2,027	\$ 1,209	\$ 42,609
2042	0.42%	75.36%	\$ 1,983	\$ 1,494	\$ 3,477	\$ 2,023	\$ 1,184	\$ 43,793
2043	1.83%	78.57%	\$ 2,007	\$ 1,577	\$ 3,584	\$ 2,046	\$ 1,175	\$ 44,968
2044	0.36%	79.21%	\$ 2,031	\$ 1,609	\$ 3,640	\$ 2,039	\$ 1,150	\$ 46,118
2045	1.70%	82.25%	\$ 2,056	\$ 1,691	\$ 3,746	\$ 2,059	\$ 1,140	\$ 47,259
2046	1.65%	85.26%	\$ 2,080	\$ 1,773	\$ 3,853	\$ 2,079	\$ 1,130	\$ 48,389
2047	2.84%	90.52%	\$ 2,104	\$ 1,905	\$ 4,008	\$ 2,122	\$ 1,132	\$ 49,521
2048	0.16%	90.83%	\$ 2,128	\$ 1,933	\$ 4,061	\$ 2,110	\$ 1,105	\$ 50,626
2049	-0.32%	90.22%	\$ 2,128	\$ 1,920	\$ 4,048	\$ 2,064	\$ 1,061	\$ 51,687
2050	0.58%	91.31%	\$ 2,128	\$ 1,943	\$ 4,071	\$ 2,037	\$ 1,028	\$ 52,716
2051	2.20%	95.52%	\$ 2,128	\$ 2,033	\$ 4,161	\$ 2,043	\$ 1,012	\$ 53,728
2052	0.70%	96.88%	\$ 2,128	\$ 2,062	\$ 4,190	\$ 2,019	\$ 982	\$ 54,710
2053	0.66%	98.17%	\$ 2,128	\$ 2,089	\$ 4,217	\$ 1,994	\$ 952	\$ 55,663
2054	2.11%	102.34%	\$ 2,128	\$ 2,178	\$ 4,306	\$ 1,998	\$ 937	\$ 56,600
2055	0.72%	103.80%	\$ 2,128	\$ 2,209	\$ 4,337	\$ 1,975	\$ 909	\$ 57,509
2056	-0.45%	102.88%	\$ 2,128	\$ 2,189	\$ 4,318	\$ 1,930	\$ 872	\$ 58,381
2057	0.79%	104.47%	\$ 2,128	\$ 2,223	\$ 4,351	\$ 1,908	\$ 847	\$ 59,227
2058	-0.07%	104.34%	\$ 2,128	\$ 2,221	\$ 4,349	\$ 1,872	\$ 815	\$ 60,042
2059	0.85%	106.09%	\$ 2,128	\$ 2,258	\$ 4,386	\$ 1,852	\$ 792	\$ 60,834
2060	1.06%	108.26%	\$ 2,128	\$ 2,304	\$ 4,432	\$ 1,837	\$ 771	\$ 61,605
2061	0.72%	109.76%	\$ 2,128	\$ 2,336	\$ 4,464	\$ 1,816	\$ 748	\$ 62,353
2062	0.62%	111.06%	\$ 2,128	\$ 2,363	\$ 4,492	\$ 1,793	\$ 725	\$ 63,079

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Table 11.13

Development Plan: 12 - K19 Imp C31 750 MW

Real Discount Rate - 1.86%

Scenario: Economics:REF Rev:REF Cap:REF

In Millions of Dollars

Fiscal Year Ending	(A) Additional General Consumers' Percent Increase	(B) Cumulative General Consumers' Percent Increase	(C) General Consumers' Revenue at Approved Rates (Nominal \$)	(D) Additional General Consumers' Revenue (Nominal \$)	(E) Total General Consumers' Revenue (Nominal \$)	(F) Total General Consumers' Revenue (2012 Constant \$)	(G) Discounted Constant Dollar Total Consumers' Revenue	(H) Cumulative Present Value of Total Consumers' Revenue
2013	0.00%	0.00%	\$ 1,331	\$ -	\$ 1,331	\$ 1,331	\$ 1,331	\$ 1,331
2014	3.50%	3.50%	\$ 1,361	\$ 48	\$ 1,409	\$ 1,384	\$ 1,358	\$ 2,689
2015	3.80%	7.43%	\$ 1,374	\$ 102	\$ 1,476	\$ 1,424	\$ 1,372	\$ 4,062
2016	3.80%	11.51%	\$ 1,390	\$ 160	\$ 1,550	\$ 1,469	\$ 1,390	\$ 5,451
2017	3.80%	15.75%	\$ 1,404	\$ 221	\$ 1,625	\$ 1,513	\$ 1,405	\$ 6,856
2018	3.80%	20.14%	\$ 1,424	\$ 287	\$ 1,711	\$ 1,564	\$ 1,426	\$ 8,282
2019	3.80%	24.70%	\$ 1,447	\$ 357	\$ 1,804	\$ 1,618	\$ 1,448	\$ 9,730
2020	3.80%	29.44%	\$ 1,462	\$ 430	\$ 1,892	\$ 1,665	\$ 1,463	\$ 11,193
2021	3.80%	34.35%	\$ 1,485	\$ 510	\$ 1,995	\$ 1,723	\$ 1,486	\$ 12,679
2022	3.80%	39.46%	\$ 1,506	\$ 594	\$ 2,101	\$ 1,780	\$ 1,508	\$ 14,187
2023	3.80%	44.75%	\$ 1,529	\$ 684	\$ 2,213	\$ 1,840	\$ 1,530	\$ 15,717
2024	3.80%	50.25%	\$ 1,552	\$ 780	\$ 2,331	\$ 1,903	\$ 1,553	\$ 17,269
2025	3.80%	55.96%	\$ 1,575	\$ 882	\$ 2,457	\$ 1,968	\$ 1,577	\$ 18,846
2026	3.80%	61.88%	\$ 1,598	\$ 989	\$ 2,587	\$ 2,033	\$ 1,599	\$ 20,445
2027	3.80%	68.03%	\$ 1,621	\$ 1,102	\$ 2,723	\$ 2,100	\$ 1,622	\$ 22,067
2028	3.80%	74.41%	\$ 1,644	\$ 1,223	\$ 2,867	\$ 2,171	\$ 1,645	\$ 23,712
2029	3.80%	81.03%	\$ 1,669	\$ 1,352	\$ 3,021	\$ 2,244	\$ 1,670	\$ 25,382
2030	3.80%	87.90%	\$ 1,693	\$ 1,488	\$ 3,181	\$ 2,319	\$ 1,694	\$ 27,076
2031	3.80%	95.04%	\$ 1,717	\$ 1,632	\$ 3,349	\$ 2,396	\$ 1,718	\$ 28,794
2032	3.80%	102.45%	\$ 1,741	\$ 1,784	\$ 3,525	\$ 2,475	\$ 1,742	\$ 30,536
2033	-22.04%	57.84%	\$ 1,765	\$ 1,021	\$ 2,786	\$ 1,920	\$ 1,327	\$ 31,863
2034	7.96%	70.41%	\$ 1,790	\$ 1,260	\$ 3,049	\$ 2,062	\$ 1,399	\$ 33,262
2035	2.22%	74.19%	\$ 1,814	\$ 1,346	\$ 3,159	\$ 2,096	\$ 1,396	\$ 34,658
2036	1.20%	76.28%	\$ 1,838	\$ 1,402	\$ 3,240	\$ 2,110	\$ 1,379	\$ 36,038
2037	0.01%	76.29%	\$ 1,862	\$ 1,421	\$ 3,283	\$ 2,098	\$ 1,347	\$ 37,384
2038	0.57%	77.29%	\$ 1,886	\$ 1,458	\$ 3,344	\$ 2,097	\$ 1,322	\$ 38,706
2039	-0.18%	76.97%	\$ 1,910	\$ 1,471	\$ 3,381	\$ 2,081	\$ 1,287	\$ 39,993
2040	0.31%	77.53%	\$ 1,935	\$ 1,500	\$ 3,435	\$ 2,074	\$ 1,260	\$ 41,252
2041	0.31%	78.08%	\$ 1,959	\$ 1,529	\$ 3,488	\$ 2,067	\$ 1,233	\$ 42,485
2042	1.83%	81.34%	\$ 1,983	\$ 1,613	\$ 3,596	\$ 2,092	\$ 1,224	\$ 43,709
2043	1.93%	84.84%	\$ 2,007	\$ 1,703	\$ 3,710	\$ 2,118	\$ 1,217	\$ 44,926
2044	0.09%	85.01%	\$ 2,031	\$ 1,727	\$ 3,758	\$ 2,105	\$ 1,187	\$ 46,113
2045	0.80%	86.49%	\$ 2,056	\$ 1,778	\$ 3,833	\$ 2,107	\$ 1,167	\$ 47,280
2046	2.12%	90.44%	\$ 2,080	\$ 1,881	\$ 3,961	\$ 2,137	\$ 1,161	\$ 48,441
2047	2.55%	95.30%	\$ 2,104	\$ 2,005	\$ 4,109	\$ 2,175	\$ 1,161	\$ 49,602
2048	-0.27%	94.78%	\$ 2,128	\$ 2,017	\$ 4,145	\$ 2,154	\$ 1,128	\$ 50,730
2049	-0.56%	93.69%	\$ 2,128	\$ 1,994	\$ 4,122	\$ 2,102	\$ 1,081	\$ 51,811
2050	0.48%	94.63%	\$ 2,128	\$ 2,014	\$ 4,142	\$ 2,072	\$ 1,046	\$ 52,857
2051	1.91%	98.35%	\$ 2,128	\$ 2,093	\$ 4,221	\$ 2,073	\$ 1,027	\$ 53,884
2052	0.65%	99.64%	\$ 2,128	\$ 2,120	\$ 4,249	\$ 2,047	\$ 996	\$ 54,880
2053	0.55%	100.74%	\$ 2,128	\$ 2,144	\$ 4,272	\$ 2,020	\$ 965	\$ 55,845
2054	1.73%	104.22%	\$ 2,128	\$ 2,218	\$ 4,346	\$ 2,017	\$ 946	\$ 56,790
2055	0.44%	105.12%	\$ 2,128	\$ 2,237	\$ 4,365	\$ 1,988	\$ 915	\$ 57,705
2056	0.37%	105.87%	\$ 2,128	\$ 2,253	\$ 4,381	\$ 1,958	\$ 885	\$ 58,590
2057	0.79%	107.50%	\$ 2,128	\$ 2,288	\$ 4,416	\$ 1,937	\$ 859	\$ 59,449
2058	-0.43%	106.61%	\$ 2,128	\$ 2,269	\$ 4,397	\$ 1,892	\$ 824	\$ 60,273
2059	0.44%	107.52%	\$ 2,128	\$ 2,288	\$ 4,416	\$ 1,865	\$ 797	\$ 61,071
2060	0.71%	108.99%	\$ 2,128	\$ 2,319	\$ 4,448	\$ 1,844	\$ 774	\$ 61,844
2061	0.45%	109.94%	\$ 2,128	\$ 2,340	\$ 4,468	\$ 1,817	\$ 749	\$ 62,593
2062	0.74%	111.49%	\$ 2,128	\$ 2,373	\$ 4,501	\$ 1,797	\$ 727	\$ 63,320

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Table 11.14

Development Plan: 6 - K19 Imp Gas 750 MW

Real Discount Rate - 1.86%

Scenario: Economics:REF Rev:REF Cap:REF

In Millions of Dollars

Fiscal Year Ending	(A) Additional General Consumers' Percent Increase	(B) Cumulative General Consumers' Percent Increase	(C) General Consumers' Revenue at Approved Rates (Nominal \$)	(D) Additional General Consumers' Revenue (Nominal \$)	(E) Total General Consumers' Revenue (Nominal \$)	(F) Total General Consumers' Revenue (2012 Constant \$)	(G) Discounted Constant Dollar Total Consumers' Revenue	(H) Cumulative Present Value of Total Consumers' Revenue
2013	0.00%	0.00%	\$ 1,331	\$ -	\$ 1,331	\$ 1,331	\$ 1,331	\$ 1,331
2014	3.50%	3.50%	\$ 1,361	\$ 48	\$ 1,409	\$ 1,384	\$ 1,358	\$ 2,689
2015	3.50%	7.12%	\$ 1,374	\$ 98	\$ 1,472	\$ 1,420	\$ 1,368	\$ 4,058
2016	3.50%	10.87%	\$ 1,390	\$ 151	\$ 1,541	\$ 1,460	\$ 1,382	\$ 5,439
2017	3.50%	14.75%	\$ 1,404	\$ 207	\$ 1,611	\$ 1,500	\$ 1,393	\$ 6,832
2018	3.50%	18.76%	\$ 1,424	\$ 267	\$ 1,692	\$ 1,546	\$ 1,409	\$ 8,242
2019	3.50%	22.92%	\$ 1,447	\$ 332	\$ 1,778	\$ 1,595	\$ 1,427	\$ 9,669
2020	3.50%	27.22%	\$ 1,462	\$ 398	\$ 1,860	\$ 1,637	\$ 1,438	\$ 11,107
2021	3.50%	31.67%	\$ 1,485	\$ 470	\$ 1,955	\$ 1,688	\$ 1,456	\$ 12,563
2022	3.50%	36.28%	\$ 1,506	\$ 546	\$ 2,053	\$ 1,740	\$ 1,473	\$ 14,036
2023	3.50%	41.04%	\$ 1,529	\$ 627	\$ 2,156	\$ 1,793	\$ 1,491	\$ 15,527
2024	3.50%	45.98%	\$ 1,552	\$ 713	\$ 2,265	\$ 1,849	\$ 1,509	\$ 17,036
2025	3.50%	51.08%	\$ 1,575	\$ 805	\$ 2,380	\$ 1,906	\$ 1,527	\$ 18,563
2026	3.50%	56.37%	\$ 1,598	\$ 901	\$ 2,499	\$ 1,964	\$ 1,545	\$ 20,108
2027	3.50%	61.84%	\$ 1,621	\$ 1,002	\$ 2,623	\$ 2,023	\$ 1,562	\$ 21,670
2028	3.50%	67.50%	\$ 1,644	\$ 1,110	\$ 2,754	\$ 2,085	\$ 1,580	\$ 23,250
2029	3.50%	73.36%	\$ 1,669	\$ 1,224	\$ 2,893	\$ 2,149	\$ 1,599	\$ 24,849
2030	3.50%	79.43%	\$ 1,693	\$ 1,345	\$ 3,038	\$ 2,214	\$ 1,618	\$ 26,467
2031	3.50%	85.71%	\$ 1,717	\$ 1,472	\$ 3,189	\$ 2,281	\$ 1,636	\$ 28,103
2032	3.50%	92.20%	\$ 1,741	\$ 1,605	\$ 3,346	\$ 2,349	\$ 1,654	\$ 29,756
2033	-18.83%	56.01%	\$ 1,765	\$ 989	\$ 2,754	\$ 1,898	\$ 1,311	\$ 31,068
2034	0.88%	57.38%	\$ 1,790	\$ 1,027	\$ 2,816	\$ 1,904	\$ 1,292	\$ 32,360
2035	3.45%	62.81%	\$ 1,814	\$ 1,139	\$ 2,953	\$ 1,959	\$ 1,305	\$ 33,665
2036	2.87%	67.48%	\$ 1,838	\$ 1,240	\$ 3,078	\$ 2,004	\$ 1,311	\$ 34,975
2037	1.04%	69.23%	\$ 1,862	\$ 1,289	\$ 3,151	\$ 2,014	\$ 1,293	\$ 36,268
2038	1.60%	71.94%	\$ 1,886	\$ 1,357	\$ 3,243	\$ 2,034	\$ 1,282	\$ 37,550
2039	-0.47%	71.13%	\$ 1,910	\$ 1,359	\$ 3,269	\$ 2,012	\$ 1,245	\$ 38,794
2040	3.51%	77.14%	\$ 1,935	\$ 1,492	\$ 3,427	\$ 2,070	\$ 1,257	\$ 40,051
2041	2.62%	81.79%	\$ 1,959	\$ 1,602	\$ 3,561	\$ 2,111	\$ 1,258	\$ 41,309
2042	1.28%	84.11%	\$ 1,983	\$ 1,668	\$ 3,651	\$ 2,124	\$ 1,243	\$ 42,552
2043	3.00%	89.64%	\$ 2,007	\$ 1,799	\$ 3,806	\$ 2,173	\$ 1,248	\$ 43,800
2044	1.88%	93.20%	\$ 2,031	\$ 1,893	\$ 3,925	\$ 2,198	\$ 1,240	\$ 45,040
2045	0.18%	93.55%	\$ 2,056	\$ 1,923	\$ 3,979	\$ 2,187	\$ 1,211	\$ 46,251
2046	4.13%	101.55%	\$ 2,080	\$ 2,112	\$ 4,192	\$ 2,261	\$ 1,229	\$ 47,480
2047	2.39%	106.36%	\$ 2,104	\$ 2,238	\$ 4,342	\$ 2,298	\$ 1,226	\$ 48,707
2048	0.71%	107.82%	\$ 2,128	\$ 2,295	\$ 4,423	\$ 2,298	\$ 1,204	\$ 49,910
2049	-0.31%	107.17%	\$ 2,128	\$ 2,281	\$ 4,409	\$ 2,248	\$ 1,156	\$ 51,066
2050	0.87%	108.97%	\$ 2,128	\$ 2,319	\$ 4,447	\$ 2,225	\$ 1,123	\$ 52,189
2051	2.58%	114.36%	\$ 2,128	\$ 2,434	\$ 4,562	\$ 2,240	\$ 1,110	\$ 53,299
2052	0.90%	116.28%	\$ 2,128	\$ 2,475	\$ 4,603	\$ 2,218	\$ 1,079	\$ 54,378
2053	0.97%	118.37%	\$ 2,128	\$ 2,519	\$ 4,647	\$ 2,197	\$ 1,050	\$ 55,428
2054	2.01%	122.76%	\$ 2,128	\$ 2,612	\$ 4,741	\$ 2,200	\$ 1,031	\$ 56,459
2055	0.77%	124.46%	\$ 2,128	\$ 2,649	\$ 4,777	\$ 2,175	\$ 1,001	\$ 57,461
2056	0.94%	126.57%	\$ 2,128	\$ 2,694	\$ 4,822	\$ 2,155	\$ 974	\$ 58,434
2057	1.40%	129.75%	\$ 2,128	\$ 2,761	\$ 4,889	\$ 2,144	\$ 951	\$ 59,386
2058	0.12%	130.02%	\$ 2,128	\$ 2,767	\$ 4,895	\$ 2,107	\$ 917	\$ 60,303
2059	0.87%	132.02%	\$ 2,128	\$ 2,810	\$ 4,938	\$ 2,086	\$ 892	\$ 61,195
2060	1.20%	134.81%	\$ 2,128	\$ 2,869	\$ 4,997	\$ 2,071	\$ 869	\$ 62,064
2061	0.98%	137.10%	\$ 2,128	\$ 2,918	\$ 5,046	\$ 2,052	\$ 846	\$ 62,910
2062	2.46%	142.92%	\$ 2,128	\$ 3,042	\$ 5,170	\$ 2,064	\$ 835	\$ 63,744

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Table 11.15

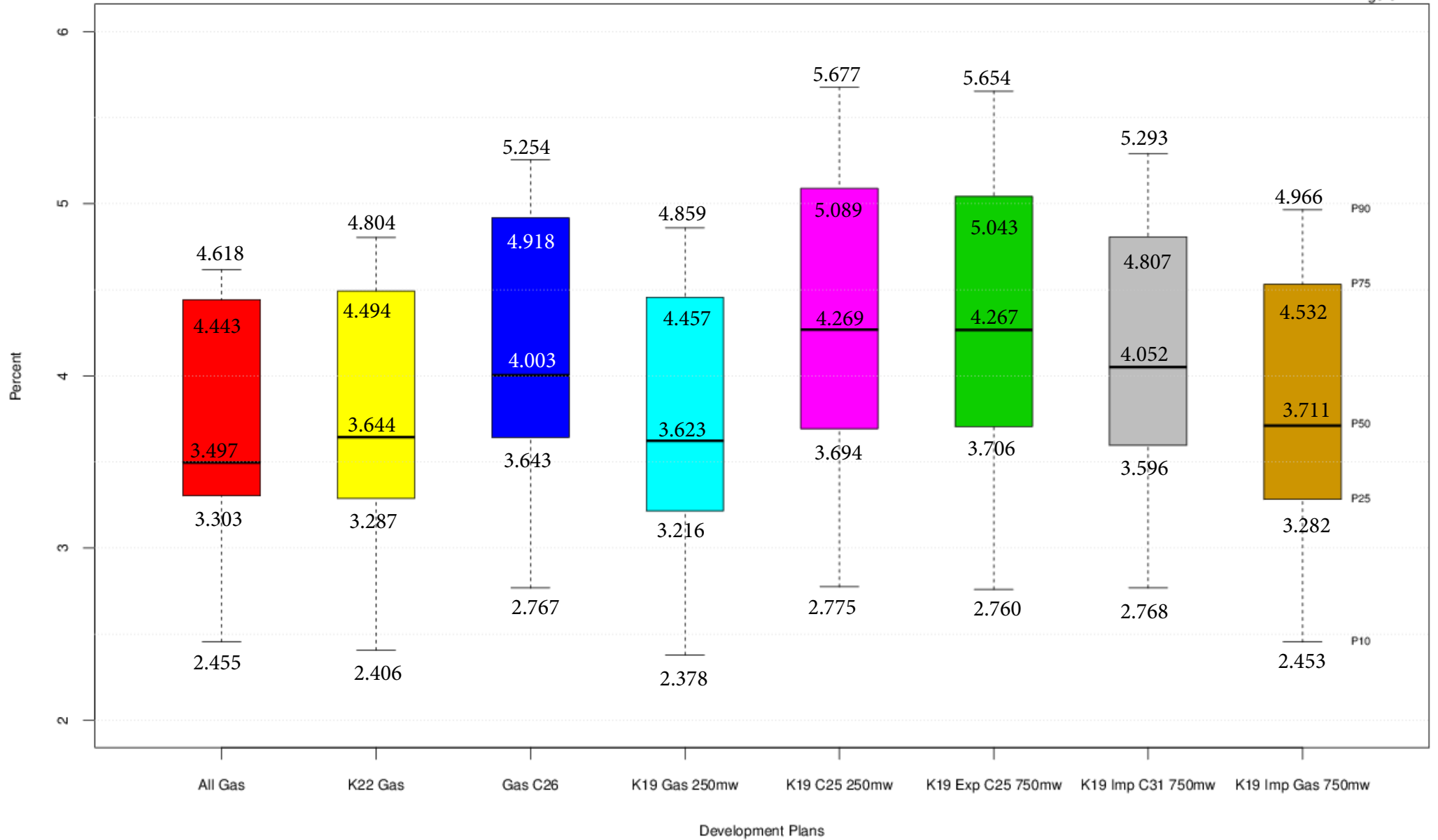
Development Plan: 14 - K19 C25 750 MW
Real Discount Rate - 1.86%
Scenario: Economics:REF Rev:REF Cap:REF
In Millions of Dollars

Fiscal Year Ending	(A) Additional General Consumers' Percent Increase	(B) Cumulative General Consumers' Percent Increase	(C) General Consumers' Revenue at Approved Rates (Nominal \$)	(D) Additional General Consumers' Revenue (Nominal \$)	(E) Total General Consumers' Revenue (Nominal \$)	(F) Total General Consumers' Revenue (2012 Constant \$)	(G) Discounted Constant Dollar Total Consumers' Revenue	(H) Cumulative Present Value of Total Consumers' Revenue
2013	0.00%	0.00%	\$ 1,331	\$ -	\$ 1,331	\$ 1,331	\$ 1,331	\$ 1,331
2014	3.50%	3.50%	\$ 1,361	\$ 48	\$ 1,409	\$ 1,384	\$ 1,358	\$ 2,689
2015	3.95%	7.59%	\$ 1,374	\$ 104	\$ 1,478	\$ 1,426	\$ 1,374	\$ 4,064
2016	3.95%	11.83%	\$ 1,390	\$ 164	\$ 1,554	\$ 1,473	\$ 1,394	\$ 5,457
2017	3.95%	16.25%	\$ 1,404	\$ 228	\$ 1,632	\$ 1,519	\$ 1,411	\$ 6,868
2018	3.95%	20.83%	\$ 1,424	\$ 297	\$ 1,721	\$ 1,573	\$ 1,434	\$ 8,302
2019	3.95%	25.60%	\$ 1,447	\$ 370	\$ 1,817	\$ 1,630	\$ 1,459	\$ 9,761
2020	3.95%	30.56%	\$ 1,462	\$ 447	\$ 1,909	\$ 1,680	\$ 1,476	\$ 11,237
2021	3.95%	35.72%	\$ 1,485	\$ 530	\$ 2,015	\$ 1,740	\$ 1,501	\$ 12,738
2022	3.95%	41.07%	\$ 1,506	\$ 619	\$ 2,125	\$ 1,801	\$ 1,525	\$ 14,263
2023	3.95%	46.64%	\$ 1,529	\$ 713	\$ 2,241	\$ 1,864	\$ 1,550	\$ 15,812
2024	3.95%	52.43%	\$ 1,552	\$ 814	\$ 2,365	\$ 1,930	\$ 1,575	\$ 17,388
2025	3.95%	58.45%	\$ 1,575	\$ 921	\$ 2,496	\$ 1,999	\$ 1,602	\$ 18,990
2026	3.95%	64.70%	\$ 1,598	\$ 1,034	\$ 2,632	\$ 2,069	\$ 1,627	\$ 20,617
2027	3.95%	71.20%	\$ 1,621	\$ 1,154	\$ 2,774	\$ 2,140	\$ 1,652	\$ 22,269
2028	3.95%	77.96%	\$ 1,644	\$ 1,282	\$ 2,926	\$ 2,215	\$ 1,679	\$ 23,948
2029	3.95%	84.98%	\$ 1,669	\$ 1,418	\$ 3,087	\$ 2,293	\$ 1,706	\$ 25,654
2030	3.95%	92.28%	\$ 1,693	\$ 1,562	\$ 3,255	\$ 2,373	\$ 1,734	\$ 27,388
2031	3.95%	99.87%	\$ 1,717	\$ 1,715	\$ 3,432	\$ 2,455	\$ 1,761	\$ 29,148
2032	3.95%	107.76%	\$ 1,741	\$ 1,876	\$ 3,617	\$ 2,540	\$ 1,788	\$ 30,936
2033	-23.04%	59.89%	\$ 1,765	\$ 1,057	\$ 2,823	\$ 1,945	\$ 1,344	\$ 32,280
2034	0.14%	60.12%	\$ 1,790	\$ 1,076	\$ 2,865	\$ 1,937	\$ 1,314	\$ 33,595
2035	1.12%	61.90%	\$ 1,814	\$ 1,123	\$ 2,936	\$ 1,948	\$ 1,298	\$ 34,892
2036	0.63%	62.93%	\$ 1,838	\$ 1,157	\$ 2,994	\$ 1,950	\$ 1,275	\$ 36,167
2037	1.30%	65.05%	\$ 1,862	\$ 1,211	\$ 3,073	\$ 1,964	\$ 1,261	\$ 37,428
2038	1.04%	66.78%	\$ 1,886	\$ 1,260	\$ 3,146	\$ 1,973	\$ 1,243	\$ 38,671
2039	-0.02%	66.74%	\$ 1,910	\$ 1,275	\$ 3,186	\$ 1,960	\$ 1,213	\$ 39,884
2040	0.58%	67.70%	\$ 1,935	\$ 1,310	\$ 3,244	\$ 1,960	\$ 1,190	\$ 41,074
2041	0.56%	68.64%	\$ 1,959	\$ 1,345	\$ 3,303	\$ 1,958	\$ 1,167	\$ 42,241
2042	2.06%	72.12%	\$ 1,983	\$ 1,430	\$ 3,413	\$ 1,985	\$ 1,162	\$ 43,403
2043	2.27%	76.03%	\$ 2,007	\$ 1,526	\$ 3,533	\$ 2,017	\$ 1,159	\$ 44,561
2044	0.23%	76.43%	\$ 2,031	\$ 1,553	\$ 3,584	\$ 2,008	\$ 1,132	\$ 45,694
2045	1.03%	78.25%	\$ 2,056	\$ 1,609	\$ 3,664	\$ 2,014	\$ 1,115	\$ 46,809
2046	2.29%	82.33%	\$ 2,080	\$ 1,712	\$ 3,792	\$ 2,046	\$ 1,112	\$ 47,921
2047	2.92%	87.66%	\$ 2,104	\$ 1,844	\$ 3,948	\$ 2,090	\$ 1,115	\$ 49,036
2048	0.05%	87.76%	\$ 2,128	\$ 1,868	\$ 3,996	\$ 2,076	\$ 1,087	\$ 50,124
2049	-0.39%	87.04%	\$ 2,128	\$ 1,852	\$ 3,980	\$ 2,029	\$ 1,044	\$ 51,167
2050	0.46%	87.89%	\$ 2,128	\$ 1,871	\$ 3,999	\$ 2,001	\$ 1,010	\$ 52,177
2051	2.43%	92.45%	\$ 2,128	\$ 1,968	\$ 4,096	\$ 2,011	\$ 997	\$ 53,174
2052	0.82%	94.02%	\$ 2,128	\$ 2,001	\$ 4,129	\$ 1,990	\$ 968	\$ 54,142
2053	0.63%	95.24%	\$ 2,128	\$ 2,027	\$ 4,155	\$ 1,965	\$ 938	\$ 55,080
2054	1.95%	99.04%	\$ 2,128	\$ 2,108	\$ 4,236	\$ 1,966	\$ 922	\$ 56,002
2055	0.55%	100.14%	\$ 2,128	\$ 2,131	\$ 4,259	\$ 1,940	\$ 893	\$ 56,895
2056	-0.08%	99.98%	\$ 2,128	\$ 2,128	\$ 4,256	\$ 1,902	\$ 859	\$ 57,754
2057	0.88%	101.75%	\$ 2,128	\$ 2,165	\$ 4,294	\$ 1,883	\$ 835	\$ 58,589
2058	-0.49%	100.76%	\$ 2,128	\$ 2,144	\$ 4,272	\$ 1,839	\$ 801	\$ 59,390
2059	0.59%	101.95%	\$ 2,128	\$ 2,170	\$ 4,298	\$ 1,815	\$ 776	\$ 60,166
2060	0.87%	103.71%	\$ 2,128	\$ 2,207	\$ 4,335	\$ 1,797	\$ 754	\$ 60,920
2061	0.48%	104.69%	\$ 2,128	\$ 2,228	\$ 4,356	\$ 1,772	\$ 730	\$ 61,650
2062	0.64%	106.00%	\$ 2,128	\$ 2,256	\$ 4,384	\$ 1,750	\$ 708	\$ 62,358

8

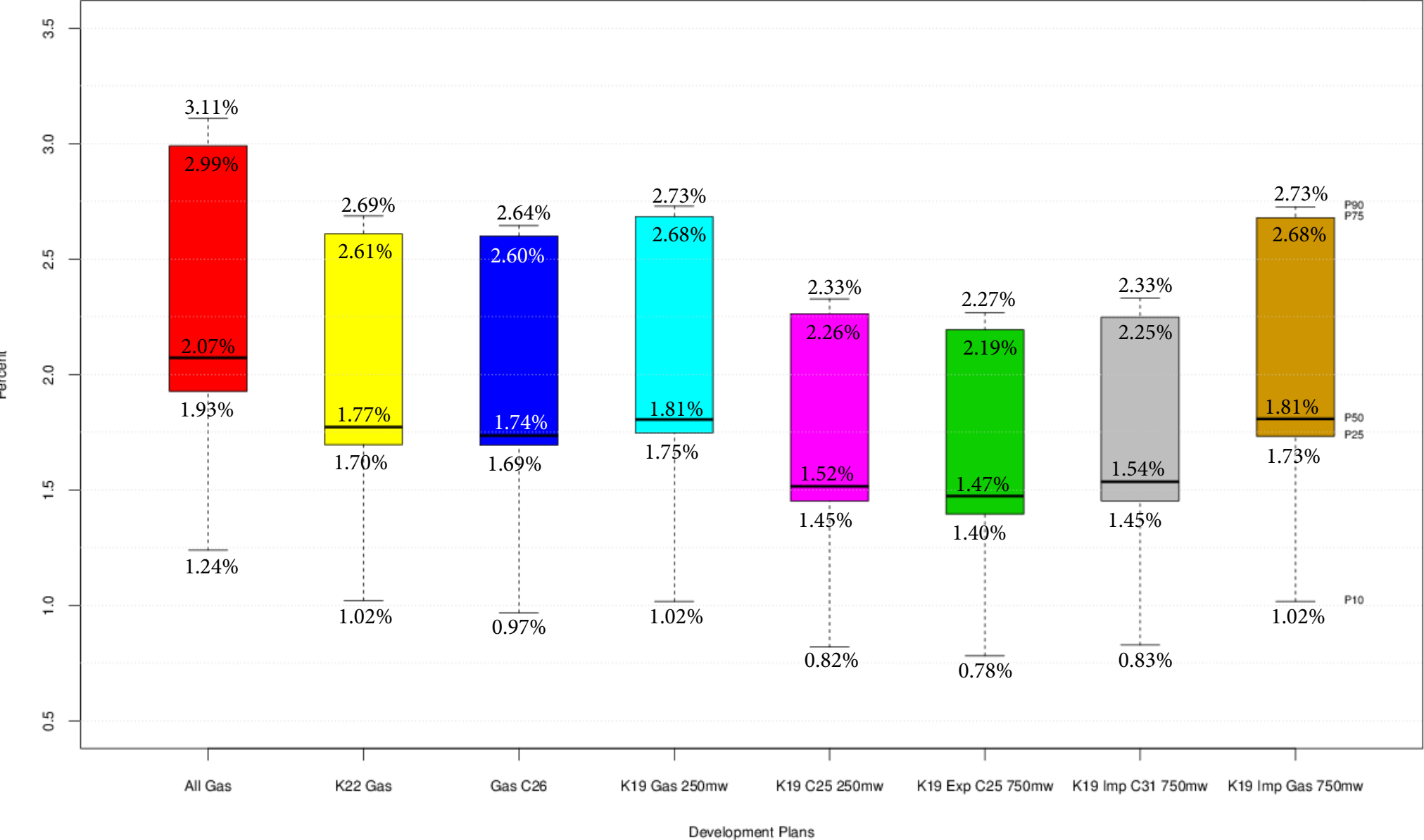
Even-Annual Rate Increases
 for Years 2015-2032

Figure 11.2



**Equivalent Even–Annual Rate Increases
 for Years 2015–2062**

Figure 11.3



9

1 **REFERENCE: Chapter 11: Financial Evaluation of Development Plans; Section: 11.2;**
2 **Page No.: 8**

3

4 **QUESTION:**

5 Based on the average annual rate increases associated with each of the eight plans and
6 Manitoba Hydro's current rate design practices, please provide projections of the Residential
7 rates (i.e. service charge and volumetric charge) for years set out in Figure 11.1 under each
8 Plan.

9

10 **RESPONSE:**

11 Manitoba Hydro's current Residential rate design as of May 1, 2013 consists of a monthly Basic
12 Charge (\$7.09) and a single Energy Charge (\$0.07183). Assuming this rate design was to remain
13 constant over the next 50 years, and that both components of the rate (Basic Charge and
14 Energy Charge) increased or decreased equally based on the overall projected percentage
15 change in General Consumer rates, then the following Residential rates would be indicative for
16 each of the eight development plans. Please note that actual rate increases will vary from those
17 projected in this analysis, and will be dependent upon future revenue requirements. For
18 simplicity purposes, only rates for each 10 year period are shown in the following tables.

1

Projected Residential Monthly Basic Charge

	2013	2023	2033	2043	2053	2063
All Gas	\$7.09	\$9.95	\$11.11	\$14.31	\$16.99	\$19.74
K22 Gas	\$7.09	\$9.99	\$11.31	\$13.87	\$15.65	\$17.27
Gas C26	\$7.09	\$10.32	\$11.67	\$13.16	\$15.19	\$16.17
K19 Gas 250mw	\$7.09	\$9.95	\$10.97	\$13.56	\$15.46	\$17.61
K19 C25 250mw	\$7.09	\$10.42	\$11.66	\$12.66	\$14.06	\$14.49
K19 Exp C25 750mw	\$7.09	\$10.41	\$11.35	\$12.51	\$13.88	\$14.14
K19 Imp C31 750mw	\$7.09	\$10.27	\$11.20	\$13.12	\$14.24	\$14.41
K19 Imp Gas 750mw	\$7.09	\$10.04	\$11.10	\$13.49	\$15.52	\$17.39

Projected Residential Energy Charge (\$/kWh)

	2013	2023	2033	2043	2053	2063
All Gas	\$0.07183	\$0.1004	\$0.1122	\$0.1443	\$0.1712	\$0.1989
K22 Gas	\$0.07183	\$0.1013	\$0.1148	\$0.1408	\$0.1591	\$0.1757
Gas C26	\$0.07183	\$0.1045	\$0.1182	\$0.1332	\$0.1538	\$0.1636
K19 Gas 250mw	\$0.07183	\$0.1004	\$0.1107	\$0.1366	\$0.1558	\$0.1775
K19 C25 250mw	\$0.07183	\$0.1056	\$0.1182	\$0.1282	\$0.1424	\$0.1468
K19 Exp C25 750mw	\$0.07183	\$0.1052	\$0.1147	\$0.1263	\$0.1401	\$0.1428
K19 Imp C31 750mw	\$0.07183	\$0.1039	\$0.1132	\$0.1325	\$0.1439	\$0.1456
K19 Imp Gas 750mw	\$0.07183	\$0.1013	\$0.1121	\$0.1363	\$0.1571	\$0.1760

10

NPV of Annual Additional Domestic Revenue

1. All Gas	7. Gas C26	2. K22 Gas	4. K19 Gas 250mw	13. K19 C25 250mw	12. K19 Imp C31 750mw	6. K19 Imp Gas 750mw	14. K19 Sales C25 750mw
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Discount Rate - 3.80% (Nominal)

Reference Scenario (Millions)

NPV 20 Year		9,227	10,500	9,434	9,167	10,834	10,331	9,398	10,675
NPV 30 Years		15,412	16,024	15,425	14,724	16,182	16,176	15,067	15,743
NPV 40 Years		22,533	21,919	21,802	20,869	21,369	21,566	21,224	20,751
NPV 49 Years		27,737	26,050	26,064	25,199	24,817	25,067	25,505	24,072

Capital High Scenario (Millions)

NPV 20 Year		9,462	10,994	9,908	9,805	11,800	11,183	10,063	11,719
NPV 30 Years		16,013	16,846	16,402	15,830	17,592	17,618	16,186	17,266
NPV 40 Years		23,524	23,039	23,243	22,391	23,101	23,396	22,729	22,611
NPV 49 Years		28,930	27,307	27,668	26,883	26,666	27,041	27,152	26,058

Export Low Scenario (Millions)

NPV 20 Year		9,987	11,953	10,765	10,655	13,055	12,160	10,989	12,758
NPV 30 Years		15,692	17,880	16,871	16,451	19,364	19,121	16,842	18,835
NPV 40 Years		22,043	23,707	22,818	22,361	24,879	24,952	22,691	24,304
NPV 49 Years		26,725	27,792	26,836	26,529	28,555	28,741	26,767	27,929

Export Low Capital High Economic High Scenario (Millions)

NPV 20 Year		14,052	17,159	15,343	15,566	19,523	17,894	16,052	19,228
NPV 30 Years		24,366	27,639	26,138	25,740	30,277	30,161	26,250	29,634
NPV 40 Years		36,510	38,512	37,035	36,805	40,196	40,758	37,179	39,485
NPV 49 Years		45,799	46,349	44,578	44,878	47,031	47,806	45,037	46,240

Discount Rate - 7.05% (Nominal)

Reference Scenario (Millions)

NPV 20 Year		6,312	7,168	6,449	6,277	7,395	7,052	6,431	7,297
NPV 30 Years		9,122	9,689	9,179	8,803	9,845	9,733	9,013	9,617
NPV 40 Years		11,518	11,675	11,328	10,873	11,594	11,552	11,086	11,304
NPV 49 Years		12,844	12,729	12,415	11,978	12,474	12,446	12,178	12,153

Capital High Scenario (Millions)

NPV 20 Year		6,151	7,126	6,435	6,374	7,643	7,241	6,539	7,601
NPV 30 Years		8,825	9,529	9,094	8,836	10,032	9,899	9,046	9,887
NPV 40 Years		11,008	11,330	11,085	10,746	11,636	11,584	10,950	11,443
NPV 49 Years		12,152	12,235	12,023	11,698	12,393	12,358	11,888	12,175

Export Low Scenario (Millions)

NPV 20 Year		7,271	8,664	7,820	7,746	9,450	8,798	7,987	9,247
NPV 30 Years		10,230	11,754	10,997	10,758	12,748	12,441	11,032	12,418
NPV 40 Years		12,792	14,107	13,400	13,145	14,977	14,800	13,394	14,629
NPV 49 Years		14,291	15,416	14,687	14,480	16,156	16,015	14,700	15,791

Export Low Capital High Economic High Scenario (Millions)

NPV 20 Year		9,527	11,566	10,372	10,536	13,142	12,021	10,863	12,959
NPV 30 Years		14,206	16,352	15,294	15,159	18,073	17,656	15,507	17,722
NPV 40 Years		18,292	20,013	18,966	18,887	21,418	21,234	19,188	21,045
NPV 49 Years		20,655	22,011	20,887	20,943	23,161	23,033	21,190	22,768

NPV of Annual Additional Domestic Revenue

1. All Gas	7. Gas C26	2. K22 Gas	4. K19 Gas 250mw	13. K19 C25 250mw	12. K19 Imp C31 750mw	6. K19 Imp Gas 750mw	14. K19 Sales C25 750mw
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Discount Rate - (7.5% Nominal)

Reference Scenario (Millions)

NPV 20 Year	6,006	6,818	6,136	5,973	7,034	6,708	6,119	6,942
NPV 30 Years	8,531	9,085	8,590	8,244	9,238	9,120	8,440	9,029
NPV 40 Years	10,599	10,798	10,445	10,030	10,747	10,690	10,229	10,485
NPV 49 Years	11,700	11,674	11,348	10,947	11,479	11,433	11,136	11,190

Capital High Scenario (Millions)

NPV 20 Year	6,151	7,126	6,435	6,374	7,643	7,241	6,539	7,601
NPV 30 Years	8,825	9,529	9,094	8,836	10,032	9,899	9,046	9,887
NPV 40 Years	11,008	11,330	11,085	10,746	11,636	11,584	10,950	11,443
NPV 49 Years	12,152	12,235	12,023	11,698	12,393	12,358	11,888	12,175

Export Low Scenario (Millions)

NPV 20 Year	6,504	7,737	6,990	6,926	8,436	7,853	7,140	8,258
NPV 30 Years	8,838	10,179	9,499	9,302	11,044	10,735	9,544	10,764
NPV 40 Years	10,682	11,873	11,228	11,021	12,649	12,434	11,245	12,356
NPV 49 Years	11,673	12,738	12,080	11,903	13,429	13,238	12,108	13,125

Export Low Capital High Economic High Scenario (Millions)

NPV 20 Year	9,052	10,981	9,852	10,009	12,474	11,408	10,319	12,303
NPV 30 Years	13,257	15,286	14,277	14,164	16,912	16,481	14,495	16,588
NPV 40 Years	16,782	18,445	17,446	17,381	19,799	19,569	17,671	19,456
NPV 49 Years	18,744	20,105	19,042	19,089	21,247	21,063	19,333	20,887

Discount Rate - 10.0% (Nominal)

Reference Scenario (Millions)

NPV 20 Year	4,610	5,224	4,708	4,588	5,389	5,140	4,699	5,324
NPV 30 Years	6,021	6,495	6,081	5,857	6,628	6,497	5,997	6,495
NPV 40 Years	6,944	7,261	6,911	6,655	7,302	7,200	6,796	7,147
NPV 49 Years	7,343	7,578	7,238	6,988	7,568	7,469	7,125	7,402

Capital High Scenario (Millions)

NPV 20 Year	4,719	5,454	4,932	4,889	5,845	5,538	5,013	5,818
NPV 30 Years	6,212	6,802	6,420	6,265	7,188	7,035	6,417	7,103
NPV 40 Years	7,187	7,606	7,311	7,119	7,906	7,789	7,268	7,799
NPV 49 Years	7,601	7,935	7,651	7,464	8,181	8,070	7,608	8,065

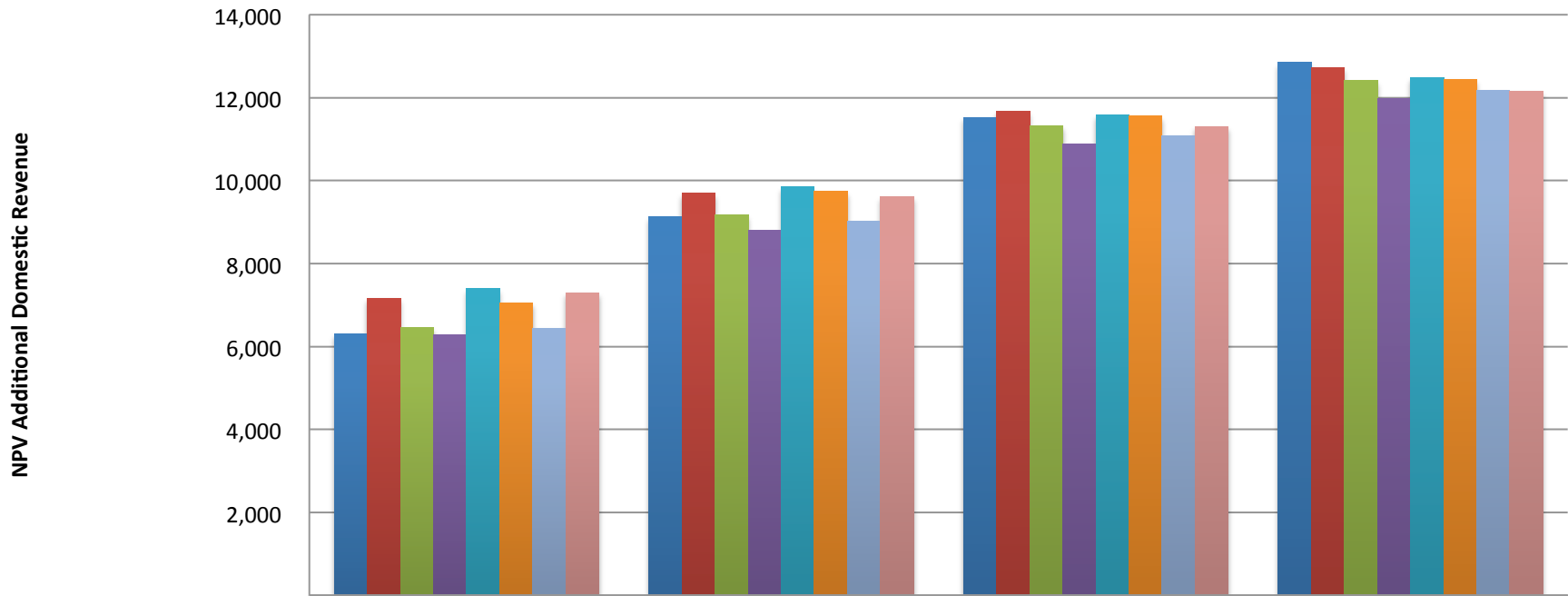
Export Low Scenario (Millions)

NPV 20 Year	4,994	5,916	5,355	5,310	6,440	5,996	5,472	6,312
NPV 30 Years	6,299	7,287	6,763	6,641	7,909	7,620	6,820	7,721
NPV 40 Years	7,122	8,044	7,536	7,409	8,627	8,380	7,580	8,433
NPV 49 Years	7,481	8,358	7,844	7,729	8,910	8,672	7,893	8,712

Export Low Capital High Economic High Scenario (Millions)

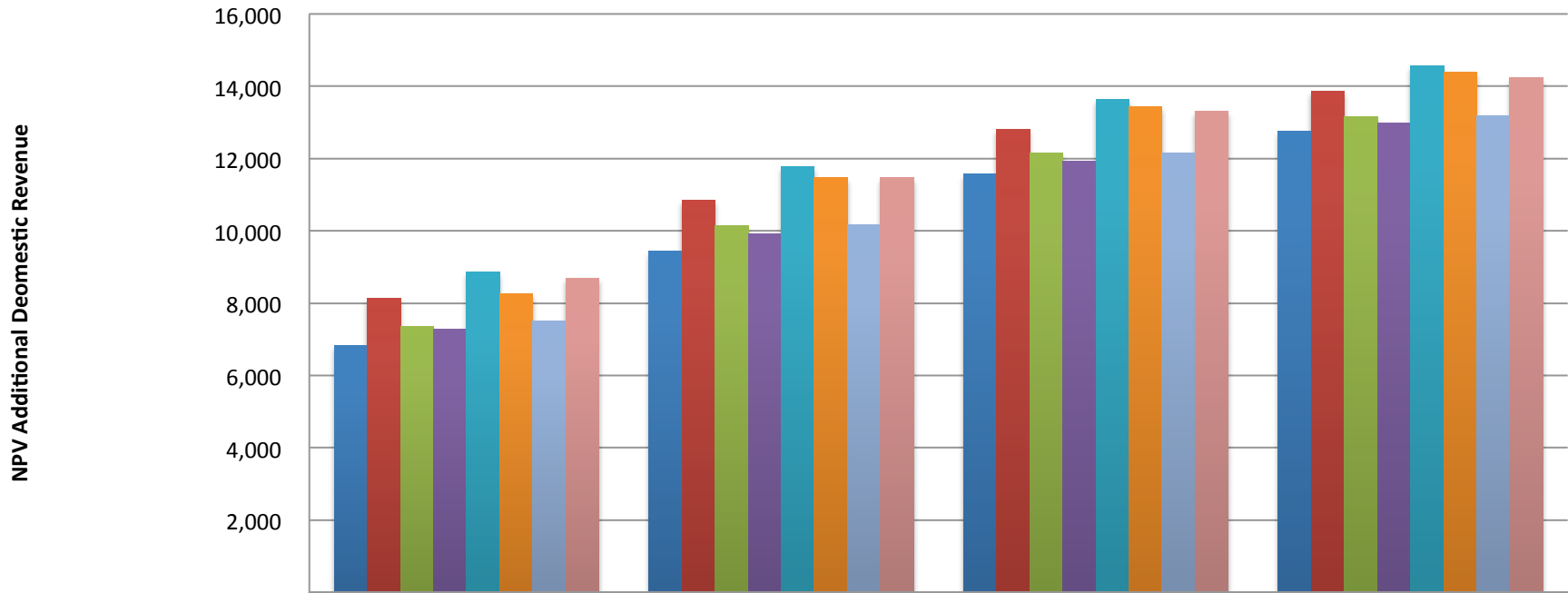
NPV 20 Year	6,898	8,329	7,491	7,615	9,449	8,633	7,849	9,328
NPV 30 Years	9,244	10,744	9,969	9,937	11,945	11,490	10,186	11,734
NPV 40 Years	10,817	12,155	11,385	11,374	13,236	12,872	11,605	13,017
NPV 49 Years	11,527	12,756	11,963	11,992	13,760	13,414	12,207	13,536

NPV of Annual Additional Domestic Revenue Reference Scenario - 7.05% (Millions)



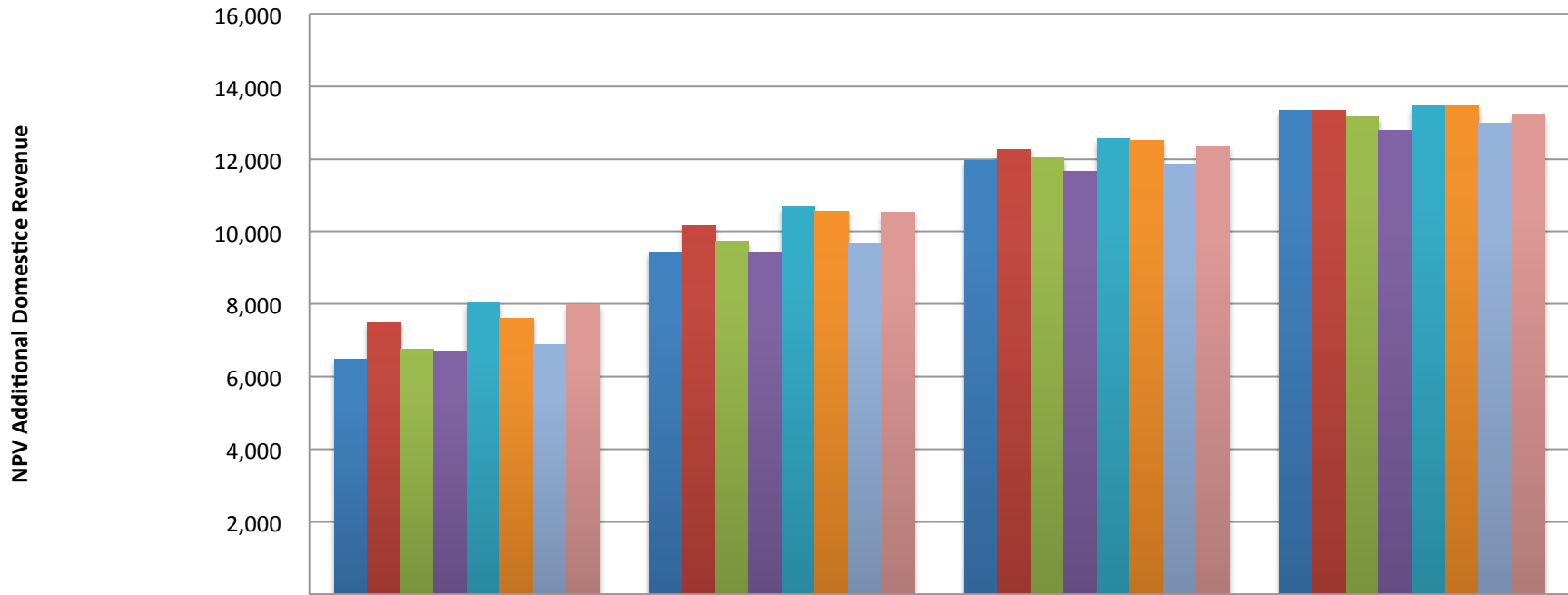
	2034	2044	2054	2062
1. All Gas	6,312	9,122	11,518	12,844
7. Gas C26	7,168	9,689	11,675	12,729
2. K22 Gas	6,449	9,179	11,328	12,415
4. K19 Gas 250mw	6,277	8,803	10,873	11,978
13. K19 C25 250mw	7,395	9,845	11,594	12,474
12. K19 Imp C31 750mw	7,052	9,733	11,552	12,446
6. K19 Imp Gas 750mw	6,431	9,013	11,086	12,178
14. K19 Sales C25 750mw	7,297	9,617	11,304	12,153

NPV of Annual Additional Domestic Revenue Export Low Scenario - 7.05% (Millions)



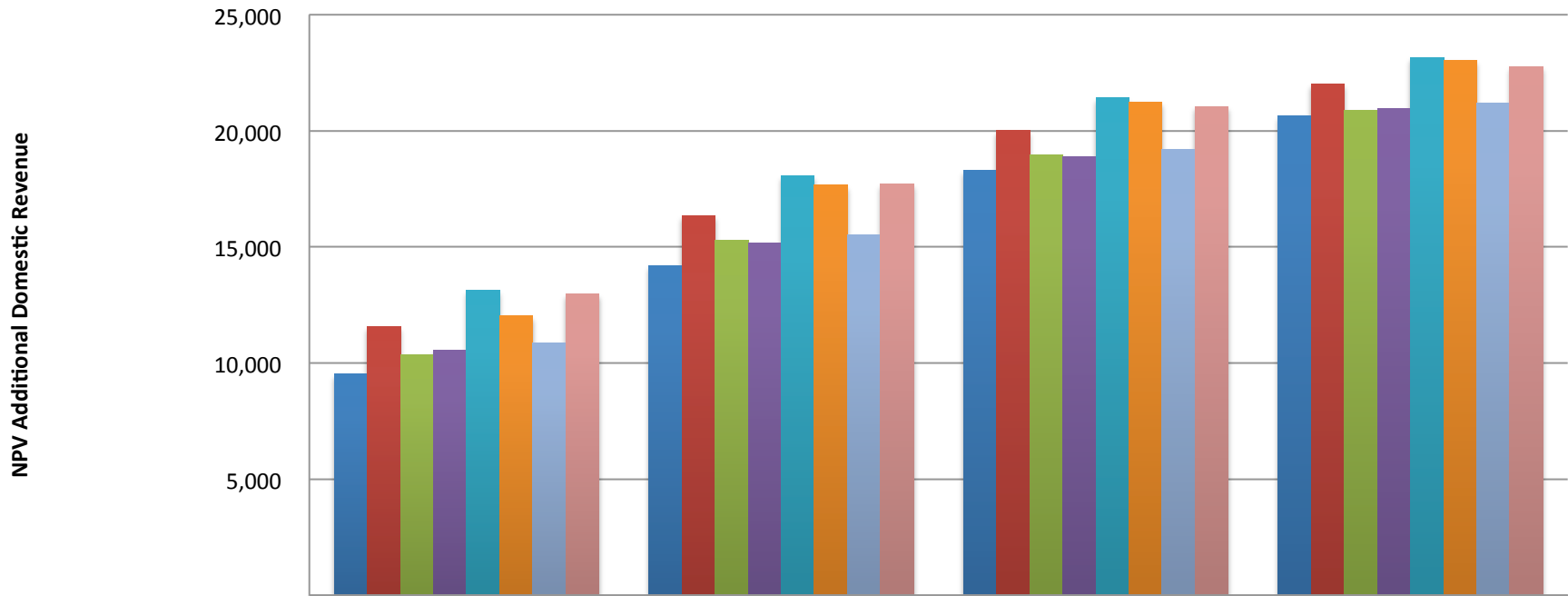
	2034	2044	2054	2062
1. All Gas	6,836	9,432	11,569	12,762
7. Gas C26	8,138	10,852	12,814	13,857
2. K22 Gas	7,349	10,138	12,142	13,167
4. K19 Gas 250mw	7,281	9,923	11,915	12,978
13. K19 C25 250mw	8,874	11,772	13,632	14,570
12. K19 Imp C31 750mw	8,262	11,463	13,431	14,399
6. K19 Imp Gas 750mw	7,506	10,180	12,150	13,189
14. K19 Sales C25 750mw	8,686	11,471	13,316	14,241

NPV of Annual Additional Domestic Revenue Capital High Scenario - 7.05% (Millions)



	2034	2044	2054	2062
1. All Gas	6,466	9,441	11,971	13,348
7. Gas C26	7,494	10,166	12,252	13,342
2. K22 Gas	6,765	9,723	12,030	13,159
4. K19 Gas 250mw	6,701	9,440	11,653	12,799
13. K19 C25 250mw	8,038	10,693	12,551	13,462
12. K19 Imp C31 750mw	7,615	10,569	12,521	13,453
6. K19 Imp Gas 750mw	6,874	9,663	11,869	12,997
14. K19 Sales C25 750mw	7,992	10,533	12,336	13,218

NPV of Annual Additional Domestic Revenue Export Low Capital High Economic High Scenario - 7.05% (Millions)



	2034	2044	2054	2062
1. All Gas	9,527	14,206	18,292	20,655
7. Gas C26	11,566	16,352	20,013	22,011
2. K22 Gas	10,372	15,294	18,966	20,887
4. K19 Gas 250mw	10,536	15,159	18,887	20,943
13. K19 C25 250mw	13,142	18,073	21,418	23,161
12. K19 Imp C31 750mw	12,021	17,656	21,234	23,033
6. K19 Imp Gas 750mw	10,863	15,507	19,188	21,190
14. K19 Sales C25 750mw	12,959	17,722	21,045	22,768

NPV of Annual Additional Domestic Revenue – Reference Scenario 3.8% (Millions)									
FYr		1. All Gas	7. Gas C26	2. K22 Gas	4. K19 Gas 250mw	13. K19 C25 250mw	12. K19 Imp C31 750mw	6. K19 Imp Gas 750mw	14. K19 Sales C25 750mw
2014	0	48	48	48	48	48	48	48	48
2015	1	96	103	97	96	104	102	97	104
2016	2	149	161	151	149	165	160	151	164
2017	3	204	224	207	203	230	221	208	228
2018	4	263	291	267	263	298	287	267	297
2019	5	325	362	331	324	373	357	331	371
2020	6	390	437	397	390	450	430	398	446
2021	7	461	518	470	460	534	510	470	530
2022	8	535	604	545	534	624	595	547	619
2023	9	614	695	627	613	718	684	627	713
2024	10	698	793	712	696	820	779	713	814
2025	11	787	896	803	785	928	882	805	920
2026	12	880	1,007	899	878	1,043	989	901	1,034
2027	13	979	1,122	1,001	977	1,163	1,102	1,002	1,154
2028	14	1,083	1,246	1,108	1,081	1,293	1,223	1,110	1,282
2029	15	1,195	1,378	1,222	1,192	1,430	1,352	1,224	1,418
2030	16	1,311	1,517	1,342	1,308	1,577	1,489	1,345	1,562
2031	17	1,434	1,664	1,468	1,431	1,730	1,631	1,471	1,715
2032	18	1,564	1,819	1,603	1,560	1,894	1,784	1,606	1,876
2033	19	999	1,138	1,053	961	1,141	1,021	988	1,057
2034	20	1,054	1,158	1,065	1,003	1,159	1,260	1,027	1,076
2035	21	1,223	1,220	1,257	1,100	1,214	1,346	1,139	1,123
2036	22	1,281	1,243	1,314	1,192	1,251	1,402	1,241	1,157
2037	23	1,309	1,255	1,362	1,249	1,278	1,420	1,289	1,211
2038	24	1,472	1,303	1,365	1,257	1,319	1,458	1,357	1,260
2039	25	1,550	1,372	1,495	1,389	1,339	1,471	1,359	1,275
2040	26	1,597	1,418	1,568	1,467	1,358	1,500	1,492	1,309
2041	27	1,779	1,484	1,620	1,526	1,461	1,529	1,602	1,345
2042	28	1,896	1,594	1,774	1,674	1,495	1,613	1,668	1,430
2043	29	2,039	1,717	1,925	1,824	1,577	1,703	1,799	1,526
2044	30	2,085	1,810	1,993	1,893	1,609	1,727	1,893	1,553
2045	31	2,257	1,872	2,020	1,930	1,691	1,778	1,923	1,609
2046	32	2,408	2,028	2,206	2,146	1,773	1,881	2,112	1,712
2047	33	2,540	2,135	2,331	2,203	1,904	2,005	2,238	1,844
2048	34	2,620	2,172	2,386	2,293	1,933	2,017	2,294	1,868
2049	35	2,628	2,163	2,368	2,278	1,920	1,994	2,281	1,852
2050	36	2,675	2,202	2,407	2,314	1,944	2,014	2,319	1,871
2051	37	2,804	2,314	2,521	2,423	2,032	2,093	2,434	1,967
2052	38	2,875	2,363	2,570	2,464	2,062	2,120	2,475	2,001
2053	39	2,963	2,431	2,577	2,502	2,089	2,144	2,519	2,027
2054	40	3,096	2,547	2,630	2,603	2,178	2,218	2,612	2,108
2055	41	3,159	2,589	2,654	2,678	2,209	2,237	2,649	2,131
2056	42	3,235	2,616	2,690	2,717	2,190	2,253	2,693	2,128
2057	43	3,308	2,658	2,723	2,784	2,223	2,288	2,762	2,165
2058	44	3,351	2,679	2,749	2,789	2,220	2,269	2,767	2,144
2059	45	3,439	2,717	2,790	2,836	2,258	2,288	2,809	2,170
2060	46	3,525	2,765	2,875	2,920	2,304	2,319	2,869	2,207
2061	47	3,614	2,813	2,936	2,991	2,336	2,340	2,918	2,228
2062	48	3,753	2,860	2,984	3,050	2,363	2,372	3,041	2,256
Total Cumulative		85,550	75,521	77,506	75,444	69,252	70,705	75,890	66,905
NPV 20 Year		9,227	10,500	9,434	9,167	10,834	10,331	9,398	10,675
NPV 30 Years		15,412	16,024	15,425	14,724	16,182	16,176	15,067	15,743
NPV 40 Years		22,533	21,919	21,802	20,869	21,369	21,566	21,224	20,751
NPV 49 Years		27,737	26,050	26,064	25,199	24,817	25,067	25,505	24,072
Discount Rate			3.80%						

Source: PUB/MHI-150a

Appendix 11.4, Volume 1

Appendix 11.4, Volume 2

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P. 487,488

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NPV of Annual Additional Domestic Revenue – Capital High Scenario 3.8% (Millions)									
FYr		1. All Gas	7. Gas C26	2. K22 Gas	4. K19 Gas 250mw	13. K19 C25 250mw	12. K19 Imp C31 750mw	6. K19 Imp Gas 750mw	14. K19 Sales C25 750mw
2014	0	48	48	48	48	48	48	48	48
2015	1	98	105	100	100	109	106	101	109
2016	2	151	166	155	155	174	168	157	174
2017	3	207	231	214	213	243	233	217	243
2018	4	267	300	277	275	318	304	281	318
2019	5	331	375	344	342	399	380	350	399
2020	6	398	453	414	411	482	458	421	482
2021	7	470	538	489	487	574	544	498	574
2022	8	546	628	570	566	672	636	580	671
2023	9	627	724	655	651	776	733	668	776
2024	10	713	826	745	741	888	837	760	887
2025	11	804	936	842	837	1,007	948	859	1,006
2026	12	900	1,051	943	937	1,133	1,066	963	1,133
2027	13	1,002	1,173	1,050	1,044	1,268	1,190	1,073	1,267
2028	14	1,109	1,304	1,164	1,157	1,411	1,323	1,190	1,410
2029	15	1,224	1,443	1,286	1,277	1,564	1,465	1,314	1,563
2030	16	1,344	1,590	1,414	1,404	1,727	1,615	1,446	1,726
2031	17	1,471	1,746	1,548	1,538	1,900	1,774	1,585	1,899
2032	18	1,605	1,911	1,691	1,679	2,083	1,942	1,731	2,082
2033	19	1,050	1,225	1,125	1,062	1,279	1,154	1,089	1,200
2034	20	1,105	1,245	1,142	1,103	1,294	1,428	1,125	1,216
2035	21	1,283	1,302	1,359	1,198	1,336	1,505	1,242	1,255
2036	22	1,345	1,320	1,420	1,290	1,370	1,561	1,347	1,284
2037	23	1,373	1,331	1,467	1,345	1,391	1,579	1,394	1,338
2038	24	1,563	1,377	1,470	1,352	1,433	1,612	1,461	1,383
2039	25	1,647	1,453	1,626	1,510	1,449	1,619	1,461	1,396
2040	26	1,693	1,500	1,705	1,592	1,465	1,644	1,622	1,426
2041	27	1,902	1,567	1,757	1,652	1,577	1,670	1,735	1,460
2042	28	2,022	1,691	1,939	1,831	1,610	1,766	1,799	1,554
2043	29	2,164	1,813	2,092	1,983	1,689	1,852	1,926	1,649
2044	30	2,210	1,917	2,158	2,047	1,720	1,873	2,031	1,674
2045	31	2,413	1,981	2,181	2,084	1,811	1,934	2,064	1,741
2046	32	2,565	2,144	2,398	2,335	1,896	2,039	2,286	1,845
2047	33	2,696	2,256	2,524	2,389	2,040	2,175	2,414	1,995
2048	34	2,772	2,290	2,575	2,472	2,068	2,181	2,465	2,014
2049	35	2,775	2,277	2,550	2,454	2,052	2,162	2,445	1,990
2050	36	2,818	2,310	2,581	2,473	2,062	2,161	2,469	1,998
2051	37	2,940	2,419	2,690	2,558	2,146	2,220	2,561	2,080
2052	38	3,005	2,465	2,737	2,585	2,173	2,237	2,587	2,105
2053	39	3,100	2,539	2,731	2,621	2,195	2,260	2,624	2,126
2054	40	3,229	2,654	2,767	2,713	2,280	2,327	2,714	2,208
2055	41	3,284	2,693	2,777	2,802	2,317	2,345	2,753	2,239
2056	42	3,370	2,713	2,795	2,842	2,296	2,360	2,797	2,233
2057	43	3,438	2,752	2,831	2,888	2,306	2,382	2,852	2,237
2058	44	3,478	2,769	2,853	2,888	2,299	2,367	2,860	2,230
2059	45	3,570	2,807	2,899	2,928	2,335	2,395	2,909	2,258
2060	46	3,654	2,849	2,992	3,015	2,355	2,402	2,944	2,275
2061	47	3,741	2,895	3,035	3,092	2,381	2,416	2,992	2,290
2062	48	3,910	2,935	3,068	3,152	2,407	2,448	3,136	2,316
Total Cumulative		89,430	79,037	82,193	80,118	73,808	75,844	80,346	71,782
NPV 20 Year		9,462	10,994	9,908	9,805	11,800	11,183	10,063	11,719
NPV 30 Years		16,013	16,846	16,402	15,830	17,592	17,618	16,186	17,266
NPV 40 Years		23,524	23,039	23,243	22,391	23,101	23,396	22,729	22,611
NPV 49 Years		28,930	27,307	27,668	26,883	26,666	27,041	27,152	26,058
Discount Rate			3.80%						

Source: PUB/MHI-150a

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P. 7,8

P. 331,332

P. 169,170

P. 493,494

P. 7,8

P. 331.332

P. 493,494

P. 169,170

NPV of Annual Additional Domestic Revenue – Export Low Scenario 3.8% (Millions)									
FYr		1. All Gas	7. Gas C26	2. K22 Gas	4. K19 Gas 250mw	13. K19 C25 250mw	12. K19 Imp C31 750mw	6. K19 Imp Gas 750mw	14. K19 Sales C25 750mw
2014	0	48	48	48	48	48	48	48	48
2015	1	101	109	104	104	114	110	106	113
2016	2	158	175	165	164	185	176	167	183
2017	3	217	245	228	227	261	247	233	258
2018	4	282	321	297	296	344	323	303	339
2019	5	351	403	371	369	432	405	379	427
2020	6	422	487	447	445	525	490	457	518
2021	7	500	580	531	528	627	584	543	618
2022	8	582	679	619	616	736	684	634	725
2023	9	669	785	714	710	852	790	731	839
2024	10	762	898	814	810	977	904	835	962
2025	11	862	1,019	922	916	1,112	1,026	946	1,094
2026	12	966	1,147	1,035	1,029	1,254	1,156	1,063	1,234
2027	13	1,076	1,283	1,155	1,148	1,406	1,293	1,187	1,383
2028	14	1,194	1,429	1,283	1,275	1,570	1,440	1,319	1,542
2029	15	1,319	1,585	1,420	1,411	1,744	1,597	1,461	1,713
2030	16	1,451	1,751	1,564	1,554	1,931	1,764	1,610	1,896
2031	17	1,590	1,926	1,717	1,706	2,129	1,942	1,769	2,089
2032	18	1,737	2,112	1,879	1,866	2,340	2,130	1,936	2,296
2033	19	983	1,310	1,139	1,079	1,429	1,318	1,106	1,319
2034	20	1,014	1,317	1,159	1,107	1,437	1,580	1,126	1,326
2035	21	1,158	1,366	1,339	1,193	1,476	1,656	1,230	1,360
2036	22	1,205	1,381	1,382	1,294	1,535	1,721	1,339	1,414
2037	23	1,230	1,393	1,415	1,332	1,557	1,743	1,372	1,494
2038	24	1,376	1,430	1,431	1,352	1,589	1,769	1,423	1,536
2039	25	1,434	1,484	1,544	1,468	1,597	1,770	1,427	1,541
2040	26	1,473	1,519	1,602	1,527	1,612	1,787	1,555	1,562
2041	27	1,634	1,574	1,646	1,583	1,698	1,811	1,636	1,620
2042	28	1,718	1,662	1,767	1,706	1,709	1,865	1,667	1,693
2043	29	1,837	1,766	1,879	1,827	1,781	1,942	1,775	1,778
2044	30	1,880	1,842	1,912	1,863	1,788	1,942	1,840	1,784
2045	31	2,027	1,883	1,912	1,887	1,840	1,983	1,851	1,816
2046	32	2,146	2,010	2,067	2,062	1,907	2,049	2,030	1,897
2047	33	2,250	2,104	2,154	2,124	2,008	2,145	2,118	1,999
2048	34	2,299	2,113	2,177	2,165	2,019	2,141	2,144	2,005
2049	35	2,335	2,132	2,197	2,189	2,037	2,160	2,165	2,021
2050	36	2,390	2,177	2,243	2,224	2,059	2,181	2,202	2,042
2051	37	2,515	2,288	2,358	2,330	2,161	2,264	2,313	2,141
2052	38	2,577	2,340	2,411	2,373	2,197	2,294	2,355	2,178
2053	39	2,654	2,404	2,413	2,405	2,216	2,311	2,382	2,195
2054	40	2,776	2,513	2,467	2,510	2,307	2,385	2,482	2,284
2055	41	2,831	2,553	2,491	2,574	2,335	2,405	2,513	2,304
2056	42	2,908	2,583	2,521	2,619	2,337	2,434	2,569	2,311
2057	43	2,975	2,627	2,573	2,672	2,377	2,463	2,623	2,350
2058	44	3,013	2,652	2,593	2,695	2,389	2,462	2,640	2,359
2059	45	3,098	2,688	2,642	2,724	2,402	2,477	2,671	2,371
2060	46	3,175	2,736	2,714	2,806	2,446	2,514	2,727	2,412
2061	47	3,256	2,787	2,776	2,882	2,489	2,543	2,780	2,445
2062	48	3,389	2,834	2,813	2,938	2,525	2,582	2,902	2,477
Total Cumulative		79,843	78,450	77,050	76,732	77,846	79,806	76,690	76,311
NPV 20 Year		9,987	11,953	10,765	10,655	13,055	12,160	10,989	12,758
NPV 30 Years		15,692	17,880	16,871	16,451	19,364	19,121	16,842	18,835
NPV 40 Years		22,043	23,707	22,818	22,361	24,879	24,952	22,691	24,304
NPV 49 Years		26,725	27,792	26,836	26,529	28,555	28,741	26,767	27,929
Discount Rate			3.80%						

Source: PUB/MHI-150a

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P. 361,362

P. 199,200

P. 523,524

P. 37,38

P. 361,362

P. 523,524

P. 199,200

NPV of Annual Additional Domestic Revenue – Export Low Capital High Economic High Scenario 3.8% (Millions)									
FYr		1. All Gas	7. Gas C26	2. K22 Gas	4. K19 Gas 250mw	13. K19 C25 250mw	12. K19 Imp C31 750mw	6. K19 Imp Gas 750mw	14. K19 Sales C25 750mw
2014	0	48	48	48	48	48	48	48	48
2015	1	118	129	123	124	138	131	126	137
2016	2	193	217	203	206	236	221	211	235
2017	3	274	312	290	294	343	318	301	340
2018	4	361	416	384	391	460	424	400	456
2019	5	456	529	486	495	588	540	508	584
2020	6	555	648	594	605	724	663	622	719
2021	7	664	781	712	727	876	799	748	869
2022	8	781	923	840	857	1,040	946	883	1,031
2023	9	907	1,077	977	998	1,218	1,104	1,028	1,208
2024	10	1,042	1,244	1,125	1,150	1,413	1,277	1,186	1,401
2025	11	1,187	1,425	1,284	1,313	1,625	1,463	1,357	1,611
2026	12	1,341	1,619	1,455	1,489	1,854	1,664	1,539	1,837
2027	13	1,507	1,828	1,638	1,677	2,101	1,880	1,735	2,081
2028	14	1,684	2,054	1,835	1,880	2,371	2,114	1,947	2,348
2029	15	1,875	2,299	2,047	2,099	2,663	2,368	2,176	2,637
2030	16	2,079	2,562	2,275	2,333	2,980	2,641	2,421	2,950
2031	17	2,296	2,844	2,518	2,584	3,322	2,934	2,684	3,287
2032	18	2,528	3,147	2,778	2,853	3,692	3,250	2,966	3,652
2033	19	1,586	2,165	1,844	1,749	2,349	2,263	1,774	2,211
2034	20	1,681	2,206	1,918	1,828	2,385	2,775	1,843	2,242
2035	21	1,963	2,318	2,262	1,985	2,467	2,904	2,048	2,312
2036	22	2,077	2,363	2,364	2,146	2,547	2,994	2,221	2,373
2037	23	2,155	2,407	2,440	2,244	2,598	3,032	2,309	2,509
2038	24	2,450	2,486	2,492	2,306	2,667	3,083	2,421	2,586
2039	25	2,590	2,619	2,751	2,574	2,707	3,104	2,472	2,621
2040	26	2,693	2,711	2,876	2,714	2,762	3,152	2,762	2,678
2041	27	3,037	2,831	2,956	2,840	2,945	3,217	2,933	2,797
2042	28	3,209	3,020	3,218	3,123	2,989	3,340	3,007	2,955
2043	29	3,417	3,204	3,399	3,338	3,095	3,452	3,176	3,102
2044	30	3,519	3,372	3,458	3,421	3,136	3,485	3,334	3,133
2045	31	3,857	3,471	3,464	3,472	3,276	3,567	3,410	3,232
2046	32	4,075	3,723	3,780	3,862	3,391	3,693	3,771	3,381
2047	33	4,288	3,918	3,947	3,996	3,626	3,919	3,972	3,622
2048	34	4,426	3,973	4,026	4,102	3,678	3,948	4,049	3,666
2049	35	4,484	4,001	4,049	4,132	3,697	3,958	4,080	3,682
2050	36	4,578	4,074	4,125	4,190	3,738	3,982	4,143	3,714
2051	37	4,785	4,250	4,310	4,337	3,876	4,095	4,302	3,845
2052	38	4,912	4,354	4,409	4,416	3,929	4,145	4,374	3,895
2053	39	5,113	4,524	4,437	4,506	3,987	4,199	4,460	3,949
2054	40	5,326	4,712	4,495	4,680	4,131	4,314	4,628	4,083
2055	41	5,461	4,818	4,550	4,875	4,225	4,387	4,741	4,173
2056	42	5,662	4,892	4,639	4,992	4,284	4,469	4,867	4,263
2057	43	5,824	4,996	4,743	5,095	4,379	4,535	4,979	4,339
2058	44	5,939	5,076	4,846	5,175	4,427	4,569	5,062	4,386
2059	45	6,168	5,177	4,970	5,287	4,487	4,627	5,161	4,442
2060	46	6,370	5,293	5,182	5,525	4,605	4,737	5,312	4,544
2061	47	6,571	5,422	5,328	5,703	4,714	4,805	5,453	4,626
2062	48	6,977	5,540	5,469	5,853	4,812	4,903	5,804	4,729
Total Cumulative		145,089	138,018	134,359	136,589	133,601	138,438	135,754	131,521
NPV 20 Year		14,052	17,159	15,343	15,566	19,523	17,894	16,052	19,228
NPV 30 Years		24,366	27,639	26,138	25,740	30,277	30,161	26,250	29,634
NPV 40 Years		36,510	38,512	37,035	36,805	40,196	40,758	37,179	39,485
NPV 49 Years		45,799	46,349	44,578	44,878	47,031	47,806	45,037	46,240
Discount Rate			3.80%						

Source: PUB/MH I-150a

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P. 97,98

P. 421,422

P. 259,260

P. 583,584

P. 97,98

P. 421,422

P. 583,584

P. 259,260

NPV of Annual Additional Domestic Revenue – Reference Scenario - 7.05% (Millions)									
FYr	NPV Year	1. All Gas	7. Gas C26	2. K22 Gas	4. K19 Gas 250mw	13. K19 C25 250mw	12. K19 Imp C31 750mw	6. K19 Imp Gas 750mw	14. K19 Sales C25 750mw
2014	0	48	48	48	48	48	48	48	48
2015	1	96	103	97	96	104	102	97	104
2016	2	149	161	151	149	165	160	151	164
2017	3	204	224	207	203	230	221	208	228
2018	4	263	291	267	263	298	287	267	297
2019	5	325	362	331	324	373	357	331	371
2020	6	390	437	397	390	450	430	398	446
2021	7	461	518	470	460	534	510	470	530
2022	8	535	604	545	534	624	595	547	619
2023	9	614	695	627	613	718	684	627	713
2024	10	698	793	712	696	820	779	713	814
2025	11	787	896	803	785	928	882	805	920
2026	12	880	1,007	899	878	1,043	989	901	1,034
2027	13	979	1,122	1,001	977	1,163	1,102	1,002	1,154
2028	14	1,083	1,246	1,108	1,081	1,293	1,223	1,110	1,282
2029	15	1,195	1,378	1,222	1,192	1,430	1,352	1,224	1,418
2030	16	1,311	1,517	1,342	1,308	1,577	1,489	1,345	1,562
2031	17	1,434	1,664	1,468	1,431	1,730	1,631	1,471	1,715
2032	18	1,564	1,819	1,603	1,560	1,894	1,784	1,606	1,876
2033	19	999	1,138	1,053	961	1,141	1,021	988	1,057
2034	20	1,054	1,158	1,065	1,003	1,159	1,260	1,027	1,076
2035	21	1,223	1,220	1,257	1,100	1,214	1,346	1,139	1,123
2036	22	1,281	1,243	1,314	1,192	1,251	1,402	1,241	1,157
2037	23	1,309	1,255	1,362	1,249	1,278	1,420	1,289	1,211
2038	24	1,472	1,303	1,365	1,257	1,319	1,458	1,357	1,260
2039	25	1,550	1,372	1,495	1,389	1,339	1,471	1,359	1,275
2040	26	1,597	1,418	1,568	1,467	1,358	1,500	1,492	1,309
2041	27	1,779	1,484	1,620	1,526	1,461	1,529	1,602	1,345
2042	28	1,896	1,594	1,774	1,674	1,495	1,613	1,668	1,430
2043	29	2,039	1,717	1,925	1,824	1,577	1,703	1,799	1,526
2044	30	2,085	1,810	1,993	1,893	1,609	1,727	1,893	1,553
2045	31	2,257	1,872	2,020	1,930	1,691	1,778	1,923	1,609
2046	32	2,408	2,028	2,206	2,146	1,773	1,881	2,112	1,712
2047	33	2,540	2,135	2,331	2,203	1,904	2,005	2,238	1,844
2048	34	2,620	2,172	2,386	2,293	1,933	2,017	2,294	1,868
2049	35	2,628	2,163	2,368	2,278	1,920	1,994	2,281	1,852
2050	36	2,675	2,202	2,407	2,314	1,944	2,014	2,319	1,871
2051	37	2,804	2,314	2,521	2,423	2,032	2,093	2,434	1,967
2052	38	2,875	2,363	2,570	2,464	2,062	2,120	2,475	2,001
2053	39	2,963	2,431	2,577	2,502	2,089	2,144	2,519	2,027
2054	40	3,096	2,547	2,630	2,603	2,178	2,218	2,612	2,108
2055	41	3,159	2,589	2,654	2,678	2,209	2,237	2,649	2,131
2056	42	3,235	2,616	2,690	2,717	2,190	2,253	2,693	2,128
2057	43	3,308	2,658	2,723	2,784	2,223	2,288	2,762	2,165
2058	44	3,351	2,679	2,749	2,789	2,220	2,269	2,767	2,144
2059	45	3,439	2,717	2,790	2,836	2,258	2,288	2,809	2,170
2060	46	3,525	2,765	2,875	2,920	2,304	2,319	2,869	2,207
2061	47	3,614	2,813	2,936	2,991	2,336	2,340	2,918	2,228
2062	48	3,753	2,860	2,984	3,050	2,363	2,372	3,041	2,256
Total Cumulative		85,550	75,521	77,506	75,444	69,252	70,705	75,890	66,905
NPV 20 Year		6,312	7,168	6,449	6,277	7,395	7,052	6,431	7,297
NPV 30 Years		9,122	9,689	9,179	8,803	9,845	9,733	9,013	9,617
NPV 40 Years		11,518	11,675	11,328	10,873	11,594	11,552	11,086	11,304
NPV 49 Years		12,844	12,729	12,415	11,978	12,474	12,446	12,178	12,153
Discount Rate			7.05%						

Source: PUB/MH I-150a

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P. 1,2

P. 325,326

P. 163,164

P. 487,488

P. 1,2

P. 325,326

P. 487,488

P. 163,164

NPV of Annual Additional Domestic Revenue – Capital High Scenario - 6.50% (Millions)									
FYr	NPV Year	1. All Gas	7. Gas C26	2. K22 Gas	4. K19 Gas 250mw	13. K19 C25 250mw	12. K19 Imp C31 750mw	6. K19 Imp Gas 750mw	14. K19 Sales C25 750mw
2014	0	48	48	48	48	48	48	48	48
2015	1	98	105	100	100	109	106	101	109
2016	2	151	166	155	155	174	168	157	174
2017	3	207	231	214	213	243	233	217	243
2018	4	267	300	277	275	318	304	281	318
2019	5	331	375	344	342	399	380	350	399
2020	6	398	453	414	411	482	458	421	482
2021	7	470	538	489	487	574	544	498	574
2022	8	546	628	570	566	672	636	580	671
2023	9	627	724	655	651	776	733	668	776
2024	10	713	826	745	741	888	837	760	887
2025	11	804	936	842	837	1,007	948	859	1,006
2026	12	900	1,051	943	937	1,133	1,066	963	1,133
2027	13	1,002	1,173	1,050	1,044	1,268	1,190	1,073	1,267
2028	14	1,109	1,304	1,164	1,157	1,411	1,323	1,190	1,410
2029	15	1,224	1,443	1,286	1,277	1,564	1,465	1,314	1,563
2030	16	1,344	1,590	1,414	1,404	1,727	1,615	1,446	1,726
2031	17	1,471	1,746	1,548	1,538	1,900	1,774	1,585	1,899
2032	18	1,605	1,911	1,691	1,679	2,083	1,942	1,731	2,082
2033	19	1,050	1,225	1,125	1,062	1,279	1,154	1,089	1,200
2034	20	1,105	1,245	1,142	1,103	1,294	1,428	1,125	1,216
2035	21	1,283	1,302	1,359	1,198	1,336	1,505	1,242	1,255
2036	22	1,345	1,320	1,420	1,290	1,370	1,561	1,347	1,284
2037	23	1,373	1,331	1,467	1,345	1,391	1,579	1,394	1,338
2038	24	1,563	1,377	1,470	1,352	1,433	1,612	1,461	1,383
2039	25	1,647	1,453	1,626	1,510	1,449	1,619	1,461	1,396
2040	26	1,693	1,500	1,705	1,592	1,465	1,644	1,622	1,426
2041	27	1,902	1,567	1,757	1,652	1,577	1,670	1,735	1,460
2042	28	2,022	1,691	1,939	1,831	1,610	1,766	1,799	1,554
2043	29	2,164	1,813	2,092	1,983	1,689	1,852	1,926	1,649
2044	30	2,210	1,917	2,158	2,047	1,720	1,873	2,031	1,674
2045	31	2,413	1,981	2,181	2,084	1,811	1,934	2,064	1,741
2046	32	2,565	2,144	2,398	2,335	1,896	2,039	2,286	1,845
2047	33	2,696	2,256	2,524	2,389	2,040	2,175	2,414	1,995
2048	34	2,772	2,290	2,575	2,472	2,068	2,181	2,465	2,014
2049	35	2,775	2,277	2,550	2,454	2,052	2,162	2,445	1,990
2050	36	2,818	2,310	2,581	2,473	2,062	2,161	2,469	1,998
2051	37	2,940	2,419	2,690	2,558	2,146	2,220	2,561	2,080
2052	38	3,005	2,465	2,737	2,585	2,173	2,237	2,587	2,105
2053	39	3,100	2,539	2,731	2,621	2,195	2,260	2,624	2,126
2054	40	3,229	2,654	2,767	2,713	2,280	2,327	2,714	2,208
2055	41	3,284	2,693	2,777	2,802	2,317	2,345	2,753	2,239
2056	42	3,370	2,713	2,795	2,842	2,296	2,360	2,797	2,233
2057	43	3,438	2,752	2,831	2,888	2,306	2,382	2,852	2,237
2058	44	3,478	2,769	2,853	2,888	2,299	2,367	2,860	2,230
2059	45	3,570	2,807	2,899	2,928	2,335	2,395	2,909	2,258
2060	46	3,654	2,849	2,992	3,015	2,355	2,402	2,944	2,275
2061	47	3,741	2,895	3,035	3,092	2,381	2,416	2,992	2,290
2062	48	3,910	2,935	3,068	3,152	2,407	2,448	3,136	2,316
Total Cumulative		89,430	79,037	82,193	80,118	73,808	75,844	80,346	71,782

NPV 20 Year	6,151	7,126	6,435	6,374	7,643	7,241	6,539	7,601
NPV 30 Years	8,825	9,529	9,094	8,836	10,032	9,899	9,046	9,887
NPV 40 Years	11,008	11,330	11,085	10,746	11,636	11,584	10,950	11,443
NPV 49 Years	12,152	12,235	12,023	11,698	12,393	12,358	11,888	12,175
Discount Rate		7.50%						

Source: PUB/MH I-150a

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P. 331,332

P. 169,170

P. 493,494

P. 7,8

P. 331,332

P. 493,494

P. 169,170

NPV of Annual Additional Domestic Revenue – Export Low Scenario - 7.05% (Millions)									
FYr	NPV Year	1. All Gas	7. Gas C26	2. K22 Gas	4. K19 Gas 250mw	13. K19 C25 250mw	12. K19 Imp C31 750mw	6. K19 Imp Gas 750mw	14. K19 Sales C25 750mw
2014	0	48	48	48	48	48	48	48	48
2015	1	101	109	104	104	114	110	106	113
2016	2	158	175	165	164	185	176	167	183
2017	3	217	245	228	227	261	247	233	258
2018	4	282	321	297	296	344	323	303	339
2019	5	351	403	371	369	432	405	379	427
2020	6	422	487	447	445	525	490	457	518
2021	7	500	580	531	528	627	584	543	618
2022	8	582	679	619	616	736	684	634	725
2023	9	669	785	714	710	852	790	731	839
2024	10	762	898	814	810	977	904	835	962
2025	11	862	1,019	922	916	1,112	1,026	946	1,094
2026	12	966	1,147	1,035	1,029	1,254	1,156	1,063	1,234
2027	13	1,076	1,283	1,155	1,148	1,406	1,293	1,187	1,383
2028	14	1,194	1,429	1,283	1,275	1,570	1,440	1,319	1,542
2029	15	1,319	1,585	1,420	1,411	1,744	1,597	1,461	1,713
2030	16	1,451	1,751	1,564	1,554	1,931	1,764	1,610	1,896
2031	17	1,590	1,926	1,717	1,706	2,129	1,942	1,769	2,089
2032	18	1,737	2,112	1,879	1,866	2,340	2,130	1,936	2,296
2033	19	983	1,310	1,139	1,079	1,429	1,318	1,106	1,319
2034	20	1,014	1,317	1,159	1,107	1,437	1,580	1,126	1,326
2035	21	1,158	1,366	1,339	1,193	1,476	1,656	1,230	1,360
2036	22	1,205	1,381	1,382	1,294	1,535	1,721	1,339	1,414
2037	23	1,230	1,393	1,415	1,332	1,557	1,743	1,372	1,494
2038	24	1,376	1,430	1,431	1,352	1,589	1,769	1,423	1,536
2039	25	1,434	1,484	1,544	1,468	1,597	1,770	1,427	1,541
2040	26	1,473	1,519	1,602	1,527	1,612	1,787	1,555	1,562
2041	27	1,634	1,574	1,646	1,583	1,698	1,811	1,636	1,620
2042	28	1,718	1,662	1,767	1,706	1,709	1,865	1,667	1,693
2043	29	1,837	1,766	1,879	1,827	1,781	1,942	1,775	1,778
2044	30	1,880	1,842	1,912	1,863	1,788	1,942	1,840	1,784
2045	31	2,027	1,883	1,912	1,887	1,840	1,983	1,851	1,816
2046	32	2,146	2,010	2,067	2,062	1,907	2,049	2,030	1,897
2047	33	2,250	2,104	2,154	2,124	2,008	2,145	2,118	1,999
2048	34	2,299	2,113	2,177	2,165	2,019	2,141	2,144	2,005
2049	35	2,335	2,132	2,197	2,189	2,037	2,160	2,165	2,021
2050	36	2,390	2,177	2,243	2,224	2,059	2,181	2,202	2,042
2051	37	2,515	2,288	2,358	2,330	2,161	2,264	2,313	2,141
2052	38	2,577	2,340	2,411	2,373	2,197	2,294	2,355	2,178
2053	39	2,654	2,404	2,413	2,405	2,216	2,311	2,382	2,195
2054	40	2,776	2,513	2,467	2,510	2,307	2,385	2,482	2,284
2055	41	2,831	2,553	2,491	2,574	2,335	2,405	2,513	2,304
2056	42	2,908	2,583	2,521	2,619	2,337	2,434	2,569	2,311
2057	43	2,975	2,627	2,573	2,672	2,377	2,463	2,623	2,350
2058	44	3,013	2,652	2,593	2,695	2,389	2,462	2,640	2,359
2059	45	3,098	2,688	2,642	2,724	2,402	2,477	2,671	2,371
2060	46	3,175	2,736	2,714	2,806	2,446	2,514	2,727	2,412
2061	47	3,256	2,787	2,776	2,882	2,489	2,543	2,780	2,445
2062	48	3,389	2,834	2,813	2,938	2,525	2,582	2,902	2,477
Total Cumulative		79,843	78,450	77,050	76,732	77,846	79,806	76,690	76,311

NPV 20 Year	6,836	8,138	7,349	7,281	8,874	8,262	7,506	8,686
NPV 30 Years	9,432	10,852	10,138	9,923	11,772	11,463	10,180	11,471
NPV 40 Years	11,569	12,814	12,142	11,915	13,632	13,431	12,150	13,316
NPV 49 Years	12,762	13,857	13,167	12,978	14,570	14,399	13,189	14,241
Discount Rate		7.05%						

Source: PUB/MHI-150a

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P. 199,200

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P. 361,362

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P. 199,200

NPV of Annual Additional Domestic Revenue – Export Low Capital High Economic High Scenario - 7.05% (Millions)									
FYr	NPV Year	1. All Gas	7. Gas C26	2. K22 Gas	4. K19 Gas 250mw	13. K19 C25 250mw	12. K19 Imp C31 750mw	6. K19 Imp Gas 750mw	14. K19 Sales C25 750mw
2014	0	48	48	48	48	48	48	48	48
2015	1	118	129	123	124	138	131	126	137
2016	2	193	217	203	206	236	221	211	235
2017	3	274	312	290	294	343	318	301	340
2018	4	361	416	384	391	460	424	400	456
2019	5	456	529	486	495	588	540	508	584
2020	6	555	648	594	605	724	663	622	719
2021	7	664	781	712	727	876	799	748	869
2022	8	781	923	840	857	1,040	946	883	1,031
2023	9	907	1,077	977	998	1,218	1,104	1,028	1,208
2024	10	1,042	1,244	1,125	1,150	1,413	1,277	1,186	1,401
2025	11	1,187	1,425	1,284	1,313	1,625	1,463	1,357	1,611
2026	12	1,341	1,619	1,455	1,489	1,854	1,664	1,539	1,837
2027	13	1,507	1,828	1,638	1,677	2,101	1,880	1,735	2,081
2028	14	1,684	2,054	1,835	1,880	2,371	2,114	1,947	2,348
2029	15	1,875	2,299	2,047	2,099	2,663	2,368	2,176	2,637
2030	16	2,079	2,562	2,275	2,333	2,980	2,641	2,421	2,950
2031	17	2,296	2,844	2,518	2,584	3,322	2,934	2,684	3,287
2032	18	2,528	3,147	2,778	2,853	3,692	3,250	2,966	3,652
2033	19	1,586	2,165	1,844	1,749	2,349	2,263	1,774	2,211
2034	20	1,681	2,206	1,918	1,828	2,385	2,775	1,843	2,242
2035	21	1,963	2,318	2,262	1,985	2,467	2,904	2,048	2,312
2036	22	2,077	2,363	2,364	2,146	2,547	2,994	2,221	2,373
2037	23	2,155	2,407	2,440	2,244	2,598	3,032	2,309	2,509
2038	24	2,450	2,486	2,492	2,306	2,667	3,083	2,421	2,586
2039	25	2,590	2,619	2,751	2,574	2,707	3,104	2,472	2,621
2040	26	2,693	2,711	2,876	2,714	2,762	3,152	2,762	2,678
2041	27	3,037	2,831	2,956	2,840	2,945	3,217	2,933	2,797
2042	28	3,209	3,020	3,218	3,123	2,989	3,340	3,007	2,955
2043	29	3,417	3,204	3,399	3,338	3,095	3,452	3,176	3,102
2044	30	3,519	3,372	3,458	3,421	3,136	3,485	3,334	3,133
2045	31	3,857	3,471	3,464	3,472	3,276	3,567	3,410	3,232
2046	32	4,075	3,723	3,780	3,862	3,391	3,693	3,771	3,381
2047	33	4,288	3,918	3,947	3,996	3,626	3,919	3,972	3,622
2048	34	4,426	3,973	4,026	4,102	3,678	3,948	4,049	3,666
2049	35	4,484	4,001	4,049	4,132	3,697	3,958	4,080	3,682
2050	36	4,578	4,074	4,125	4,190	3,738	3,982	4,143	3,714
2051	37	4,785	4,250	4,310	4,337	3,876	4,095	4,302	3,845
2052	38	4,912	4,354	4,409	4,416	3,929	4,145	4,374	3,895
2053	39	5,113	4,524	4,437	4,506	3,987	4,199	4,460	3,949
2054	40	5,326	4,712	4,495	4,680	4,131	4,314	4,628	4,083
2055	41	5,461	4,818	4,550	4,875	4,225	4,387	4,741	4,173
2056	42	5,662	4,892	4,639	4,992	4,284	4,469	4,867	4,263
2057	43	5,824	4,996	4,743	5,095	4,379	4,535	4,979	4,339
2058	44	5,939	5,076	4,846	5,175	4,427	4,569	5,062	4,386
2059	45	6,168	5,177	4,970	5,287	4,487	4,627	5,161	4,442
2060	46	6,370	5,293	5,182	5,525	4,605	4,737	5,312	4,544
2061	47	6,571	5,422	5,328	5,703	4,714	4,805	5,453	4,626
2062	48	6,977	5,540	5,469	5,853	4,812	4,903	5,804	4,729
Total Cumulative		145,089	138,018	134,359	136,589	133,601	138,438	135,754	131,521

NPV 20 Year	9,527	11,566	10,372	10,536	13,142	12,021	10,863	12,959
NPV 30 Years	14,206	16,352	15,294	15,159	18,073	17,656	15,507	17,722
NPV 40 Years	18,292	20,013	18,966	18,887	21,418	21,234	19,188	21,045
NPV 49 Years	20,655	22,011	20,887	20,943	23,161	23,033	21,190	22,768
Discount Rate		7.05%						

Source: PUB/MH I-150a

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P. 421,422

P. 259,260

P. 583,584

Appendix 11.4, Volume 2

P. 97,98

P. 421,422

P. 583,584

P. 259,260

Annual Additional Domestic Revenue – Reference Scenario - 7.5% (Millions)									
FYr	NPV Year	1. All Gas	7. Gas C26	2. K22 Gas	4. K19 Gas 250mw	13. K19 C25 250mw	12. K19 Imp C31 750mw	6. K19 Imp Gas 750mw	14. K19 Sales C25 750mw
2014	0	48	48	48	48	48	48	48	48
2015	1	96	103	97	96	104	102	97	104
2016	2	149	161	151	149	165	160	151	164
2017	3	204	224	207	203	230	221	208	228
2018	4	263	291	267	263	298	287	267	297
2019	5	325	362	331	324	373	357	331	371
2020	6	390	437	397	390	450	430	398	446
2021	7	461	518	470	460	534	510	470	530
2022	8	535	604	545	534	624	595	547	619
2023	9	614	695	627	613	718	684	627	713
2024	10	698	793	712	696	820	779	713	814
2025	11	787	896	803	785	928	882	805	920
2026	12	880	1,007	899	878	1,043	989	901	1,034
2027	13	979	1,122	1,001	977	1,163	1,102	1,002	1,154
2028	14	1,083	1,246	1,108	1,081	1,293	1,223	1,110	1,282
2029	15	1,195	1,378	1,222	1,192	1,430	1,352	1,224	1,418
2030	16	1,311	1,517	1,342	1,308	1,577	1,489	1,345	1,562
2031	17	1,434	1,664	1,468	1,431	1,730	1,631	1,471	1,715
2032	18	1,564	1,819	1,603	1,560	1,894	1,784	1,606	1,876
2033	19	999	1,138	1,053	961	1,141	1,021	988	1,057
2034	20	1,054	1,158	1,065	1,003	1,159	1,260	1,027	1,076
2035	21	1,223	1,220	1,257	1,100	1,214	1,346	1,139	1,123
2036	22	1,281	1,243	1,314	1,192	1,251	1,402	1,241	1,157
2037	23	1,309	1,255	1,362	1,249	1,278	1,420	1,289	1,211
2038	24	1,472	1,303	1,365	1,257	1,319	1,458	1,357	1,260
2039	25	1,550	1,372	1,495	1,389	1,339	1,471	1,359	1,275
2040	26	1,597	1,418	1,568	1,467	1,358	1,500	1,492	1,309
2041	27	1,779	1,484	1,620	1,526	1,461	1,529	1,602	1,345
2042	28	1,896	1,594	1,774	1,674	1,495	1,613	1,668	1,430
2043	29	2,039	1,717	1,925	1,824	1,577	1,703	1,799	1,526
2044	30	2,085	1,810	1,993	1,893	1,609	1,727	1,893	1,553
2045	31	2,257	1,872	2,020	1,930	1,691	1,778	1,923	1,609
2046	32	2,408	2,028	2,206	2,146	1,773	1,881	2,112	1,712
2047	33	2,540	2,135	2,331	2,203	1,904	2,005	2,238	1,844
2048	34	2,620	2,172	2,386	2,293	1,933	2,017	2,294	1,868
2049	35	2,628	2,163	2,368	2,278	1,920	1,994	2,281	1,852
2050	36	2,675	2,202	2,407	2,314	1,944	2,014	2,319	1,871
2051	37	2,804	2,314	2,521	2,423	2,032	2,093	2,434	1,967
2052	38	2,875	2,363	2,570	2,464	2,062	2,120	2,475	2,001
2053	39	2,963	2,431	2,577	2,502	2,089	2,144	2,519	2,027
2054	40	3,096	2,547	2,630	2,603	2,178	2,218	2,612	2,108
2055	41	3,159	2,589	2,654	2,678	2,209	2,237	2,649	2,131
2056	42	3,235	2,616	2,690	2,717	2,190	2,253	2,693	2,128
2057	43	3,308	2,658	2,723	2,784	2,223	2,288	2,762	2,165
2058	44	3,351	2,679	2,749	2,789	2,220	2,269	2,767	2,144
2059	45	3,439	2,717	2,790	2,836	2,258	2,288	2,809	2,170
2060	46	3,525	2,765	2,875	2,920	2,304	2,319	2,869	2,207
2061	47	3,614	2,813	2,936	2,991	2,336	2,340	2,918	2,228
2062	48	3,753	2,860	2,984	3,050	2,363	2,372	3,041	2,256
Total Cumulative		85,550	75,521	77,506	75,444	69,252	70,705	75,890	66,905
NPV 20 Year		5,687	6,454	5,809	5,657	6,658	6,350	5,795	6,573
NPV 30 Years		7,931	8,471	7,991	7,675	8,620	8,497	7,858	8,429
NPV 40 Years		9,688	9,926	9,568	9,193	9,902	9,831	9,378	9,667
NPV 49 Years		10,585	10,639	10,303	9,940	10,498	10,437	10,117	10,241
Discount Rate			8.00%						

Source: PUB/MH I-150a

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P. 487,488

P. 1,2

P. 325,326

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P. 163,164

Annual Additional Domestic Revenue – Capital High Scenario - 7.5% (Millions)									
FYr	NPV Year	1. All Gas	7. Gas C26	2. K22 Gas	4. K19 Gas 250mw	13. K19 C25 250mw	12. K19 Imp C31 750mw	6. K19 Imp Gas 750mw	14. K19 Sales C25 750mw
2014	0	48	48	48	48	48	48	48	48
2015	1	98	105	100	100	109	106	101	109
2016	2	151	166	155	155	174	168	157	174
2017	3	207	231	214	213	243	233	217	243
2018	4	267	300	277	275	318	304	281	318
2019	5	331	375	344	342	399	380	350	399
2020	6	398	453	414	411	482	458	421	482
2021	7	470	538	489	487	574	544	498	574
2022	8	546	628	570	566	672	636	580	671
2023	9	627	724	655	651	776	733	668	776
2024	10	713	826	745	741	888	837	760	887
2025	11	804	936	842	837	1,007	948	859	1,006
2026	12	900	1,051	943	937	1,133	1,066	963	1,133
2027	13	1,002	1,173	1,050	1,044	1,268	1,190	1,073	1,267
2028	14	1,109	1,304	1,164	1,157	1,411	1,323	1,190	1,410
2029	15	1,224	1,443	1,286	1,277	1,564	1,465	1,314	1,563
2030	16	1,344	1,590	1,414	1,404	1,727	1,615	1,446	1,726
2031	17	1,471	1,746	1,548	1,538	1,900	1,774	1,585	1,899
2032	18	1,605	1,911	1,691	1,679	2,083	1,942	1,731	2,082
2033	19	1,050	1,225	1,125	1,062	1,279	1,154	1,089	1,200
2034	20	1,105	1,245	1,142	1,103	1,294	1,428	1,125	1,216
2035	21	1,283	1,302	1,359	1,198	1,336	1,505	1,242	1,255
2036	22	1,345	1,320	1,420	1,290	1,370	1,561	1,347	1,284
2037	23	1,373	1,331	1,467	1,345	1,391	1,579	1,394	1,338
2038	24	1,563	1,377	1,470	1,352	1,433	1,612	1,461	1,383
2039	25	1,647	1,453	1,626	1,510	1,449	1,619	1,461	1,396
2040	26	1,693	1,500	1,705	1,592	1,465	1,644	1,622	1,426
2041	27	1,902	1,567	1,757	1,652	1,577	1,670	1,735	1,460
2042	28	2,022	1,691	1,939	1,831	1,610	1,766	1,799	1,554
2043	29	2,164	1,813	2,092	1,983	1,689	1,852	1,926	1,649
2044	30	2,210	1,917	2,158	2,047	1,720	1,873	2,031	1,674
2045	31	2,413	1,981	2,181	2,084	1,811	1,934	2,064	1,741
2046	32	2,565	2,144	2,398	2,335	1,896	2,039	2,286	1,845
2047	33	2,696	2,256	2,524	2,389	2,040	2,175	2,414	1,995
2048	34	2,772	2,290	2,575	2,472	2,068	2,181	2,465	2,014
2049	35	2,775	2,277	2,550	2,454	2,052	2,162	2,445	1,990
2050	36	2,818	2,310	2,581	2,473	2,062	2,161	2,469	1,998
2051	37	2,940	2,419	2,690	2,558	2,146	2,220	2,561	2,080
2052	38	3,005	2,465	2,737	2,585	2,173	2,237	2,587	2,105
2053	39	3,100	2,539	2,731	2,621	2,195	2,260	2,624	2,126
2054	40	3,229	2,654	2,767	2,713	2,280	2,327	2,714	2,208
2055	41	3,284	2,693	2,777	2,802	2,317	2,345	2,753	2,239
2056	42	3,370	2,713	2,795	2,842	2,296	2,360	2,797	2,233
2057	43	3,438	2,752	2,831	2,888	2,306	2,382	2,852	2,237
2058	44	3,478	2,769	2,853	2,888	2,299	2,367	2,860	2,230
2059	45	3,570	2,807	2,899	2,928	2,335	2,395	2,909	2,258
2060	46	3,654	2,849	2,992	3,015	2,355	2,402	2,944	2,275
2061	47	3,741	2,895	3,035	3,092	2,381	2,416	2,992	2,290
2062	48	3,910	2,935	3,068	3,152	2,407	2,448	3,136	2,316
Total Cumulative		89,430	79,037	82,193	80,118	73,808	75,844	80,346	71,782

NPV 20 Year	6,151	7,126	6,435	6,374	7,643	7,241	6,539	7,601
NPV 30 Years	8,825	9,529	9,094	8,836	10,032	9,899	9,046	9,887
NPV 40 Years	11,008	11,330	11,085	10,746	11,636	11,584	10,950	11,443
NPV 49 Years	12,152	12,235	12,023	11,698	12,393	12,358	11,888	12,175
Discount Rate		7.50%						

Source: PUB/MH I-150a

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Annual Additional Domestic Revenue – Export Low Scenario - 7.5% (Millions)									
FYr	NPV Year	1. All Gas	7. Gas C26	2. K22 Gas	4. K19 Gas 250mw	13. K19 C25 250mw	12. K19 Imp C31 750mw	6. K19 Imp Gas 750mw	14. K19 Sales C25 750mw
2014	0	48	48	48	48	48	48	48	48
2015	1	101	109	104	104	114	110	106	113
2016	2	158	175	165	164	185	176	167	183
2017	3	217	245	228	227	261	247	233	258
2018	4	282	321	297	296	344	323	303	339
2019	5	351	403	371	369	432	405	379	427
2020	6	422	487	447	445	525	490	457	518
2021	7	500	580	531	528	627	584	543	618
2022	8	582	679	619	616	736	684	634	725
2023	9	669	785	714	710	852	790	731	839
2024	10	762	898	814	810	977	904	835	962
2025	11	862	1,019	922	916	1,112	1,026	946	1,094
2026	12	966	1,147	1,035	1,029	1,254	1,156	1,063	1,234
2027	13	1,076	1,283	1,155	1,148	1,406	1,293	1,187	1,383
2028	14	1,194	1,429	1,283	1,275	1,570	1,440	1,319	1,542
2029	15	1,319	1,585	1,420	1,411	1,744	1,597	1,461	1,713
2030	16	1,451	1,751	1,564	1,554	1,931	1,764	1,610	1,896
2031	17	1,590	1,926	1,717	1,706	2,129	1,942	1,769	2,089
2032	18	1,737	2,112	1,879	1,866	2,340	2,130	1,936	2,296
2033	19	983	1,310	1,139	1,079	1,429	1,318	1,106	1,319
2034	20	1,014	1,317	1,159	1,107	1,437	1,580	1,126	1,326
2035	21	1,158	1,366	1,339	1,193	1,476	1,656	1,230	1,360
2036	22	1,205	1,381	1,382	1,294	1,535	1,721	1,339	1,414
2037	23	1,230	1,393	1,415	1,332	1,557	1,743	1,372	1,494
2038	24	1,376	1,430	1,431	1,352	1,589	1,769	1,423	1,536
2039	25	1,434	1,484	1,544	1,468	1,597	1,770	1,427	1,541
2040	26	1,473	1,519	1,602	1,527	1,612	1,787	1,555	1,562
2041	27	1,634	1,574	1,646	1,583	1,698	1,811	1,636	1,620
2042	28	1,718	1,662	1,767	1,706	1,709	1,865	1,667	1,693
2043	29	1,837	1,766	1,879	1,827	1,781	1,942	1,775	1,778
2044	30	1,880	1,842	1,912	1,863	1,788	1,942	1,840	1,784
2045	31	2,027	1,883	1,912	1,887	1,840	1,983	1,851	1,816
2046	32	2,146	2,010	2,067	2,062	1,907	2,049	2,030	1,897
2047	33	2,250	2,104	2,154	2,124	2,008	2,145	2,118	1,999
2048	34	2,299	2,113	2,177	2,165	2,019	2,141	2,144	2,005
2049	35	2,335	2,132	2,197	2,189	2,037	2,160	2,165	2,021
2050	36	2,390	2,177	2,243	2,224	2,059	2,181	2,202	2,042
2051	37	2,515	2,288	2,358	2,330	2,161	2,264	2,313	2,141
2052	38	2,577	2,340	2,411	2,373	2,197	2,294	2,355	2,178
2053	39	2,654	2,404	2,413	2,405	2,216	2,311	2,382	2,195
2054	40	2,776	2,513	2,467	2,510	2,307	2,385	2,482	2,284
2055	41	2,831	2,553	2,491	2,574	2,335	2,405	2,513	2,304
2056	42	2,908	2,583	2,521	2,619	2,337	2,434	2,569	2,311
2057	43	2,975	2,627	2,573	2,672	2,377	2,463	2,623	2,350
2058	44	3,013	2,652	2,593	2,695	2,389	2,462	2,640	2,359
2059	45	3,098	2,688	2,642	2,724	2,402	2,477	2,671	2,371
2060	46	3,175	2,736	2,714	2,806	2,446	2,514	2,727	2,412
2061	47	3,256	2,787	2,776	2,882	2,489	2,543	2,780	2,445
2062	48	3,389	2,834	2,813	2,938	2,525	2,582	2,902	2,477
Total Cumulative		79,843	78,450	77,050	76,732	77,846	79,806	76,690	76,311
NPV 20 Year		6,504	7,737	6,990	6,926	8,436	7,853	7,140	8,258
NPV 30 Years		8,838	10,179	9,499	9,302	11,044	10,735	9,544	10,764
NPV 40 Years		10,682	11,873	11,228	11,021	12,649	12,434	11,245	12,356
NPV 49 Years		11,673	12,738	12,080	11,903	13,429	13,238	12,108	13,125
Discount Rate			7.50%						

Source: PUB/MHI-150a

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P. 361,362

P. 199,200

P. 523,524

P. 37,38

P. 361,362

P. 523,524

P. 199,200

Annual Additional Domestic Revenue – Export Low Capital High Economic High Scenario - 7.5% (Millions)									
FYr	NPV Year	1. All Gas	7. Gas C26	2. K22 Gas	4. K19 Gas 250mw	13. K19 C25 250mw	12. K19 Imp C31 750mw	6. K19 Imp Gas 750mw	14. K19 Sales C25 750mw
2014	0	48	48	48	48	48	48	48	48
2015	1	118	129	123	124	138	131	126	137
2016	2	193	217	203	206	236	221	211	235
2017	3	274	312	290	294	343	318	301	340
2018	4	361	416	384	391	460	424	400	456
2019	5	456	529	486	495	588	540	508	584
2020	6	555	648	594	605	724	663	622	719
2021	7	664	781	712	727	876	799	748	869
2022	8	781	923	840	857	1,040	946	883	1,031
2023	9	907	1,077	977	998	1,218	1,104	1,028	1,208
2024	10	1,042	1,244	1,125	1,150	1,413	1,277	1,186	1,401
2025	11	1,187	1,425	1,284	1,313	1,625	1,463	1,357	1,611
2026	12	1,341	1,619	1,455	1,489	1,854	1,664	1,539	1,837
2027	13	1,507	1,828	1,638	1,677	2,101	1,880	1,735	2,081
2028	14	1,684	2,054	1,835	1,880	2,371	2,114	1,947	2,348
2029	15	1,875	2,299	2,047	2,099	2,663	2,368	2,176	2,637
2030	16	2,079	2,562	2,275	2,333	2,980	2,641	2,421	2,950
2031	17	2,296	2,844	2,518	2,584	3,322	2,934	2,684	3,287
2032	18	2,528	3,147	2,778	2,853	3,692	3,250	2,966	3,652
2033	19	1,586	2,165	1,844	1,749	2,349	2,263	1,774	2,211
2034	20	1,681	2,206	1,918	1,828	2,385	2,775	1,843	2,242
2035	21	1,963	2,318	2,262	1,985	2,467	2,904	2,048	2,312
2036	22	2,077	2,363	2,364	2,146	2,547	2,994	2,221	2,373
2037	23	2,155	2,407	2,440	2,244	2,598	3,032	2,309	2,509
2038	24	2,450	2,486	2,492	2,306	2,667	3,083	2,421	2,586
2039	25	2,590	2,619	2,751	2,574	2,707	3,104	2,472	2,621
2040	26	2,693	2,711	2,876	2,714	2,762	3,152	2,762	2,678
2041	27	3,037	2,831	2,956	2,840	2,945	3,217	2,933	2,797
2042	28	3,209	3,020	3,218	3,123	2,989	3,340	3,007	2,955
2043	29	3,417	3,204	3,399	3,338	3,095	3,452	3,176	3,102
2044	30	3,519	3,372	3,458	3,421	3,136	3,485	3,334	3,133
2045	31	3,857	3,471	3,464	3,472	3,276	3,567	3,410	3,232
2046	32	4,075	3,723	3,780	3,862	3,391	3,693	3,771	3,381
2047	33	4,288	3,918	3,947	3,996	3,626	3,919	3,972	3,622
2048	34	4,426	3,973	4,026	4,102	3,678	3,948	4,049	3,666
2049	35	4,484	4,001	4,049	4,132	3,697	3,958	4,080	3,682
2050	36	4,578	4,074	4,125	4,190	3,738	3,982	4,143	3,714
2051	37	4,785	4,250	4,310	4,337	3,876	4,095	4,302	3,845
2052	38	4,912	4,354	4,409	4,416	3,929	4,145	4,374	3,895
2053	39	5,113	4,524	4,437	4,506	3,987	4,199	4,460	3,949
2054	40	5,326	4,712	4,495	4,680	4,131	4,314	4,628	4,083
2055	41	5,461	4,818	4,550	4,875	4,225	4,387	4,741	4,173
2056	42	5,662	4,892	4,639	4,992	4,284	4,469	4,867	4,263
2057	43	5,824	4,996	4,743	5,095	4,379	4,535	4,979	4,339
2058	44	5,939	5,076	4,846	5,175	4,427	4,569	5,062	4,386
2059	45	6,168	5,177	4,970	5,287	4,487	4,627	5,161	4,442
2060	46	6,370	5,293	5,182	5,525	4,605	4,737	5,312	4,544
2061	47	6,571	5,422	5,328	5,703	4,714	4,805	5,453	4,626
2062	48	6,977	5,540	5,469	5,853	4,812	4,903	5,804	4,729
Total Cumulative		145,089	138,018	134,359	136,589	133,601	138,438	135,754	131,521

NPV 20 Year		9,052	10,981	9,852	10,009	12,474	11,408	10,319	12,303
NPV 30 Years		13,257	15,286	14,277	14,164	16,912	16,481	14,495	16,588
NPV 40 Years		16,782	18,445	17,446	17,381	19,799	19,569	17,671	19,456
NPV 49 Years		18,744	20,105	19,042	19,089	21,247	21,063	19,333	20,887
Discount Rate			7.50%						

Source: PUB/MH I-150a

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P. 97,98

P. 421,422

P. 259,260

P. 583,584

Appendix 11.4, Volume 2

P. 97,98

P. 421,422

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P. 259,260

Annual Additional Domestic Revenue – Reference Scenario - 10% (Millions)									
FYr	NPV Year	1. All Gas	7. Gas C26	2. K22 Gas	4. K19 Gas 250mw	13. K19 C25 250mw	12. K19 Imp C31 750mw	6. K19 Imp Gas 750mw	14. K19 Sales C25 750mw
2014	0	48	48	48	48	48	48	48	48
2015	1	96	103	97	96	104	102	97	104
2016	2	149	161	151	149	165	160	151	164
2017	3	204	224	207	203	230	221	208	228
2018	4	263	291	267	263	298	287	267	297
2019	5	325	362	331	324	373	357	331	371
2020	6	390	437	397	390	450	430	398	446
2021	7	461	518	470	460	534	510	470	530
2022	8	535	604	545	534	624	595	547	619
2023	9	614	695	627	613	718	684	627	713
2024	10	698	793	712	696	820	779	713	814
2025	11	787	896	803	785	928	882	805	920
2026	12	880	1,007	899	878	1,043	989	901	1,034
2027	13	979	1,122	1,001	977	1,163	1,102	1,002	1,154
2028	14	1,083	1,246	1,108	1,081	1,293	1,223	1,110	1,282
2029	15	1,195	1,378	1,222	1,192	1,430	1,352	1,224	1,418
2030	16	1,311	1,517	1,342	1,308	1,577	1,489	1,345	1,562
2031	17	1,434	1,664	1,468	1,431	1,730	1,631	1,471	1,715
2032	18	1,564	1,819	1,603	1,560	1,894	1,784	1,606	1,876
2033	19	999	1,138	1,053	961	1,141	1,021	988	1,057
2034	20	1,054	1,158	1,065	1,003	1,159	1,260	1,027	1,076
2035	21	1,223	1,220	1,257	1,100	1,214	1,346	1,139	1,123
2036	22	1,281	1,243	1,314	1,192	1,251	1,402	1,241	1,157
2037	23	1,309	1,255	1,362	1,249	1,278	1,420	1,289	1,211
2038	24	1,472	1,303	1,365	1,257	1,319	1,458	1,357	1,260
2039	25	1,550	1,372	1,495	1,389	1,339	1,471	1,359	1,275
2040	26	1,597	1,418	1,568	1,467	1,358	1,500	1,492	1,309
2041	27	1,779	1,484	1,620	1,526	1,461	1,529	1,602	1,345
2042	28	1,896	1,594	1,774	1,674	1,495	1,613	1,668	1,430
2043	29	2,039	1,717	1,925	1,824	1,577	1,703	1,799	1,526
2044	30	2,085	1,810	1,993	1,893	1,609	1,727	1,893	1,553
2045	31	2,257	1,872	2,020	1,930	1,691	1,778	1,923	1,609
2046	32	2,408	2,028	2,206	2,146	1,773	1,881	2,112	1,712
2047	33	2,540	2,135	2,331	2,203	1,904	2,005	2,238	1,844
2048	34	2,620	2,172	2,386	2,293	1,933	2,017	2,294	1,868
2049	35	2,628	2,163	2,368	2,278	1,920	1,994	2,281	1,852
2050	36	2,675	2,202	2,407	2,314	1,944	2,014	2,319	1,871
2051	37	2,804	2,314	2,521	2,423	2,032	2,093	2,434	1,967
2052	38	2,875	2,363	2,570	2,464	2,062	2,120	2,475	2,001
2053	39	2,963	2,431	2,577	2,502	2,089	2,144	2,519	2,027
2054	40	3,096	2,547	2,630	2,603	2,178	2,218	2,612	2,108
2055	41	3,159	2,589	2,654	2,678	2,209	2,237	2,649	2,131
2056	42	3,235	2,616	2,690	2,717	2,190	2,253	2,693	2,128
2057	43	3,308	2,658	2,723	2,784	2,223	2,288	2,762	2,165
2058	44	3,351	2,679	2,749	2,789	2,220	2,269	2,767	2,144
2059	45	3,439	2,717	2,790	2,836	2,258	2,288	2,809	2,170
2060	46	3,525	2,765	2,875	2,920	2,304	2,319	2,869	2,207
2061	47	3,614	2,813	2,936	2,991	2,336	2,340	2,918	2,228
2062	48	3,753	2,860	2,984	3,050	2,363	2,372	3,041	2,256
Total Cumulative		85,550	75,521	77,506	75,444	69,252	70,705	75,890	66,905
NPV 20 Year		4,610	5,224	4,708	4,588	5,389	5,140	4,699	5,324
NPV 30 Years		6,021	6,495	6,081	5,857	6,628	6,497	5,997	6,495
NPV 40 Years		6,944	7,261	6,911	6,655	7,302	7,200	6,796	7,147
NPV 49 Years		7,343	7,578	7,238	6,988	7,568	7,469	7,125	7,402
Discount Rate			10.00%						

Source: PUB/MH I-150a

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P. 487,488

P. 1,2

P. 325,326

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Annual Additional Domestic Revenue – Capital High Scenario - 10% (Millions)									
FYr	NPV Year	1. All Gas	7. Gas C26	2. K22 Gas	4. K19 Gas 250mw	13. K19 C25 250mw	12. K19 Imp C31 750mw	6. K19 Imp Gas 750mw	14. K19 Sales C25 750mw
2014	0	48	48	48	48	48	48	48	48
2015	1	98	105	100	100	109	106	101	109
2016	2	151	166	155	155	174	168	157	174
2017	3	207	231	214	213	243	233	217	243
2018	4	267	300	277	275	318	304	281	318
2019	5	331	375	344	342	399	380	350	399
2020	6	398	453	414	411	482	458	421	482
2021	7	470	538	489	487	574	544	498	574
2022	8	546	628	570	566	672	636	580	671
2023	9	627	724	655	651	776	733	668	776
2024	10	713	826	745	741	888	837	760	887
2025	11	804	936	842	837	1,007	948	859	1,006
2026	12	900	1,051	943	937	1,133	1,066	963	1,133
2027	13	1,002	1,173	1,050	1,044	1,268	1,190	1,073	1,267
2028	14	1,109	1,304	1,164	1,157	1,411	1,323	1,190	1,410
2029	15	1,224	1,443	1,286	1,277	1,564	1,465	1,314	1,563
2030	16	1,344	1,590	1,414	1,404	1,727	1,615	1,446	1,726
2031	17	1,471	1,746	1,548	1,538	1,900	1,774	1,585	1,899
2032	18	1,605	1,911	1,691	1,679	2,083	1,942	1,731	2,082
2033	19	1,050	1,225	1,125	1,062	1,279	1,154	1,089	1,200
2034	20	1,105	1,245	1,142	1,103	1,294	1,428	1,125	1,216
2035	21	1,283	1,302	1,359	1,198	1,336	1,505	1,242	1,255
2036	22	1,345	1,320	1,420	1,290	1,370	1,561	1,347	1,284
2037	23	1,373	1,331	1,467	1,345	1,391	1,579	1,394	1,338
2038	24	1,563	1,377	1,470	1,352	1,433	1,612	1,461	1,383
2039	25	1,647	1,453	1,626	1,510	1,449	1,619	1,461	1,396
2040	26	1,693	1,500	1,705	1,592	1,465	1,644	1,622	1,426
2041	27	1,902	1,567	1,757	1,652	1,577	1,670	1,735	1,460
2042	28	2,022	1,691	1,939	1,831	1,610	1,766	1,799	1,554
2043	29	2,164	1,813	2,092	1,983	1,689	1,852	1,926	1,649
2044	30	2,210	1,917	2,158	2,047	1,720	1,873	2,031	1,674
2045	31	2,413	1,981	2,181	2,084	1,811	1,934	2,064	1,741
2046	32	2,565	2,144	2,398	2,335	1,896	2,039	2,286	1,845
2047	33	2,696	2,256	2,524	2,389	2,040	2,175	2,414	1,995
2048	34	2,772	2,290	2,575	2,472	2,068	2,181	2,465	2,014
2049	35	2,775	2,277	2,550	2,454	2,052	2,162	2,445	1,990
2050	36	2,818	2,310	2,581	2,473	2,062	2,161	2,469	1,998
2051	37	2,940	2,419	2,690	2,558	2,146	2,220	2,561	2,080
2052	38	3,005	2,465	2,737	2,585	2,173	2,237	2,587	2,105
2053	39	3,100	2,539	2,731	2,621	2,195	2,260	2,624	2,126
2054	40	3,229	2,654	2,767	2,713	2,280	2,327	2,714	2,208
2055	41	3,284	2,693	2,777	2,802	2,317	2,345	2,753	2,239
2056	42	3,370	2,713	2,795	2,842	2,296	2,360	2,797	2,233
2057	43	3,438	2,752	2,831	2,888	2,306	2,382	2,852	2,237
2058	44	3,478	2,769	2,853	2,888	2,299	2,367	2,860	2,230
2059	45	3,570	2,807	2,899	2,928	2,335	2,395	2,909	2,258
2060	46	3,654	2,849	2,992	3,015	2,355	2,402	2,944	2,275
2061	47	3,741	2,895	3,035	3,092	2,381	2,416	2,992	2,290
2062	48	3,910	2,935	3,068	3,152	2,407	2,448	3,136	2,316
Total Cumulative		89,430	79,037	82,193	80,118	73,808	75,844	80,346	71,782

NPV 20 Year	4,719	5,454	4,932	4,889	5,845	5,538	5,013	5,818
NPV 30 Years	6,212	6,802	6,420	6,265	7,188	7,035	6,417	7,103
NPV 40 Years	7,187	7,606	7,311	7,119	7,906	7,789	7,268	7,799
NPV 49 Years	7,601	7,935	7,651	7,464	8,181	8,070	7,608	8,065
Discount Rate		10.00%						

Source: PUB/MHI-150a

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Annual Additional Domestic Revenue – Export Low Scenario - 10% (Millions)									
FYr	NPV Year	1. All Gas	7. Gas C26	2. K22 Gas	4. K19 Gas 250mw	13. K19 C25 250mw	12. K19 Imp C31 750mw	6. K19 Imp Gas 750mw	14. K19 Sales C25 750mw
2014	0	48	48	48	48	48	48	48	48
2015	1	101	109	104	104	114	110	106	113
2016	2	158	175	165	164	185	176	167	183
2017	3	217	245	228	227	261	247	233	258
2018	4	282	321	297	296	344	323	303	339
2019	5	351	403	371	369	432	405	379	427
2020	6	422	487	447	445	525	490	457	518
2021	7	500	580	531	528	627	584	543	618
2022	8	582	679	619	616	736	684	634	725
2023	9	669	785	714	710	852	790	731	839
2024	10	762	898	814	810	977	904	835	962
2025	11	862	1,019	922	916	1,112	1,026	946	1,094
2026	12	966	1,147	1,035	1,029	1,254	1,156	1,063	1,234
2027	13	1,076	1,283	1,155	1,148	1,406	1,293	1,187	1,383
2028	14	1,194	1,429	1,283	1,275	1,570	1,440	1,319	1,542
2029	15	1,319	1,585	1,420	1,411	1,744	1,597	1,461	1,713
2030	16	1,451	1,751	1,564	1,554	1,931	1,764	1,610	1,896
2031	17	1,590	1,926	1,717	1,706	2,129	1,942	1,769	2,089
2032	18	1,737	2,112	1,879	1,866	2,340	2,130	1,936	2,296
2033	19	983	1,310	1,139	1,079	1,429	1,318	1,106	1,319
2034	20	1,014	1,317	1,159	1,107	1,437	1,580	1,126	1,326
2035	21	1,158	1,366	1,339	1,193	1,476	1,656	1,230	1,360
2036	22	1,205	1,381	1,382	1,294	1,535	1,721	1,339	1,414
2037	23	1,230	1,393	1,415	1,332	1,557	1,743	1,372	1,494
2038	24	1,376	1,430	1,431	1,352	1,589	1,769	1,423	1,536
2039	25	1,434	1,484	1,544	1,468	1,597	1,770	1,427	1,541
2040	26	1,473	1,519	1,602	1,527	1,612	1,787	1,555	1,562
2041	27	1,634	1,574	1,646	1,583	1,698	1,811	1,636	1,620
2042	28	1,718	1,662	1,767	1,706	1,709	1,865	1,667	1,693
2043	29	1,837	1,766	1,879	1,827	1,781	1,942	1,775	1,778
2044	30	1,880	1,842	1,912	1,863	1,788	1,942	1,840	1,784
2045	31	2,027	1,883	1,912	1,887	1,840	1,983	1,851	1,816
2046	32	2,146	2,010	2,067	2,062	1,907	2,049	2,030	1,897
2047	33	2,250	2,104	2,154	2,124	2,008	2,145	2,118	1,999
2048	34	2,299	2,113	2,177	2,165	2,019	2,141	2,144	2,005
2049	35	2,335	2,132	2,197	2,189	2,037	2,160	2,165	2,021
2050	36	2,390	2,177	2,243	2,224	2,059	2,181	2,202	2,042
2051	37	2,515	2,288	2,358	2,330	2,161	2,264	2,313	2,141
2052	38	2,577	2,340	2,411	2,373	2,197	2,294	2,355	2,178
2053	39	2,654	2,404	2,413	2,405	2,216	2,311	2,382	2,195
2054	40	2,776	2,513	2,467	2,510	2,307	2,385	2,482	2,284
2055	41	2,831	2,553	2,491	2,574	2,335	2,405	2,513	2,304
2056	42	2,908	2,583	2,521	2,619	2,337	2,434	2,569	2,311
2057	43	2,975	2,627	2,573	2,672	2,377	2,463	2,623	2,350
2058	44	3,013	2,652	2,593	2,695	2,389	2,462	2,640	2,359
2059	45	3,098	2,688	2,642	2,724	2,402	2,477	2,671	2,371
2060	46	3,175	2,736	2,714	2,806	2,446	2,514	2,727	2,412
2061	47	3,256	2,787	2,776	2,882	2,489	2,543	2,780	2,445
2062	48	3,389	2,834	2,813	2,938	2,525	2,582	2,902	2,477
Total Cumulative		79,843	78,450	77,050	76,732	77,846	79,806	76,690	76,311
NPV 20 Year		4,994	5,916	5,355	5,310	6,440	5,996	5,472	6,312
NPV 30 Years		6,299	7,287	6,763	6,641	7,909	7,620	6,820	7,721
NPV 40 Years		7,122	8,044	7,536	7,409	8,627	8,380	7,580	8,433
NPV 49 Years		7,481	8,358	7,844	7,729	8,910	8,672	7,893	8,712
Discount Rate			10.00%						

Source: PUB/MHI-150a

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Annual Additional Domestic Revenue – Export Low Capital High Economic High Scenario - 10% (Millions)									
FYr	NPV Year	1. All Gas	7. Gas C26	2. K22 Gas	4. K19 Gas 250mw	13. K19 C25 250mw	12. K19 Imp C31 750mw	6. K19 Imp Gas 750mw	14. K19 Sales C25 750mw
2014	0	48	48	48	48	48	48	48	48
2015	1	118	129	123	124	138	131	126	137
2016	2	193	217	203	206	236	221	211	235
2017	3	274	312	290	294	343	318	301	340
2018	4	361	416	384	391	460	424	400	456
2019	5	456	529	486	495	588	540	508	584
2020	6	555	648	594	605	724	663	622	719
2021	7	664	781	712	727	876	799	748	869
2022	8	781	923	840	857	1,040	946	883	1,031
2023	9	907	1,077	977	998	1,218	1,104	1,028	1,208
2024	10	1,042	1,244	1,125	1,150	1,413	1,277	1,186	1,401
2025	11	1,187	1,425	1,284	1,313	1,625	1,463	1,357	1,611
2026	12	1,341	1,619	1,455	1,489	1,854	1,664	1,539	1,837
2027	13	1,507	1,828	1,638	1,677	2,101	1,880	1,735	2,081
2028	14	1,684	2,054	1,835	1,880	2,371	2,114	1,947	2,348
2029	15	1,875	2,299	2,047	2,099	2,663	2,368	2,176	2,637
2030	16	2,079	2,562	2,275	2,333	2,980	2,641	2,421	2,950
2031	17	2,296	2,844	2,518	2,584	3,322	2,934	2,684	3,287
2032	18	2,528	3,147	2,778	2,853	3,692	3,250	2,966	3,652
2033	19	1,586	2,165	1,844	1,749	2,349	2,263	1,774	2,211
2034	20	1,681	2,206	1,918	1,828	2,385	2,775	1,843	2,242
2035	21	1,963	2,318	2,262	1,985	2,467	2,904	2,048	2,312
2036	22	2,077	2,363	2,364	2,146	2,547	2,994	2,221	2,373
2037	23	2,155	2,407	2,440	2,244	2,598	3,032	2,309	2,509
2038	24	2,450	2,486	2,492	2,306	2,667	3,083	2,421	2,586
2039	25	2,590	2,619	2,751	2,574	2,707	3,104	2,472	2,621
2040	26	2,693	2,711	2,876	2,714	2,762	3,152	2,762	2,678
2041	27	3,037	2,831	2,956	2,840	2,945	3,217	2,933	2,797
2042	28	3,209	3,020	3,218	3,123	2,989	3,340	3,007	2,955
2043	29	3,417	3,204	3,399	3,338	3,095	3,452	3,176	3,102
2044	30	3,519	3,372	3,458	3,421	3,136	3,485	3,334	3,133
2045	31	3,857	3,471	3,464	3,472	3,276	3,567	3,410	3,232
2046	32	4,075	3,723	3,780	3,862	3,391	3,693	3,771	3,381
2047	33	4,288	3,918	3,947	3,996	3,626	3,919	3,972	3,622
2048	34	4,426	3,973	4,026	4,102	3,678	3,948	4,049	3,666
2049	35	4,484	4,001	4,049	4,132	3,697	3,958	4,080	3,682
2050	36	4,578	4,074	4,125	4,190	3,738	3,982	4,143	3,714
2051	37	4,785	4,250	4,310	4,337	3,876	4,095	4,302	3,845
2052	38	4,912	4,354	4,409	4,416	3,929	4,145	4,374	3,895
2053	39	5,113	4,524	4,437	4,506	3,987	4,199	4,460	3,949
2054	40	5,326	4,712	4,495	4,680	4,131	4,314	4,628	4,083
2055	41	5,461	4,818	4,550	4,875	4,225	4,387	4,741	4,173
2056	42	5,662	4,892	4,639	4,992	4,284	4,469	4,867	4,263
2057	43	5,824	4,996	4,743	5,095	4,379	4,535	4,979	4,339
2058	44	5,939	5,076	4,846	5,175	4,427	4,569	5,062	4,386
2059	45	6,168	5,177	4,970	5,287	4,487	4,627	5,161	4,442
2060	46	6,370	5,293	5,182	5,525	4,605	4,737	5,312	4,544
2061	47	6,571	5,422	5,328	5,703	4,714	4,805	5,453	4,626
2062	48	6,977	5,540	5,469	5,853	4,812	4,903	5,804	4,729
Total Cumulative		145,089	138,018	134,359	136,589	133,601	138,438	135,754	131,521
NPV 20 Year		6,898	8,329	7,491	7,615	9,449	8,633	7,849	9,328
NPV 30 Years		9,244	10,744	9,969	9,937	11,945	11,490	10,186	11,734
NPV 40 Years		10,817	12,155	11,385	11,374	13,236	12,872	11,605	13,017
NPV 49 Years		11,527	12,756	11,963	11,992	13,760	13,414	12,207	13,536
Discount Rate			10.00%						

Source: PUB/MH I-150a

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P. 259,260

1 **REFERENCE: Chapter 11: Financial Evaluation of Development Plans; Section: 11.2;**
2 **Page No.: 12-Nov; Ratepayer Impacts**

3

4 **QUESTION:**

5 Please provide a table that compares the cumulative additional domestic revenue that is
6 indicated by each of the preferred development plans and the evaluated alternatives.

7

8 **RESPONSE:**

9 The following table represents the Cumulative Annual Additional Domestic Revenue for each of
10 the eight development plans evaluated in Chapter 11 under the reference scenario.

Cumulative Annual Additional Domestic Revenue – Reference Scenario (Millions)								
FYr	1. All Gas	7. Gas C26	2. K22 Gas	4. K19 Gas 250mw	13. K19 C25 250mw	12. K19 Imp C31 750mw	6. K19 Imp Gas 750mw	14. K19 Sales C25 750mw
2014	48	48	48	48	48	48	48	48
2015	144	151	145	144	152	150	145	152
2016	293	312	296	293	317	310	296	316
2017	497	536	503	496	547	531	504	544
2018	760	827	770	759	845	818	771	841
2019	1,085	1,189	1,101	1,083	1,218	1,175	1,102	1,212
2020	1,475	1,626	1,498	1,473	1,668	1,605	1,500	1,658
2021	1,936	2,144	1,968	1,933	2,202	2,115	1,970	2,188
2022	2,471	2,748	2,513	2,467	2,826	2,710	2,517	2,807
2023	3,085	3,443	3,140	3,080	3,544	3,394	3,144	3,520
2024	3,783	4,236	3,852	3,776	4,364	4,173	3,857	4,334
2025	4,570	5,132	4,655	4,561	5,292	5,055	4,662	5,254
2026	5,450	6,139	5,554	5,439	6,335	6,044	5,563	6,288
2027	6,429	7,261	6,555	6,416	7,498	7,146	6,565	7,442
2028	7,512	8,507	7,663	7,497	8,791	8,369	7,675	8,724
2029	8,707	9,885	8,885	8,689	10,221	9,721	8,899	10,142
2030	10,018	11,402	10,227	9,997	11,798	11,210	10,244	11,704
2031	11,452	13,066	11,695	11,428	13,528	12,841	11,715	13,419
2032	13,016	14,885	13,298	12,988	15,422	14,625	13,321	15,295
2033	14,015	16,023	14,351	13,949	16,563	15,646	14,309	16,352
2034	15,069	17,181	15,416	14,952	17,722	16,906	15,336	17,428
2035	16,292	18,401	16,673	16,052	18,936	18,252	16,475	18,551
2036	17,573	19,644	17,987	17,244	20,187	19,654	17,716	19,708
2037	18,882	20,899	19,349	18,493	21,465	21,074	19,005	20,919

Cumulative Annual Additional Domestic Revenue – Reference Scenario (Millions)								
FYr	1. All Gas	7. Gas C26	2. K22 Gas	4. K19 Gas 250mw	13. K19 C25 250mw	12. K19 Imp C31 750mw	6. K19 Imp Gas 750mw	14. K19 Sales C25 750mw
2038	20,354	22,202	20,714	19,750	22,784	22,532	20,362	22,179
2039	21,904	23,574	22,209	21,139	24,123	24,003	21,721	23,454
2040	23,501	24,992	23,777	22,606	25,481	25,503	23,213	24,763
2041	25,280	26,476	25,397	24,132	26,942	27,032	24,815	26,108
2042	27,176	28,070	27,171	25,806	28,437	28,645	26,483	27,538
2043	29,215	29,787	29,096	27,630	30,014	30,348	28,282	29,064
2044	31,300	31,597	31,089	29,523	31,623	32,075	30,175	30,617
2045	33,557	33,469	33,109	31,453	33,314	33,853	32,098	32,226
2046	35,965	35,497	35,315	33,599	35,087	35,734	34,210	33,938
2047	38,505	37,632	37,646	35,802	36,991	37,739	36,448	35,782
2048	41,125	39,804	40,032	38,095	38,924	39,756	38,742	37,650
2049	43,753	41,967	42,400	40,373	40,844	41,750	41,023	39,502
2050	46,428	44,169	44,807	42,687	42,788	43,764	43,342	41,373
2051	49,232	46,483	47,328	45,110	44,820	45,857	45,776	43,340
2052	52,107	48,846	49,898	47,574	46,882	47,977	48,251	45,341
2053	55,070	51,277	52,475	50,076	48,971	50,121	50,770	47,368
2054	58,166	53,824	55,105	52,679	51,149	52,339	53,382	49,476
2055	61,325	56,413	57,759	55,357	53,358	54,576	56,031	51,607
2056	64,560	59,029	60,449	58,074	55,548	56,829	58,724	53,735
2057	67,868	61,687	63,172	60,858	57,771	59,117	61,486	55,900
2058	71,219	64,366	65,921	63,647	59,991	61,386	64,253	58,044
2059	74,658	67,083	68,711	66,483	62,249	63,674	67,062	60,214
2060	78,183	69,848	71,586	69,403	64,553	65,993	69,931	62,421
2061	81,797	72,661	74,522	72,394	66,889	68,333	72,849	64,649
2062	85,550	75,521	77,506	75,444	69,252	70,705	75,890	66,905

11

1 **REFERENCE: Chapter 11: Financial Evaluation of Development Plans; Section: 11.2**

2

3 **QUESTION:**

4 Please add to the table in (a) the cumulative additional domestic revenue on a net present
5 value basis in 2014 dollars, utilizing the 5.05% discount rate used in the NFAT and provide a
6 comparative description of the table.

7

8 **RESPONSE:**

9 Please see Manitoba Hydro's response to PUB/MH I-149(a).

PUB/MH I-49

Reference: Tab 5 25 & 31 of 36 Payments to Governments

- a) **Please provide a schedule that details all payments to municipalities and the Province by year for the fiscal years 2004 through 2032**

ANSWER:

Please see the following schedule for all payments to municipalities and the Province for 2008 through 2032.

Payments to the Province and Municipalities (Millions)

Fiscal Year Ended	Water Rentals	Provincial Guarantee Fee	Sinking Fund Admin. Fee	Capital Taxes	Payroll Taxes	Provincial Mitigation or Settlement Obligations (1)	Municipal GILT and Business Taxes	Gross Electricity Operations Revenue	Gross Export Revenue	Total Provincial Payments (GILT & Business Tax Not Included)	Provincial Payments as a Percentage of Gross Revenue
2008	\$ 117	\$ 70	\$ 1	\$ 39	\$ 8	\$ 2	\$ 11	\$ 1,712	\$ 625	\$ 236	14%
2009	115	70	1	44	9	0	11	1,771	623	\$ 240	14%
2010	114	72	1	46	9	0	20	1,583	427	\$ 242	15%
2011	114	77	-	48	10	0	20	1,616	398	\$ 249	15%
2012	111	82	-	52	10	1	21	1,573	363	\$ 256	16%
2013	98	91	-	54	10	9	22	1,677	341	\$ 262	16%
2014	103	100	-	58	11	0	23	1,762	363	\$ 271	15%
2015	103	109	-	64	11	0	25	1,857	394	\$ 286	15%
2016	103	122	-	71	11	0	25	1,990	469	\$ 306	15%
2017	103	138	-	79	11	0	26	2,097	502	\$ 331	16%
2018	102	154	-	88	12	0	26	2,206	531	\$ 356	16%
2019	101	175	-	93	12	0	27	2,302	554	\$ 381	17%
2020	103	184	-	100	12	0	27	2,448	611	\$ 399	16%
2021	111	197	-	106	12	0	28	2,751	821	\$ 426	16%
2022	116	211	-	112	13	0	28	2,938	913	\$ 451	15%
2023	116	219	-	117	13	0	29	3,054	931	\$ 465	15%
2024	116	228	-	121	13	0	30	3,173	946	\$ 478	15%
2025	122	235	-	126	13	0	30	3,425	1,124	\$ 496	14%
2026	135	244	-	127	14	0	31	3,786	1,408	\$ 520	14%
2027	139	240	-	127	14	0	31	3,988	1,526	\$ 521	13%
2028	139	240	-	128	14	0	32	4,089	1,544	\$ 522	13%
2029	139	240	1	129	15	0	33	4,170	1,539	\$ 524	13%
2030	139	240	1	130	15	0	34	4,261	1,544	\$ 524	12%
2031	140	237	1	130	15	0	34	4,371	1,565	\$ 523	12%
2032	140	230	1	130	15	0	35	4,474	1,574	\$ 516	12%

(1) Hydro entered into an agreement with the Province whereby the Corporation assumed obligations of the Province with respect to certain northern development projects. Obligations totaling \$143 million were assumed, with respect to which water rental charges had been fixed until March 31, 2001. Of these obligations, \$9 million remain to be paid in fiscal 2013 and future years.

1 **Table 7: Net Present Value of Government Benefits As Compared to Plan 1 (All Gas)**
 2 **Over 50 Years – 5.05% Real Discount Rate (\$ Millions)**

Energy Prices	Econ.	Capital Costs	Pathway 1	Pathway 2		Pathway 3		Pathway 4		Pathway 5	Probability
			1	7	2	4	13	6	12	14	
Low	Low	High	0	2,174	1,975	1,961	4,220	1,976	4,138	4,319	1.35%
Low	Low	Ref	0	2,064	1,836	1,821	3,949	1,836	3,854	4,031	2.25%
Low	Low	Low	0	1,687	1,481	1,445	3,442	1,466	3,337	3,504	0.90%
Low	Ref	High	0	2,209	1,927	1,844	4,174	1,834	4,154	4,244	4.50%
Low	Ref	Ref	0	2,091	1,798	1,743	3,904	1,712	3,869	3,954	7.50%
Low	Ref	Low	0	1,995	1,747	1,641	3,697	1,655	3,653	3,733	3.00%
Low	High	High	0	2,247	1,915	1,663	4,047	1,626	4,104	4,091	3.15%
Low	High	Ref	0	2,116	1,808	1,574	3,821	1,551	3,845	3,843	5.25%
Low	High	Low	0	2,029	1,748	1,508	3,617	1,512	3,652	3,628	2.10%
Ref	Low	High	0	2,118	1,949	1,965	4,193	1,988	4,157	4,265	2.48%
Ref	Low	Ref	0	2,009	1,825	1,833	3,914	1,858	5,110	3,977	4.12%
Ref	Low	Low	0	1,908	1,740	1,741	3,679	1,774	3,642	3,732	1.65%
Ref	Ref	High	0	2,144	1,973	1,883	4,144	1,880	4,194	4,196	8.25%
Ref	Ref	Ref	0	2,028	1,832	1,726	3,877	1,738	3,902	3,894	13.75%
Ref	Ref	Low	0	1,933	1,761	1,666	3,662	1,685	3,681	3,685	5.50%
Ref	High	High	0	2,162	1,966	1,754	4,058	1,731	4,209	4,074	5.78%
Ref	High	Ref	0	2,034	1,835	1,629	3,789	1,612	3,922	3,787	9.63%
Ref	High	Low	0	1,937	1,790	1,557	3,586	1,560	3,703	3,572	3.85%
High	Low	High	0	2,070	1,969	2,007	4,175	2,027	4,195	4,202	0.68%
High	Low	Ref	0	1,949	1,845	1,865	3,890	1,884	3,899	3,931	1.13%
High	Low	Low	0	1,847	1,767	1,778	3,679	1,805	3,678	3,704	0.45%
High	Ref	High	0	2,071	1,948	1,905	4,109	1,902	4,216	4,137	2.25%
High	Ref	Ref	0	1,905	1,834	1,781	3,844	1,786	3,937	3,850	3.75%
High	Ref	Low	0	1,846	1,763	1,705	3,630	1,717	3,718	3,629	1.50%
High	High	High	0	2,056	1,965	1,756	3,958	1,715	4,204	3,955	1.58%
High	High	Ref	0	1,948	1,853	1,666	3,743	1,645	3,967	3,718	2.63%
High	High	Low	0	1,851	1,785	1,609	3,543	1,604	3,735	3,509	1.05%

3
 4 The following Table 8 shows the present value benefits to Government for each plan compared with the
 5 Plan 1 (All Gas) REF-REF-REF, similar to Manitoba Hydro's Table 10.5 from Chapter 10 of the NFAT
 6 Business Case¹⁷.

¹⁷ Manitoba Hydro NFAT Business Case, Chapter 10: Economic Uncertainty Analysis – Probabilistic Analysis and Sensitivities, page 17.

1 **Table 8: Net Present Value of Government Benefits as Compared to Plan 1 (All Gas) REF-REF-**
 2 **REF Over 50 Years – 5.05% Real Discount Rate (\$ Millions)**

Energy Prices	Econ.	Capital Costs	Pathway 1	Pathway 2		Pathway 3		Pathway 4		Pathway 5	Probability
			1	7	2	4	13	6	12	14	
Low	Low	High	146	2,321	2,121	2,107	4,366	2,123	4,284	4,465	1.35%
Low	Low	Ref	(13)	2,051	1,823	1,808	3,936	1,823	3,841	4,018	2.25%
Low	Low	Low	134	1,821	1,615	1,579	3,576	1,601	3,472	3,638	0.90%
Low	Ref	High	(119)	2,091	1,808	1,725	4,055	1,715	4,035	4,125	4.50%
Low	Ref	Ref	(292)	1,798	1,506	1,451	3,612	1,420	3,577	3,662	7.50%
Low	Ref	Low	(433)	1,562	1,314	1,208	3,264	1,222	3,220	3,300	3.00%
Low	High	High	(515)	1,731	1,400	1,147	3,532	1,111	3,589	3,576	3.15%
Low	High	Ref	(696)	1,420	1,112	878	3,125	855	3,149	3,147	5.25%
Low	High	Low	(856)	1,173	892	653	2,761	656	2,797	2,773	2.10%
Ref	Low	High	410	2,529	2,359	2,375	4,603	2,399	4,567	4,676	2.48%
Ref	Low	Ref	247	2,256	2,072	2,080	4,161	2,105	5,356	4,224	4.12%
Ref	Low	Low	121	2,029	1,861	1,862	3,800	1,895	3,763	3,853	1.65%
Ref	Ref	High	174	2,318	2,147	2,057	4,318	2,055	4,368	4,370	8.25%
Ref	Ref	Ref	0	2,028	1,832	1,726	3,877	1,738	3,902	3,894	13.75%
Ref	Ref	Low	(148)	1,785	1,613	1,518	3,514	1,538	3,533	3,537	5.50%
Ref	High	High	(162)	2,001	1,804	1,593	3,897	1,569	4,047	3,912	5.78%
Ref	High	Ref	(337)	1,697	1,498	1,292	3,453	1,275	3,586	3,450	9.63%
Ref	High	Low	(503)	1,434	1,287	1,054	3,083	1,056	3,199	3,069	3.85%
High	Low	High	645	2,715	2,614	2,652	4,820	2,672	4,840	4,848	0.68%
High	Low	Ref	489	2,437	2,334	2,354	4,379	2,373	4,388	4,420	1.13%
High	Low	Low	356	2,203	2,122	2,134	4,035	2,161	4,034	4,060	0.45%
High	Ref	High	464	2,535	2,411	2,369	4,572	2,365	4,680	4,601	2.25%
High	Ref	Ref	291	2,196	2,125	2,072	4,135	2,076	4,228	4,141	3.75%
High	Ref	Low	148	1,993	1,911	1,853	3,777	1,865	3,865	3,777	1.50%
High	High	High	211	2,267	2,176	1,967	4,169	1,926	4,415	4,166	1.58%
High	High	Ref	14	1,961	1,867	1,679	3,757	1,659	3,981	3,731	2.63%
High	High	Low	(147)	1,703	1,638	1,462	3,396	1,457	3,588	3,362	1.05%

3
 4 Note that the range of benefits under the plans such as Plan 4 (K19/Gas/250MW), Plan 6
 5 (K19/Gas/750MW) and Plan 14 (PDP) are always positive and better than Plan 1 (All Gas), while Plan 1
 6 (All Gas) shows a risk to Government under certain scenarios that recoveries will be less than the Plan 1
 7 (All Gas) REF-REF-REF baseline value.

8 The NPV and relative NPV of Government benefits are set out in Figure 23 through Figure 26 below.
 9 These figures provide a comparison of both the EV and the risk (P10/P90) to the Government benefits
 10 under each Plan and the full range of Scenarios. Of note, each figure shows that there is effectively no
 11 risk to Government of achieving higher levels of benefits as plans proceed from Plan 1 (All Gas) to Plan 4
 12 (K19/Gas/250MW) to Plan 14 (PDP).

1 **3.0 FINANCIAL ANALYSIS RESULTS– 50 YEAR “QUILT” PRESENTATION**

2 The above waterfall figures present considerable detail on the various components that make up the
3 Financial projections under each Plan modelled, to derive the resulting impacts on ratepayers. The above
4 presentation however is limited in that it only provides a comparison between two chosen Plans (e.g.,
5 Plan 14 (PDP) and Plan 1 (All Gas)) and it only provides the outcomes under REF-REF-REF conditions.

6 In order to provide a comparison across all eight plans provided in the NFAT Appendix 9.3 and under the
7 various Scenarios, the quilt presentation developed by Hydro was adopted in the following tables.

8 Table 1 shows the present value of ratepayer costs (or Manitoba Hydro domestic revenues) for each plan
9 compared with Plan 1 (All Gas) of the same scenario (similar to Manitoba Hydro’s Table 2 from the NFAT
10 Business Case Executive Summary¹⁰); including the probabilities of occurrence calculated by Hydro for
11 each scenario along the right hand side of the Table.

12 **Table 1: Net Present Value Benefits of Alternative Development Plans to Ratepayers as**
13 **Compared to Plan 1 (All Gas) Over 50 years – 5.05% Real Discount Rate (\$ Millions)**

Development Plan			Pathway 1	Pathway 2		Pathway 3		Pathway 4		Pathway 5	Probability
Energy Prices	Econ.	Capital Costs	1	7	2	4	13	6	12	14	
Low	Low	High	0	(760)	(411)	(205)	(1,428)	(428)	(1,423)	(1,155)	1.35%
Low	Low	Ref	0	(711)	(219)	26	(1,067)	(182)	(1,046)	(737)	2.25%
Low	Low	Low	0	(645)	(112)	208	(764)	(16)	(733)	(368)	0.90%
Low	Ref	High	0	(1,267)	(652)	(515)	(2,409)	(749)	(2,238)	(2,125)	4.50%
Low	Ref	Ref	0	(1,170)	(436)	(225)	(1,931)	(457)	(1,751)	(1,581)	7.50%
Low	Ref	Low	0	(1,083)	(437)	(69)	(1,605)	(308)	(1,413)	(1,194)	3.00%
Low	High	High	0	(1,459)	(399)	(437)	(2,664)	(700)	(2,391)	(2,323)	3.15%
Low	High	Ref	0	(1,326)	(230)	(173)	(2,155)	(415)	(1,892)	(1,720)	5.25%
Low	High	Low	0	(1,222)	(196)	(6)	(1,776)	(273)	(1,484)	(1,254)	2.10%
Ref	Low	High	0	483	634	911	796	705	638	1,056	2.48%
Ref	Low	Ref	0	535	814	1,152	1,185	958	1,030	1,489	4.12%
Ref	Low	Low	0	589	930	1,320	1,487	1,115	1,342	1,841	1.65%
Ref	Ref	High	0	11	203	593	(121)	379	(111)	146	8.25%
Ref	Ref	Ref	0	128	463	935	397	717	427	746	13.75%
Ref	Ref	Low	0	210	595	1,101	753	884	780	1,139	5.50%
Ref	High	High	0	(21)	433	685	(188)	442	(106)	134	5.78%
Ref	High	Ref	0	104	689	1,013	366	789	472	782	9.63%
Ref	High	Low	0	227	770	1,232	814	1,004	907	1,270	3.85%
High	Low	High	0	1,841	1,722	2,083	3,212	1,884	2,820	3,340	0.68%
High	Low	Ref	0	1,901	1,907	2,336	3,610	2,146	3,230	3,800	1.13%
High	Low	Low	0	1,950	2,017	2,489	3,888	2,295	3,520	4,124	0.45%
High	Ref	High	0	1,456	1,422	1,856	2,434	1,645	2,225	2,566	2.25%
High	Ref	Ref	0	1,551	1,637	2,142	2,913	1,932	2,693	3,112	3.75%
High	Ref	Low	0	1,645	1,776	2,323	3,281	2,124	3,074	3,532	1.50%
High	High	High	0	1,577	1,652	2,091	2,646	1,863	2,486	2,837	1.58%
High	High	Ref	0	1,716	1,922	2,386	3,185	2,171	3,044	3,422	2.63%
High	High	Low	0	1,825	2,069	2,588	3,590	2,369	3,442	3,914	1.05%

¹⁰ Page 23 of Manitoba Hydro’s NFAT Business Case: Executive Summary (August 2013).

1 Table 2 shows the present value of ratepayer costs (or Manitoba Hydro domestic revenues) for each plan
 2 compared with Plan 1 (All gas) REF-REF-REF scenario, similar to Manitoba Hydro's Table 10.5 from
 3 Chapter 10 of the NFAT Business Case¹¹.

4 **Table 2: Net Present Value Benefits of Alternative Development Plans to Ratepayers**
 5 **as Compared to Plan 1 (All Gas) REF-REF-REF Over 50 Years – 5.05%**
 6 **Real Discount Rate (\$ Millions)**

Development Plan			Pathway 1	Pathway 2		Pathway 3		Pathway 4		Pathway 5	Probability
Energy Prices	Econ.	Capital Costs	1	7	2	4	13	6	12	14	
Low	Low	High	498	(262)	87	293	(930)	70	(925)	(656)	1.35%
Low	Low	Ref	977	266	758	1,003	(90)	795	(69)	240	2.25%
Low	Low	Low	1,369	724	1,257	1,577	606	1,353	637	1,001	0.90%
Low	Ref	High	(463)	(1,730)	(1,115)	(978)	(2,873)	(1,212)	(2,702)	(2,588)	4.50%
Low	Ref	Ref	89	(1,081)	(347)	(136)	(1,842)	(368)	(1,662)	(1,492)	7.50%
Low	Ref	Low	525	(558)	89	456	(1,080)	217	(888)	(669)	3.00%
Low	High	High	(717)	(2,176)	(1,117)	(1,154)	(3,382)	(1,417)	(3,108)	(3,040)	3.15%
Low	High	Ref	(120)	(1,446)	(351)	(294)	(2,275)	(535)	(2,012)	(1,841)	5.25%
Low	High	Low	346	(876)	150	340	(1,430)	73	(1,138)	(908)	2.10%
Ref	Low	High	340	822	974	1,250	1,136	1,044	978	1,396	2.48%
Ref	Low	Ref	822	1,357	1,637	1,975	2,007	1,780	1,853	2,311	4.12%
Ref	Low	Low	1,215	1,804	2,144	2,535	2,702	2,329	2,557	3,056	1.65%
Ref	Ref	High	(539)	(528)	(336)	55	(660)	(160)	(650)	(392)	8.25%
Ref	Ref	Ref	0	128	463	935	397	717	427	746	13.75%
Ref	Ref	Low	435	645	1,030	1,536	1,188	1,319	1,215	1,574	5.50%
Ref	High	High	(797)	(819)	(364)	(112)	(985)	(355)	(903)	(663)	5.78%
Ref	High	Ref	(197)	(93)	491	816	169	592	274	585	9.63%
Ref	High	Low	255	482	1,025	1,488	1,069	1,259	1,162	1,526	3.85%
High	Low	High	(9)	1,832	1,713	2,074	3,203	1,875	2,811	3,331	0.68%
High	Low	Ref	470	2,371	2,377	2,806	4,080	2,616	3,700	4,270	1.13%
High	Low	Low	866	2,816	2,883	3,355	4,754	3,161	4,387	4,991	0.45%
High	Ref	High	(890)	566	533	967	1,544	756	1,335	1,676	2.25%
High	Ref	Ref	(338)	1,213	1,299	1,804	2,574	1,593	2,355	2,774	3.75%
High	Ref	Low	92	1,737	1,868	2,415	3,373	2,216	3,166	3,624	1.50%
High	High	High	(1,177)	400	475	913	1,468	685	1,309	1,660	1.58%
High	High	Ref	(589)	1,127	1,333	1,797	2,596	1,582	2,455	2,832	2.63%
High	High	Low	(124)	1,701	1,946	2,465	3,467	2,245	3,319	3,790	1.05%

7
 8 The above quilts, particularly Table 1, emphasize that from a ratepayer's perspective, energy prices are
 9 by far the largest impact factor. In particular, the tables note that for Plan 4 (K19/Gas/250MW), the
 10 variation between LOW and HIGH energy prices (as compared to Plan 1 (All Gas)) is a NPV effect on
 11 ratepayers of upwards of plus or minus \$1 billion or more (Plan 14 (PDP) is in the range of +/- \$2.0-\$2.5
 12 billion). This can be seen by comparing the values in the rows at the bottom third of Table 1 (high
 13 export prices), to the middle third (Reference export prices) to the top third (Low export prices).

14 In contrast, the variation related to LOW or HIGH capital costs is on the order of plus or minus \$0.4 to
 15 \$0.5 billion (Plan 14 (PDP) is comparable)¹². The variation in economic conditions (including interest costs
 16 and inflation but maintaining a 5.05% real discount rate across scenarios) is generally smaller and at

¹¹ Manitoba Hydro NFAT Business Case, Chapter 10: Economic Uncertainty Analysis – Probabilistic Analysis and Sensitivities, page 17 (August 2013).

¹² Capital cost variability can be seen by comparing sets of rows within a group of 3 consecutive rows with the same Energy Price and Economic assumptions.

1 income tax on workers employed on Hydro projects, or from indirect impacts such as changes in
2 the level of Manitoba economic activity that arise from higher or lower rate levels and the
3 resulting wealth of Manitobans. The vast majority (>98%) relate to the provincial Government.

4 Each expected value and P10/P90 percentile is reported as an increment over the expected value of Plan
5 1 (All Gas)⁵⁵.

6 **Table 3: NPV of Total Benefits to Ratepayers and Government at Year 20 (2031/32)**
7 **for Financial Analysis (\$ Millions) at 5.05% Real Discount Rate**

NPV of (Cost)/Benefit at 20 years (\$ Millions) [P10/P90]	Pthwy 1	Pthwy 2		Pthwy 3		Pthwy 4		Pthwy 5
	Plan 1	Plan 7	Plan 2	Plan 4	Plan 13	Plan 6	Plan 12	Plan 14
Ratepayer Benefit	0 [(623)/ 601]	(954) [(1995) /95]	(177) [(1,223)/ 802]	(126) [(1,285)/ 1,002]	(1,379) [(3,033)/ 258]	(301) [(1,543) /849]	(914) [(2,238) /275]	(1,319) [(2,935)/ 261]
Government Benefit	0 [(357)/ 321]	1,545 [1,201/ 1,822]	1,354 [1,059/ 1,623]	1,290 [892/ 1,661]	2,948 [2,496/ 3,292]	1,299 [885/ 1,689]	2,830 [2,348 /3,210]	2,954 [2,530/ 3,349]
Total Plan Benefits	0 [(980)/ 922]	591 [(794)/ 1,917]	1,177 [(164)/ 2,425]	1,164 [(393)/ 2,663]	1,569 [(537)/ 3,550]	998 [(658)/ 2,538]	1,916 [110/ 3,485]	1,635 [(405)/ 3,610]

8 Table 3 indicates the Expected Value (EV) benefits (in bold) with negative values indicating net negative
9 impacts compared to the Plan 1 (All Gas) EV. The bolded values are the impact based on EV which the
10 lower values in each cell reflect the upside and downside ranges associated with P90 and P10 conditions.
11 All weighting are as per Hydro's NFAT.

12 The first set of values reflects benefits to ratepayers, while the second row is benefits to Government.

13 The final row is the sum of benefits (which effectively represents benefits to Manitoba generally).

⁵⁵ Assuming 5.05% real discount rate and methodology explained in Appendix C: Results of InterGroup Financial Analysis.

1 **Table 4: NPV of Total Benefits to Ratepayers and Government at Year 30 (2041/42)**
 2 **for Financial Analysis (\$ Millions) at 5.05% Real Discount Rate**

NPV of (Cost)/Benefit at 30 years (\$ Millions) [P10/P90]	Pthwy 1		Pthwy 2		Pthwy 3		Pthwy 4		Pthwy 5
	Plan 1	Plan 7	Plan 2	Plan 4	Plan 13	Plan 6	Plan 12	Plan 14	
Ratepayer Benefit	0 [(586)/593]	(850) [(2,316)/ /574]	(164) [(1,376)/ /1,083]	110 [(1,215)/ /1,395]	(1,263) [(3,658)/ /964]	(138) [(1,524)/ /1,204]	(1,078) [(3,151)/ /840]	(1,031) [(3,277)/ /1,074]	
Government Benefit	0 [(384)/344]	1,896 [1,492/ 2,229]	1,666 [1,300/ 1,996]	1,562 [1,093/ 1,959]	3,577 [3,037/ 4,027]	1,572 [1,100/ 1,989]	3,601 [3,018/ 4,086]	3,598 [3,093/ 4,089]	
Total Plan Benefits	0 [(970)/937]	1,046 [(824)/ 2,803]	1,502 [(76)/ 3,079]	1,672 [(122)/ 3,354]	2,314 [(621)/ 4,991]	1,434 [(424)/ 3,193]	2,523 [(133)/ 4,926]	2,567 [(184)/ 5,163]	

3 **Table 5: NPV of Total Benefits to Ratepayers and Government at Year 40 (2051/52)**
 4 **for Financial Analysis (\$ Millions) at 5.05% Real Discount Rate**

NPV of (Cost)/Benefit at 40 years (\$ Millions) [P10/P90]	Pthwy 1		Pthwy 2		Pthwy 3		Pthwy 4		Pthwy 5
	Plan 1	Plan 7	Plan 2	Plan 4	Plan 13	Plan 6	Plan 12	Plan 14	
Ratepayer Benefit	0 [(609)/ 786]	(392) [(1,924)/ 1,069]	100 [(904)/ 1,354]	457 [(759)/ 1,742]	(532) [(2,971)/ /1,817]	218 [(1,030)/ /1,540]	(472) [(2,664)/ 1,638]	(240) [(2,567)/ 1,967]	
Government Benefit	0 [(398)/ 367]	2,010 [1,553/ 2,382]	1,811 [1,384/ 2,205]	1,686 [1,159/ 2,114]	3,804 [3,183/ 4,282]	1,690 [1,160/ 2,141]	3,883 [3,242/ 4,420]	3,830 [3,256/ 4,366]	
Total Plan Benefit	0 [(1,007)/ 1,153]	1,618 [(371)/ 3,451]	1,911 [(480)/ 3,559]	2,143 [400/ 3,856]	3,272 [212/ 6,099]	1,908 [130/ 3,681]	3,411 [578/ 6,058]	3,590 [689/ 6,333]	

**Table 6: NPV of Total Benefits to Ratepayers and Government at Year 50 (2061/62)
for Complete Financial Analysis (\$ Millions) at 5.05% Real Discount Rate**

NPV of (Cost)/Benefit at 50 years (\$ Millions) [P10/P90]	Pthwy 1	Pthwy 2		Pthwy 3		Pthwy 4		Pthwy 5
	Plan 1	Plan 7	Plan 2	Plan 4	Plan 13	Plan 6	Plan 12	Plan 14
Ratepayer Benefit	0 [(688)/ 648]	(12) [(1,412)/ 1,353]	444 [(393)/ 1,553]	780 [(282)/ 1,960]	105 [(2,259) /2,631]	557 [(524)/ 1,760]	141 [(2,001) /2,434]	439 [(1,833)/ 2,841]
Government Benefit	0 [(408)/ 381]	2,048 [1,565/ 2,423]	1,849 [1,396/ 2,264]	1,731 [1,177/ 2,187]	3,889 [3,219/ 4,383]	1,729 [1,171/ 2,211]	3,986 [3,307/ 4,542]	3,918 [3,304/ 4,495]
Total Plan Benefit	0 [(1,096)/ 1,029]	2,036 [153/ 3,776]	2,293 [1,003/ 3,817]	2,511 [895/ 4,147]	3,994 [960/ 7,014]	2,286 [647/ 3,971]	4,127 [1,306/ 6,976]	4,357 [1,471/ 7,336]

As can be seen from the tables:

- None of the Plans start to become beneficial to ratepayers up to year 20 as compared to Plan 1 (All Gas) as per Table 3.
- Table 4 shows an initial NPV benefit to ratepayers by year 30 (2041/42) for Plan 4 (K19/Gas/250MW).

Other plans require until the 40 year (Table 5) or 50 year (Table 6) horizons to achieve positive NPV benefits for ratepayers.

Note that this is in contrast to Manitoba Hydro's evidence that the 'cross-over' point for some plans occur after 10-15 years following the in-service date of Conawapa⁵⁶.

Pathway #3 and #4 provide the highest expected benefit to ratepayers through Plans 4 (K19/Gas/250MW) and 6 (K19/Gas/750MW) compared to Plan 1 (All Gas). These two plans also provide significant benefits to Government. As reviewed elsewhere in Hydro's NFAT filing, these plans include material employment, business, environmental and First Nation benefits as compared to Plan 1 (All Gas).

Figure 2 below shows the 50 year rate benefits of pursuing Plan 4 (K19/Gas/250MW) as compared to Plan 1 (All Gas) which is further described in Appendix C to this submission.

⁵⁶ Manitoba Hydro NFAT Business Case, Chapter 14: Conclusions, page 22 (August 2013).

12

(In Millions)	2031/32			2059/60		
	Econ:REF	Econ:REF	Econ:HIG	Econ:REF	Econ:REF	Econ:HIG
	Rev:REF	Rev:REF	Rev:REF	Rev:REF	Rev:REF	Rev:REF
	Cap:REF	Cap:HIG	Cap:HIG	Cap:REF	Cap:HIG	Cap:HIG
All Gas						
NET DEBT	14,671	15,067	16,120	16,088	17,031	23,498
DEBT RATIO	75%	75%	75%	60%	60%	60%
NET INTEREST EXPENSE	802	823	1,109	918	953	1,835
ADDITIONAL GENERAL CONSUMERS REVENUE	1,564	1,604	2,286	3,525	3,654	7,018
K22 Gas						
NET DEBT	18,416	19,135	20,636	15,421	15,956	21,437
DEBT RATIO	75%	75%	75%	54%	54%	54%
NET INTEREST EXPENSE	1,025	1,056	1,456	890	919	1,671
ADDITIONAL GENERAL CONSUMERS REVENUE	1,602	1,691	2,411	2,874	2,992	5,571
Gas C26						
NET DEBT	20,405	21,173	23,190	15,629	16,040	20,868
DEBT RATIO	75%	75%	75%	53%	53%	52%
NET INTEREST EXPENSE	1,214	1,269	1,823	982	1,012	1,858
ADDITIONAL GENERAL CONSUMERS REVENUE	1,819	1,911	2,748	2,765	2,849	5,357
K19 Gas 250mw						
NET DEBT	18,100	18,843	20,127	15,643	16,389	22,436
DEBT RATIO	75%	75%	75%	55%	55%	56%
NET INTEREST EXPENSE	1,001	1,045	1,420	948	958	1,807
ADDITIONAL GENERAL CONSUMERS REVENUE	1,560	1,679	2,462	2,920	3,015	5,699
K19 C25 250mw						
NET DEBT	23,785	24,890	27,034	15,965	16,353	21,197
DEBT RATIO	75%	75%	75%	51%	50%	50%
NET INTEREST EXPENSE	1,439	1,526	2,179	1,025	1,026	1,828
ADDITIONAL GENERAL CONSUMERS REVENUE	1,894	2,083	3,101	2,304	2,355	4,277
K19 Sales C25 750mw						
NET DEBT	23,993	25,176	27,310	16,048	16,499	21,290
DEBT RATIO	75%	75%	75%	50%	50%	50%
NET INTEREST EXPENSE	1,459	1,549	2,217	1,025	1,036	1,846
ADDITIONAL GENERAL CONSUMERS REVENUE	1,876	2,082	3,100	2,207	2,275	4,115
K19 Imp C31 750mw						
NET DEBT	25,690	27,103	30,388	16,800	17,294	22,101
DEBT RATIO	75%	75%	75%	50%	49%	48%
NET INTEREST EXPENSE	1,035	1,082	1,499	1,084	1,102	1,961
ADDITIONAL GENERAL CONSUMERS REVENUE	1,784	1,942	2,800	2,319	2,402	4,328
K19 Imp Gas 750mw						
NET DEBT	18,231	18,966	20,251	15,169	15,694	21,071
DEBT RATIO	75%	75%	75%	55%	54%	54%
NET INTEREST EXPENSE	1,021	1,072	1,462	916	918	1,699
ADDITIONAL GENERAL CONSUMERS REVENUE	1,605	1,731	2,538	2,869	2,944	5,525

Sources: PUB/MH I-201, I-202, I-203

13

NPV of Annual Additional Domestic Revenue – Reference Scenario vs. Export Low 7.05% (Millions)

Table with columns for Fyr (2014-2062 and Total Cumulative) and eight categories of revenue (1. All Gas, 7. Gas C26, 2. K22 Gas, 4. K19 Gas 250mw, 13. K19 C25 250mw, 12. K19 Imp C31 750mw, 6. K19 Imp Gas 750mw, 14. K19 Sales C25 750mw). Each category has sub-columns for Export Low, Ref, and Difference.

Source: PUB/MH I-150a

14

K19 Sales C25 750MW

1	Economics:REF Rev:REF Cap:REF									Economics:REF Rev:Low Cap:REF									Economics:REF Rev:REF Cap:High									Economics:High Rev:Low Cap:High								
	2018	2021	Impact	2025	2028	Impact	2018	2021	Impact	2025	2028	Impact	2018	2021	Impact	2025	2028	Impact	2018	2021	Impact	2025	2028	Impact												
2	Development Plan Scenario																																			
	ELECTRIC OPERATIONS																																			
	PROJECTED OPERATING STATEMENT																																			
	In Millions of Dollars																																			
2	For the year ended March 31																																			
	REVENUES																																			
3	1,424	1,485	61	1,575	1,644	69	1,424	1,485	61	1,575	1,644	69	1,424	1,485	61	1,575	1,644	69	1,424	1,485	61	1,575	1,644	69												
4	297	530	233	921	1,282	361	339	618	279	1,094	1,542	448	318	574	256	1,006	1,410	404	456	869	413	1,611	2,348	737												
5	412	713	301	795	1,165	370	319	526	207	645	825	180	412	713	301	795	1,165	370	350	598	248	753	1,035	282												
6	16	17	1	18	19	1	16	17	1	18	19	1	16	17	1	18	19	1	16	17	1	18	19	1												
7	2,149	2,745	596	3,309	4,110	801	2,098	2,646	548	3,332	4,030	698	2,170	2,789	619	3,394	4,238	844	2,246	2,969	723	3,957	5,046	1,089												
	EXPENSES																																			
9	593	678	85	730	788	58	593	678	85	730	788	58	593	678	85	730	788	58	612	717	105	798	883	85												
10	658	989	331	1,077	1,584	507	666	998	332	1,091	1,602	511	656	1,012	356	1,112	1,681	569	765	1,325	560	1,515	2,413	898												
11	422	518	96	561	721	160	422	518	96	561	721	160	422	527	105	573	750	177	423	535	112	588	795	207												
12	112	124	12	127	150	23	112	124	12	127	150	23	112	124	12	127	150	23	112	124	12	127	151	24												
13	200	222	22	270	256	(14)	172	182	10	215	210	(5)	200	222	22	270	256	(14)	177	192	15	236	233	(3)												
14	127	149	22	181	192	11	127	148	21	181	193	12	129	153	24	189	201	12	131	158	27	202	220	18												
15	8	8	-	8	8	-	8	8	-	8	8	-	8	8	-	8	8	-	8	8	-	8	8	-												
16	2,120	2,688	568	2,954	3,699	745	2,100	2,656	556	2,913	3,672	759	2,120	2,724	604	3,009	3,834	825	2,228	3,059	831	3,474	4,703	1,229												
17	(13)	(7)	6	9	9	-	(18)	(16)	2	(1)	(5)	(4)	(13)	(7)	6	9	9	-	(16)	(13)	3	6	4	(2)												
18	42	64	22	346	402	56	16	6	-10	420	363	-57	63	72	9	376	395	19	34	-77	-111	477	339	-138												
19	3.95%	3.95%		3.95%	3.95%		4.58%	4.58%		4.58%	4.58%		4.27%	4.27%		4.27%	4.27%		6.28%	6.28%		6.28%	6.28%													
20	20.8%	35.7%	14.9%	58.5%	78.0%	19.5%	23.8%	41.6%	17.8%	69.4%	93.8%	24.4%	22.3%	38.7%	16.3%	63.9%	85.8%	21.9%	32.1%	58.2%	26.2%	102.2%	142.8%	40.6%												
21	87	89	2	88	85	(3)	88	90	2	89	86	(3)	87	89	2	88	85	2	89	91	(2)	91	88	(3)												
22	1.04	1.05	0.01	1.22	1.25	0.01	1.02	1.00	0.01	1.26	1.22	0.01	1.06	1.06	0.01	1.23	1.23	0.01	1.03	0.95	0.08	1.21	1.14	(0.07)												
23	1.36	1.52	0.16	1.84	2.33	0.16	1.27	1.35	0.16	1.98	2.22	0.16	1.43	1.56	0.16	1.95	2.39	0.16	1.39	1.21	0.18	1.92	2.06	0.14												
	Keyeyask Impact									Conawapa Impact									Keyeyask Impact									Conawapa Impact								
	2018	2021	Impact	2025	2028	Impact	2018	2021	Impact	2025	2028	Impact	2018	2021	Impact	2025	2028	Impact	2018	2021	Impact	2025	2028	Impact												
24	658	989	331	1,077	1,584	507	666	998	332	1,091	1,602	511	656	1,012	356	1,112	1,681	569	765	1,325	560	1,515	2,413	898												
25	593	678	85	730	788	58	593	678	85	730	788	58	593	678	85	730	788	58	612	717	105	798	883	85												
26	422	518	96	561	721	160	422	518	96	561	721	160	422	527	105	573	750	177	423	535	112	588	795	207												
27	239	273	34	308	342	34	239	272	33	308	343	35	241	277	36	316	351	35	243	282	39	329	371	42												
28	1,912	2,458	546	2,676	3,435	759	1,920	2,466	546	2,690	3,454	764	1,912	2,494	582	2,731	3,570	839	2,043	2,859	816	3,230	4,462	1,232												

*Before non-controlling interest

Source: Appendix 11.4 - Pro Forma Financial Statements - Volume 2, Pages 163, 199, 169, 259

15

1 **REFERENCE: Chapter 11: Financial Evaluation of Development Plans; PUB/MH II-56 (a)**
2 **& (b) 2010 GRA Internally Generated Funds**

3

4 **QUESTION:**

5 Please file PUB/MH II-56 (a) & (b) from the 2010 GRA.

6

7 **RESPONSE:**

8 Please see the attached response to PUB/MH II-56 (a) & (b) from the 2012/13 & 2013/14
9 General Rate Application.

10

11 PUB/MH II-56 (a) provides a schedule showing general consumers revenue from base rates and
12 from rate increases along with extra-provincial revenue for 2004/05 through 2013/14. PUB/MH
13 II-56 (b) provides a schedule that shows total Manitoba Hydro revenues, funds from operations,
14 and funds from operations allocated to base capital and major new generation & transmission
15 expenditures from 2004/05 to 2013/14. It should be noted that Manitoba Hydro does not
16 allocate funds from operation in practice and that the information provided in this schedule is
17 for illustrative purposes only.

PUB/MH II-56

Reference: PUB/MH I-53, Rate Revenues

- a) **Please re-file the information to include the 2004/05, 2005/06 and 2006/07 fiscal years.**

ANSWER:

Please see the following table for the requested information. Manitoba Hydro notes clarification was obtained from the Public Utilities Board to also include exprovincial revenues in the requested table.

MANITOBA HYDRO

GENERAL CONSUMERS REVENUE

(000's)

	2004/05 Actual	2005/06 Actual	2006/07 Actual	2007/08 Actual	2008/09 Actual	2009/10 Actual	2010/11 Actual	2011/12 Actual	2012/13 Forecast	2013/14 Forecast
Residential - Base Rates	\$ 373,737	\$ 360,363	\$ 381,532	\$ 397,742	\$ 405,896	\$ 401,304	\$ 411,995	\$ 390,436	\$ 423,362	\$ 432,192
General Service - Base Rates	534,958	555,836	570,078	581,124	583,448	563,954	571,525	584,748	595,056	607,475
Base Rates	908,694	916,198	951,610	978,865	989,345	965,258	983,520	975,183	1,018,418	1,039,667
2004/05 Approved Rate Increase (5.0% August 1, 2004)	30,260	45,810	47,580	48,943	49,467	48,263	49,176	48,759	50,921	51,983
2005/06 Approved Rate Increase (2.25% April 1, 2005)	-	21,645	22,482	23,126	23,373	22,804	23,236	23,039	24,060	24,562
2006/07 Approved Rate Increase (2.25% March 1, 2007)	-	-	1,941	23,646	23,899	23,317	23,758	23,557	24,601	25,115
2008/09 Approved Rate Increase (5.0% July 1, 2008)	-	-	-	-	40,728	52,982	53,984	53,527	55,900	57,066
2009/10 Approved Rate Increase (2.9% April 1, 2009)	-	-	-	-	-	32,266	32,877	32,598	34,043	34,753
2010/11 Interim Rate Increase (2.9% April 1, 2010)	-	-	-	-	-	-	33,830	33,543	-	-
2010/11 Approved Rate Increase (1.9% April 1, 2010)	-	-	-	-	-	-	-	-	22,951	23,430
2011/12 Approved Rate Increase (2.0% April 1, 2011)	-	-	-	-	-	-	-	23,804	24,618	25,132
2012/13 Interim Rate Increase (2.0% April 1, 2012)	-	-	-	-	-	-	-	-	25,110	25,634
Interim & Approved Rate Increases	30,260	67,455	72,003	95,715	137,468	179,633	216,861	238,827	262,205	267,675
Deferred Revenue - 2010/11 & 2011/12 (1% rate rollback)	-	-	-	-	-	-	-	(22,894)	22,894	-
Deferred Revenue - 2012/13 & 2013/14 (1% rate rollback)	-	-	-	-	-	-	-	-	12,144	12,096
Deferred Revenue from 1% rate rollback	-	-	-	-	-	-	-	(22,894)	35,038	12,096
Additional General Consumers Revenue (2.5% September 1, 2012)	-	-	-	-	-	-	-	-	19,912	32,669
Additional General Consumers Revenue (3.5% April 1, 2013)	-	-	-	-	-	-	-	-	-	46,982
Additional General Consumers Revenue	-	-	-	-	-	-	-	-	19,912	79,651
Total General Consumer Revenue	\$ 938,954	\$ 983,653	\$ 1,023,613	\$ 1,074,580	\$ 1,126,812	\$ 1,144,891	\$ 1,200,381	\$ 1,191,117	\$ 1,335,571	\$ 1,399,088
Rate increase requested	3.0%	2.5%	2.25%	n/a	2.9%	3.9%	2.9%	2.9%	3.5%	3.5%
Rate increase granted*	5.0%	2.25%	2.25%	n/a	5.0%	2.9%	1.9%	2.0%	2.0%/2.4%	n/a

* Please note that in Order 117/12 the PUB approved an interim rate increase of 2.4%.

MANITOBA HYDRO

EXTRAPROVINCIAL REVENUE

(000's)

	2004/05 Actual	2005/06 Actual	2006/07 Actual	2007/08 Actual	2008/09 Actual	2009/10 Actual	2010/11 Actual	2011/12 Actual	2012/13 Forecast	2013/14 Forecast
Total Extraprovincial Revenue	\$ 553,727	\$ 826,766	\$ 592,245	\$ 624,971	\$ 622,646	\$ 426,641	\$ 398,306	\$ 363,044	\$ 341,167	\$ 362,920

PUB/MH II-56

Reference: PUB/MH I-53, Rate Revenues

b) Below the table please add a companion table which details the cash flow from operations and MH's use of those cash flows to:

- 1. Fund operations;**
- 2. Fund Base Capital; and**
- 3. Fund Major Capital (from internally generated funds from operations).**

ANSWER:

Please see the table below for the requested information.

2012/13 & 2013/14 Electric General Rate Application

(000's)	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
	<u>Actual</u>	<u>Actual</u>	<u>Actual</u>	<u>Actual</u>	<u>Actual</u>	<u>Actual</u>	<u>Actual</u>	<u>Actual</u>	<u>Forecast</u>	<u>Forecast</u>
General Consumer Revenue	\$ 938,954	\$ 983,653	\$ 1,023,613	\$ 1,074,580	\$ 1,126,812	\$ 1,144,891	\$ 1,200,381	\$ 1,191,117	\$ 1,335,571	\$ 1,399,088
Extraprovincial Revenue	<u>553,727</u>	<u>826,766</u>	<u>592,245</u>	<u>624,971</u>	<u>622,646</u>	<u>426,641</u>	<u>398,306</u>	<u>363,044</u>	<u>341,167</u>	<u>362,920</u>
Total General Consumer & Extraprovincial Revenue*	\$ 1,492,681	\$ 1,810,419	\$ 1,615,858	\$ 1,699,551	\$ 1,749,459	\$ 1,571,532	\$ 1,598,687	\$ 1,554,161	\$ 1,676,738	\$ 1,762,008
Fund Operations	\$ 1,086,681	\$ 1,098,419	\$ 1,194,858	\$ 1,100,551	\$ 1,096,459	\$ 1,043,532	\$ 1,048,687	\$ 1,036,161	\$ 1,238,115	\$ 1,317,808
Fund Base Capital	337,000	283,000	376,000	363,000	359,000	414,000	450,000	472,000	411,529	394,370
Fund Major Capital (from internally generated funds from operations)	69,000	429,000	45,000	236,000	294,000	114,000	100,000	46,000	27,094	49,830

* Please note that not all revenue collected in a fiscal year is received as cash, resulting in a receivable. This response has been provided for illustrative purposes only.

1 **REFERENCE: Chapter 11: Financial Evaluation of Development Plans; PUB/MH II-56 (a)**
2 **& (b) 2010 GRA Internally Generated Funds**

3

4 **QUESTION:**

5 Please provide an update to (a) for the Preferred Development Plan and each alternative for
6 high, reference and low capital cost scenarios.

7

8 **RESPONSE:**

9 Please see Manitoba Hydro's response to PUB/MH I-054d which provides schedules of cash
10 flow from operations allocated between base capital and major new generation & transmission
11 expenditures for each development plan and scenario. It should be noted that the allocation of
12 cash flow from operations is for illustrative purposes only and not an allocation made in
13 practice.

16

Manitoba Hydro NFAT
NPV of Incremental
Ratepayer Domestic Revenue
3.80% Nominal

Financial Analysis

2035

2043

2062

Scenario (\$ Millions)	Energy Price	Discount Rate	Capital Cost	nt	2035					2043					2062				
					Plan 1 All Gas	Plan 7 Gas C26	Plan 4 K19/Gas24/250 MW	Plan 6 K19 Imp Gas 750mw	Plan 14 PDP K19/C25/750 MW(WPS Sale & Investment)	Plan 1 All Gas	Plan 7 Gas C26	Plan 4 K19/Gas24/250 MW	Plan 6 K19 Imp Gas 750mw	Plan 14 PDP K19/C25/750 MW(WPS Sale & Investment)	Plan 1 All Gas	Plan 7 Gas C26	Plan 4 K19/Gas24/250 MW	Plan 6 K19 Imp Gas 750mw	Plan 14 PDP K19/C25/750 MW(WPS Sale & Investment)
1 Reference Case	R	R	R	1	9,786	11,058	9,670	9,918	11,188	14,202	14,910	13,621	13,948	14,740	27,737	26,050	25,199	25,505	24,072
2 Low Energy	L	R	R	2	10,516	12,577	11,200	11,551	13,379	14,563	16,686	15,301	15,686	17,627	26,725	27,792	26,529	26,767	27,929
3 High Discount Rate	R	H	R	3	13,632	15,563	13,824	14,127	16,150	21,097	22,128	20,447	20,852	22,024	45,948	42,336	41,349	41,686	38,374
4 High Capital Costs	R	R	H	4	10,048	11,589	10,352	10,631	12,292	14,731	15,660	14,627	14,974	16,161	28,930	27,307	26,883	27,152	26,058
5 Other Scenarios																			
6 Low Energy Prices/ High Discount Rate	L	H	R	6	7,579	9,028	8,064	8,314	9,610	9,299	10,721	9,792	10,051	11,349	14,291	15,416	14,480	14,700	15,791
8 Low Energy Prices/High Capital Costs	L	R	H	7	10,797	13,093	11,891	12,280	14,492	15,113	17,419	16,292	16,702	19,032	27,934	29,032	28,104	28,314	29,792
9 High Discount Rate/ High Capital Costs	R	H	H	8	13,989	16,268	14,685	15,063	17,626	21,856	23,152	21,745	22,195	23,900	47,715	44,104	43,643	43,925	41,016
10 Low Energy/High Discount Rate/ High Capital Costs	L	H	H	9	14,949	18,218	16,473	16,988	20,284	22,279	25,474	23,645	24,164	27,482	45,799	46,349	44,878	45,037	46,240

Notes:

1. Appendix 11.4 - Volume 1, pages 1, 2 (Plan 1), 325, 326 (Plan 7), 487, 488 (Plan 4) & Appendix 11.4 - Volume 2, pages 163,164 (Plan 14), 487, 488 (Plan 6)
2. Appendix 11.4 - Volume 1, pages 37, 38 (Plan 1), 361, 362 (Plan 7), 523, 524 (Plan 4) & Appendix 11.4 - Volume 2, pages 199, 200 (Plan 14), 523, 524 (Plan 6)
3. Appendix 11.4 - Volume 1, pages 55, 56 (Plan 1), 379, 380 (Plan 7), 541, 542 (Plan 4) & Appendix 11.4 - Volume 2, pages 217, 218 (Plan 14), 541, 542 (Plan 6)
4. Appendix 11.4 - Volume 1, pages 7, 8 (Plan 1), 331, 332 (Plan 7), 493, 494 (Plan 4) & Appendix 11.4 - Volume 2, pages 169, 170 (Plan 14), 493, 494 (Plan 6)
5. Appendix 11.4 - Volume 1, pages 37, 38 (Plan 1), 361, 362 (Plan 7), 523, 524 (Plan 4) & Appendix 11.4 - Volume 2, pages 199, 200 (Plan 14), 523, 524 (Plan 6)
6. Appendix 11.4 - Volume 1, pages 43, 44 (Plan 1), 367, 368 (Plan 7), 529, 530 (Plan 4) & Appendix 11.4 - Volume 2, pages 205, 206 (Plan 14), 529, 530 (Plan 6)
7. Appendix 11.4 - Volume 1, pages 61, 62 (Plan 1), 385, 386 (Plan 7), 547, 548 (Plan 4) & Appendix 11.4 - Volume 2, pages 223, 224 (Plan 14), 547, 548 (Plan 6)
8. Appendix 11.4 - Volume 1, pages 97, 98 (Plan 1), 421, 422 (Plan 7), 583, 584 (Plan 4) & Appendix 11.4 - Volume 2, pages 259, 260 (Plan 14), 583, 584 (Plan 6)

Manitoba Hydro NFAT
 NPV of Incremental
 Ratepayer Domestic Revenue
 3.80% Nominal

Financial Analysis

Scenario (\$ Millions)	Energy Price	Discount Rate	Capital Cost	nt	2035			2043			2062		
					Plan 1 All Gas	Plan 14 PDP K19/C25/750 MW(WPS Sale & Investment)	NPV Difference	Plan 1 All Gas	Plan 14 PDP K19/C25/750 MW(WPS Sale & Investment)	NPV Difference	Plan 1 All Gas	Plan 14 PDP K19/C25/750 MW(WPS Sale & Investment)	NPV Difference
1 Reference Case	R	R	R	1	9,786	11,188	(1,401)	14,202	14,740	(539)	27,737	24,072	3,664
2 Low Energy	L	R	R	2	10,516	13,379	(2,864)	14,563	17,627	(3,064)	26,725	27,929	(1,204)
3 High Discount Rate	R	H	R	3	13,632	16,150	(2,518)	21,097	22,024	(927)	45,948	38,374	7,574
4 High Captital Costs	R	R	H	4	10,048	12,292	(2,244)	14,731	16,161	(1,430)	28,930	26,058	2,871
5 Other Scenarios													
6 Low Energy Prices/ High Discount Rate	L	H	R	5	7,579	9,610	(2,030)	9,299	11,349	(2,050)	14,291	15,791	(1,501)
8 Low Energy Prices/High Capital Costs	L	R	H	6	10,797	14,492	(3,695)	15,113	19,032	(3,919)	27,934	29,792	(1,858)
9 High Discount Rate/ High Capital Costs	R	H	H	7	13,989	17,626	(3,637)	21,856	23,900	(2,044)	47,715	41,016	6,699
10 Low Energy/High Discount Rate/ High Capital Costs	L	H	H	8	14,949	20,284	(5,335)	22,279	27,482	(5,203)	45,799	46,240	(441)

Notes:

1. Appendix 11.4 - Volume 1, pages 1, 2 & Appendix 11.4 - Volume 2, pages 163,164
2. Appendix 11.4 - Volume 1, pages 37, 38 & Appendix 11.4 - Volume 2, pages 199, 200
3. Appendix 11.4 - Volume 1, pages 55, 56 & Appendix 11.4 - Volume 2, pages 217, 218
4. Appendix 11.4 - Volume 1, pages 7, 8 & Appendix 11.4 - Volume 2, pages 169, 170
5. Appendix 11.4 - Volume 1, pages 37, 38 & Appendix 11.4 - Volume 2, pages 199, 200
6. Appendix 11.4 - Volume 1, pages 43, 44 & Appendix 11.4 - Volume 2, pages 205, 206
7. Appendix 11.4 - Volume 1, pages 61, 62 & Appendix 11.4 - Volume 2, pages 223, 224
8. Appendix 11.4 - Volume 1, pages 97, 98 & Appendix 11.4 - Volume 2, pages 259, 260

Manitoba Hydro NFAT
 NPV of Incremental
 Ratepayer Domestic Revenue
 3.80% Nominal

Financial Analysis

Scenario (\$ Millions)	Energy Price	Discount Rate	Capital Cost	nt	2035 Plan 14 PDP K19/C25/750 MW(WPS Sale & Investment)			2043 Plan 14 PDP K19/C25/750 MW(WPS Sale & Investment)			2062 Plan 14 PDP K19/C25/750 MW(WPS Sale & Investment)		
					Plan 4 K19/Gas24/250 MW	NPV Difference	Plan 4 K19/Gas24/250 MW	NPV Difference	Plan 4 K19/Gas24/250 MW	NPV Difference			
1 Reference Case	R	R	R	1	9,670	11,188	(1,518)	13,621	14,740	(1,120)	25,199	24,072	1,127
2 Low Energy	L	R	R	2	11,200	13,379	(2,179)	15,301	17,627	(2,326)	26,529	27,929	(1,400)
3 High Discount Rate	R	H	R	3	13,824	16,150	(2,326)	20,447	22,024	(1,577)	41,349	38,374	2,976
4 High Captital Costs	R	R	H	4	10,352	12,292	(1,940)	14,627	16,161	(1,534)	26,883	26,058	824
5 Other Scenarios													
6 Low Energy Prices/ High Discount Rate	L	H	R	5	8,064	9,610	(1,545)	9,792	11,349	(1,556)	14,480	15,791	(1,312)
8 Low Energy Prices/High Capital Costs	L	R	H	6	11,891	14,492	(2,601)	16,292	19,032	(2,740)	28,104	29,792	(1,689)
9 High Discount Rate/ High Capital Costs	R	H	H	7	14,685	17,626	(2,940)	21,745	23,900	(2,156)	43,643	41,016	2,626
10 Low Energy/High Discount Rate/ High Capital Costs	L	H	H	8	16,473	20,284	(3,811)	23,645	27,482	(3,837)	44,878	46,240	(1,362)

Notes:

- Appendix 11.4 - Volume 1, pages 487, 488 & Appendix 11.4 - Volume 2, pages 163,164
- Appendix 11.4 - Volume 1, pages 523, 524 & Appendix 11.4 - Volume 2, pages 199, 200
- Appendix 11.4 - Volume 1, pages 541, 542 & Appendix 11.4 - Volume 2, pages 217, 218
- Appendix 11.4 - Volume 1, pages 493, 494 & Appendix 11.4 - Volume 2, pages 169, 170
- Appendix 11.4 - Volume 1, pages 523, 524 & Appendix 11.4 - Volume 2, pages 199, 200
- Appendix 11.4 - Volume 1, pages 529, 530 & Appendix 11.4 - Volume 2, pages 205, 206
- Appendix 11.4 - Volume 1, pages 547, 548 & Appendix 11.4 - Volume 2, pages 223, 224
- Appendix 11.4 - Volume 1, pages 583, 584 & Appendix 11.4 - Volume 2, pages 259, 260

Manitoba Hydro NFAT
 NPV of Incremental
 Ratepayer Domestic Revenue
 3.80% Nominal

Financial Analysis

Scenario (\$ Millions)	Energy Price	Discount Rate	Capital Cost	nt	2035 Plan 14 PDP K19/C25/750			2043 Plan 14 PDP K19/C25/750			2062 Plan 14 PDP K19/C25/750		
					Plan 6 K19 Imp Gas 750mw	MW(WPS Sale & Investment)	NPV Difference	Plan 6 K19 Imp Gas 750mw	MW(WPS Sale & Investment)	NPV Difference	Plan 6 K19 Imp Gas 750mw	MW(WPS Sale & Investment)	NPV Difference
1 Reference Case	R	R	R	1	9,918	11,188	(1,269)	13,948	14,740	(792)	25,505	24,072	1,433
2 Low Energy	L	R	R	2	11,551	13,379	(1,828)	15,686	17,627	(1,941)	26,767	27,929	(1,162)
3 High Discount Rate	R	H	R	3	14,127	16,150	(2,022)	20,852	22,024	(1,172)	41,686	38,374	3,312
4 High Captital Costs	R	R	H	4	10,631	12,292	(1,661)	14,974	16,161	(1,187)	27,152	26,058	1,094
5 Other Scenarios													
6 Low Energy Prices/ High Discount Rate	L	H	R	5	8,314	9,610	(1,295)	10,051	11,349	(1,297)	14,700	15,791	(1,092)
8 Low Energy Prices/High Capital Costs	L	R	H	6	12,280	14,492	(2,212)	16,702	19,032	(2,331)	28,314	29,792	(1,478)
9 High Discount Rate/ High Capital Costs	R	H	H	7	15,063	17,626	(2,563)	22,195	23,900	(1,706)	43,925	41,016	2,909
10 Low Energy/High Discount Rate/ High Capital Costs	L	H	H	8	16,988	20,284	(3,297)	24,164	27,482	(3,318)	45,037	46,240	(1,203)

Notes:

1. Appendix 11.4 - Volume 2, pages 163, 164 & 487, 488
2. Appendix 11.4 - Volume 2, pages 199, 200 & 523, 524
3. Appendix 11.4 - Volume 2, pages 217, 218 & 541, 542
4. Appendix 11.4 - Volume 2, pages 169, 170 & 493, 494
5. Appendix 11.4 - Volume 2, pages 199, 200 & 523, 524
6. Appendix 11.4 - Volume 2, pages 205, 206 & 529, 530
7. Appendix 11.4 - Volume 2, pages 223, 224 & 547, 548
8. Appendix 11.4 - Volume 2, pages 259, 260 & 583, 584

Manitoba Hydro NFAT
 NPV of Incremental
 Ratepayer Domestic Revenue
 3.80% Nominal

Financial Analysis

Scenario (\$ Millions)	Energy Price	Discount Rate	Capital Cost	nt	2035 Plan 14 PDP K19/C25/750 MW(WPS Sale & Investment)			2043 Plan 14 PDP K19/C25/750 MW(WPS Sale & Investment)			2062 Plan 14 PDP K19/C25/750 MW(WPS Sale & Investment)		
					Plan 7 Gas C26	NPV Difference	Plan 7 Gas C26	NPV Difference	Plan 7 Gas C26	NPV Difference			
1 Reference Case	R	R	R	1	11,058	11,188	(130)	14,910	14,740	170	26,050	24,072	1,978
2 Low Energy	L	R	R	2	12,577	13,379	(803)	16,686	17,627	(941)	27,792	27,929	(137)
3 High Discount Rate	R	H	R	3	15,563	16,150	(587)	22,128	22,024	104	42,336	38,374	3,962
4 High Captital Costs	R	R	H	4	11,589	12,292	(704)	15,660	16,161	(501)	27,307	26,058	1,249
5 Other Scenarios													
6 Low Energy Prices/ High Discount Rate	L	H	R	5	9,028	9,610	(582)	10,721	11,349	(628)	15,416	15,791	(376)
8 Low Energy Prices/High Capital Costs	L	R	H	6	13,093	14,492	(1,399)	17,419	19,032	(1,614)	29,032	29,792	(761)
9 High Discount Rate/ High Capital Costs	R	H	H	7	16,268	17,626	(1,358)	23,152	23,900	(748)	44,104	41,016	3,087
10 Low Energy/High Discount Rate/ High Capital Costs	L	H	H	8	18,218	20,284	(2,066)	25,474	27,482	(2,007)	46,349	46,240	109

Notes:

- Appendix 11.4 - Volume 1, pages 325, 326 & Appendix 11.4 - Volume 2, pages 163,164
- Appendix 11.4 - Volume 1, pages 361, 362 & Appendix 11.4 - Volume 2, pages 199, 200
- Appendix 11.4 - Volume 1, pages 379, 380 & Appendix 11.4 - Volume 2, pages 217, 218
- Appendix 11.4 - Volume 1, pages 331, 332 & Appendix 11.4 - Volume 2, pages 169, 170
- Appendix 11.4 - Volume 1, pages 361, 362 & Appendix 11.4 - Volume 2, pages 199, 200
- Appendix 11.4 - Volume 1, pages 367, 368 & Appendix 11.4 - Volume 2, pages 205, 206
- Appendix 11.4 - Volume 1, pages 385, 386 & Appendix 11.4 - Volume 2, pages 223, 224
- Appendix 11.4 - Volume 1, pages 421, 422 & Appendix 11.4 - Volume 2, pages 259, 260

17

1 **REFERENCE: Chapter 11: Financial Evaluation of Development Plans; Section: 11.1;**
2 **Page No.: 5; Treatment of Sunk Costs in Financial Evaluation**

3

4 **QUESTION:**

5 Please file a financial analysis where Keeyask or Conawapa are deferred beyond the evaluation
6 period. Assume that sunk costs are not included in revenue requirement until the identified in-
7 service date of the facility and, in the case where the identified in-service date is unknown, the
8 costs are written off to retained earnings.

9

10 **RESPONSE:**

11 Following the informal meeting between Manitoba Hydro staff and PUB Advisors contemplated
12 in Order 119/13, the PUB Advisors required this Information Request to be revised and the
13 following information provided:

14 Please see the response to PUB/MH I-197(b).

1 **REFERENCE: Chapter 11: Financial Evaluation of Development Plans; Section: 11.1;**
2 **Page No.: 5; Treatment of Sunk Costs in Financial Evaluation**

3

4 **QUESTION:**

5 Please file a financial analysis where Keeyask or Conawapa are deferred beyond the evaluation
6 period. Assume that sunk costs are not included in revenue requirement until the identified in-
7 service date of the facility and, in the case where the identified in-service date is unknown, the
8 costs are written off to retained earnings.

9

10 **RESPONSE:**

11 In Order 119/13 the PUB determined that this Information Request need not be answered at
12 this time.

1 **REFERENCE: Chapter 11: Financial Evaluation of Development Plans; Section: 11.1;**
2 **Page No.: 5; Treatment of Sunk Costs in Financial Evaluation**

3

4 **QUESTION:**

5 Please file a financial analysis where Keeyask or Conawapa sunk costs are deferred beyond the
6 evaluation period and assume that net sunk costs are amortized over a 30-year period.

7

8 **RESPONSE:**

9 Accounting standards require Manitoba Hydro to expense sunk costs deemed to provide no
10 future benefit. Accounting standards do not permit Manitoba Hydro to maintain planning/sunk
11 costs related to deferred projects on the balance sheet in perpetuity. Accordingly analysis
12 assuming that sunk costs are amortized over a 30-year period beginning in 2063 was not
13 performed.

1 **REFERENCE: Chapter 11: Financial Evaluation of Development Plans; Section: 11.1;**
2 **Page No.: 5; Treatment of Sunk Costs in Financial Evaluation**

3

4 **QUESTION:**

5 Please provide the proposed accounting treatment for sunk costs related to Keeyask and
6 Conawapa if the developments are delayed beyond the evaluation period.

7

8 **RESPONSE:**

9 When costs are determined to no longer provide future benefit, sunk costs must be expensed.
10 Assuming development of the Keeyask and Conawapa projects are deferred beyond the current
11 planned in-service dates, the Corporation would periodically assess the nature of the sunk costs
12 and determine whether those sunk costs continue to provide future benefit to the utility. For
13 example, sunk costs associated with engineering studies and plant design will continue to hold
14 their value long into the future as these items are not likely to change over time for the
15 respective plants. Community agreements and environmental studies (e.g. fish and caribou
16 studies) are not as likely to hold value long into the future as the community agreements have
17 termination provisions and the environmental conditions may change requiring new
18 agreements and studies.

1 **REFERENCE: Chapter 11: Financial Evaluation of Development Plans; Section: 11.3;**
2 **Page No.: 16; Figure 11.6**

3

4 **QUESTION:**

5 Please provide an updated table similar to Figure 11.6, indicating the debt-to-equity ratio for
6 each development plan through 2035 and reflecting no amortization of sunk costs until the
7 planned delayed in-service date of Keeyask or Conawapa.

8

9 **RESPONSE:**

10 In development plans where the generating stations are delayed (K22/Gas, Gas/C26 or
11 K19/C31/750), the sunk costs for delayed plants are not amortized, rather, they are included in
12 the amounts capitalized and depreciated over the life of the plant commencing with the in
13 service date. Please also see the response to MIPUG/MH I-3(c).

1 **REFERENCE: Chapter 11: Financial Evaluation of Development Plans; Section: 11.3;**
2 **Page No.: 16; Figure 11.6**

3

4 **QUESTION:**

5 Please provide an updated table similar to Figure 11.6, indicating the debt-to-equity ratio for
6 each development plan through 2060 and reflecting amortization of sunk costs over a 30 year
7 period.

8

9 **RESPONSE:**

10 Hypothetically, extending the amortization period to 30 years results in even annual rate
11 increases from 2015-2032 of approximately 3.36% compared to 3.42% for the All Gas
12 development plan under the Reference scenario.

13

14 The following table provides a summary of projected key financial metrics for the eight
15 development plans, as well as the sunk cost 30-year amortization sensitivity, under the
16 reference scenario.

Pathway	Interconnection	Plan #	Development Plan	Projected Even-Annual Rate Increases (2014/15 to 2031/32)	Equivalent Even-Annual Rate Increases over the Forecast Period (50 Years)	Cumulative Nominal Rate Increases at at 2031/32	Cumulative Nominal Rate Increases as at 2061/62	Debt:Equity Ratio as at 2031/32	Debt:Equity Ratio as at 2061/62
1	No New	1	All Gas	3.43%	2.07%	90%	176%	75%	58%
			All Gas Sensitivity*	3.36%	2.06%	88%	176%	75%	57%
		7	Gas C26	3.86%	1.72%	105%	134%	75%	51%
2		2	K22 Gas	3.49%	1.77%	92%	140%	75%	53%
3	250 MW	4	K19 Gas 250 MW	3.42%	1.80%	90%	143%	75%	54%
		13	K19 C25 250 MW	3.98%	1.50%	109%	111%	75%	48%
4	750 MW	12	K19 Imp C31 750 MW	3.80%	1.50%	102%	111%	75%	47%
		6	K19 Imp Gas 750 MW	3.50%	1.79%	92%	143%	75%	54%
5		14	K19 Sales C25 750 MW	3.95%	1.44%	108%	106%	75%	48%

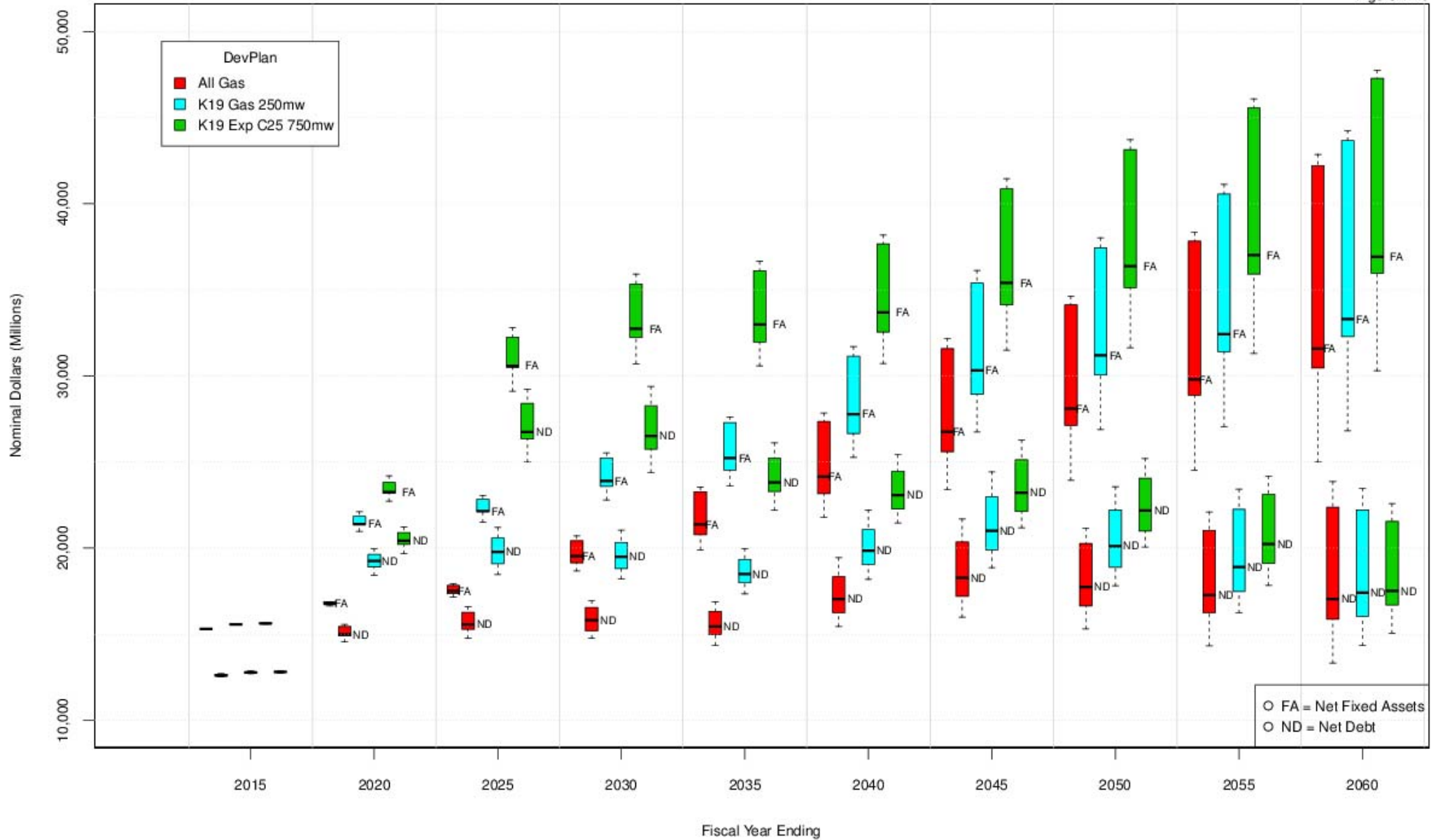
* All Gas Sensitivity extends the amortization period for Keyask and Conawapa sunk costs from 18 years to 30 years for the purposes of the financial evaluation

1

18

Projected Balances of Net Fixed Assets and Net Debt
 by Development Plan

Figure 11.5



1 **REFERENCE: Chapter 11: Financial Evaluation of Development Plans; PUB/MH I-101**
2 **(a) & (b) 2012 GRA**

3

4 **QUESTION:**

5 Please file updated response to PUB/MH I-101 (a) including chart and table of data point based
6 on IFF11-2, IFF12 and IFF13.

7

8 **RESPONSE:**

9 In Order 119/13 the PUB ordered that Manitoba Hydro may respond to this Information
10 request by filing existing information without providing the requested update.

11

12 Please find attached Manitoba Hydro's response to PUB/MH I-101(a) from the 2012/13 &
13 2013/14 Electric General Rate Application which is a graph of net fixed assets and net debt from
14 1990 to 2032.

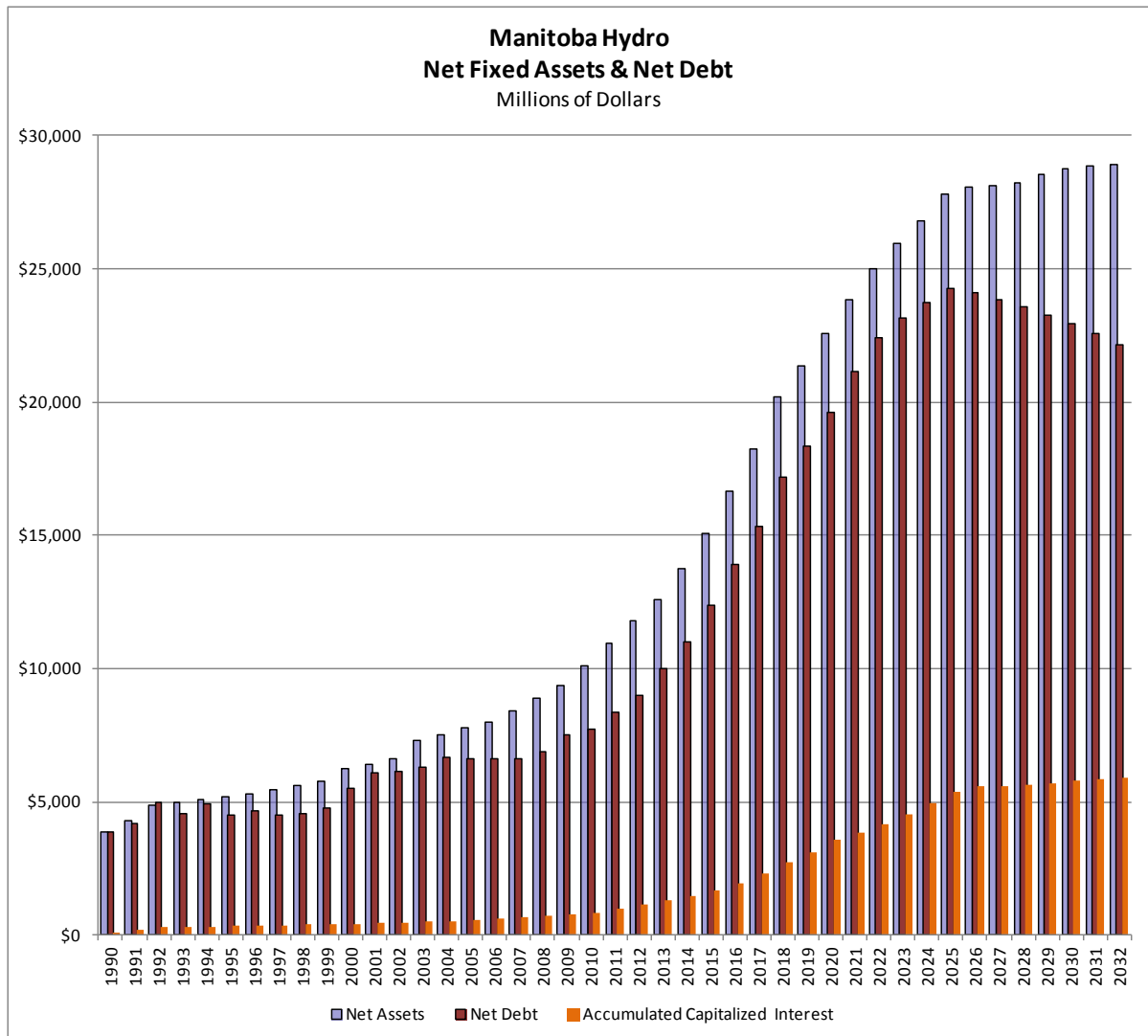
PUB/MH I-101

Reference: Appendix 6.2 Debt Management Strategy 2011 & 2012 GRA

- a) **Please refile an updated response to PUB/MH I-69 (a) based on IFF11-2 including an updated the graph of Net Fixed Assets & Net Debt for the years 1990 through 2032 identifying the level of accumulated capitalized interest in each year. Please provide a table of corresponding data points.**

ANSWER:

The values for the years 1990 to 2012 are based on actuals, and 2013 to 2032 values are based on the forecast IFF11-2 (Consolidated Operations).



The chart illustrates the growth in net fixed assets and net long term debt that has occurred over the past 20 years, as well as the projected growth to 2032. While net debt is expected to grow to approximately \$22.2 billion as at March 31, 2032, the corresponding investment in generation, transmission, distribution and other assets is expected to grow to a net book value of approximately \$28.9 billion at March 31, 2032.

A table of corresponding data points is as follows:

Year Ending	Net Assets	Capitalized Interest	Accumulated Capitalized Interest	Net Debt
1990	3,882	97	97	3,889
1991	4,267	110	207	4,199
1992	4,857	72	279	4,972
1993	4,983	32	312	4,533
1994	5,067	16	328	4,948
1995	5,170	15	342	4,508
1996	5,310	19	361	4,685
1997	5,464	16	377	4,493
1998	5,608	20	396	4,559
1999	5,774	20	416	4,772
2000	6,235	15	431	5,488
2001	6,428	16	447	6,114
2002	6,626	26	473	6,146
2003	7,305	28	501	6,320
2004	7,536	32	532	6,675
2005	7,776	33	565	6,642
2006	8,010	34	600	6,614
2007	8,415	47	647	6,597
2008	8,912	60	707	6,870
2009	9,382	56	763	7,521
2010	10,128	68	831	7,716
2011	10,954	138	969	8,365
2012	11,797	170	1,139	9,010
2013	12,608	142	1,280	9,984
2014	13,771	178	1,458	11,019
2015	15,056	221	1,679	12,354
2016	16,644	280	1,960	13,905
2017	18,263	365	2,325	15,331
2018	20,204	403	2,727	17,176
2019	21,331	387	3,114	18,358
2020	22,581	447	3,561	19,610
2021	23,830	285	3,846	21,146
2022	24,991	291	4,137	22,392
2023	25,959	378	4,515	23,161
2024	26,816	452	4,967	23,715
2025	27,816	403	5,370	24,255
2026	28,062	203	5,573	24,126
2027	28,113	31	5,604	23,850
2028	28,244	45	5,650	23,566
2029	28,531	68	5,717	23,270
2030	28,761	95	5,812	22,966
2031	28,882	45	5,857	22,562
2032	28,920	47	5,904	22,172

1 **REFERENCE: Chapter 11: Financial Evaluation of Development Plans; PUB/MH I-101**
2 **(a) & (b) 2012 GRA**

3

4 **QUESTION:**

5 Please file updated response to PUB/MH I-101 (b) based on IFF08, IFF09, IFF11-2, IFF12 and
6 IFF13 and for the Preferred Development Plan and Alternatives (Reference).

7

8 **RESPONSE:**

9 In Order 119/13 the PUB ordered that Manitoba Hydro may respond to this Information
10 request by filing existing information without providing the requested update.

11

12 Please find attached Manitoba Hydro's response to PUB/MH I-101(b) from the 2012/13 &
13 2013/14 Electric General Rate Application which provides a table of net assets, net debt,
14 retained earnings and financial ratios for 1990 through 2032.

PUB/MH I-101

Reference: Appendix 6.2 Debt Management Strategy 2011 & 2012 GRA

- b) **Please refile and updated response to PUB/MH I-69 (b) provide a corresponding table of Net Assets, Net Debt, Retained Earnings, Debt to Equity ratio, Capital Coverage ratio, and Interest Coverage ratio of the corresponding year.**

ANSWER:

Please see the attached schedule.

2012/13 & 2013/14 Electric General Rate Application

Year Ending	Net Assets	Net Debt	Retained Earnings	D/E Ratio	I/C Ratio	C/C Ratio
	<i>Millions of dollars</i>	<i>Millions of dollars</i>	<i>Millions of dollars</i>			
1990	3,882	3,889	117	95:05	1.07	
1991	4,267	4,199	165	94:06	1.13	
1992	4,857	4,972	183	94:06	1.04	
1993	4,983	4,533	159	95:05	0.95	
1994	5,067	4,948	228	93:07	1.16	
1995	5,170	4,508	284	92:08	1.13	1.00
1996	5,310	4,685	354	91:09	1.16	1.00
1997	5,464	4,493	455	88:12	1.23	1.10
1998	5,608	4,559	566	86:14	1.25	1.13
1999	5,774	4,772	666	84:16	1.23	1.22
2000	6,235	5,488	818	83:17	1.35	1.28
2001	6,428	6,114	1,088	80:20	1.62	1.18
2002	6,626	6,146	1,302	77:23	1.42	1.67
2003	7,305	6,320	1,170	80:20	1.14	1.10
2004	7,536	6,675	734	87:13	0.17	(0.32)
2005	7,776	6,642	870	85:15	1.25	1.20
2006	8,010	6,614	1,285	81:19	1.77	2.28
2007	8,415	6,597	1,407	80:20	1.23	1.10
2008	8,912	6,870	1,822	73:27	1.69	1.62
2009	9,382	7,521	2,076	77:23	1.49	1.77
2010	10,128	7,716	2,239	73:27	1.32	1.30
2011	10,954	8,365	2,389	73:27	1.27	1.25
2012	11,797	9,010	2,450	74:26	1.10	1.13
2013	12,608	9,984	2,483	76:24	1.05	1.19
2014	13,771	11,019	2,203	82:18	1.12	1.18
2015	15,056	12,354	2,277	84:16	1.10	1.22
2016	16,644	13,905	2,414	85:15	1.16	1.47
2017	18,263	15,331	2,587	85:15	1.18	1.58
2018	20,204	17,176	2,722	86:14	1.12	1.51
2019	21,331	18,358	2,754	87:13	1.03	1.32
2020	22,581	19,610	2,839	87:13	1.07	1.49
2021	23,830	21,146	2,796	88:12	0.97	1.45
2022	24,991	22,392	2,924	88:12	1.09	1.85
2023	25,959	23,161	3,150	88:12	1.15	1.92
2024	26,816	23,715	3,455	87:13	1.19	1.97
2025	27,816	24,255	3,872	86:14	1.26	2.02
2026	28,062	24,126	4,338	84:16	1.28	2.32
2027	28,113	23,850	4,768	82:18	1.26	2.28
2028	28,244	23,566	5,292	80:20	1.33	2.52
2029	28,531	23,270	5,898	78:22	1.38	2.54
2030	28,761	22,966	6,607	76:24	1.45	2.60
2031	28,882	22,562	7,350	73:27	1.48	3.23
2032	28,920	22,172	8,245	70:30	1.62	2.92

1 **REFERENCE: PUB/MH I-088b**

2

3 **PREAMBLE:** Pages 3-72 of the response provide the debt/equity ratio for each Plan and
4 associated scenarios.

5

6 **QUESTION:**

7 Please indicate how the Debt value reported in the response can be derived from the Pro-
8 Forma financial statements in Appendix 11.4.

9

10 **RESPONSE:**

11 For the purposes of the debt/equity ratio calculation, debt is the sum of the long-term
12 (including the current portion) and short-term debt balances less sinking fund assets, short-
13 term investments and debt attributed to the gas operations. Long-term debt on the pro forma
14 balance sheet in Appendix 11.4 excludes the current portion which is classified in Current &
15 Other Liabilities. Short-term debt and debt attributed to Centra Gas are also classified in
16 Current & Other Liabilities. Sinking fund assets and short-term investments are classified in
17 Current & Other Assets on the pro forma balance sheet.

18

19 The following schedule provides the corresponding values to calculate the debt for the
20 Preferred Development Plan debt equity ratio under the reference scenario.



Needs For and Alternatives To
CAC/MH II-079

Development Plan K19 Sales C25 750 MW
Development Plan Scenario Economics:REF Rev:REF Cap:REF

ELECTRIC OPERATIONS
CALCULATION OF NET DEBT
In Millions of Dollars

For the year ended March 31	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Long Term Debt (including current portion)	10 097	11 471	13 114	14 821	16 700	18 571	19 744	21 039	22 406	23 530	25 080	26 482	27 685	28 038	28 239	28 440	28 581	28 334	27 636	27 626	27 399	25 401	25 202	24 921	24 523
Sinking Fund Assets	(320)	(129)	(152)	(311)	(489)	(700)	(498)	(533)	(518)	(188)	(277)	(542)	(830)	(691)	(1 003)	(1 328)	(1 606)	(1 708)	(1 361)	(1 678)	(1 792)	(1 337)	(1 446)	(1 424)	(1 376)
Short Term Debt	183	84	128	215	220	172	215	105	51	160	90	53	-	107	190	18	-	-	-	-	-	-	-	-	-
Short Term Investments	-	-	-	-	-	-	-	-	-	-	-	-	(4)	-	-	-	(113)	(287)	(668)	(1 425)	(1 412)	(166)	(193)	(232)	(156)
Debt for Gas Operations	(295)	(325)	(330)	(340)	(360)	(380)	(390)	(400)	(410)	(420)	(440)	(450)	(460)	(470)	(480)	(490)	(500)	(510)	(520)	(530)	(540)	(550)	(560)	(570)	(580)
Net Debt for Debt/Equity Ratio	9 665	11 100	12 760	14 386	16 072	17 664	19 071	20 211	21 530	23 081	24 453	25 543	26 392	26 984	26 947	26 640	26 362	25 829	25 088	23 993	23 655	23 348	23 003	22 695	22 412

1

2

Development Plan K19 Sales C25 750 MW
Development Plan Scenario Economics:REF Rev:REF Cap:REF

ELECTRIC OPERATIONS
CALCULATION OF NET DEBT
In Millions of Dollars

For the year ended March 31	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062
Long Term Debt (including current portion)	24 375	24 177	24 279	24 429	24 378	24 277	24 625	24 624	24 622	25 020	25 019	24 817	24 490	24 489	24 439	24 238	22 638	21 837	21 236	20 829	20 428	19 702	19 502	19 102	19 102
Sinking Fund Assets	(1 410)	(1 609)	(1 627)	(1 743)	(1 863)	(1 988)	(2 261)	(2 498)	(2 445)	(2 792)	(2 901)	(2 915)	(2 803)	(3 012)	(3 230)	(3 406)	(3 539)	(2 975)	(2 819)	(2 803)	(2 834)	(2 815)	(2 587)	(2 743)	(2 778)
Short Term Debt	-	-	-	-	-	60	-	88	232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Short Term Investments	(242)	(69)	(178)	(106)	(62)	-	(66)	-	-	(105)	(340)	(508)	(650)	(830)	(947)	(1 064)	(1 028)	(366)	(144)	(69)	(153)	(243)	(257)	(381)	(447)
Debt for Gas Operations	(590)	(600)	(610)	(620)	(630)	(640)	(660)	(670)	(680)	(700)	(710)	(720)	(740)	(750)	(760)	(770)	(780)	(790)	(790)	(800)	(800)	(810)	(810)	(810)	(800)
Net Debt for Debt/Equity Ratio	22 134	21 898	21 863	21 961	21 823	21 709	21 638	21 544	21 728	21 424	21 068	20 674	20 298	19 898	19 553	19 198	18 892	18 507	18 084	17 565	17 041	16 560	16 048	15 569	15 077

3

19

1 **REFERENCE: Chapter 11: Financial Evaluation of Development Plans; Section: 11.1;**
2 **Page No.: 4**

3

4 **QUESTION:**

5 Please provide Manitoba Hydro's most recent analysis/review confirming the appropriateness
6 of a target 75:25 debt: equity ratio.

7

8 **RESPONSE:**

9 The Manitoba Hydro-Electric Board reaffirmed Manitoba Hydro's existing targets for
10 debt/equity (75:25), interest coverage (>1.20) and capital coverage (>1.20) in November 2012
11 based on the projections included in the 2012 Integrated Financial Forecast (IFF12).

1 **REFERENCE: Chapter 11: Financial Evaluation of Development Plans; MH Exhibit #21**
2 **PUB/MH II-39, II-41, MH Exhibit # 38 MIPUG/MH II-11 (c) 2012 GRA - Financial Targets**

3

4 **QUESTION:**

5 Please file MH Exhibit #21 from the 2012 GRA.

6

7 **RESPONSE:**

8 Please see the attached Manitoba Hydro Exhibit #21 from the 2012/13 & 2013/14 General Rate
9 Application.

10

11 PUB/MH II-39 and PUB/MH II-41 provide summaries of financial ratios for forecasts IFF07
12 through IFF12.

PUB/MH I-27 (Revised Based on IFF12)

Reference: Tab 4 Page 2 of 9 , Appendix 4.1 Economic Outlook, Attachment 4 2012 economic outlook

b) Please indicate whether the Corporation has done any analysis on the impact of changed assumptions, if so please file.

ANSWER:

Please see IFF12 which include the impacts of the revised assumptions in EO12.

PUB/MH I-27 (Revised Based on IFF12)

Reference: Tab 4 Page 2 of 9 , Appendix 4.1 Economic Outlook, Attachment 4 2012 economic outlook

- c) **If not, please refile IFF11-2 updated based on the changed major assumptions in EO12.**

ANSWER:

Please see part b of this response.

PUB/MH II-39 (Revised Based on IFF12)

Reference: PUB/MH I-30 (a) (c) Financial Targets

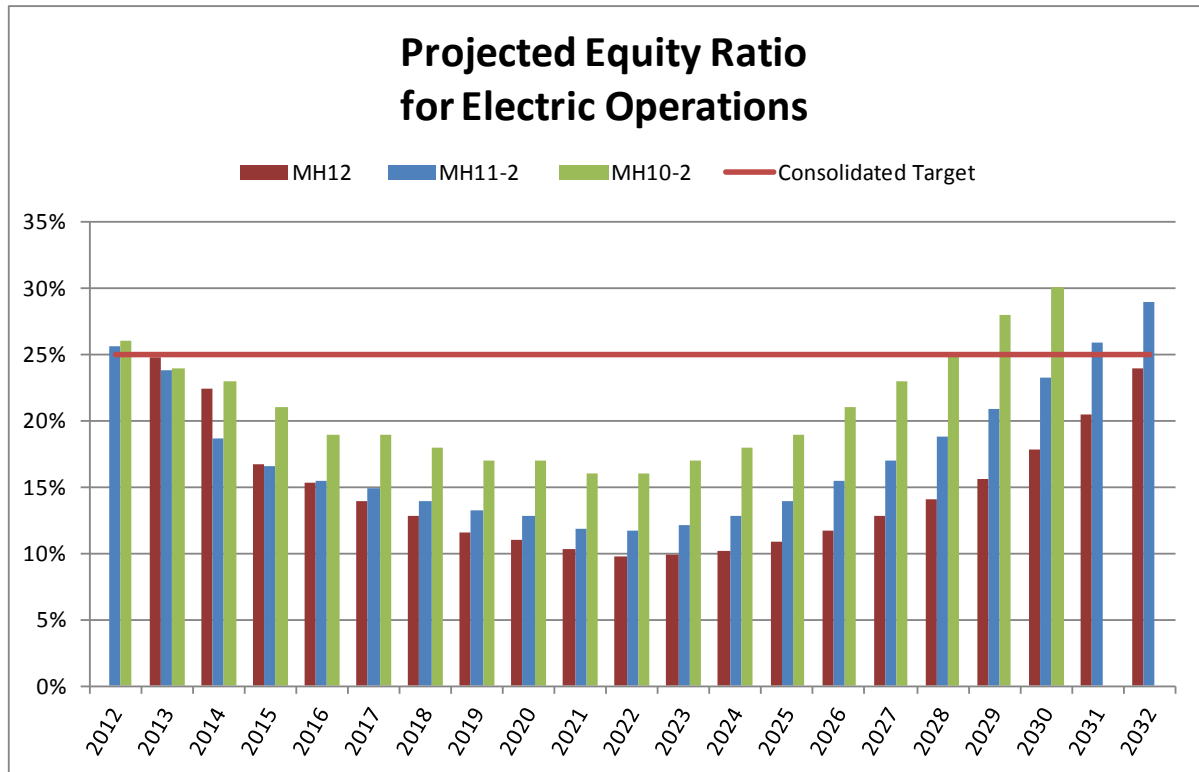
a) Please update the response to (a) to include IFF12

ANSWER:

Equity Ratio

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
MH12	-	25%	22%	17%	15%	14%	13%	12%	11%	10%	10%
MH11-2	26%	24%	19%	17%	15%	15%	14%	13%	13%	12%	12%
MH10-2	26%	24%	23%	21%	19%	19%	18%	17%	17%	16%	16%
Consolidated Target	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%

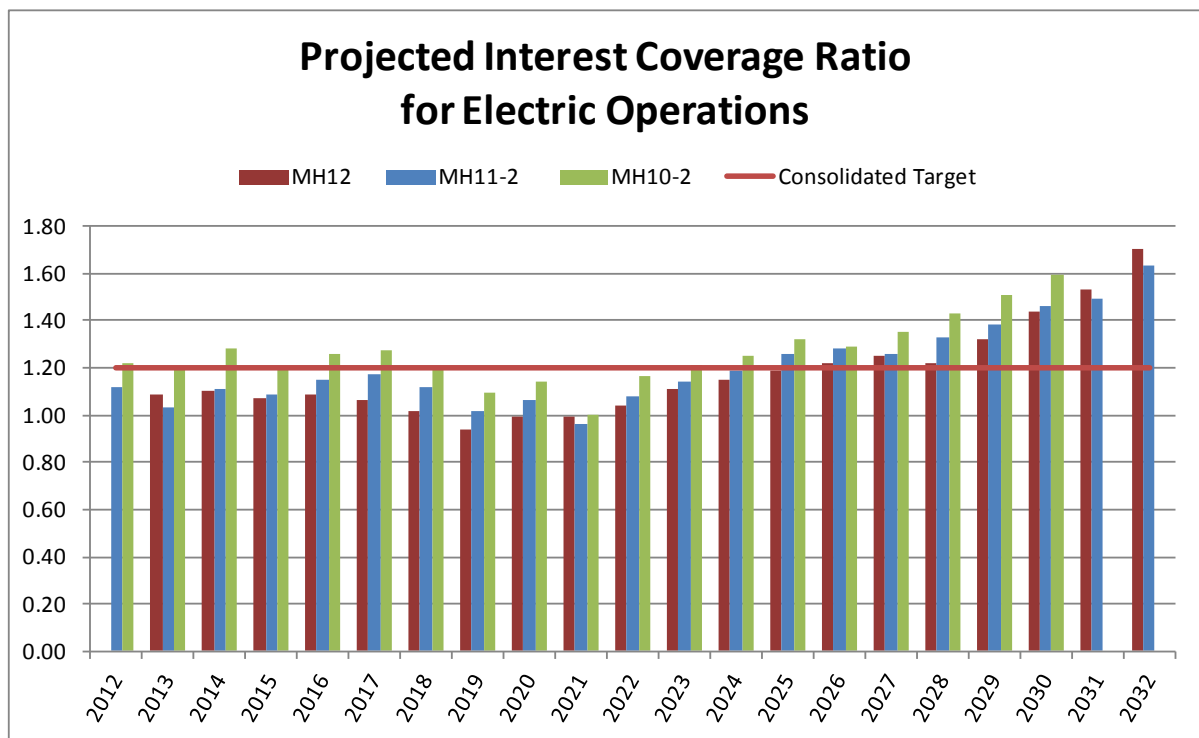
	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
MH12	10%	10%	11%	12%	13%	14%	16%	18%	20%	24%
MH11-2	12%	13%	14%	15%	17%	19%	21%	23%	26%	29%
MH10-2	17%	18%	19%	21%	23%	25%	28%	30%	-	-
Consolidated Target	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%



Interest Coverage Ratio

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
MH12	-	1.09	1.10	1.07	1.09	1.06	1.02	0.94	0.99	0.99	1.04
MH11-2	1.12	1.03	1.11	1.09	1.15	1.17	1.12	1.02	1.06	0.96	1.08
MH10-2	1.22	1.20	1.28	1.19	1.26	1.28	1.20	1.09	1.14	1.00	1.16
Consolidated Target	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20

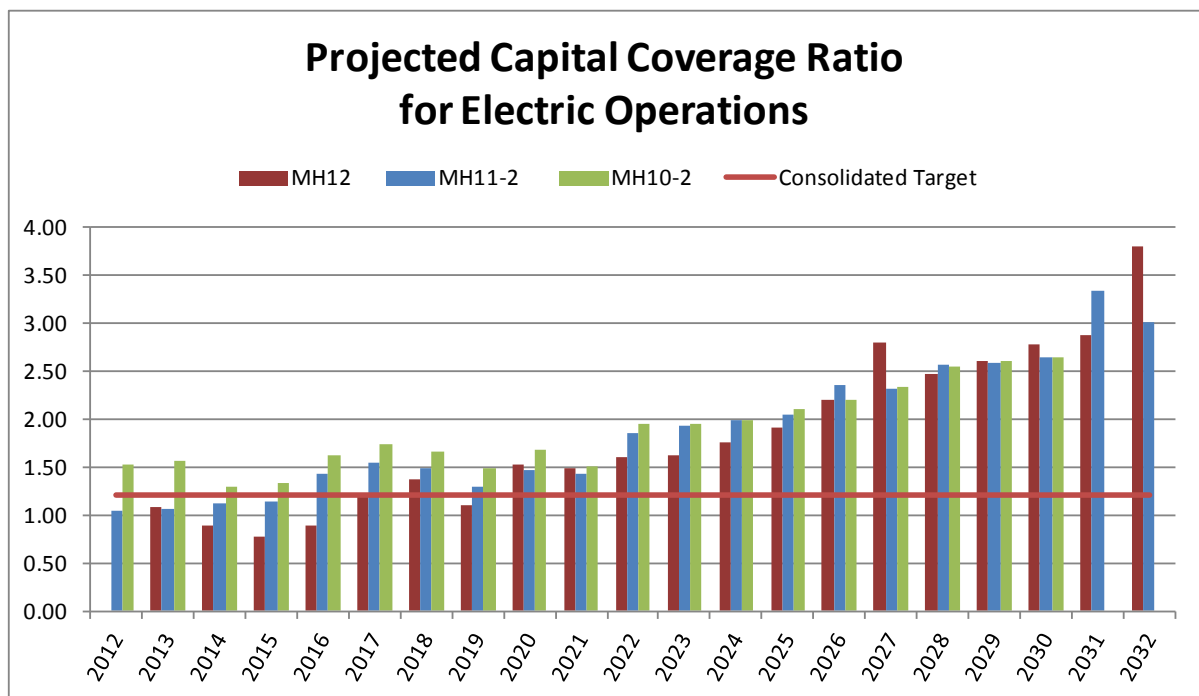
	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
MH12	1.11	1.15	1.19	1.22	1.25	1.22	1.32	1.44	1.53	1.70
MH11-2	1.14	1.19	1.26	1.28	1.26	1.33	1.38	1.46	1.49	1.63
MH10-2	1.22	1.25	1.32	1.29	1.35	1.43	1.51	1.59	-	-
Consolidated Target	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20



Capital Coverage Ratio

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
MH12	-	1.09	0.89	0.77	0.90	1.21	1.37	1.11	1.53	1.49	1.61
MH11-2	1.04	1.07	1.13	1.15	1.43	1.54	1.48	1.29	1.46	1.43	1.86
MH10-2	1.52	1.56	1.29	1.33	1.62	1.74	1.66	1.49	1.68	1.51	1.95
Consolidated Target	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
MH12	1.63	1.75	1.91	2.21	2.80	2.47	2.60	2.77	2.88	3.80
MH11-2	1.93	1.99	2.04	2.36	2.32	2.57	2.59	2.65	3.34	3.00
MH10-2	1.95	1.99	2.10	2.20	2.34	2.56	2.60	2.65	-	-
Consolidated Target	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20



PUB/MH II-41 (Revised Based on IFF12)

Reference: PUB/MH I-30 (b) Financial Target Comparisons

Please file an update to the response including IFF12

ANSWER:

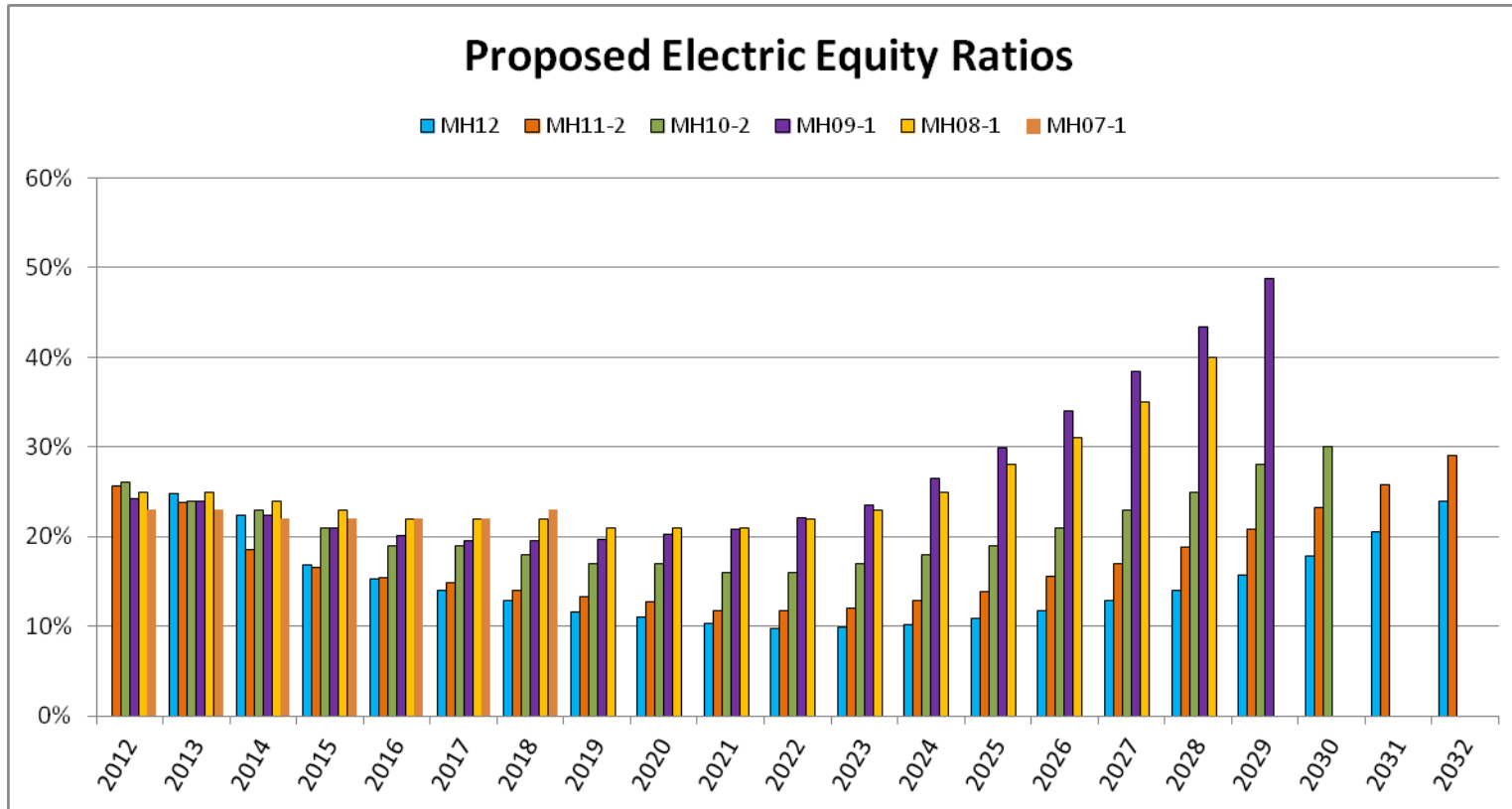
Please see the attached graphs and tables. Please note a 20 year outlook was not prepared in conjunction with IFF07.

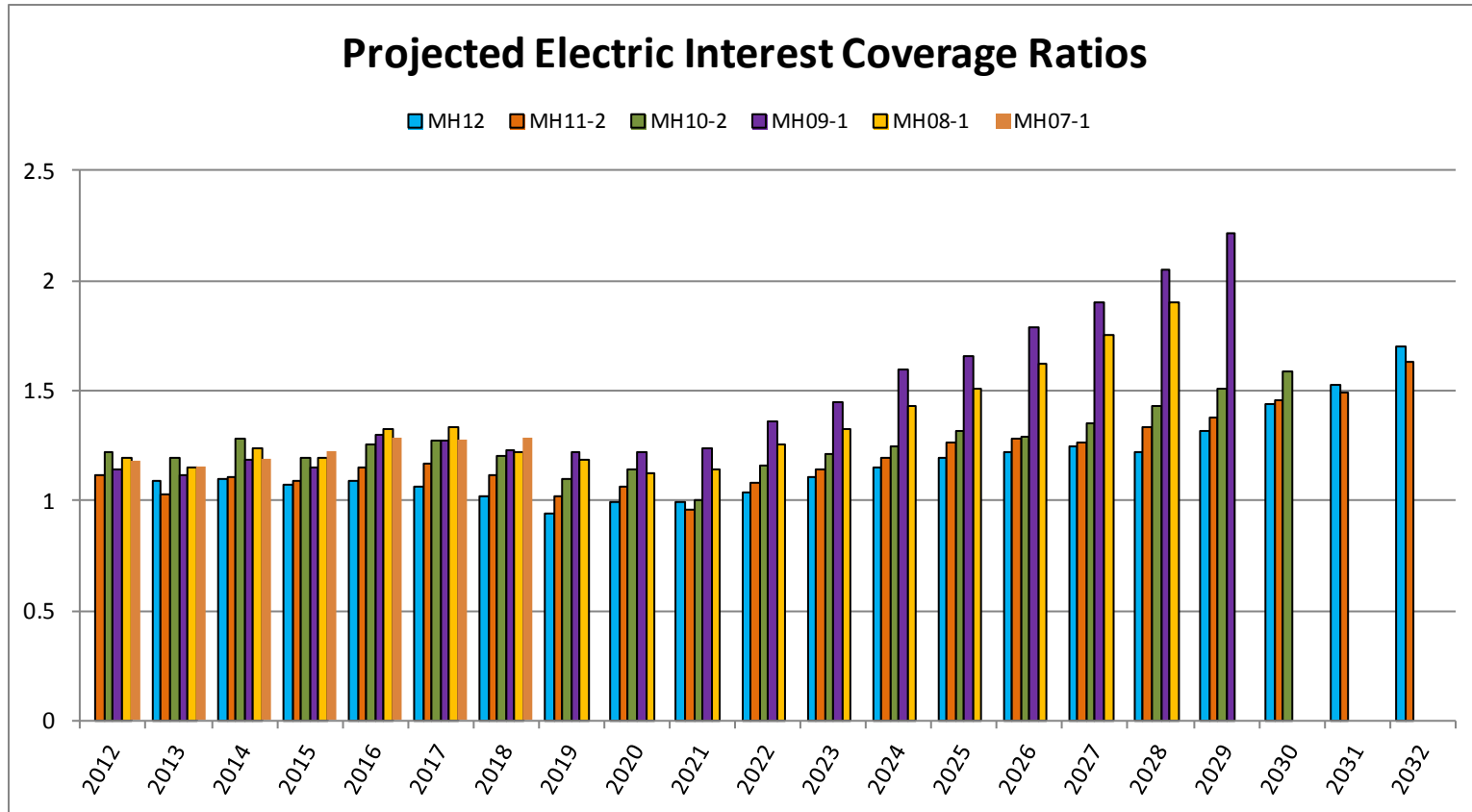
2012/13 & 2013/14 Electric General Rate Application

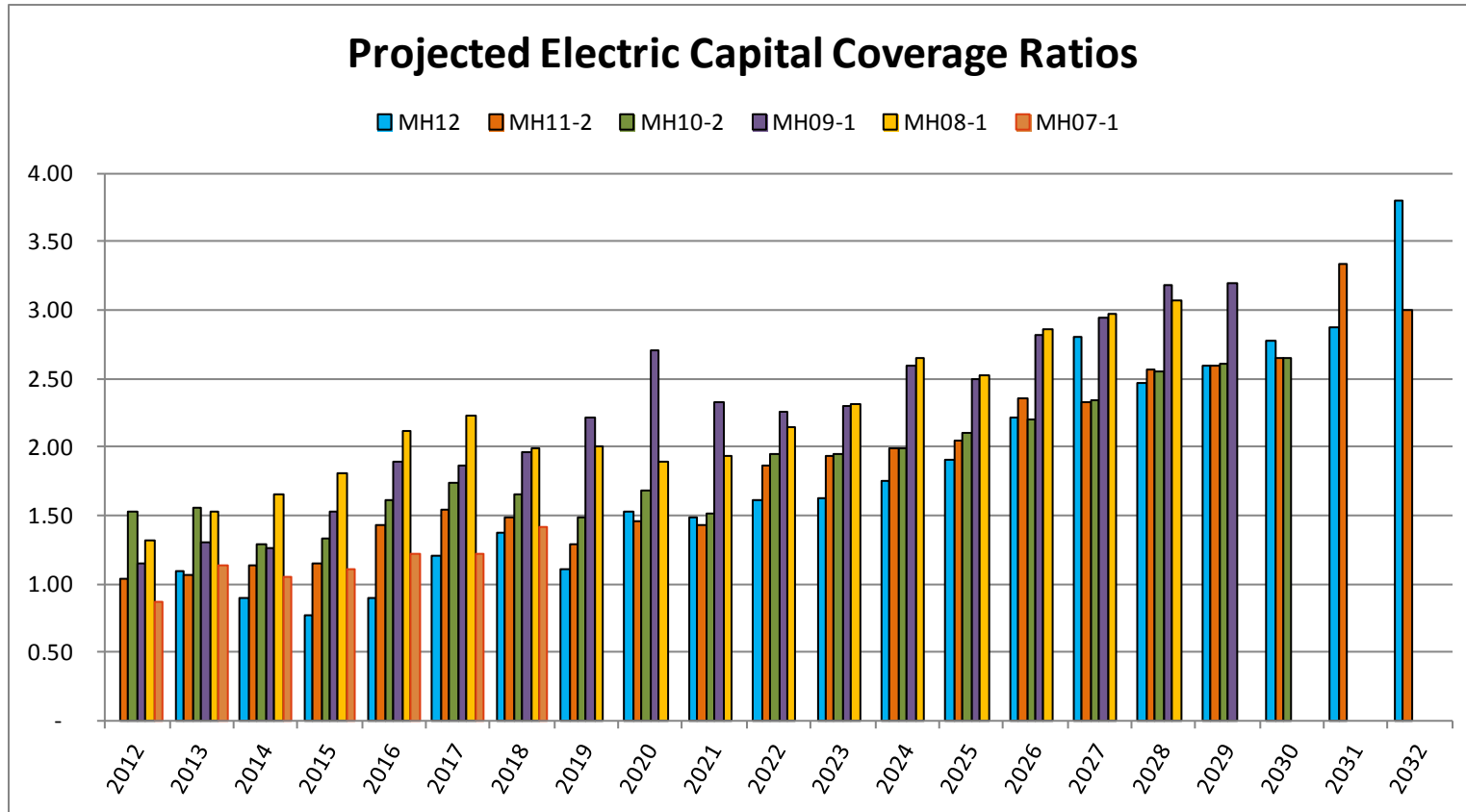
Projected Electric Financial Ratios

	MH12			MH11-2			MH10-2		
	Equity	Interest	Capital	Equity	Interest	Capital	Equity	Interest	Capital
	Ratio	Coverage	Coverage	Ratio	Coverage	Coverage	Ratio	Coverage	Coverage
	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio
2013	25%	1.09	1.09	24%	1.03	1.07	24%	1.20	1.56
2014	22%	1.10	0.89	19%	1.11	1.13	23%	1.28	1.29
2015	17%	1.07	0.77	17%	1.09	1.15	21%	1.19	1.33
2016	15%	1.09	0.90	15%	1.15	1.43	19%	1.26	1.62
2017	14%	1.06	1.21	15%	1.17	1.54	19%	1.28	1.74
2018	13%	1.02	1.37	14%	1.12	1.48	18%	1.20	1.66
2019	12%	0.94	1.11	13%	1.02	1.29	17%	1.09	1.49
2020	11%	0.99	1.53	13%	1.06	1.46	17%	1.14	1.68
2021	10%	0.99	1.49	12%	0.96	1.43	16%	1.00	1.51
2022	10%	1.04	1.61	12%	1.08	1.86	16%	1.16	1.95
2023	10%	1.11	1.63	12%	1.14	1.93	17%	1.22	1.95
2024	10%	1.15	1.75	13%	1.19	1.99	18%	1.25	1.99
2025	11%	1.19	1.91	14%	1.26	2.04	19%	1.32	2.10
2026	12%	1.22	2.21	15%	1.28	2.36	21%	1.29	2.20
2027	13%	1.25	2.80	17%	1.26	2.32	23%	1.35	2.34
2028	14%	1.22	2.47	19%	1.33	2.57	25%	1.43	2.56
2029	16%	1.32	2.60	21%	1.38	2.59	28%	1.51	2.60
2030	18%	1.44	2.77	23%	1.46	2.65	30%	1.59	2.65
2031	20%	1.53	2.88	26%	1.49	3.34	NA	NA	NA
2032	24%	1.70	3.80	29%	1.63	3.00	NA	NA	NA

	MH09-1			MH08-1			MH07-1		
	Equity	Interest	Capital	Equity	Interest	Capital	Equity	Interest	Capital
	Ratio	Coverage	Coverage	Ratio	Coverage	Coverage	Ratio	Coverage	Coverage
	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio	Ratio
2013	24%	1.11	1.31	25%	1.15	1.52	23%	1.15	1.13
2014	22%	1.19	1.25	24%	1.24	1.66	22%	1.19	1.06
2015	21%	1.15	1.53	23%	1.20	1.80	22%	1.22	1.10
2016	20%	1.30	1.89	22%	1.33	2.12	22%	1.29	1.22
2017	20%	1.28	1.87	22%	1.33	2.23	22%	1.28	1.22
2018	20%	1.23	1.96	22%	1.22	1.99	23%	1.28	1.41
2019	20%	1.22	2.21	21%	1.18	2.01	NA	NA	NA
2020	20%	1.22	2.71	21%	1.12	1.89	NA	NA	NA
2021	21%	1.24	2.32	21%	1.14	1.93	NA	NA	NA
2022	22%	1.36	2.26	22%	1.26	2.14	NA	NA	NA
2023	24%	1.45	2.30	23%	1.32	2.32	NA	NA	NA
2024	26%	1.59	2.59	25%	1.43	2.65	NA	NA	NA
2025	30%	1.66	2.50	28%	1.51	2.53	NA	NA	NA
2026	34%	1.79	2.81	31%	1.62	2.86	NA	NA	NA
2027	38%	1.90	2.95	35%	1.75	2.97	NA	NA	NA
2028	43%	2.05	3.19	40%	1.90	3.07	NA	NA	NA
2029	49%	2.22	3.19	NA	NA	NA	NA	NA	NA
2030	NA	NA	NA	NA	NA	NA	NA	NA	NA
2031	NA	NA	NA	NA	NA	NA	NA	NA	NA
2032	NA	NA	NA	NA	NA	NA	NA	NA	NA







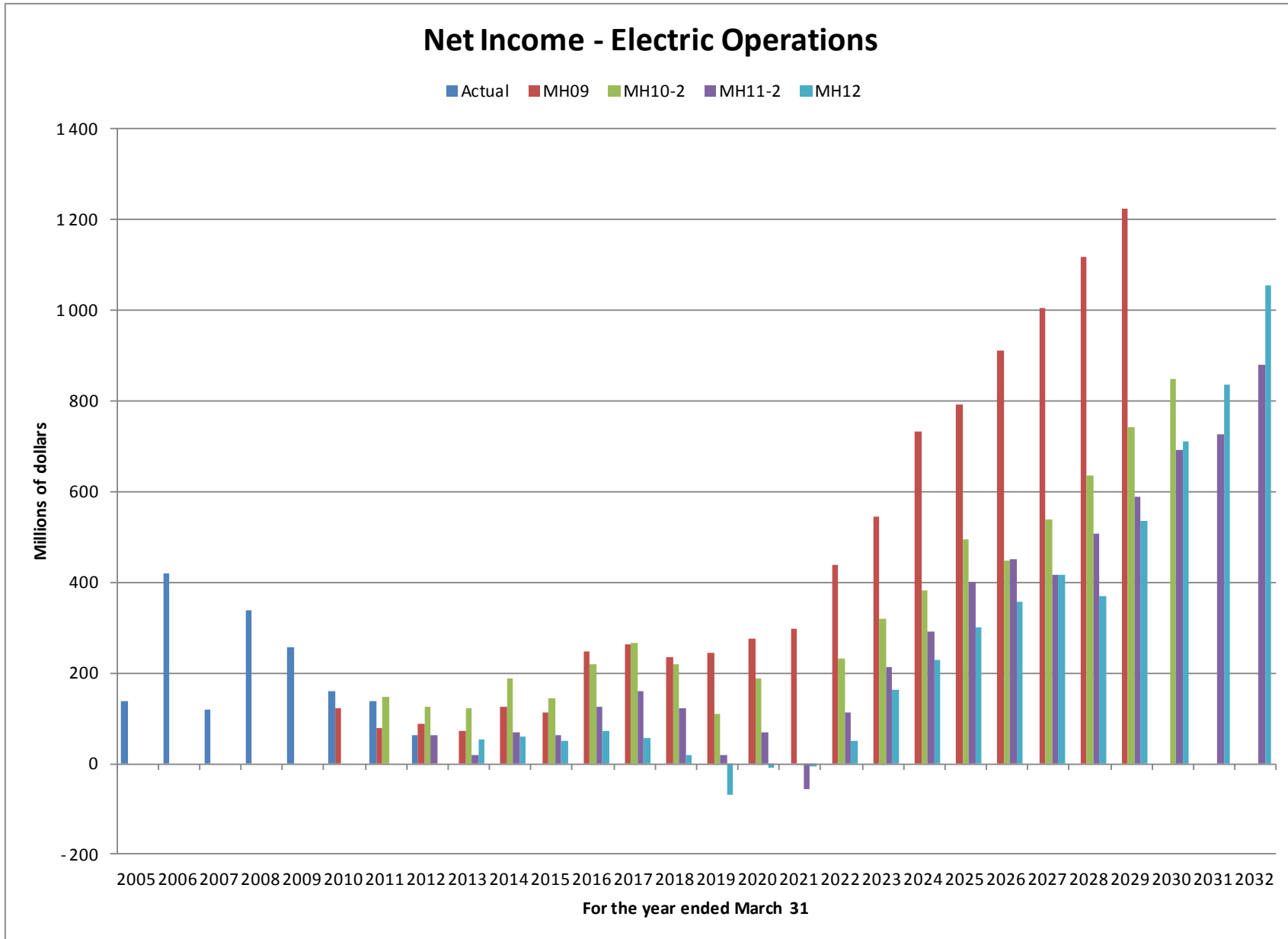
PUB/MH II-46 (Revised Based on IFF12)

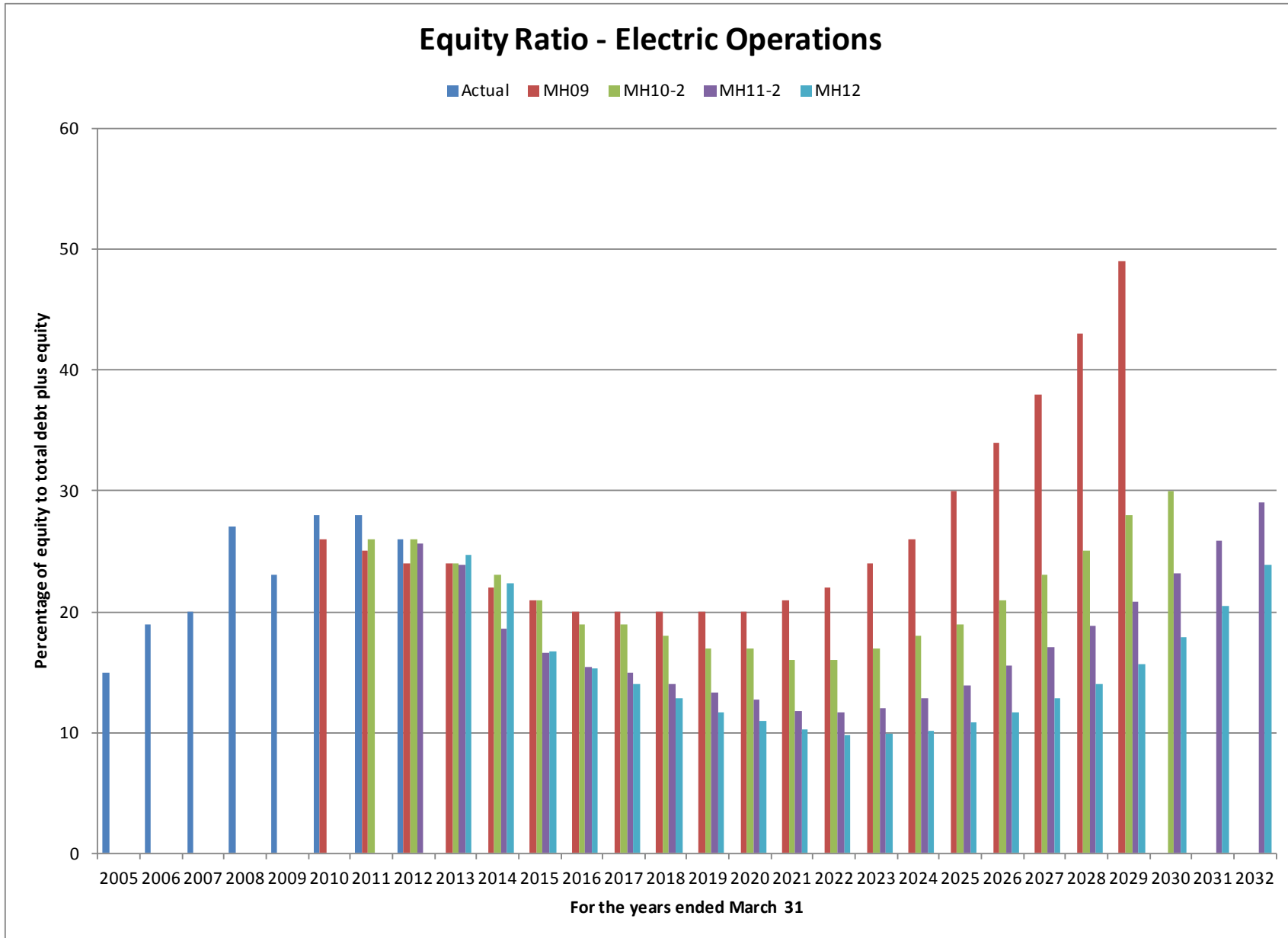
Reference: PUB/MH I-35 (b)

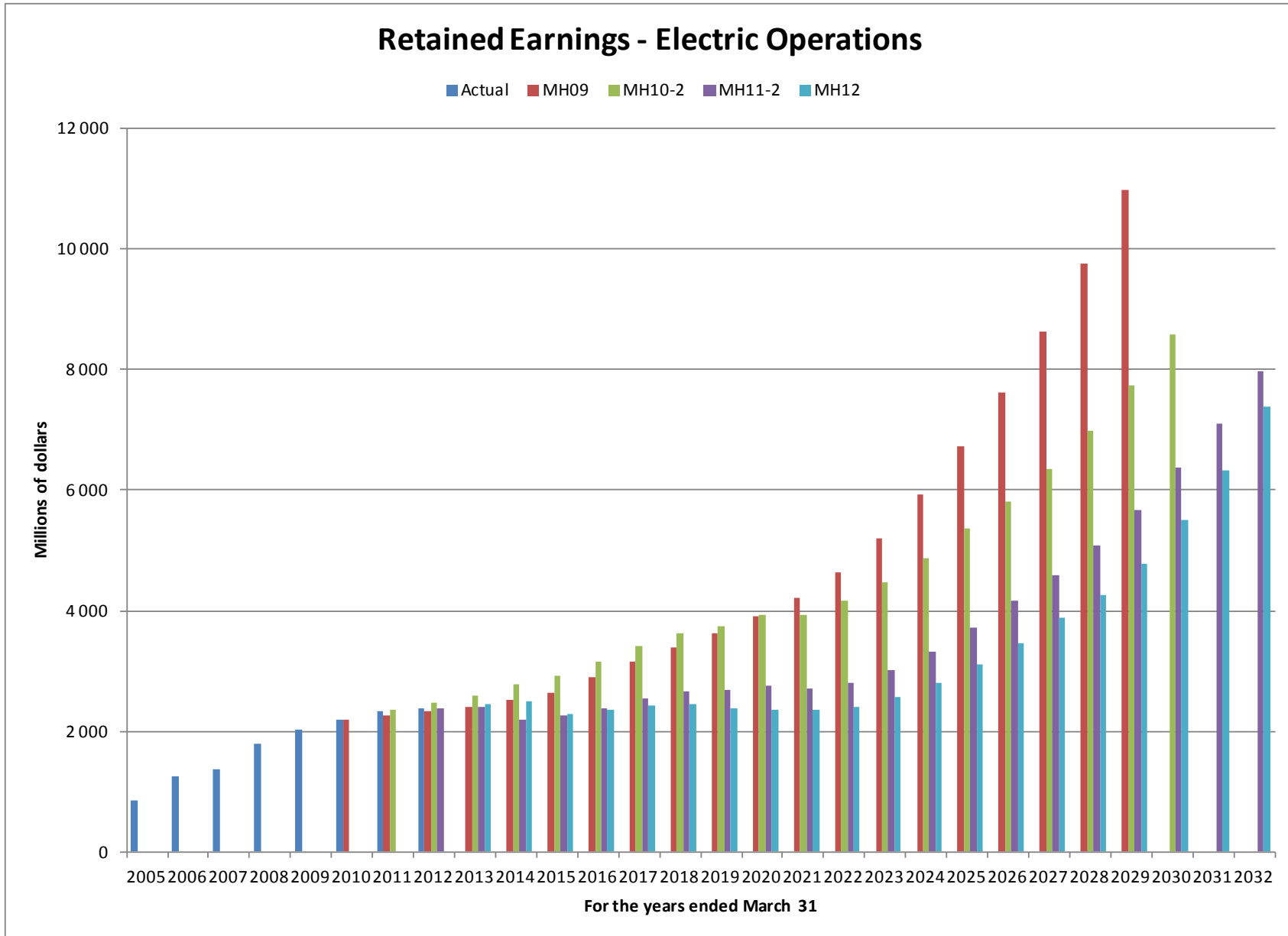
a) Please provide an update of the charts provided including IFF12.

ANSWER:

Please see attached charts and data points.



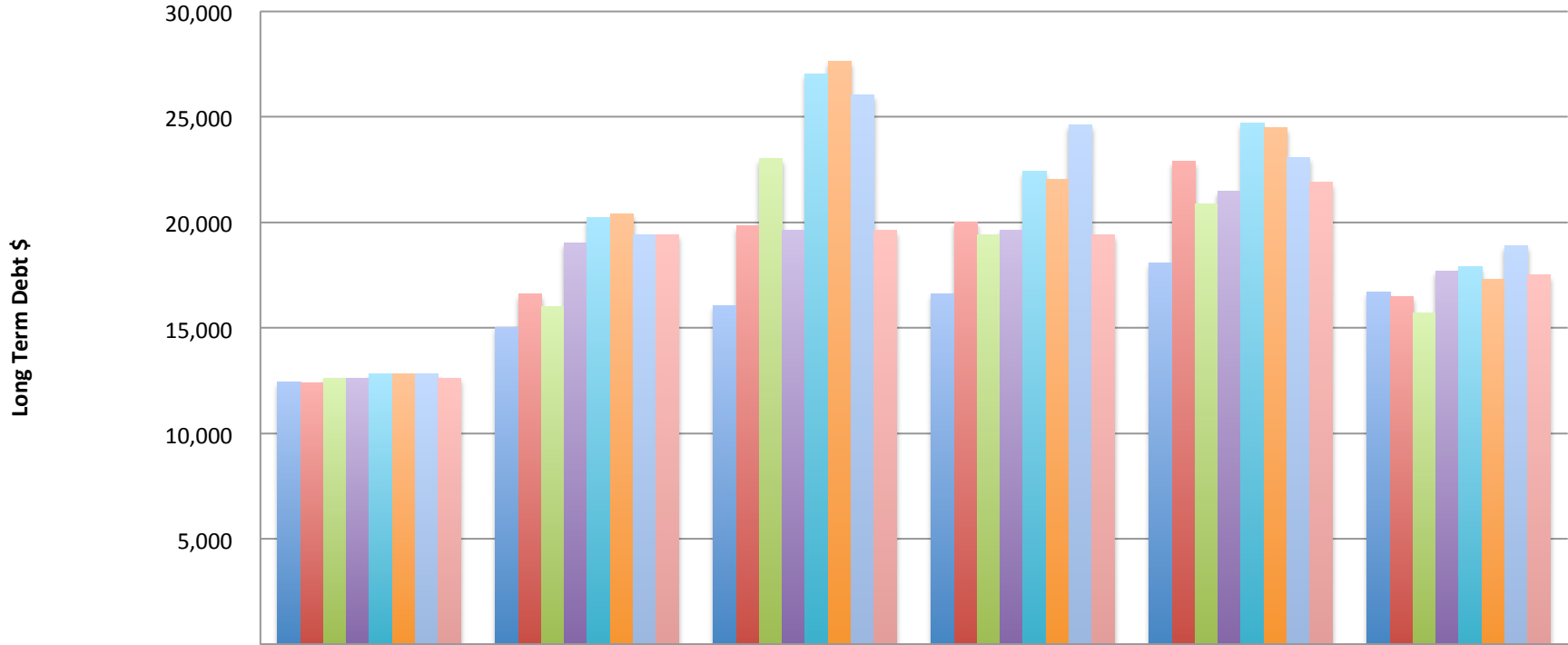




<u>Fiscal</u> <u>Year</u> <u>Ending</u>	<u>Net Income - Electric Operations</u> <u>(\$Millions)</u>					<u>Equity Ratio - Electric Operations</u> <u>(Percentage equity to total debt plus equity)</u>					<u>Retained Earnings - Electric Operations</u> <u>(\$Millions)</u>				
	<u>Actual</u>	<u>MH09</u>	<u>MH10-2</u>	<u>MH11-2</u>	<u>MH12</u>	<u>Actual</u>	<u>MH09</u>	<u>MH10-2</u>	<u>MH11-2</u>	<u>MH12</u>	<u>Actual</u>	<u>MH09</u>	<u>MH10-2</u>	<u>MH11-2</u>	<u>MH12</u>
2005	137					15					845				
2006	420					19					1 262				
2007	119					20					1 378				
2008	337					27					1 784				
2009	258					23					2 028				
2010	160	121				28	26				2 190	2 183			
2011	138	78	149			28	25	26			2 328	2 261	2 355		
2012	62	87	125	64		26	24	26	26		2 390	2 331	2 480	2 391	
2013		72	121	20	53		24	24	24	25		2 403	2 598	2 411	2442
2014		125	187	68	60		22	23	19	22		2 528	2 784	2 203	2502
2015		113	145	62	50		21	21	17	17		2 641	2 930	2 265	2295
2016		248	219	124	73		20	19	15	15		2 889	3 148	2 389	2368
2017		263	267	159	57		20	19	15	14		3 153	3 415	2 548	2425
2018		235	218	121	19		20	18	14	13		3 388	3 634	2 669	2444
2019		244	111	18	(68)		20	17	13	12		3 632	3 744	2 687	2376
2020		276	187	70	(9)		20	17	13	11		3 908	3 931	2 757	2368
2021		299	(1)	(57)	(7)		21	16	12	10		4 207	3 930	2 700	2361
2022		439	233	113	52		22	16	12	10		4 645	4 163	2 814	2413
2023		544	319	213	163		24	17	12	10		5 190	4 482	3 026	2576
2024		732	382	291	228		26	18	13	10		5 922	4 864	3 317	2804
2025		791	493	402	301		30	19	14	11		6 713	5 357	3 719	3105
2026		911	449	450	358		34	21	15	12		7 623	5 806	4 170	3463
2027		1 005	538	415	418		38	23	17	13		8 629	6 344	4 584	3881
2028		1 116	637	507	370		43	25	19	14		9 745	6 981	5 092	4251
2029		1 224	741	588	534		49	28	21	16		10 969	7 722	5 679	4785
2030			848	691	710			30	23	18			8 570	6 370	5495
2031				726	835				26	20				7 096	6330
2032				878	1 054				29	24				7 974	7384

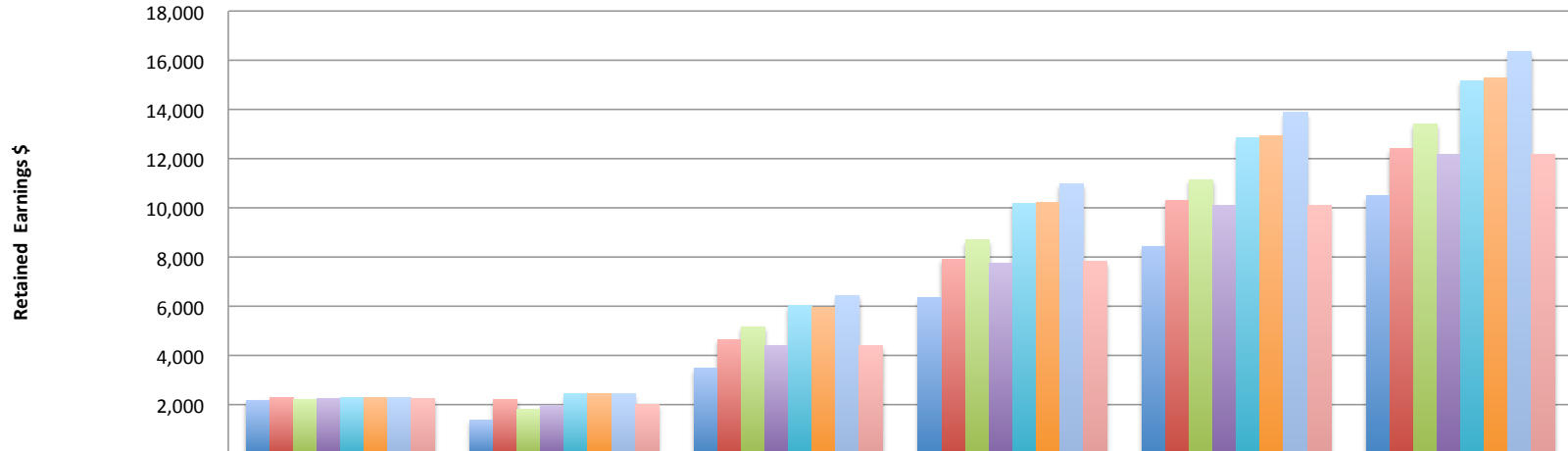
20

Long Term Debt \$ Millions



	2015	2020	2030	2040	2050	2060
All Gas	12,419	15,038	16,068	16,629	18,090	16,702
K22 Gas	12,402	16,597	19,827	20,029	22,890	16,502
Gas C26	12,602	15,997	23,027	19,429	20,890	15,702
K19 Gas 250mw	12,602	19,009	19,640	19,629	21,490	17,702
K19 C25 250mw	12,813	20,222	27,052	22,429	24,690	17,902
K19 Exp C25 750mw	12,802	20,404	27,634	22,029	24,490	17,302
K19 Imp C31 750mw	12,802	19,404	26,034	24,629	23,090	18,902
K19 Imp Gas 750mw	12,602	19,408	19,639	19,429	21,890	17,502

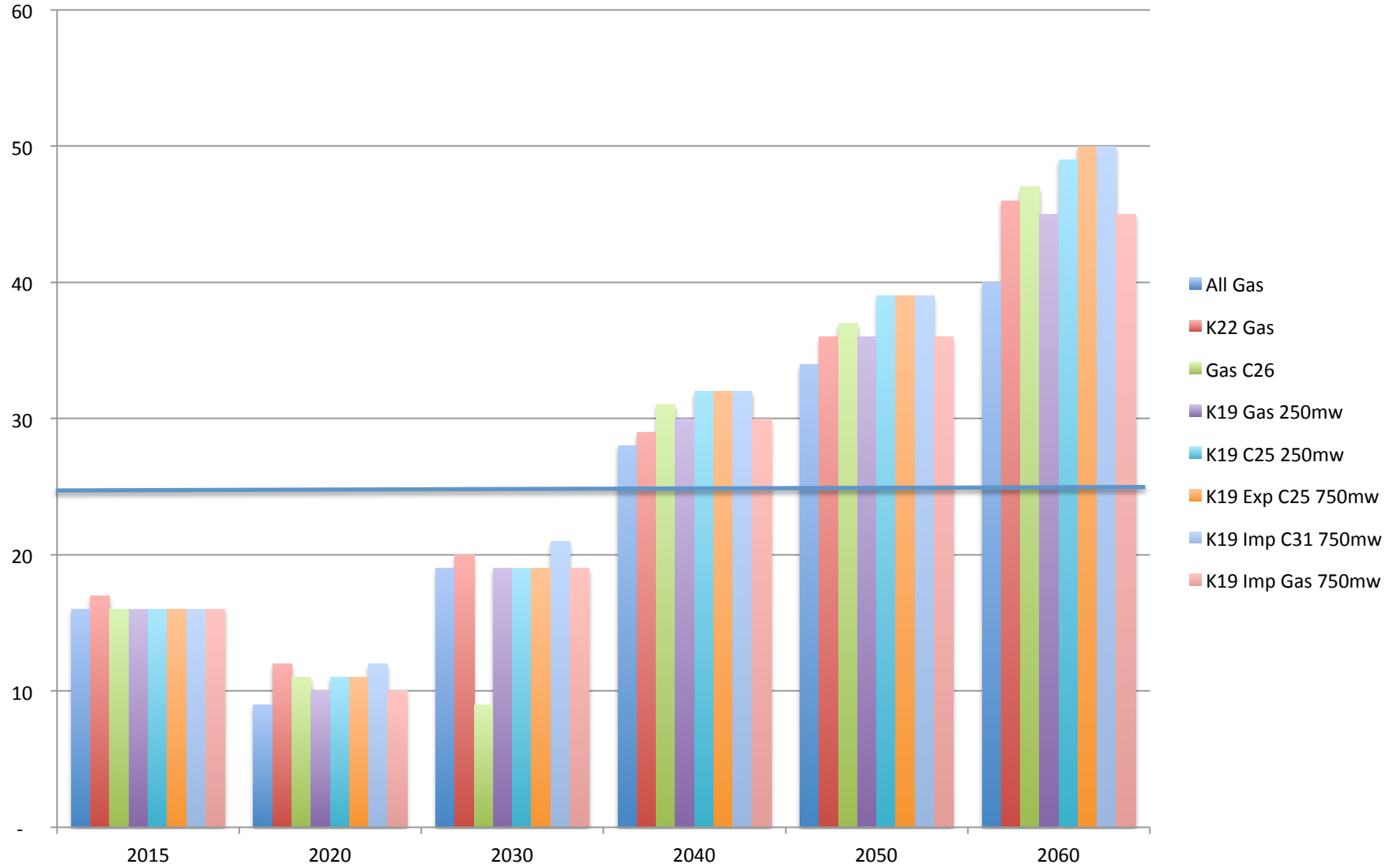
Retained Earnings - Alternative Plans



	2015	2020	2030	2040	2050	2060
All Gas	2,183	1,366	3,493	6,340	8,432	10,481
K22 Gas	2,289	2,193	4,648	7,916	10,316	12,394
Gas C26	2,216	1,795	5,162	8,688	11,141	13,399
K19 Gas 250mw	2,263	1,977	4,406	7,750	10,082	12,164
K19 C25 250mw	2,301	2,451	6,045	10,168	12,832	15,161
K19 Exp C25 750mw	2,297	2,453	5,970	10,228	12,933	15,266
K19 Imp C31 750mw	2,297	2,431	6,425	10,986	13,873	16,338
K19 Imp Gas 750mw	2,264	2,024	4,380	7,807	10,104	12,167

Source: PUB/MH I-204

Equity Ratio - Alternative Plans



21

1 **REFERENCE: Chapter 11: Financial Evaluation of Development Plans; Section: 11.4;**
2 **Page No.: 18; Figure 11.7**

3

4 **QUESTION:**

5 Please file a table of data points for Figure 11.7 based on the reference/expected retained
6 earnings balance.

7

8 **RESPONSE:**

9 The following table provides the retained earnings corresponding to the P50 points on Figure
10 11.7 (the black bar within each box for that development plan and for that fiscal year).

11

DevPlan \ Fyr -->	2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
All Gas	2,183	1,366	1,672	3,493	5,395	6,340	7,374	8,432	9,475	10,481
K22 Gas	2,289	2,193	2,854	4,648	6,758	7,916	9,113	10,316	11,435	12,394
Gas C26	2,216	1,795	2,724	5,162	7,482	8,688	9,921	11,141	12,321	13,399
K19 Gas 250mw	2,263	1,977	2,422	4,406	6,634	7,750	8,927	10,082	11,169	12,164
K19 C25 250mw	2,301	2,451	3,605	6,045	8,769	10,168	11,528	12,832	14,063	15,161
K19 Exp C25 750mw	2,297	2,453	3,357	5,970	8,820	10,228	11,607	12,933	14,175	15,266
K19 Imp C31 750mw	2,297	2,431	3,254	6,425	9,454	10,986	12,467	13,873	15,171	16,338
K19 Imp Gas 750mw	2,264	2,024	2,190	4,380	6,686	7,807	8,960	10,104	11,175	12,167

12

1 **REFERENCE: Chapter 11: Financial Evaluation of Development Plans; Section: 11.3;**
2 **Page No.: 13**

3

4 **QUESTION:**

5 Please provide a schedule that sets out Manitoba Hydro's historical borrowing for each of the
6 last 20 years.

7

8 **RESPONSE:**

9 The following table shows the historical borrowings (net of long term debt retirements and
10 sinking fund transactions) as reported in the Consolidated Statement of Cash Flows within the
11 Manitoba Hydro-Electric Board Annual Reports:

12

<u>Fiscal Year</u>	<u>(millions)</u>
2013	528
2012	627
2011	562
2010	614
2009	301
2008	391
2007	127
2006	(26)
2005	136
2004	647
2003	79
2002	(27)
2001	51
2000	262
1999	(66)
1998	(54)
1997	178
1996	68
1995	(283)
1994	388

1 **REFERENCE: Chapter 11: Financial Evaluation of Development Plans; Section: 11.3;**
2 **Page No.: 13**

3

4 **QUESTION:**

5 Please provide a schedule that sets out the required annual borrowing over the study for each
6 of the eight plan's Reference cases.

7

8 **RESPONSE:**

9 Please see the attached table that shows the projected borrowings (net of long term debt
10 retirements and sinking fund transactions) for the values corresponding with
11 P10/P25/P50/P75/P90.

Projected Borrowings

(net of long term debt retirements and sinking fund transactions)

Fiscal Year Ending	Development Plan	P10	P25	P50	P75	P90
2014	All Gas	1,340	1,540	1,540	1,540	1,540
	K22 Gas	1,340	1,540	1,540	1,540	1,540
	Gas C26	1,340	1,540	1,540	1,540	1,540
	K19 Gas 250mw	1,340	1,540	1,540	1,540	1,540
	K19 C25 250mw	1,340	1,540	1,540	1,540	1,540
	K19 Exp C25 750mw	1,340	1,540	1,540	1,540	1,540
	K19 Imp C31 750mw	1,340	1,540	1,540	1,540	1,540
	K19 Imp Gas 750mw	1,340	1,540	1,540	1,540	1,540
2017	All Gas	653	659	665	844	858
	K22 Gas	650	659	844	850	858
	Gas C26	664	844	856	858	861
	K19 Gas 250mw	1,438	1,447	1,458	1,646	1,652
	K19 C25 250mw	1,491	1,637	1,652	1,837	1,850
	K19 Exp C25 750mw	1,542	1,641	1,652	1,837	1,850
	K19 Imp C31 750mw	1,444	1,452	1,596	1,638	1,651
	K19 Imp Gas 750mw	1,439	1,450	1,457	1,646	1,652
2020	All Gas	(11)	11	12	179	179
	K22 Gas	813	813	980	981	1,014
	Gas C26	212	254	395	413	462
	K19 Gas 250mw	634	651	836	993	995
	K19 C25 250mw	849	1,033	1,036	1,233	1,400
	K19 Exp C25 750mw	1,035	1,048	1,232	1,246	1,402
	K19 Imp C31 750mw	832	835	851	1,000	1,087
	K19 Imp Gas 750mw	651	833	836	995	1,036
2023	All Gas	(53)	98	115	115	135
	K22 Gas	512	683	690	876	882
	Gas C26	1,301	1,329	1,529	1,697	1,732
	K19 Gas 250mw	65	68	104	248	256
	K19 C25 250mw	1,072	1,240	1,421	1,441	1,815
	K19 Exp C25 750mw	1,244	1,316	1,437	1,624	1,660
	K19 Imp C31 750mw	63	69	104	248	263
	K19 Imp Gas 750mw	(128)	47	68	243	260
2026	All Gas	(138)	(135)	(127)	63	67
	K22 Gas	(266)	(262)	(78)	(72)	86
	Gas C26	544	703	896	1,087	1,093
	K19 Gas 250mw	(387)	(383)	(368)	(188)	(91)
	K19 C25 250mw	298	472	482	858	1,034
	K19 Exp C25 750mw	386	478	661	855	1,044
	K19 Imp C31 750mw	38	209	220	224	329
	K19 Imp Gas 750mw	(379)	(378)	(358)	(186)	(141)
2029	All Gas	27	179	209	376	401
	K22 Gas	(53)	(48)	112	158	319
	Gas C26	(128)	(98)	(88)	59	72
	K19 Gas 250mw	(76)	(53)	135	151	310
	K19 C25 250mw	(369)	(353)	(223)	(182)	(150)
	K19 Exp C25 750mw	(379)	(344)	(227)	(181)	(158)
	K19 Imp C31 750mw	1,213	1,324	1,514	1,860	1,897
	K19 Imp Gas 750mw	(299)	(272)	(261)	(238)	(90)

Projected Borrowings

(net of long term debt retirements and sinking fund transactions)

Fiscal Year Ending	Development Plan	P10	P25	P50	P75	P90
2032	All Gas	(240)	(232)	(199)	(192)	(115)
	K22 Gas	(300)	(262)	(253)	(105)	(64)
	Gas C26	(358)	(346)	(304)	(292)	(266)
	K19 Gas 250mw	(286)	(128)	(79)	(61)	(30)
	K19 C25 250mw	(447)	(406)	(363)	(324)	(239)
	K19 Exp C25 750mw	(456)	(433)	(390)	(367)	(338)
	K19 Imp C31 750mw	(149)	(138)	(12)	34	76
	K19 Imp Gas 750mw	(300)	(262)	(85)	(50)	84
2035	All Gas	66	80	262	281	409
	K22 Gas	(568)	(501)	(368)	(291)	(239)
	Gas C26	(337)	(296)	(257)	(239)	(124)
	K19 Gas 250mw	(267)	(235)	(169)	(137)	(98)
	K19 C25 250mw	(820)	(537)	(390)	(333)	(315)
	K19 Exp C25 750mw	(1,032)	(817)	(447)	(347)	(306)
	K19 Imp C31 750mw	(629)	(572)	(437)	(376)	(344)
	K19 Imp Gas 750mw	(249)	(216)	(161)	(107)	(70)
2038	All Gas	123	248	321	331	389
	K22 Gas	(38)	16	30	51	239
	Gas C26	(88)	(24)	3	79	195
	K19 Gas 250mw	(11)	33	89	172	243
	K19 C25 250mw	(400)	(364)	(269)	(244)	(198)
	K19 Exp C25 750mw	(487)	(406)	(291)	(227)	(221)
	K19 Imp C31 750mw	(542)	(487)	(382)	(312)	(266)
	K19 Imp Gas 750mw	138	237	316	384	442
2041	All Gas	(85)	59	100	156	228
	K22 Gas	151	197	227	385	508
	Gas C26	111	253	288	356	425
	K19 Gas 250mw	190	200	243	435	514
	K19 C25 250mw	(222)	(214)	(178)	(100)	(70)
	K19 Exp C25 750mw	(19)	(10)	7	103	287
	K19 Imp C31 750mw	(178)	(25)	(5)	99	121
	K19 Imp Gas 750mw	(203)	(175)	(85)	(1)	71
2044	All Gas	112	193	334	421	603
	K22 Gas	(53)	84	224	286	402
	Gas C26	(151)	(115)	(100)	(32)	157
	K19 Gas 250mw	22	99	224	418	534
	K19 C25 250mw	(256)	(211)	(152)	(25)	51
	K19 Exp C25 750mw	(286)	(214)	(147)	(16)	25
	K19 Imp C31 750mw	(287)	(237)	(192)	(77)	2
	K19 Imp Gas 750mw	51	190	238	420	652
2047	All Gas	(125)	(75)	(24)	123	164
	K22 Gas	(270)	(225)	(198)	(145)	(15)
	Gas C26	(406)	(323)	(236)	(184)	(151)
	K19 Gas 250mw	(368)	(257)	(173)	(12)	4
	K19 C25 250mw	(244)	(195)	(97)	(24)	(14)
	K19 Exp C25 750mw	(327)	(195)	(75)	(14)	5
	K19 Imp C31 750mw	(491)	(444)	(432)	(373)	(269)
	K19 Imp Gas 750mw	(255)	(209)	(187)	(29)	14

Projected Borrowings

(net of long term debt retirements and sinking fund transactions)

Fiscal Year Ending	Development Plan	P10	P25	P50	P75	P90
2050	All Gas	(495)	(460)	(267)	(149)	(29)
	K22 Gas	(343)	(295)	(188)	(70)	(28)
	Gas C26	(537)	(328)	(274)	(184)	(72)
	K19 Gas 250mw	(535)	(320)	(248)	(120)	(26)
	K19 C25 250mw	(353)	(339)	(299)	(219)	(114)
	K19 Exp C25 750mw	(468)	(306)	(276)	(215)	(70)
	K19 Imp C31 750mw	(1,102)	(897)	(791)	(674)	(597)
	K19 Imp Gas 750mw	(305)	(282)	(264)	(176)	(59)
2053	All Gas	(248)	(174)	(78)	(22)	42
	K22 Gas	(642)	(296)	(221)	(151)	13
	Gas C26	(268)	(256)	(118)	(40)	(10)
	K19 Gas 250mw	(286)	(222)	(213)	(152)	22
	K19 C25 250mw	(662)	(585)	(290)	(258)	(197)
	K19 Exp C25 750mw	(650)	(415)	(285)	(266)	(207)
	K19 Imp C31 750mw	(835)	(517)	(471)	(430)	(310)
	K19 Imp Gas 750mw	(376)	(258)	(227)	(173)	(155)
2056	All Gas	(439)	(393)	(265)	(176)	(61)
	K22 Gas	(622)	(476)	(382)	(236)	(120)
	Gas C26	(507)	(442)	(391)	(275)	(232)
	K19 Gas 250mw	(525)	(419)	(303)	(201)	(156)
	K19 C25 250mw	(1,588)	(1,047)	(684)	(270)	(165)
	K19 Exp C25 750mw	(1,372)	(1,050)	(717)	(276)	(134)
	K19 Imp C31 750mw	(605)	(543)	(410)	(228)	(199)
	K19 Imp Gas 750mw	(395)	(332)	(201)	(80)	105
2059	All Gas	(153)	(61)	15	200	398
	K22 Gas	(304)	(141)	(25)	154	239
	Gas C26	(607)	(489)	(434)	(411)	(353)
	K19 Gas 250mw	(278)	(201)	(76)	57	250
	K19 C25 250mw	(572)	(514)	(437)	(394)	(218)
	K19 Exp C25 750mw	(611)	(526)	(442)	(236)	(216)
	K19 Imp C31 750mw	(778)	(659)	(500)	(457)	(365)
	K19 Imp Gas 750mw	(514)	(439)	(371)	(257)	(178)
2062	All Gas	(626)	(560)	(411)	(383)	(230)
	K22 Gas	(90)	107	220	666	1,138
	Gas C26	(636)	(616)	(568)	(418)	(340)
	K19 Gas 250mw	(300)	(239)	(50)	204	219
	K19 C25 250mw	(629)	(492)	(440)	(305)	(200)
	K19 Exp C25 750mw	(585)	(549)	(442)	(203)	(122)
	K19 Imp C31 750mw	(302)	(171)	(10)	76	214
	K19 Imp Gas 750mw	(286)	(199)	(55)	209	353

1 **REFERENCE: Chapter 11: Financial Evaluation of Development Plans; Section: 11.3;**
2 **Page No.: 13**

3

4 **QUESTION:**

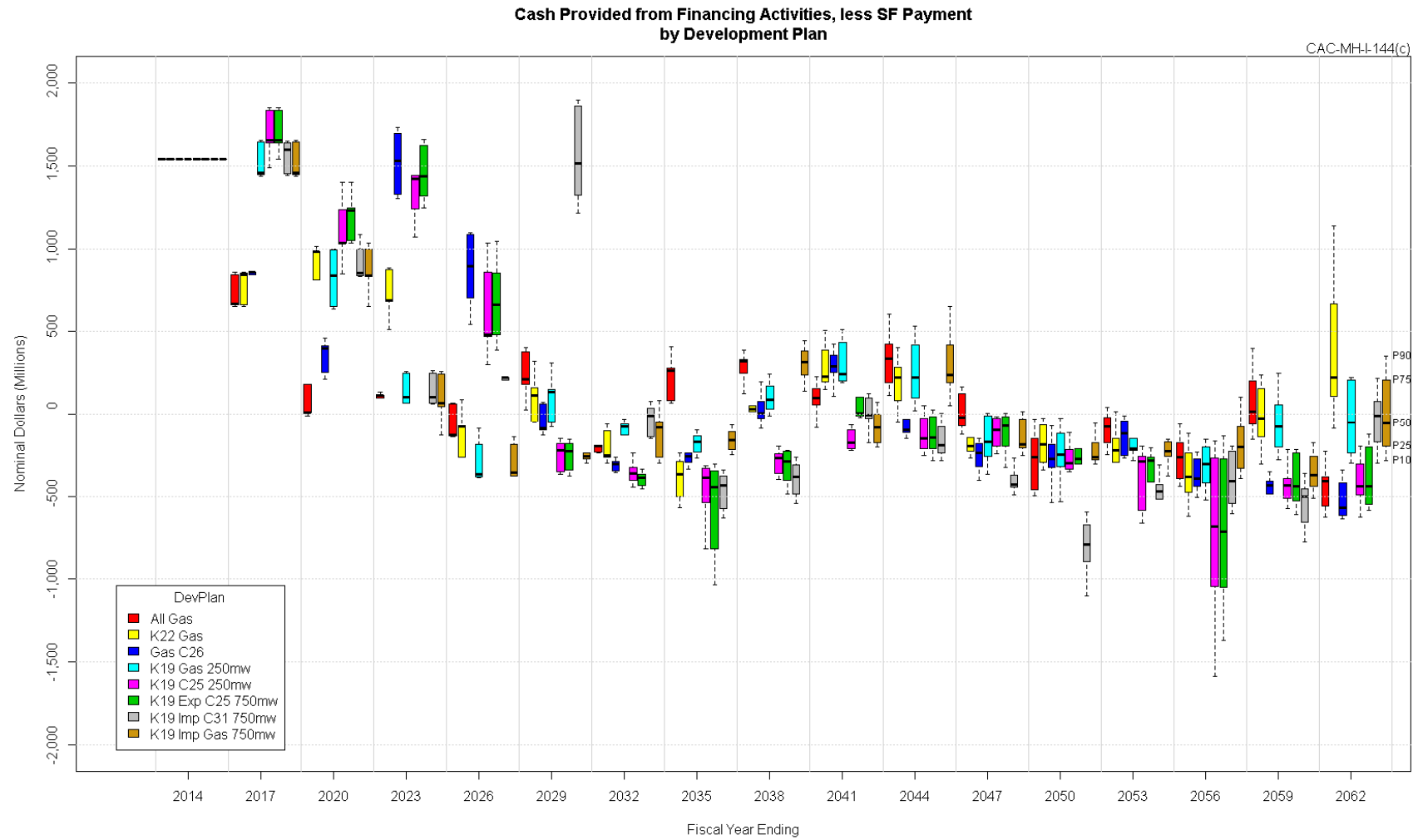
5 Please provide a graphic similar to Figure 11.4 but based on annual borrowing as opposed to
6 net debt.

7

8 **RESPONSE:**

9 The following plot provides the Figure 11.4 with projected borrowings (net of long term debt
10 retirements and sinking fund transactions) for the values corresponding with
11 P10/P25/P50/P75/P90.

1



2

22

1 **REFERENCE: Chapter 11: Financial Evaluation of Development Plans CAC/MH I-108**
2 **2012 GRA**

3

4 **PREAMBLE:** “It is expected that Manitoba Hydro’s debt will continue to be viewed to
5 be self-supporting by credit rating agencies during the “decade of investment” (barring
6 other unforeseen circumstances). Therefore, it is not anticipated that there will be any
7 negative impact the cost of debt to Manitoba Hydro.”

8

9 **QUESTION:**

10 Please elaborate on what Manitoba Hydro may consider as unforeseen circumstances.

11

12 **RESPONSE:**

13 Although Manitoba Hydro has a comprehensive understanding of its business risks, the phrase
14 “barring other unforeseen circumstances” was simply indicating the inherent uncertainty
15 associated with future-oriented projections and that unpredictable circumstances may arise.

16

17 It is still expected that Manitoba Hydro’s debt will continue to be viewed to be self-supporting
18 by credit rating agencies. There are a multitude of potential factors that may impact the credit
19 ratings and the cost of debt to Manitoba Hydro within the financial markets. For example, the
20 credit rating agencies identify numerous rating considerations and factors within their reports
21 (for the credit rating reports for the Manitoba Hydro-Electric Board and the Province of
22 Manitoba, please see the response to PUB/MH I-085(a)-(b)). The causal role, if any, associated
23 with Manitoba Hydro’s capital investment program upon the future credit ratings and the cost
24 of debt is indeterminable. Manitoba Hydro’s self-supporting status is also discussed within the
25 credit rating agency reports. For example, the credit rating report from Moody’s Investors
26 Service on the Manitoba Hydro-Electric Board dated September 23, 2013 stated the following
27 on page 2:

1 “Given the uptick in capex and corresponding debt, financial metrics are predicted to fall
2 below targets in the next three fiscal years. The equity ratio, in particular, will be
3 challenged and not likely to return to target until FY2032. The weakening financial
4 profile restricts financial flexibility and adds risk in case of unexpected events such as
5 low water levels, cost overruns and construction delays, given the nature of a
6 hydroelectric plant's long construction cycle before cash generating begins. However,
7 we view Manitoba Hydro as being capable of prudently managing debt and mitigating
8 such risks by seeking rate increases and curtailing capital spending to continue as a self-
9 supporting corporation.”

23

Rating Report**Report Date:**

September 16, 2013

Previous Report:

October 5, 2012

The Manitoba Hydro-Electric Board

Analysts**Elizabeth Staltari**

+1 416 597 7320

estaltari@dbrs.com

James Jung, CFA,**FRM, CMA**

+1 416 597 7577

jjung@dbrs.com

Andy Thi

+1 416 597 7337

athi@dbrs.com

Chenny Long

+1 416 597 7451

clong@dbrs.com

The Utility

The Manitoba Hydro-Electric Board, a wholly owned Crown corporation of the Province of Manitoba, is a vertically integrated electric utility that provides generation, transmission and distribution of electricity to approximately 548,774 customers throughout Manitoba and natural gas service to approximately 269,786 customers via its subsidiary, Centra Gas Manitoba Inc. The Utility also exports electricity to more than 26 electric utilities through its participation in four wholesale markets in Canada and the midwestern United States.

Short-Term Promissory Notes Programme

\$500 million

Ratings

Debt	Rating	Trend
Short-Term Obligations	R-1 (middle)	Stable
Long-Term Obligations	A (high)	Stable

Note: These Obligations are based on the implicit support of the Province of Manitoba and the unconditional guarantee provided by the Province on Manitoba Hydro's third-party debt, and thus reflect the Province's debt ratings.

Rating Update

The debt ratings of The Manitoba Hydro-Electric Board (Manitoba Hydro or the Utility) are a flow-through of the ratings of the Province of Manitoba (the Province; see DBRS's report on the Province dated September 4, 2012), based on (1) the implicit support of the Province, as Manitoba Hydro is for all purposes an agent of the Province, and (2) the unconditional guarantee provided by the Province on the majority of the Utility's outstanding third-party obligations.

Manitoba Hydro has been undergoing a substantial capital expenditure (capex) program, with approximately \$1 billion in annual capital spending over the past five years, well above historic depreciation levels. Increased capex is mainly used to refurbish its aging infrastructure (44% of F2013 electricity capex) and to develop new hydro generation and transmission facilities (56% of F2013 electricity capex). The utility is expected to continue spending on growth projects over the medium term, including the Bipole III transmission project and the Keeyask and Conawapa generation stations. In F2013, the Utility added 200 megawatts of generating capacity as the Wuskwatim Generation Station entered commercial service, with the final unit entering service in October 2012. Continued significant capex levels are expected to lead to an increase in debt levels, which will likely cause credit metrics to decline moderately over the medium term.

The Utility generated a free cash flow deficit of \$448 million in F2013, which was funded with debt. This trend is expected to continue over the next several years; however, DBRS expects free cash flow deficits going forward will remain manageable. Net income for F2013 increased to \$92 million, from \$61 million, as the Utility experienced higher domestic electricity sales as a result of increases in electricity rates and colder than normal weather. In addition, revenues generated from electricity sales outside of the province (extraprovincial revenues) decreased in F2013 as a result of current economic conditions and low natural gas prices.

Rating Considerations**Strengths**

- (1) Debt is a direct obligation of the Province
- (2) Low-cost hydro-based generation
- (3) Access to favourable export markets

Challenges

- (1) Hydrology risk
- (2) High leverage
- (3) High level of planned capital expenditure

Financial Information

Manitoba Hydro-Electric Board (CA\$ millions where applicable)	CGAAP	CGAAP	CGAAP	CGAAP	CGAAP
	2013	2012	2011	2010	2009
EBIT gross interest coverage	0.89	0.80	1.00	1.01	1.35
Total debt in capital structure (1)	78.5%	77.9%	77.2%	77.0%	78.3%
Cash flow/Total debt	6.1%	6.3%	7.1%	7.6%	9.0%
Net income before non-recurring items	92	61	150	163	266
Cash flow from operations	589	567	595	589	688

(1) Adjusted for other comprehensive income.

**The Manitoba
Hydro-Electric
Board****Report Date:**

September 16, 2013

Rating Considerations Details**Strengths**

(1) **Debt is a direct obligation of the Province.** Manitoba Hydro is an agent of the Crown and its debt securities are almost entirely held or guaranteed by the Province. Therefore, the ratings assigned to Manitoba Hydro's obligations are a flow-through of ratings assigned to the Province.

(2) **Low-cost hydro-based generation.** Low-cost hydroelectric-based generating capacity results in one of the lowest variable cost structures in North America, which has enabled Manitoba Hydro to provide electricity to its domestic customers at one of the lowest rates on the continent. This gives the Utility the flexibility to increase rates in the future, especially in light of the substantially heightened future capital expenditure requirements.

(3) **Access to favourable export markets.** Manitoba Hydro's interconnections (approximately 43% of installed capacity), with firm export transfer capability of 2,100 megawatts (MW) to the United States, 150 MW to Saskatchewan and 200 MW to Ontario, along with additional non-firm transfer capability, provide the Utility with access to favourable export markets. The interconnections also provide a secure supply of electricity for domestic customers during times of poor hydrology.

Challenges

(1) **Hydrology risk.** Given that approximately 92% of Manitoba Hydro's installed generating capacity is hydroelectricity-based, earnings and cash flows are highly sensitive to hydrological conditions. The Utility is also exposed to significant price and volume risk, due to its export commitments under the fixed price-to-volume contract, which may require the Utility to procure power supply from import markets if hydrological conditions are unfavourable.

(2) **High leverage.** Manitoba Hydro's leverage remains one of the highest among government-owned integrated utilities in Canada, limiting its financial flexibility going forward.

(3) **High level of planned capital expenditures.** The need to refurbish its aging infrastructure, combined with the aggressive development of new hydro generation and transmission facilities, will require Manitoba Hydro to deploy significant capital into its electricity infrastructure over the medium term. The Utility has forecasted that capital expenditures over the medium term should average approximately \$2 billion per year, which will pressure the already-high debt levels.

**The Manitoba
Hydro-Electric
Board****Report Date:**

September 16, 2013

Major Projects (Under Construction and Planned)

- **Keeyask Generation Station:** This proposed project includes the development of a 695 MW generation station on the Nelson River. The project is currently under regulatory review and construction is expected to commence in June of 2014.
- **Conawapa Generation Station:** This project is currently in the formal planning process and an Environment Impact Statement is expected to be completed and ready to file with regulators by the end of 2014. The proposed project includes the development of a 1,485 MW generation station on the Lower Nelson River. The earliest in-service date is expected for 2025-2026.
- **Bipole III:** This project involves the construction of a 500-kilovolt high voltage direct current transmission line, along with new converter stations. The Environmental Act License for the project was received on August 14, 2013, and work continues on finalizing all regulatory requirements prior to commencement of construction.

Project	Estimated Cost (\$ millions)	Planned Construction Start Date	In-Service Target Date
695 MW Keeyask Generation Station	6,200	2014	2019/2020
1,485 MW Conawapa Generation Station	10,200	2016/2017	2025/2026
Bipole III	3,300	2013/2014	2017/2018

**The Manitoba
Hydro-Electric
Board****Report Date:**

September 16, 2013

Earnings and Outlook

	CGAAP	CGAAP	CGAAP	CGAAP	CGAAP
	For the year ended March 31				
(CA\$ millions where applicable)	2013	2012	2011	2010	2009
Total electricity revenues	1,733	1,573	1,616	1,583	1,784
Net gas revenues	147	132	143	138	149
Total revenues	1,880	1,705	1,759	1,721	1,933
EBITDA	991	865	968	957	1,105
EBIT	568	484	575	573	737
Gross interest expense	636	603	573	569	545
Earning before taxes	79	61	150	163	266
Net income before non-recurring items	92	61	150	163	266
Reported net income	92	61	150	163	266
Return on equity (1)	3.5%	2.4%	6.3%	7.4%	13.4%

(1) Adjusted for other comprehensive income.

F2013 Summary

- Manitoba Hydro's earnings increased in F2013 to \$92 million from \$61 million in F2012, due mainly to higher domestic electricity sales as a result of increases in electricity rates and colder than normal weather.
- Extraprovincial electricity revenue decreased as a result of lower volumes in the United States market, combined with increased Manitoba load.

F2014 Outlook

- For the three months ended June 30, 2013 (Q1 2014), the Utility reported a net loss of \$5 million, compared to a net loss of \$24 million in Q1 2013. The improvement in earnings was mainly attributed to increased net extraprovincial revenues due to higher sales volumes from favourable weather conditions and increased export prices.
- Extraprovincial electricity revenue continues to be exposed to pricing volatilities in the United States. Slightly improved economic conditions in the U.S., combined with higher gas prices, allowed for export market prices to the U.S. to experience a year-over-year recovery, but continue to be low. This is expected to contribute to F2014's earnings (projected at approximately \$70 million) being lower than those of F2013.
- Favourable water conditions are occurring which may result in above-forecast surplus energy volumes for export.

**The Manitoba
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Board****Report Date:**

September 16, 2013

Financial Profile

	CGAAP	CGAAP	CGAAP	CGAAP	CGAAP
	For the year ended March 31				
(CA\$ millions where applicable)	2013	2012	2011	2010	2009
Cash Receipts from Customers	2,015	1,998	2,029	2,110	2,422
Cash Paid to Suppliers and Employees	(981)	(1,048)	(1,043)	(1,080)	(1,245)
Interest Paid	(489)	(418)	(422)	(475)	(524)
Interest Received	44	35	31	34	35
Cash flow from operations	589	567	595	589	688
Dividends paid	0	0	0	0	0
Capital expenditures	(1,037)	(1,124)	(1,166)	(1,068)	(915)
Free cash flow	(448)	(557)	(571)	(479)	(227)
Acquisitions & long-term investments	(98)	(90)	(88)	(93)	(47)
Net sinking fund withdrawals/(payments)	22	(75)	527	(274)	137
Net debt change	565	673	192	873	157
Other	(59)	29	(164)	(12)	6
Change in cash	(18)	(20)	(104)	15	26
Total debt (net sinking fund investments)	9,633	9,010	8,365	7,716	7,621
Cash and equivalents	32	50	70	174	159
Total debt in capital structure	76.6%	75.8%	74.6%	74.9%	79.7%
Total debt in capital structure (1)	78.5%	77.9%	77.2%	77.0%	78.3%
Cash flow/Total debt	6.1%	6.3%	7.1%	7.6%	9.0%
EBIT gross interest coverage (times)	0.89	0.80	1.00	1.01	1.35
Dividend payout ratio	0.0%	0.0%	0.0%	0.0%	0.0%

(1) Adjusted for other comprehensive income.

F2013 Summary

- Credit metrics have declined moderately over the past few years, as significant capex has led to an increase in debt levels. This trend is expected to continue in the medium term.
- Cash flow from operations increased in F2013 to \$589 million, compared to \$567 million in F2012, mainly due to increased domestic electricity sales.
- With the ongoing high capex program, the Utility's cash flow from operations was insufficient in covering capex in F2013 (\$1,037 million), leading to a free cash flow deficit of \$448 million.
- The cash flow deficit was mainly funded with debt.

F2014 Outlook

- Capex is expected to remain high over the medium term, driven primarily by (1) generation system upgrades; (2) the development of new generation facilities, specifically the Conawapa (1,485 MW) and Keyask (695 MW) generating stations; and (3) upgrades and additions to improve the reliability of Manitoba Hydro's aging transmission and distribution infrastructure, including the Bipole III.
- This capital program is expected to result in continued cash flow deficits over the medium term. The extent of the Utility's funding requirements will largely be dependent on hydrology and export market conditions.
- Manitoba Hydro is expected to fund the free cash flow deficits with debt. As a result of the rising debt levels required to support ongoing capital projects, key credit metrics are also expected to decline moderately in the medium term.
- However, with no mandatory dividend payment requirements, this should provide the Utility with greater financial flexibility.

**The Manitoba
Hydro-Electric
Board****Report Date:**

September 16, 2013

Long-Term Debt Maturities and Bank Lines

Debt Profile (CAD millions)	For the year ended March 31,			
	%	2013	2012	2011
Advances from the Province	97.6%	9,775	9,095	8,467
Manitoba Hydro Bonds	0.6%	55	136	44
Manitoba Hydro-Electric Board Bonds*	1.8%	182	194	197
	100.0%	10,012	9,425	8,708
Adjustments to carrying value of dual currency bonds		(20)	(24)	(28)
Debt discounts and premiums		22	9	(6)
Transaction Costs		(29)	(28)	(27)
Total		9,985	9,382	8,647

* \$73 million of unguaranteed bonds are part of the \$182 million.

Debt Maturities

Year	2014	2015	2016	2017	2018	Thereafter	Total
CAD millions	656	210	313	308	331	8,194	10,012
%	7%	2%	3%	3%	3%	82%	100%

Summary

- The Province supports Manitoba Hydro by advancing funds or guaranteeing the Utility's long-term debt issues. Long-term debt at March 31, 2013, consisted of the following:
 - \$9,775 million in advances from the Province (all of which have annual sinking fund requirements).
 - \$55 million Manitoba Hydro Bonds.
 - \$182 million Manitoba Hydro-Electric Board Bonds.
- Only \$73 million of Manitoba Hydro-Electric Board Bonds do not carry the provincial guarantee.
- Manitoba Hydro maintains a relatively smooth maturity profile, no unhedged foreign currency debt and a moderate level of floating-rate debt, which adds stability to debt servicing costs and minimizes interest rate risk.
- The Utility has bank credit facilities that provide for overdrafts and notes payable up to \$500 million denominated in Canadian and/or U.S. dollars. At March 31, 2013, there were no amounts outstanding.
- Manitoba Hydro issues short-term debt in its own name for all its short-term cash requirements and does not receive short-term funding from the Province. These short-term notes are guaranteed by the Province of Manitoba.

**The Manitoba
Hydro-Electric
Board****Report Date:**

September 16, 2013

Regulation

Manitoba Hydro is governed by the Manitoba Hydro Act and its electricity and natural gas rates are regulated by the Manitoba Public Utilities Board (PUB).

Electricity

- Each year, Manitoba Hydro reviews its financial targets, with particular focus on its debt-to-equity target capital structure of 75% to 25%. If it deems a rate adjustment is necessary to continue progress toward attainment of its financial targets, it submits a rate application to the PUB.
- The PUB reviews the rate adjustment application with the objective of allowing Manitoba Hydro to recover its cost of service and achieve its long-term debt-to-equity target of 75% to 25%. The PUB does not have the mandate to pre-approve capital expenditures. The capital expenditure planning responsibility resides with Manitoba Hydro and the government of Manitoba.
- In June 2012, Manitoba Hydro filed its 2012-13 and 2013-14 General Rate Application. In the General Rate Applications, the Utility requested an average 2.5% rate increase for all classes, effective September 1, 2012, and an additional 3.5% increase in overall revenues effective April 1, 2013.
- On August 31, 2012, the PUB issued Order 117/12, which approved the proposed average 2.5% interim rate increase for all classes, effective September 1, 2012.
- In order 43/13 dated April 26, 2013, the PUB provided final approval of a 3.5% across the board rate increase for all customer classes effective May 1, 2013. The order also provided final approval to the Utility's application to reinstate the 1.0% rate deferral as revenue in the 2012-2013 fiscal year. In addition, the 2.0% interim rate increase granted for April 1, 2012, and 2.4% interim rate increase granted for September 1, 2012, were also approved.
- While Manitoba Hydro is the sole retail electricity supplier in Manitoba, under the Manitoba Hydro Amendment Act of 1997 (the Act) other utilities may access the transmission system to reach customers in neighbouring provinces and states.
- The Act also explicitly allows Manitoba Hydro to build new generating capacity for export sales, to offer new energy-related services, to enter into strategic alliances and joint ventures and to create subsidiaries.
- There are presently no plans to move to full retail competition in the province.
- Manitoba retail customers currently enjoy rates that are among the lowest in North America, due to Manitoba Hydro's predominantly hydroelectric generation and efficient resource management.

Natural Gas Distribution

- Manitoba Hydro distributes natural gas through its wholly owned subsidiary, Centra Gas Manitoba Inc. (Centra Gas). In accordance with the rate-setting methodology for natural gas, commodity rates are changed every quarter based on 12-month forward natural gas market prices.
- The commodity cost of gas is a pass-through with no markup to customers.
- Non-commodity costs, such as transportation, distribution and operating and general expenses related to the natural gas business, also are passed on.
- The PUB allows Centra Gas to target an annual profit of approximately \$3 million, which is fairly modest compared with Manitoba Hydro's consolidated earnings.
- On July 26, 2013, the PUB issued order 85/13, which approved an approximate 1% general revenue increase for gas operations, effective August 1, 2013.

**The Manitoba
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September 16, 2013

Watershed Storage Capacity

Manitoba Hydro draws water from five distinct watersheds: Nelson River, Winnipeg River, Saskatchewan River, Churchill River (including the Laurie River) and Burntwood River. This provides the Utility with some geographic diversification, especially during times of low hydrology. The main generation source is the Nelson River, which accounted for approximately 76% of power generated in F2013.

SOURCE OF ELECTRICAL ENERGY GENERATED AND IMPORTED

For the year ended March 31, 2013

Nelson River	75.54%	Saskatchewan River	6.87%
Billion kWh generated	26.1	Billion kWh generated	2.4
Limestone	24.35%	Grand Rapids	6.87%
Kettle	23.36%		
Long Spruce	19.52%	Laurie River	0.15%
Kelsey	6.04%	Billion kWh generated	0.1
Jenpeg	2.27%	Laurie River #1	0.07%
		Laurie River #2	0.08%
Winnipeg River	10.47%	Burntwood River	2.74%
Billion kWh generated	3.6	Billion kWh generated	0.9
Seven Sisters	2.89%	Wuskwatim	2.74%
Great Falls	2.45%		
Pine Falls	1.78%		
Pointe du Bois	0.87%		
Slave Falls	1.35%		
McArthur	1.13%		
Thermal	0.24%	Purchases (excl. wind)	1.53%
Billion kWh generated	0.1	Billion kWh imported	0.5
Brandon	0.19%		
Selkirk	0.05%	Wind	2.46%
		Billion kWh imported	0.9

Source: Manitoba Hydro.

Favourable characteristics inherent in Manitoba Hydro's watersheds include the following:

- Cold temperatures reduce overall evaporation rates, as much of the water is frozen for up to five months of the year.
- A significant portion of the watersheds consists of rock, which has lower seepage rates and higher runoff than predominantly soil-covered watersheds.
- Lake Winnipeg, Cedar Lake and Southern Indian Lake serve as large storage reservoirs. The Utility's water storage capacity is a competitive advantage in trading electricity (buying surplus U.S. power at low off-peak prices and selling its electricity during peak demand periods at higher prices).

In addition to its own generating stations in Manitoba, Manitoba Hydro purchases all electricity from two wind farms in southern Manitoba at St. Joseph and St. Leon. The installed capacity of these facilities is 258.5 MW. The Wuskwatim generation station is owned by the Wuskwatim Power Ltd. Partnership, in which Manitoba Hydro is the majority owner. Manitoba Hydro purchases all the electricity generated from the Wuskwatim generating station.

**The Manitoba
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Generating Capacity

Manitoba Hydro owns and operates an aggregate generating capacity of 5,685 MW.

Manitoba Hydro's Generating Stations and Capabilities

For the year ended March 31, 2013

<u>Power Station</u>	<u>Location</u>	<u># of units</u>	<u>Net Capacity (MW)</u>
<u>Hydroelectric</u>			
Seven Sisters	Winnipeg River	6	165
Great Falls	Winnipeg River	6	129
Pine Falls	Winnipeg River	6	88
McArthur Falls	Winnipeg River	8	55
Pointe du Bois	Winnipeg River	16	75
Slave Falls	Winnipeg River	8	67
Grand Rapids	Saskatchewan River	4	479
Limestone	Nelson River	10	1,340
Kettle	Nelson River	12	1,220
Long Spruce	Nelson River	10	1,010
Kelsey	Nelson River	7	250
Jenpeg	Nelson River	6	129
Laurie River (2)	Laurie River	3	10
Wuskwatim	Burntwood River	3	200
Total Hydroelectric Generation		105	5,217
<u>Thermal</u>			
Brandon (coal: 98 MW, gas: 241 MW)		3	333
Selkirk (gas)		2	125
Total Thermal Generation		5	458
<u>Isolated Diesel Capabilities</u>			
Brochet			3
Lac Brochet			2
Shamattawa			3
Tadoules Lake			2
Total Isolated Diesel Generation			10
Total Generation Capacity			5,685

Source: Manitoba Hydro.

**The Manitoba
Hydro-Electric
Board****Report Date:**

September 16, 2013

Balance Sheet (CA\$ millions)	Manitoba Hydro-Electric Board						
	CGAAP	CGAAP	CGAAP		CGAAP	CGAAP	CGAAP
	<u>Mar. 31</u>	<u>Mar. 31</u>	<u>Mar. 31</u>		<u>Mar. 31</u>	<u>Mar. 31</u>	<u>Mar. 31</u>
Assets	2013	2012	2011	Liabilities & Equity	2013	2012	2011
Cash & equivalents	32	50	70	S.T. borrowings	0	0	0
Accounts receivable	421	328	403	Accounts payable	397	308	323
Inventories	93	106	85	Current portion L.T.D.	656	281	30
Prepaid expenses & other	4	4	4	Other current liab.	127	157	108
Total Current Assets	550	488	562	Total Current Liab.	1,180	746	461
Net fixed assets	12,508	11,797	10,954	Long-term debt (net sinking fund investments)	8,977	8,729	8,335
Goodwill & intangibles	276	268	260	Sinking fund investments	352	372	282
Investments & others	1,208	1,238	1,106	Other L.T. liab.	1,097	1,067	961
				Shareholders' equity	2,936	2,877	2,843
Total Assets	14,542	13,791	12,882	Total Liab. & SE	14,542	13,791	12,882

Balance Sheet & Liquidity & Capital Ratios	CGAAP	CGAAP	CGAAP	CGAAP	CGAAP
	2013	2012	2011	2010	2009
Current ratio	0.47	0.65	1.22	0.88	0.65
Total debt in capital structure	76.6%	75.8%	74.6%	74.9%	79.7%
Total debt in capital structure (1)	78.5%	77.9%	77.2%	77.0%	78.3%
Cash flow/Total debt	6.1%	6.3%	7.1%	7.6%	9.0%
(Cash flow-dividends)/Capex	0.57	0.50	0.51	0.55	0.75
Dividend payout ratio	0.0%	0.0%	0.0%	0.0%	0.0%
Coverage Ratios (times)					
EBIT gross interest coverage	0.89	0.80	1.00	1.01	1.35
EBITDA gross interest coverage	1.56	1.43	1.69	1.68	2.03
Fixed-charge coverage	0.90	0.82	1.02	1.11	1.39
Profitability Ratios					
Purchased power/electricity revenues	7.7%	9.3%	6.6%	6.6%	9.9%
Operating margin	30.2%	28.4%	32.7%	33.3%	38.1%
Net margin	4.9%	3.6%	8.5%	9.5%	13.8%
Return on equity (1)	3.5%	2.4%	6.3%	7.4%	13.4%

(1) Adjusted for other comprehensive income.

The Manitoba Hydro-Electric Board

Report Date:
 September 16, 2013

Ratings

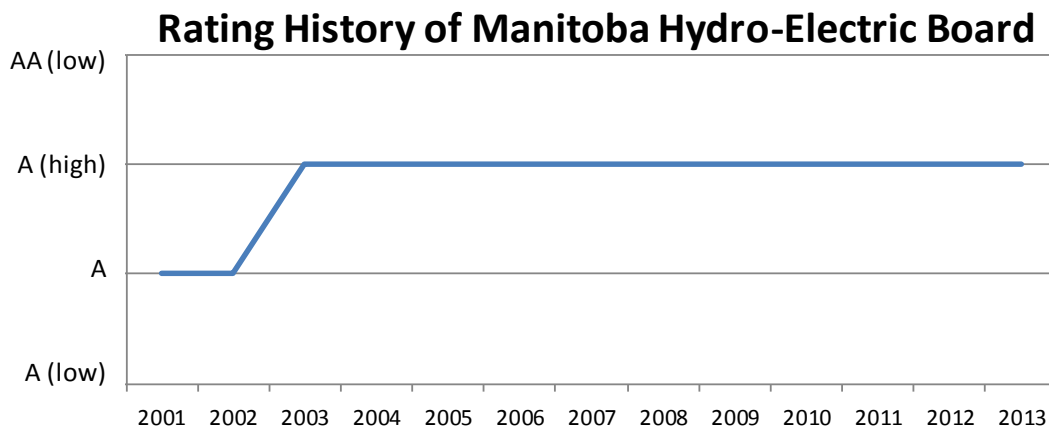
Debt	Rating	Trend
Short-Term Obligations	R-1 (middle)	Stable
Long-Term Obligations	A (high)	Stable

Note: These Obligations are based on the implicit support of the Province of Manitoba and the unconditional guarantee provided by the Province on Manitoba Hydro’s third-party debt, and thus reflect the Province’s debt ratings.

Rating History

	Current	2012	2011	2010	2009	2008
Short-Term Obligations	R-1 (middle)	R-1 (middle)	R-1 (middle)	R-1 (middle)	R-1 (middle)	R-1 (middle)
Long-Term Obligations	A (high)	A (high)	A (high)	A (high)	A (high)	A (high)

Note: These Obligations are based on the implicit support of the Province of Manitoba and the unconditional guarantee provided by the Province on Manitoba Hydro’s third-party debt, and thus reflect the Province’s debt ratings.



Note:
 All figures are in Canadian dollars unless otherwise noted.

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Rating Report**Report Date:**

October 11, 2013

Previous Report:

September 4, 2012

Province of Manitoba**Analysts****Travis Shaw**

+1 416 597 7582

tshaw@dbrs.com

Julius Nyarko

+1 416 597 7408

jnyarko@dbrs.com

The Province

Manitoba is located in Central Canada and ranks fifth among Canadian provinces by population and sixth in terms of GDP. The Province is home to significant renewable energy resources, with almost all electricity generated from water.

Rating

Debt	Rating	Rating Action	Trend
Issuer Rating	A (high)	Confirmed	Stable
Short-Term Debt*	R-1 (middle)	Confirmed	Stable
Long-Term Debt*	A (high)	Confirmed	Stable

*Issued/guaranteed by the Province, including the Manitoba Hydro-Electric Board.

Rating Update

DBRS has confirmed the Issuer Rating of the Province of Manitoba (the Province or Manitoba) at A (high), along with its Long-Term Debt and Short-Term Debt ratings at A (high) and R-1 (middle), respectively. The trends on all ratings are Stable. Manitoba's credit profile is supported by a resilient and well-diversified economy; however, fiscal projections continue to underwhelm by contributing to a rising debt burden and forestalling any improvement in the credit profile.

For 2012–13, Manitoba recorded a deficit of \$580 million based on its recently released public accounts. This translates into a DBRS-adjusted shortfall of \$1.3 billion, or 2.3% of GDP, (after including capital expenditures as incurred rather than as amortized), and marked an improvement from the budget as a result of lower-than-anticipated capital spending. Total revenues were largely in line with budget and up by less than 1.0% from the prior year while spending contracted by 3.4% year-over-year. As a result, DBRS-adjusted debt rose by \$1.5 billion, or 7.6%, pushing the debt-to-GDP ratio to 36.9% as of March 31, 2013, up from 35.5% the prior year.

The private sector consensus followed by DBRS points to moderate real GDP growth of 2.0% in 2013, accelerating to 2.4% in 2014, which tracks closely to budget estimates of 1.9% and 2.3%, respectively. While global economic uncertainty and a softening domestic environment continue to present downside risks to Manitoba's outlook, a modest recovery in U.S. housing, strong automotive sales and demand for manufactured and agricultural products should provide relief to the export sector. (Continued on page 2.)

Rating Considerations**Strengths**

- (1) Diversified and resilient economy
- (2) Manageable debt burden and sound debt management practices
- (3) Abundant low-cost hydroelectricity

Challenges

- (1) Fiscal outlook remains weak
- (2) High reliance on federal transfers
- (3) Below-average income and GDP per capita

Financial Information

(all financial figures DBRS adjusted)	For the year ended March 31				
	<u>2013-14B</u>	<u>2012-13</u>	<u>2011-12</u>	<u>2010-11</u>	<u>2009-10</u>
Debt* (\$ millions)	22,392	21,347	19,840	17,478	16,148
Debt*/GDP	37.3%	36.9%	35.5%	32.8%	31.8%
Surplus (deficit) (\$ millions)	(1,635)	(1,342)	(1,966)	(1,102)	(1,011)
Surplus (deficit)/GDP	(2.7%)	(2.3%)	(3.5%)	(2.1%)	(2.0%)
Interest costs/total revenue	5.5%	5.6%	5.5%	5.4%	5.4%
Federal transfers/total revenue	27.3%	28.8%	31.8%	30.7%	31.2%
Nominal GDP (\$ millions)	60,107	57,906	55,894	53,266	50,828
Real GDP growth rate	1.9%	2.7%	2.0%	2.5%	(0.4%)
Unemployment rate	5.3%	5.3%	5.4%	5.4%	5.2%

* DBRS-defined: tax-supported debt + unfunded pension liabilities. B = Budget.

Source: Province of Manitoba, Statistics Canada, and DBRS calculations.

**Province of
Manitoba****Report Date:**
October 11, 2013**Rating Update** (Continued from page 1.)

For 2013–14, the budget points to a deficit of \$518 million, or \$1.6 billion on a DBRS-adjusted basis. This equates to 2.7% of GDP and represents a moderate deterioration from 2012–13. Total revenues are estimated to rise by 3.0% in 2013–14 as new tax measures were introduced to offset the absence of growth in federal transfers and other non-tax revenues. Meanwhile, DBRS-adjusted expenditures are forecast to rise by 4.7% in 2013–14 — a level that exceeds the provincial average. The Province has delayed its fiscal recovery plan with a return to balance not anticipated until 2016–17. On a DBRS-adjusted basis, assuming relatively stable capital spending, this is likely to result in persistent deficits of around 1.6% to 2.4% of GDP — one of the weakest outlooks among provinces. DBRS notes that Manitoba's success at containing spending, especially with respect to public sector compensation, will be a key determinant in the Province's ability to meet its targets. Given the longer fiscal recovery plan, debt is expected to continue rising between 5% to 8% annually, resulting in a debt burden of approximately 40% of GDP by 2016–17. While considered manageable for the current ratings, this exceeds the peak in debt anticipated in DBRS's last review and continues to erode some of Manitoba's once sound financial flexibility.

Rating Considerations Details**Strengths**

(1) Manitoba has one of the most resilient and well-diversified economies in the country. This strength was evident during the 2009 downturn when the Province experienced only a very mild recession. The economy boasts a well-balanced mix of industries, including agriculture and mining, manufacturing, financial services and transportation and has one of the lowest unemployment rates in Canada. In addition, the composition of Manitoba's exports also tends to be more diverse than that of other provinces. As a result of these factors, the provincial economy shows less volatility than its manufacturing- and resource-dependent neighbours.

(2) As of March 31, 2013, Manitoba's debt burden stood at 37% of GDP and, although it has been creeping up since 2009, it is relatively unchanged from early 2000s and remains manageable for the current ratings. The Province maintains a relatively smooth maturity profile, with no unhedged foreign currency debt and a moderate level of floating-rate debt, which adds stability to debt servicing requirements.

(3) Manitoba benefits from an abundance of low-cost hydroelectricity, resulting in some of the lowest electricity rates in North America. This gives the Province a distinct advantage when competing for new business investment. The recently completed 200 megawatt (MW) Wuskwatim dam project further added to Manitoba's supply of hydroelectricity. In addition, other projects being considered include Keeyask (695 MW for \$6.2 billion) and Conawapa (1,485 MW for \$10.2 billion), which are dependent on growth in domestic demand and Manitoba Hydro's ability to secure export contracts.

Challenges

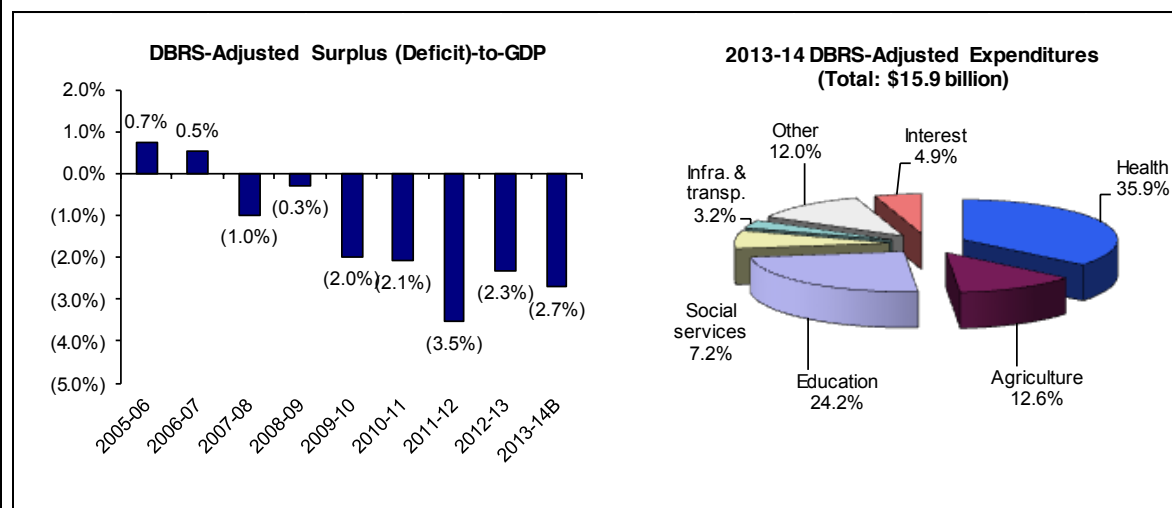
(1) Manitoba has delayed its return to balance by two years until 2016–17. This is one of the slowest fiscal recovery plans among Canadian provinces even though the depth of the recession was relatively mild. DBRS acknowledges that fiscal progress has been challenged by significant flood recovery costs; however, considerable effort will still be required to ensure the latest fiscal targets are adhered to.

(2) Despite its relatively resilient economy, Manitoba receives approximately 29% of its revenues by way of federal transfers, including 14% from equalization, leaving it exposed to changes in federal transfer programs. For four years, the Province has benefited from the federal government's temporary total transfer protection program to ensure the combined amounts for equalization, health and social transfers do not decline.

(3) Manitoba boasts a well-diversified economy and healthy labour market; however, it continues to exhibit below-average wealth. The Province registered personal income per household of \$35,719 in 2011 (the latest year for which information is available), below the national average of \$39,484. Manitoba also generates below-average GDP per capita suggesting that productivity and high-value-added sectors may be lagging.

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2013–14 Budget



Manitoba fiscal outlook continues to disappoint as demonstrated by the decision to delay its return to balance target by two years until 2016–17. For 2013–14, the budget points to a deficit of \$518 million, or \$1.6 billion on a DBRS-adjusted basis (after including capital expenditures as incurred rather than as amortized). This equates to 2.7% of GDP and represents the largest fiscal gap among all provinces, highlighting ongoing challenges at containing expenditure growth.

Total revenues are estimated to rise by 3.0% in 2013–14 as new tax measures were introduced to offset the absence of growth in federal transfers and other non-tax revenues. Although Manitoba remains opposed to harmonizing its provincial sales tax with the federal GST, the budget announced an increase in its sales tax rate to 8% beginning July 1, 2013, from 7% previously. This is expected to boost sales tax receipts by 15.9% and, on a full-year basis, represents an additional \$278 million in revenues. The 8% sales tax rate is intended to be in place for ten years, to help fund infrastructure investment, after which time it will revert back to 7%. In addition, higher tobacco tax rates should contribute a further \$16 million to revenues in 2013–14. An increase in personal exemption limits and property education tax rebates for seniors will provide a partial offset. The Province is also providing relief to small businesses by increasing the income threshold at which the small business rate applies, to \$425,000 from \$400,000 previously. Earnings at government business enterprises, including Manitoba Liquor and Lotteries Corporation and Manitoba Hydro are forecast to grow by 6% year-over-year. However, federal transfers are forecast to decline by 2.6%. The Province is only expected to receive \$7 million from Total Transfer Protection payments as rising health and social transfers will offset a decline in equalization funding. The expiration of other cost-shared programs is accountable for the decline.

The Province remains mindful of the impact of public sector restraint on the domestic economy and is focused on protecting frontline services. As a result, total DBRS-adjusted expenditures are forecast to rise by 4.7% in 2013–14 — a level that exceeds the provincial average and reflects a return to higher capital spending. Health and education spending are projected to grow by 3.2% and 6.7%, respectively. In addition, outlays for social programs are projected to rise by more than 6.0% as the Province continues to experience both volume and price pressure. Achieving fiscal targets will be heavily dependent on the Province's ability to contain wages, as several collective agreements in health care are up for renewal, including nurses, support staff and home care workers. Importantly, the Province remains ahead of its target to reduce the civil service by 600 FTEs over the next three years by eliminating vacant positions. Other efforts to contain spending include the implementation of lean management practices and program efficiency reviews, in addition to measures announced last year, such as the amalgamation of regional service offices and reduction in other administrative costs. To help address infrastructure needs, the Province announced a ten-year infrastructure investment plan, in part, funded through a portion of sales tax receipts and fuel taxes, which will see gross capital spending of \$1.7 billion, up by 31% from 2012–13. Despite rising debt, interest costs are budgeted to rise by just 1.5%.

**Province of
Manitoba****Report Date:**
October 11, 2013**Outlook**

The first quarter update, released on September 30, 2013, points to somewhat stronger-than-expected performance through the early part of the year. However, the Province indicates that this variance is largely due to timing differences rather than a material deviation from budget, and notes that it is experiencing cost pressures in social services, public safety and forest fire fighting. An updated year-end fiscal projection will be provided in the second quarter update later this fall.

Manitoba's delayed fiscal recovery plan now points to gradually declining deficits in 2014–15 and 2015–16 before returning to a very small surplus in 2016–17. On a DBRS-adjusted basis, assuming relatively stable capital spending, this is likely to result in persistent deficits of around 1.6% to 2.4% of GDP — one of the weakest outlooks among provinces. While the plan is based on a gradual improvement in economic conditions, Manitoba's success at containing spending, especially with respect to public sector compensation, will be a key determinant in the Province's ability to meet its targets. DBRS notes that in addition to those agreements already expired, several more collective agreements come up for renewal in March 2014.

2012–13 Preliminary Results

Based on recently released public accounts, Manitoba recorded a deficit of \$580 million in 2012–13. This translates into a DBRS-adjusted shortfall of \$1.3 billion, or 2.3% of GDP, and marked an improvement from the budget as a result of lower-than-anticipated capital spending. Total revenues grew by less than 1.0% in 2012–13, although this reflects sizeable federal funding for disaster assistance in 2011–12 that was not repeated. Own-source revenues grew by 5.1%, supported by a combination of higher personal income tax, corporate income tax and sales tax receipts, partially offset by a reduction in mining and other taxes. Excluding the impact of disaster assistance payments received in 2011–12, federal transfer payments were relatively unchanged year-over-year as the Province continued to benefit from the federal government's Total Transfer Protection program.

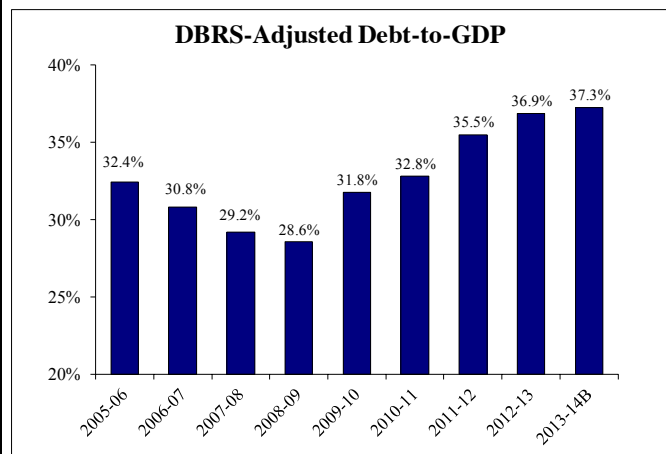
Total expenditures as calculated by DBRS came in below budget in 2012–13 and fell by 3.4% compared with the previous year. Lower-than-planned capital spending accounted for the bulk of improvement, as the capital budget was underspent by roughly \$250 million. Encouragingly, the increase in health-care spending was contained to 3.0% as the Province moved forward with its plan to cap administrative costs in the health sector and reduce the number of regional health authorities to five from 11. Investments in education, to reduce class sizes for kindergarten to grade three students, and in social services, for caseload and pricing pressures, resulted in increases of 5.3% and 4.8%, respectively, although both areas also underspent relative to budget. Meanwhile, net interest expense grew by a mild 2.2% as the low interest rate environment helped to offset a growing debt burden.

**Province of
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Debt Profile

DBRS-adjusted debt, defined as tax-supported debt plus unfunded pension liabilities, grew by \$1.5 billion, or 7.6% in 2012–13. This was somewhat faster than planned owing to increased debt for crown organizations and municipalities. Slower-than-anticipated growth in unfunded pension liabilities and reduced borrowing for health facilities provided a partial offset. As of March 31, 2013, the debt-to-GDP ratio stood at 36.9%, up from 35.5% in 2011–12. This compares with a recent low of 28.6% in 2008–09 and represents the fourth-highest debt burden among Canadian provinces.



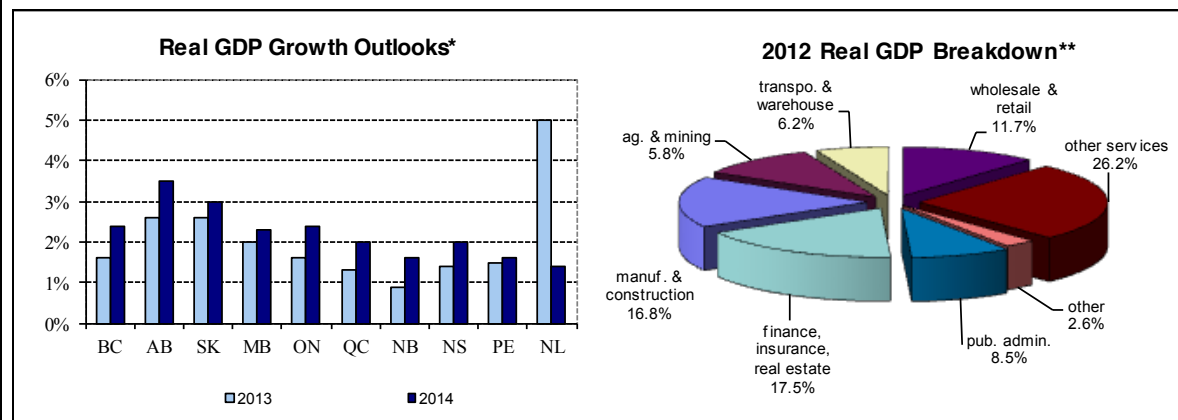
Outlook

In 2013–14, debt growth is projected to slow to \$1.0 billion, or 4.9%. When combined with moderate growth in nominal GDP, this is expected to result in a debt-to-GDP ratio of 37.3% — the smallest increase over the past five years. Gross borrowing requirements are estimated at \$4.8 billion for the current fiscal year and are comprised of \$2.2 billion of refinancing needs, \$937 million for fiscal deficit and capital needs and the remainder for crown corporations, largely Manitoba Hydro. At the time of writing, approximately \$2.9 billion, or 60%, of borrowing had been completed. The

Province endeavours to maintain a smooth maturity profile and as of March 31, 2013 (excluding Manitoba Hydro), had no unhedged foreign currency exposure and moderate floating-rate debt.

Given the longer fiscal recovery plan, debt is expected to continue rising between 5% to 8% annually, resulting in a debt burden of approximately 40% of GDP by 2016–17. While considered manageable for the current ratings, this exceeds the peak in debt anticipated in DBRS’s last review and continues to erode some of Manitoba’s once sound financial flexibility.

Economy



*Based on major Canadian banks' forecasts at the time of this report. **Statistics Canada, CANSIM379-0030.

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The Province continues to benefit from the stability afforded by a highly diversified economic base, posting solid real GDP growth of 2.7% in 2012. This growth was underpinned by a rebound in agricultural production following major floods in 2011, a 19.1% jump in housing starts driving strong construction performance and substantial non-residential capital expenditure growth of 9.1%. Manufacturing output growth, however, was subdued even as sales receipts edged higher on the strength of sub-sectors, such as aerospace parts and transit bus production. On the retail side, sales growth slowed to a muted 1.6% in 2012, in part due to lagging per capita income relative to the national average. International immigration remained strong, and more than offset continued interprovincial outmigration, contributing to population growth of 1.3%. The labour market demonstrated resilience with the creation of 7,500 private sector jobs, while 1,900 positions were shed in the public sector amid ongoing fiscal restraint across all levels of government. The unemployment rate fell slightly to 5.3%, the third lowest among the Canadian provinces. Externally, persistently sluggish growth in the critical U.S. market and weaker global demand for commodities contributed to a 4.8% year-over-year decline in total export values, led by major contractions in the export value of cereals and oilseeds and by lower prices for base metals.

Outlook

The private sector consensus tracked by DBRS points to moderate growth of 2.0% in 2013, accelerating to 2.4% in 2014, which tracks closely to budget estimates of 1.9% and 2.3%, respectively. Capital investment trends are encouraging, as Statistics Canada's most recent intentions survey points to a 10.3% uptick in non-residential construction, machinery and equipment investment for 2013, notably above the national average of 2.2%. Meanwhile, housing starts are forecast to fall by 2.0% in 2013 according to CMHC, but will remain well above the historical ten-year average. Agricultural production should continue to be supported by favourable crop conditions thus far and elevated grain prices; while manufacturing sub-sectors, such as aerospace parts, are expected to see improving sales. However, service sector activity is expected to soften. As of August 2013, the unemployment rate stood at 5.2% (seasonally adjusted). Consumer sentiment appears to be soft, with retail trade advancing by just 0.8% year-over-year as of July 2013 on a seasonally adjusted basis — the slowest rate among provinces. While global economic uncertainty and a softening domestic environment continue to present downside risks to Manitoba's outlook, a modest recovery in U.S. housing, strong automotive sales and demand for manufactured and agricultural products should provide relief to the export sector.

Economic Statistics

For the year ended December 31

	<u>2014P</u>	<u>2013P</u>	<u>2012</u>	<u>2011</u>	<u>2010</u>	<u>2009</u>	<u>2008</u>
Nominal GDP (\$ millions)	62,751	60,107	57,906	55,894	53,266	50,828	51,899
Nominal GDP growth	4.4%	3.8%	3.6%	4.9%	4.8%	(2.1%)	5.4%
Real GDP growth	2.3%	1.9%	2.7%	2.0%	2.5%	(0.4%)	4.0%
Population (thousands)	1,280	1,265	1,250	1,234	1,221	1,209	1,198
Population growth	1.2%	1.2%	1.3%	1.0%	1.0%	0.9%	0.7%
Employment (thousands)	646	638	630	625	620	608	609
Unemployment rate	5.1%	5.3%	5.3%	5.4%	5.4%	5.2%	4.2%
Housing starts (units)	7,000	7,100	7,242	6,083	5,888	4,174	5,537
Retail sales (\$ millions)	n.a.	n.a.	17,018	16,758	16,029	15,127	15,143
Inflation rate (CPI)	2.0%	1.7%	1.6%	3.0%	0.8%	0.6%	2.3%
Household income per capita (\$)	n.a.	n.a.	n.a.	35,719	34,428	34,028	33,864

Sources: Statistics Canada (actuals), Manitoba Finance, CMHC, and DBRS estimates. P= Projected. n.a. = not available.

**Province of
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Province of Manitoba

	<u>Budget</u>		<u>Budget</u>			
	<u>2013-14</u>	<u>2012-13</u>	<u>2012-13</u>	<u>2011-12</u>	<u>2010-11</u>	<u>2009-10</u>
Budget Summary* (\$ millions)						
Revenue	14,119	13,712	13,771	13,621	13,173	12,585
Program expenditure	14,978	14,289	14,473	14,839	13,569	12,920
Program surplus (deficit)	(859)	(577)	(701)	(1,218)	(396)	(335)
Interest expense	776	765	778	748	706	676
DBRS-Adjusted Surplus (Deficit)	(1,635)	(1,342)	(1,479)	(1,966)	(1,102)	(1,011)
DBRS adjustments:						
Capital expenditures less amortization	1,117	762	1,019	965	923	828
Other non-recurring items, incl. assets sales	-	-	-	-	-	-
Surplus (deficit), as reported	<u>(518)</u>	<u>(580)</u>	<u>(460)</u>	<u>(1,001)</u>	<u>(179)</u>	<u>(183)</u>
Tax-supported debt + unfunded pension liabilities	22,392	21,347	20,681	19,840	17,478	16,148
Gross borrowing requirements (all entities)	4,753	3,493	3,671	5,424	3,550	4,684
Gross capital expenditure	1,665	1,273	1,520	1,441	1,361	1,232

* DBRS adjusts reported figures to exclude certain non-recurring items (e.g. asset sales). DBRS also recognizes capital expenditures as incurred, rather than as amortized, to improve inter-provincial comparability.

Selected Financial Indicators (DBRS-Adjusted)

Debt*/GDP	37.3%	36.9%	35.7%	35.5%	32.8%	31.8%
Surplus (deficit)/GDP	(2.7%)	(2.3%)	(2.6%)	(3.5%)	(2.1%)	(2.0%)
Surplus (deficit)/total revenue	(11.6%)	(9.8%)	(10.7%)	(14.4%)	(8.4%)	(8.0%)
Interest costs/total revenue	5.5%	5.6%	5.6%	5.5%	5.4%	5.4%
Total tax revenues/total revenue	52.3%	50.1%	50.8%	47.6%	48.0%	47.2%
Federal transfers/total revenue	27.3%	28.8%	28.2%	31.8%	30.7%	31.2%
Program expenditures/total revenue	106.1%	104.2%	105.1%	108.9%	103.0%	102.7%
Health expenditures/total expenditures	35.9%	36.4%	36.4%	34.2%	35.3%	35.5%
Program expenditure growth	4.8%	(3.7%)	(2.5%)	9.4%	5.0%	6.9%
Total expenditure growth	4.7%	(3.4%)	(2.2%)	9.2%	5.0%	6.2%
Total revenue growth	3.0%	0.7%	1.1%	3.4%	4.7%	(0.5%)

* DBRS-defined: tax-supported debt + unfunded pension liabilities.

Background Political Information

Party in power: New Democratic Party	Legislature seats: 37 of 57
Premier: Greg Selinger	Election to be held by: October 2015*

*If a federal election is held within two weeks of this date, the provincial election will be postponed until April 2016.

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Province of Manitoba

	Budget		Budget			
	2013-14	2012-13	2012-13	2011-12	2010-11	2009-10
Revenue (\$ millions)						
Personal income tax	2,952	2,846	2,796	2,697	2,592	2,402
Retail sales tax	2,047	1,767	1,834	1,658	1,618	1,570
Corporate taxes	966	965	927	919	824	754
Gasoline & motive fuel tax	326	332	316	269	256	255
Tobacco taxes	283	252	256	249	234	216
Education property tax	676	587	744	554	690	668
Energy, mining, and other taxes	130	124	116	142	114	75
Total tax revenue	7,381	6,874	6,990	6,488	6,328	5,940
Lottery income (1)	615	298	346	338	332	307
Liquor control commission (1)	-	261	260	254	251	234
Manitoba Hydro	72	92	65	61	150	163
Natural resource levies	169	168	179	187	169	149
Fees, permits, licences, & other	2,033	2,067	2,042	1,961	1,896	1,869
Total Own-Source Revenue	10,270	9,759	9,882	9,289	9,126	8,661
Equalization payments	1,799	1,872	1,872	1,942	2,001	2,063
Canada health & social transfer	1,564	1,487	1,492	1,417	1,365	1,302
Other federal transfers	486	594	525	973	681	559
Total Federal Transfers	3,849	3,953	3,889	4,332	4,047	3,924
DBRS-Adjusted Revenue	14,119	13,712	13,771	13,621	13,173	12,585
Expenditures (\$ millions)						
Health	5,660	5,487	5,546	5,328	5,044	4,831
Education and training	3,807	3,569	3,710	3,389	3,330	3,227
Social services (2)	1,133	1,062	1,066	1,013	978	1,295
Justice	521	500	475	460	435	410
Infrastructure and transportation	498	540	527	525	540	491
Agriculture, economic, & resource dev. (2)	1,986	1,865	1,920	2,209	1,860	1,322
Other general government	402	504	450	950	459	516
Capital expenditures less amortization (3)	1,117	762	1,019	965	923	828
Other	(147)	-	(241)	-	-	-
DBRS-Adjusted Program Expenditures	14,978	14,289	14,473	14,839	13,569	12,920
DBRS-Adjusted Program Surplus (Deficit)	(859)	(577)	(701)	(1,218)	(396)	(335)
Net interest expense (4)	776	765	778	748	706	676
DBRS-adjusted Expenditures	15,754	15,054	15,250	15,587	14,275	13,596
DBRS-Adjusted Surplus (Deficit)	(1,635)	(1,342)	(1,479)	(1,966)	(1,102)	(1,011)
DBRS adjustments:						
Capital expenditures less amortization (3)	1,117	762	1,019	965	923	828
Non-recurring revenue (expenditure)	-	-	-	-	-	-
Surplus (deficit), as reported	(518)	(580)	(460)	(1,001)	(179)	(183)

(1) In budget 2013-14, the Manitoba Lotteries Commission was merged with the Manitoba Liquor Control Commission.

(2) Due to government reorganization, budget and projected results in social services and agriculture, economic & resource development are not directly comparable with reported results for 2010-11 and prior years.

(3) This adjustment converts capital expenditures to a pay-as-you-go basis. (4) Interest expense is net of sinking fund earnings.

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Province of Manitoba
Balance Sheet (Consolidated Statement)

(\$ millions)	As at March 31				As at March 31		
	2013	2012	2011		2013	2012	2011
Financial Assets				Liabilities			
Cash and cash equivalents	1,522	1,579	1,392	A/P and accrued charges	3,862	3,936	3,575
Amounts receivable	1,661	1,647	1,341	Debt (1)	30,602	28,742	25,667
Loans & advances (1)	10,871	10,050	9,269	Unamortized for. exch. fluc.	(39)	(44)	(50)
Equity in gov't enterprises	3,766	3,617	3,570	Unfunded pension liability	1,828	1,634	1,731
Net tangible capital assets	9,842	9,097	8,187	Other liabilities	-	-	-
Other assets	2,655	2,934	2,927	Total Liabilities	36,253	34,268	30,923
Total Financial Assets	30,317	28,924	26,686	Accumulated Deficit	(5,936)	(5,344)	(4,237)
				Total Liabilities	30,317	28,924	26,686

Net Public Sector Debt*

(\$ millions)	As at March 31							
	2014B	2013	2012	2011	2010	2009	2008	2007
Net general purpose debt	15,360	14,851	13,956	11,907	10,919	9,739	9,208	7,465
Crown corporation & gov't agencies	2,397	2,246	1,926	1,641	1,478	1,341	1,269	1,279
Schools and universities	588	538	495	461	432	384	387	360
Hospitals	1,314	1,149	1,094	1,015	949	831	833	790
Municipalities (2)	735	735	735	723	602	544	476	524
Net Tax-Supported Debt	20,394	19,519	18,206	15,747	14,380	12,839	12,174	10,418
Self-supporting debt:								
Manitoba Hydro	11,046	9,607	8,999	8,362	7,730	7,499	6,794	6,636
Total net public sector debt	31,440	29,126	27,205	24,109	22,110	20,338	18,968	17,054
Unfunded Pension Liabilities (3)	1,998	1,828	1,634	1,731	1,768	1,991	2,209	3,491
Per Capita (CAD) (3)								
Tax-supp. debt + unf. pension liabilities	17,701	17,078	16,082	14,316	13,361	12,382	12,093	11,752
Total public sector debt	24,854	23,301	22,051	19,747	18,294	16,980	15,948	14,410
As a % of GDP (3)								
Tax-supp. debt + unf. pension liabilities	37.3%	36.9%	35.5%	32.8%	31.8%	28.6%	29.2%	30.8%
Total public sector debt	52.3%	50.3%	48.7%	45.3%	43.5%	39.2%	38.5%	37.8%

Debt Breakdown by Currency (4)

Cdn\$ pay	n/a	100%	100%	100%	100%	100%	100%	100%
Non-CAD pay	n/a	0%	0%	0%	0%	0%	0%	0%

Fixed/Floating Rate Debt Breakdown (4)

Fixed rate	n/a	77%	80%	76%	82%	80%	81%	82%
Floating rate	n/a	23%	20%	24%	18%	20%	19%	18%

Unfunded Pension Liabilities (Tax-Supported)

(\$ millions)	Valuation Date	Mar. 31, 2013	Gross Debt Maturity Profile		
			Public Sector Debt		
			(\$ millions)	%	
Civil service (5)	Dec. 2011	2,381	2013-14	4,417	14.5%
Teachers (5)	Jan. 2012	2,914	2014-15	2,540	8.3%
Other plans (includes MLAs, judges, other)	Various	1,645	2015-16	2,068	6.8%
			2016-17	2,574	8.5%
			2017-18	2,569	8.4%
			2018-19 to 2022-23	6,415	21.1%
			2023-24+	9,853	32.4%
			Total	30,436	100%

* Net of sinking fund and Debt Retirement Fund assets. P = Projected; B = Budget; n/a = not applicable.

- (1) Includes asset and liability items related to debt of The Manitoba Hydro-Electric Board and Manitoba Lotteries Corporation.
(2) Not guaranteed by the Province. DBRS estimate for 2013P; 2014B.
(3) Excludes pension liabilities of self-supporting Crown corporations.
(4) Net of hedges (if any). Floating rate debt is defined as debt that matures or is repriced within 12 months.
(5) Civil Service includes amounts for indexation and unamortized pension adjustment; Teachers includes amount for indexation.

**Province of
Manitoba****Report Date:**
October 11, 2013**Rating**

Debt	Rating	Rating Action	Trend
Issuer Rating	A (high)	Confirmed	Stable
Short-Term Debt*	R-1 (middle)	Confirmed	Stable
Long-Term Debt*	A (high)	Confirmed	Stable

*Issued/guaranteed by the Province, including Manitoba-Hydro Electric Board

Rating History

	Current	2012	2011	2010	2009	2008
Issuer Rating	A (high)	A (high)	NR	NR	NR	NR
Short-Term Debt	R-1 (middle)	R-1 (middle)	R-1 (middle)	R-1 (middle)	R-1 (middle)	R-1 (middle)
Long-Term Debt	A (high)	A (high)	A (high)	A (high)	A (high)	A (high)

Related Research

- [DBRS Updates Provincial Government Fact Sheet](#), July 11, 2013.
- [Rating Canadian Provincial Governments](#), August 2012.

Notes:

All figures are in Canadian dollars unless otherwise noted.

For the definition of Issuer Rating, please refer to Rating Definitions under Rating Policy on www.dbrs.com.

Generally, Issuer Ratings apply to all senior unsecured obligations of an applicable issuer, except when an issuer has a significant or unique level of secured debt.

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25

1 statements (income statement, balance sheet and cash flow statement) for every development plan
2 modelled under Appendix 11.4 under all scenarios, and under all previous hydrology regimes.

3 In reaching our conclusions contained in this report, MPA has run the All Gas and Preferred
4 Development plans, and Plans 4, 6 and 12 under the 2012 reference Manitoba load for all 99 years of
5 hydrological history through year 2062 (at reference economics, energy and capital, for 495 total runs).

6 The All Gas and Preferred Development Plans were further run at high and low 2012 Manitoba load for
7 all 99 years of hydrological history through year 2062 (at reference economics, energy and capital, for
8 396 total runs).

9 The Preferred Development Plan was further run at 4x 2013 DSM and 1x 2012 DSM (both at 2013
10 reference Manitoba load) for all 99 years of hydrological history through year 2062 (at reference
11 economics, energy and capital, for 198 total runs).

12 The All Gas and Preferred Development plans, and Plans 4,6 and 12, were run for 21 different years of
13 hydrological history, for every combination of reference, high and low economics, energy and capital
14 costs, for a total of 546 runs per development plan, or 2730 total runs.

15 In total, MPA performed 3,819 different runs of the financial model. The financial model, as constructed
16 in the manner detailed above, formed the basis for our financial conclusions reached in this report.

17 **Findings on Ratepayer Total Costs**

- 18 • Findings are in reference to the average probability weighted present value basis of domestic
19 revenue
- 20 • Resource Plans 4 and 6, which include Keeyask, some level of transmission interconnection and
21 natural gas plants, appear to fare consistently better than the other options
- 22 • Plans 14 and 12, which include Conawapa, are consistently ranked as more costly to ratepayers
23 than Plans 4 and 6, which include Keeyask but not Conawapa
- 24 • Plan 1, the All Gas Plan, ranks poorly when economic variables such as inflation and interest
25 rates are low, but better when they are moderate or high; this is particularly true with respect to
26 the Preferred Plan 14, which is superior to All Gas in the low economics environment but not
27 otherwise
- 28 • Plan 1, the All Gas Plan, ranks relatively poorly when the discount rate is lower at 6%, but better
29 when the discount rate is higher at 10%, suggesting that the relative time value of money is an
30 important consideration
- 31 • Plan 4, with a 250 MW interconnection, always ranks better than Plan 6, with a 750 MW
32 interconnection

- 1 • Similarly, Plan 14 is better than Plan 12 in every case but one, suggesting that an earlier
2 construction and export orientation for the Conawapa facility is better than a later one
- 3 • Changing Manitoba demand does not actually affect the total cost to ratepayers over 48 years
4 very much, if all other variables are kept constant; the difference in total cost to ratepayers
5 between High and Low Manitoba demand futures is not more than about 2% in any of the cases

6 Findings on Government Revenues

7 As might be expected, the differences between Resource Plans with respect to revenues for the
8 Government of Manitoba are clear, and align with the construction of hydroelectric facilities.

Average Probability Weighted PV of Revenue to the Province of Manitoba

High, Ref and Low Economics, Energy and Capital

(2015-2062)

(\$ in millions)

Revenue	Development Plan				
	1	4	6	12	14
NPV @ 6.00%					
Water Rentals	\$1,702	\$1,883	\$1,879	\$2,034	\$2,091
Provincial Debt Guarantee	\$2,614	\$3,031	\$3,075	\$3,561	\$3,783
Capital Taxes	\$1,584	\$1,874	\$1,883	\$2,229	\$2,275

9

10 In the Preferred Development Plan (14), Conawapa is built and built soonest, and hence water rental
11 fees are greater, more debt must be guaranteed, and capital taxes are highest.

12 The differences between Plans (14) and (12), where Conawapa is built a few years later, are very
13 modest. Similarly, the differences between Plans (4) and (6), which both include Keeyask but not
14 Conawapa, are very minor, but these totals are noticeably lower than the Conawapa-based Resource
15 Plans.

16 Findings on Export Orientation

17 As might be expected, the Preferred Development Plan (14), which includes the building of Conawapa
18 earlier in time with the intention of signing long-term export contracts, includes the highest export
19 revenues as a percentage of total Manitoba Hydro revenues.

Average Export Revenue as a Percentage of Total Revenue**All Gas and Preferred Development Plan**Reference Economics and Capital
(2015 - 2062)

Energy Scenario	Development Plan	
	1	14
Reference	9.5%	20.9%
High	11.9%	26.2%
Low	6.4%	14.3%

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- Resource Plans which have a higher reliance on export revenues are more sensitive to changes in export prices; this is borne out by reference to the model results if all variables except energy prices are kept constant: for example, average present value costs to ratepayers in Preferred Plan (14) are 10% lower if export prices are higher; whereas in All Gas Plan (1) there is little difference between the total ratepayer costs between scenarios with High and Low export prices
 - For government, higher exports mean that more of its revenue from Manitoba Hydro is actually coming from export jurisdictions, rather than ratepayers, which means that, *other things being equal*, the province as a whole should be receiving a net benefit

11 Findings on Hydrology

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- Hydrology is critical to short-term issues, such as the potential for financial distress, but is less relevant to longer term issues such as the present value of ratepayer costs over a 48-year period or longer
 - Though hydrology is less critical over longer terms, it does not mean that it is not relevant: even over a 35-year period the standard deviation of water flow is almost 5% of the historical average
 - Resource plans heavy in hydroelectric investment, such as the Preferred Development Plan (14), are more sensitive to hydrology, and will therefore demonstrate greater variation in all financial results (including Manitoba ratepayer costs), especially in the short term but also over the longer term, other things being equal

21 Findings on Financial Distress

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- 26
- Despite the fact that the most severe situations of financial distress caused by drought overwhelm distinctions between Resource Plans, there are useful distinctions that can be made
 - These include sensitivity to hydrology, sensitivity to the timing of distress, and overall financial strength
 - Some Resource Plans are more sensitive to hydrology than others

- 1 • It is inescapable that the net income of Manitoba Hydro will be more sensitive to hydrology if
2 Keyask, Conawapa or both are built
- 3 • It should be noted that this sensitivity goes both ways: these Resource Plans will be exposed to
4 higher highs and lower lows in net income and other financial indicators based on the future
5 course of hydrology
- 6 • Timing is extremely relevant, and there are distinctions between the resource plans

7 **Conclusions**

8 Analysis of the available data and construction of a financial model capable of incorporating hydrology
9 has allowed for the illumination of a number of patterns, and a variety of observations that will, it is
10 hoped, assist the PUB in making its recommendations to government on the NFAT Review of the
11 Manitoba Hydro Preferred Development Plan.

12 Key observations have included:

- 13 • The ability of Manitoba Hydro to meet its financial targets over the next ten years without
14 increasing rates beyond two times the rate of inflation – under all Resource Plans – is entirely
15 dependent on the continued absence of a significant drought
- 16 • Different Resource Plans extend that period of fragility, including the Preferred Development
17 Plan, which should not be expected to enter a time of more financial capacity for 20 years,
18 unless rates are allowed to rise at more than double the rate of inflation for an extended period
19 of time
- 20 • In the face of a sustained, severe drought, the choice of Resource Plan is irrelevant to the
21 occurrence of distress, as the financial consequences of such a drought would overwhelm the
22 differences between Resource Plans
- 23 • Choice of Resource Plan does affect the occurrence of financial distress due to drought in milder
24 drought cases, and it also affects the magnitude of the problem that would be faced by
25 government in the event of a drought of any kind
- 26 • The total, probability-adjusted present value of ratepayer costs over 48 years across all five
27 Resource Plans is likely too narrowly distributed to allow for definitive selection of the “lowest
28 cost” choice. These outcomes are essentially within the margin of error of the many
29 calculations, estimates and assumptions that were required to construct the model
- 30 • The consistent patterns of sensitivity of specific Resource Plans to certain variables indicates
31 that model analysis can provide a guide to identifying the concerns that should be part of any
32 decision-making process

- 1 • An extremely important inter-generational decision is embedded in the choice of Resource Plan,
2 as costs to Ratepayers will be distributed very differently over time.

3 Bearing these and other observations in mind, we would suggest the following recommendations:

- 4 a) Plans 4 and 6, which were largely indistinguishable from each other, resulted in costs to
5 ratepayers that appear to be lower than other Resource Plans in many scenarios, if only
6 marginally; this suggests that proceeding with Keeyask may be a prudent step to take at this
7 time, but a more thorough review of the proposal to build Conawapa as part of the Preferred
8 Development Plan should be undertaken closer to its final commitment date
- 9 b) Given the expected fragility of Manitoba Hydro during the first ten years of any Resource Plan,
10 and beyond that in others, the Government of Manitoba may wish to calculate and reserve
11 some of the funds it generates (e.g., through permits, approvals, income taxes, etc., related to
12 the construction projects) to act as an initial financial buffer for the government in the event of
13 drought and the need for financial assistance to Manitoba Hydro
- 14 c) Given the inevitability of a drought at some point in the future, and the expected financial
15 impact that such a drought would have on Manitoba Hydro, particularly in the near term,
16 consideration should be given to the development of an explicit policy on the future course of
17 customer rates in such a situation; this policy could then be shared with credit rating agencies
18 and others to address the potential concern that they may have that in the event of a drought
19 some fraction of Manitoba Hydro debt might be financially unsupported.

20

21

22

1 historical average, two thirds of the time (however, fully one third of the time, it will be above 120% or
 2 below 80%). If water flow is averaged on a ten year basis, however, the standard deviation falls in half,
 3 with two thirds of ten-year averages falling between 110% and 90% of the average water flow. Over a
 4 longer period of time, the deviation shrinks further.

5 Put differently, the change in water flow on an annual basis can be dramatic. In an average year over the
 6 past 100 years, water flow was 18% higher or lower than the previous year. Eight times in the past
 7 century water flow has changed by +/- 40%! However, these gyrations just mask the fact that water flow
 8 tends to return to the mean.³¹

9 In terms of relevance to the choice of Resource Plans, it can be observed that:

- 10 • Hydrology is critical to short-term issues, such as the potential for financial distress, which will
 11 be addressed in the next section, but is less relevant to longer term issues such as the present
 12 value of ratepayer costs over a 48-year period or longer
- 13 • Though hydrology is less critical over longer terms, it does not mean that it is not relevant: even
 14 over a 35-year period the standard deviation of water flow is almost 5% of the historical average
- 15 • Resource plans heavy in hydroelectric investment, such as the Preferred Development Plan (14),
 16 are more sensitive to hydrology, and will therefore demonstrate greater variation in all financial
 17 results (including Manitoba ratepayer costs), especially in the short term but also over the
 18 longer term, other things being equal.

19 **4.6. Findings on Financial Distress**

20 It should be very apparent from the previous section on the impact of hydrology on Manitoba Hydro's
 21 financial results that there are scenarios where Manitoba Hydro may find itself in challenging
 22 circumstances. In average water flow years, it is apparent from the modeling that Manitoba Hydro's
 23 financial results will be adequate, across all 27 scenarios proposed by Manitoba Hydro, regardless of the
 24 choice of Resource Plan. "Adequate" in the sense of meeting its standards for debt:equity ratio in the
 25 longer term, keeping its Interest Coverage Ratio above 1.2,³² and not increasing or decreasing rates by
 26 more than double the rate of inflation in any given year.

27 However, as the historical data makes clear, water flow need not be average, and in fact could at some
 28 point be well below average. In that case, Manitoba Hydro's financial results will not be within the
 29 planned ranges.

³¹ Note that climate change and other long-term factors such as industrial development and water usage in watersheds can have long-term impacts on the mean water flow reaching Manitoba. This issue is not addressed here.

³² Note that in some scenarios the ICR falls below 1.2 even in average water years, particularly between 2015 and 2025 when investment is greatest. However, this has already been signalled to the capital markets as an inevitable result of the intended long-term investment program, and there is no reason to believe that such a pattern would be cause for concern.

1 Many of the hydrology patterns applied to the model include “drought” scenarios at some point. If
 2 drought is defined as any year in which water flow is below the historical average, then an alarming
 3 number of droughts become readily apparent. If drought is defined as any five-year period when
 4 average water flow over five years is less than 95% of the historical average, then a more stringent test
 5 is being applied. In that case, there have been 37 such periods out of the 97 periods that can be counted
 6 in the last 101 years.³³ Very serious droughts with substantial financial impacts on Manitoba Hydro
 7 might be defined as five-year periods where average water flow is below 85% of average: there are 12
 8 such periods out of the past 97. Most of these encompass periods centred in the 1930s and late 1980s.
 9 The last such five-year period was from 1988-89 to 1992-93.

10 Notably, the past 20 years have been extremely “wet” by historical standards, with only seven years
 11 below the historical average water flow, and a 20-year average of 110% of the historical water flow, one
 12 of the best such periods on record.³⁴

13 There have historically been extended periods of serious drought:

- 14 • in the seven years from 1918-24 inclusive, every year was below average, and four of the seven
 15 years were below 85% of the average
- 16 • in the *eighteen* years between 1929-1946 inclusive, only three were above the historical
 17 average, and *nine* were 85% or less; this can be considered the “drought of the century” both in
 18 terms of length and severity, as it also includes the worst five-year period (from 1936-40, but
 19 that is almost equaled by the period 1987-91, when records are more accurate)
- 20 • in the sixteen years between 1980-95 inclusive, only three years were above average, and eight
 21 were 85% or less, including the severe period from 1987-91, the second-worst five years on
 22 record.

23 According to our model, it is absolutely clear that in the event of a severe, prolonged drought of the sort
 24 described here, Manitoba Hydro faces financial distress *regardless* of the Resource Plan selected, AND
 25 regardless of which of the 27 scenarios best describes the many variables that affect financial
 26 performance. In fact, distress is caused of such magnitude that the distinctions between the Resource
 27 Plans and scenarios are not particularly relevant.

28 The distress caused by a drought manifests itself in several ways:

- 29 • The system’s hydroelectric production falls dramatically, which reduces exports and export
 30 revenue, increases thermal production and therefore fuel costs, and increases imports and
 31 import costs
- 32 • The result is reduced operating income

³³ I.e., given data beginning from 1912 to 2012 inclusive, five-year periods would be counted from 1912-16, 1913-17, etc.

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- 1 • When depreciation and interest are deducted from operating income, net income will often be
2 negative, which leads to interest coverage ratios below 1.0; in the worst years declines in
3 operating results will be so severe that the interest coverage ratio is actually itself negative,
4 which implies that cash flow before capital investments is insufficient to cover interest
- 5 • If net income is negative for a series of years, then retained earnings will steadily decline
6 (possibly to the point of negative equity in the business), while at the same time all capital
7 investments will have to be funded increasingly by debt, which compounds the interest burden
8 for future years;
- 9 • Until the drought ends, and net income returns to positive territory, the company will continue
10 to suffer deteriorating financial indicators from the compounding of debt increases.

11 There are two potential responses to this situation: raise rates, or borrow ever more to fund
12 requirements. However, it should be made clear that solely raising rates to the level required to
13 compensate for a drought is highly unlikely to be the practical solution. In some model runs across
14 Resource Plans, rates would be required to rise by anywhere from 25% to 50% or more for a sustained
15 period in order to maintain Manitoba Hydro's financial probity. Then, several years after the drought
16 ends, rates could again fall steeply. This kind of response would play havoc with the business plans of
17 Manitoba Hydro ratepayers, could undermine the competitiveness of many businesses, and would
18 certainly change the competitive standing of the province with respect to other electricity jurisdictions.

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20 inflation, but that the Government of Manitoba would also fund Manitoba Hydro's business with a
21 combination of additional debt and possibly temporary relief from fees and taxes paid to government
22 (water rental fees, capital taxes, and debt guarantee fees).

23 Speculating as to the magnitude of allowable rate increases in such circumstances is difficult: would
24 rates be allowed to rise at triple inflation for a few years? Or, perhaps 10% per year? What balance
25 would there be between a willingness to allow an "emergency" increase in the first year of a drought,
26 and subsequent sustained increases when it is determined that drought is continuing unabated? If
27 drought were to become the "new normal" over the course of a decade, would ratepayers/citizens be
28 willing to see a Crown Corporation systematically raise rates during what would likely be seen as a time
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32 electricity system is designed to ensure that these can be satisfied in all conditions where water flows
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8 for future years;
- 9 • Until the drought ends, and net income returns to positive territory, the company will continue
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12 requirements. However, it should be made clear that solely raising rates to the level required to
13 compensate for a drought is highly unlikely to be the practical solution. In some model runs across
14 Resource Plans, rates would be required to rise by anywhere from 25% to 50% or more for a sustained
15 period in order to maintain Manitoba Hydro's financial probity. Then, several years after the drought
16 ends, rates could again fall steeply. This kind of response would play havoc with the business plans of
17 Manitoba Hydro ratepayers, could undermine the competitiveness of many businesses, and would
18 certainly change the competitive standing of the province with respect to other electricity jurisdictions.

19 A more realistic scenario is that rates would increase at something more than double the rate of
20 inflation, but that the Government of Manitoba would also fund Manitoba Hydro's business with a
21 combination of additional debt and possibly temporary relief from fees and taxes paid to government
22 (water rental fees, capital taxes, and debt guarantee fees).

23 Speculating as to the magnitude of allowable rate increases in such circumstances is difficult: would
24 rates be allowed to rise at triple inflation for a few years? Or, perhaps 10% per year? What balance
25 would there be between a willingness to allow an "emergency" increase in the first year of a drought,
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29 of hardship for many?³⁵ Since Manitoba has not faced this type of circumstance for more than 20 years,
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³⁵ For example, in a severe and prolonged drought, it can be expected that the agricultural community would suffer most acutely, creating a public and media awareness of drought, and the typical calls for government support.

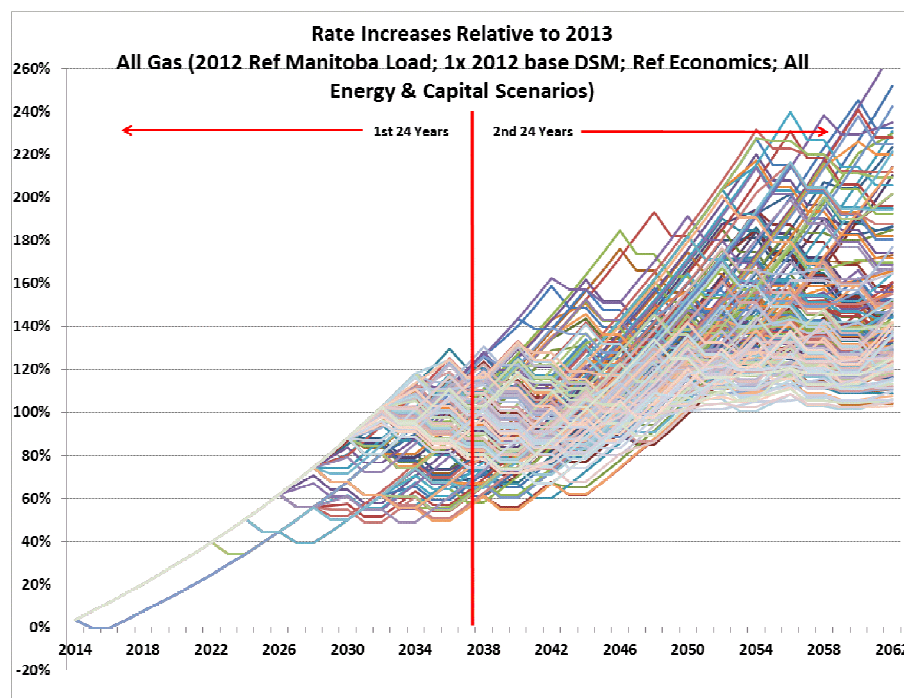
1 event of drought, so technically this situation could be avoided. However, actually suspending a firm
 2 export contract would be an extraordinary step to take,³⁶ and could change the standing of Manitoba
 3 Hydro as a potential commercial partner for years afterward.

4 **4.6.1. Relative Susceptibility to Distress**

5 Despite the fact that the most severe situations of financial distress caused by drought overwhelm
 6 distinctions between Resource Plans, there are useful distinctions that can be made. These include
 7 sensitivity to hydrology, sensitivity to the timing of distress, and overall financial strength.

8 First, the point made in s. 4.5 above that some Resource Plans are more sensitive to hydrology is
 9 relevant. It is inescapable that the net income of Manitoba Hydro will be more sensitive to hydrology if
 10 Keeyask, Conawapa or both are built. A less severe drought may not affect Resource Plan 1 enough to
 11 drive Manitoba Hydro into distress. It should be noted that this sensitivity goes both ways: these
 12 Resource Plans will be exposed to higher highs and lower lows in net income and other financial
 13 indicators based on the future course of hydrology.

14 Second, timing is extremely relevant, and there are distinctions between the resource plans. In the first
 15 ten years of the model, all Resource Plans – including the All Gas Plan (1) – assume that rates increase at
 16 double the rate of inflation under all of the 27 scenarios and virtually all of the 21 hydrology patterns
 17 tested. For example, the following is the rate increase pattern for the All Gas Plan (1) in the 189 model
 18 runs that include reference economics (but varying hydrology, fuel costs, etc.).

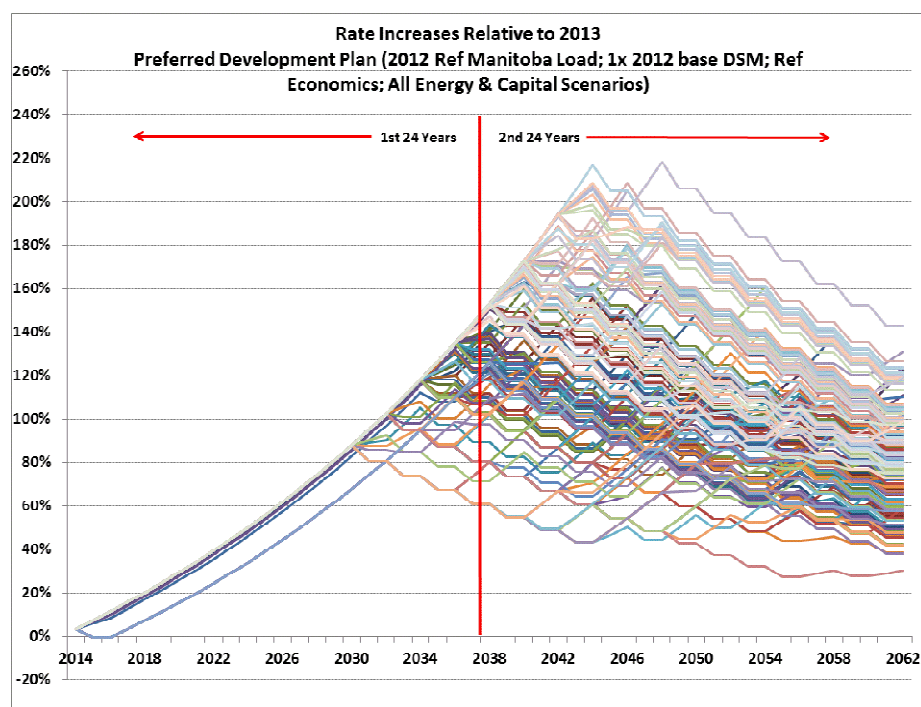


19

³⁶ In 2003-04, when Manitoba suffered a significant one-year drought, all firm contracts were fulfilled and “adverse water” was not declared. However, it is notable that in the two following years after the drought, water flow levels shot up well above historical averages.

1 Until the late 2020s, very few model runs out of 189 include anything other than 3.8% annual rate
 2 increases. One implication is that Manitoba's competitive advantage with other jurisdictions may be
 3 deteriorating from its strong current position based on the steady increases. However, after that point,
 4 rate increase moderate in many scenarios and hydrology patterns, indicating that financial stress on the
 5 company is abating. To the extent that rates are flattening or declining, Manitoba's competitive rate
 6 flexibility could be improving. If a drought were to begin after that point, then the first response would
 7 be to return to 3.8% rate increases (which is exactly what many lines on the chart depict), and only then
 8 would other options have to be considered.

9 For the Preferred Development Plan (14), however, timing is different.



10

11 Here, significant rate differentiation does not begin until the early to mid-2030s. Rates rise at a steady
 12 clip for the next 20 years, which must have some competitiveness consequences (depending on
 13 developments elsewhere, of course). This means that any financial challenge suffered during those two
 14 decades could only be addressed by extraordinary measures, whether in the form of higher rates or
 15 declining financial indicators coupled with government support. However, upon reaching the 2040s,
 16 rates begin a steady decline under virtually all scenarios, which indicates tremendous capacity to absorb
 17 shocks without unduly compromising the province's competitive position.

18 The third factor is the relative ability of Manitoba Hydro under each of the Resource Plans to absorb the
 19 potential deterioration to financial indicators that could be caused by drought. One possible measure of
 20 this factor is to compare the maximum negative net income that could occur in a drought year with the
 21 size of the interest payment that is due in that year. For example, in s. 4.5 above, the year 2030 was
 22 reviewed for Resource Plans (1) and (14) with respect to the potential impact of hydrology and scenario
 23 conditions. In the worst modeled case for that year (in the High Economics, High Energy Cost, High

1 Capital Good Costs, with the hydrology of 1988), Resource Plan (1) had a net loss of \$1,366 million and
 2 an interest coverage ratio of only 0.29x, while Resource Plan (14) had a net loss of \$2,896 million but an
 3 interest coverage ratio of 0.33x. The size of the net loss caused by the drought in absolute terms was
 4 larger, but with respect to its impact on a financial indicator such as the interest coverage ratio it was
 5 actually relatively smaller, because of the larger balance sheet of the company in Resource Plan (14).

6 Such calculations change from year to year, Plan to Plan, and scenario to scenario, and cannot be
 7 calculated with confidence without meticulously testing the entire 3000+ model runs. However, a
 8 general assumption can be made that the Resource Plans with larger balance sheets will be better able
 9 to absorb these situations over the full life of the model, other things being equal.

10 **4.6.2. Magnitude of Distress**

11 Assessing the relative “magnitude” of the distress to which each of the Resource Plans is susceptible is
 12 challenging because of its amorphous definition.

13 Is the magnitude the absolute size of a possible net loss in a single year? (Adjusted for inflation?) Is the
 14 magnitude the absolute size of the operating cash shortfall that might be suffered in the worst
 15 situations?³⁷ (Again, adjusted for inflation?) If government could compensate for temporary financial
 16 distress by exempting Manitoba Hydro from payments to government (water, debt guarantee and
 17 capital tax), is it the amount by which losses exceed these payments?

18 The purpose of attempting to calculate the magnitude of distress is to understand the problem in
 19 relation to the government, which is providing Manitoba Hydro with a debt guarantee, and which would
 20 be concerned if the company were no longer perceived by the credit rating agencies to be “financially
 21 self-supporting”. The key test can be inferred from comments made by the credit rating agency Moody’s
 22 in its report on the Province of Manitoba in July, 2013.³⁸

23 “This Crown Corporation’s ability to meet its own financial obligations without recourse
 24 to provincial subsidies is a positive credit attribute for the province.”

25 In a “normal” situation, Manitoba Hydro’s guidelines target not only an interest coverage ratio of at
 26 least 1.2, but also coverage of typical capital spending requirements from internally generated funds. If
 27 the company were not able to meet this objective during a one or two-year drought, it would be unlikely
 28 that credit rating agencies would reassess their position on the ability of Manitoba Hydro to be self-
 29 sustaining.³⁹ However, if drought conditions continued, and rates were not allowed to rise sufficiently to
 30 meet these interest and capital targets, then the shortfall in meeting them would become a focus for
 31 attention.

³⁷ I.e., the amount by which a potential annual net loss exceeded 1.2 times debt interest.

³⁸ Moody’s Investor Service, *Province of Manitoba Credit Analysis*, July 2013, p. 3.

³⁹ Manitoba suffered a short, sharp drought in 2003-4. The DBRS Credit Report on the Province of Manitoba on June 22, 2004 noted that the province suffered “an unexpected, and likely non-recurring, loss of \$359 million at The Manitoba Hydro-Electric Board (“Manitoba Hydro”) as a result of unexpectedly low water levels.” No further impact occurred, as water flow returned to average and subsequently above average levels in the following years.

1 In this case, *longevity* of financial distress caused by drought would be the indicator that the problem
2 had ANY magnitude. Only secondarily, the size of the cash shortfall in successive years would then be an
3 indication of the magnitude of the problem.

4 Returning to the example mentioned above relating to the model year 2030, if the losses described
5 occurred in only one year, because of a sudden drought, but then in subsequent years financial
6 indicators turned around, then there would be no magnitude to the problem. However, if those net
7 losses were part of a repeating pattern because of a deep and long drought, and there was an
8 unwillingness to drastically raise rates to compensate for the need for revenues, then it would be
9 absolute size of the net loss that would indicate the magnitude of the problem. In short, for
10 Development Plan (1), where the net loss was \$1,366 million, the magnitude would be less than for
11 Development Plan (14), where it was \$2,896 million.

12 Moreover, in provincial terms, because of the debt guarantee provided by the Province of Manitoba to
13 Manitoba Hydro, these cash shortfalls would be translated into the form of supported debt. Since these
14 situations occurred in the High economics environment, where the cost of Manitoba Hydro debt is
15 assumed to be nearly 9%, then the magnitude of debt that would be lacking support would be \$15
16 billion in the case of All Gas Plan (1), and over \$30 billion in Preferred Plan (14).

17 It should be noted that hydrology year 1988 was a singularly severe drought year, and there was some
18 recovery in each of these model runs subsequently, so shortfalls of that magnitude would not be
19 repeated. However, the assumption about financial capacity being related to size of balance sheet is
20 reversed with respect to magnitude of exposure to financial distress. In the event of a sustained, severe
21 drought, Resource Plans with a larger balance sheet due to investment in hydroelectric facilities will
22 have a greater magnitude of exposure, commensurate with that balance sheet and amount of debt.
23 Once a drought ends, the sensitivity to hydrology will again become a positive, and quickly return the
24 magnitude of exposure to zero.

25 In order to test the magnitude of financial distress more carefully, several assumed droughts in the
26 2020s and 2030s were examined. Sustained, deep drought hydrology patterns were used, with the same
27 pattern used for each of the decades. The Preferred Development Plan (14) was particularly susceptible
28 to drought in the earlier period, facing shortfalls of over \$1,000 million per year in a number of years
29 (that represents rate increases of 35% to 50%, depending on the year). However, when the same
30 drought experience is faced in the mid-2030s, no financial distress is experienced. At that point, debt
31 had been declining at Manitoba Hydro for several years, and rates were actually in the midst of falling
32 when the drought occurred. Reversing the rate direction in that situation was sufficient to address the
33 challenge. For All Gas Plan (1), circumstances are reversed: it was able to weather the storm in the
34 2020s with two years of poor results, but in the example of the 1930s, a sustained \$1,000 million
35 shortfall resulted unless rates were hiked systematically.

36

4.6.3. Cost Overruns

While drought is the most likely and expected source of financial challenges for Manitoba Hydro in considering its Resource Plans, it is not the only possibility. As was described in s. 3.3.5 above, there have been instances around the world where large construction projects have gone horribly wrong, resulting in substantial hardship for stakeholders.

Two observations seem pertinent: first, given that a construction cost overrun would be manifested in Manitoba Hydro's case as an increase in debt, it is only the debt interest amount that would present an immediate challenge. Second, given that it is only changes in revenue of a size potentially caused by hydrology that actually undermine Manitoba Hydro's performance, an overrun would have to be truly massive in proportion to be significant.

For example, a cost overrun of \$1,000 million under the High economics scenario would generate a year two debt interest of just under \$100 million. In the case of financial distress caused by drought, swings in cash flow of ten times that size were under examined. An unnecessary cash cost of \$100 million per year would not be welcomed, but would not undermine the performance of the company (that would even be true at two or three times the size).

This is not to say, however, that an extraordinary construction cost overrun would not be important: such events would change the full 48-year cost to Ratepayers, as follows:

PV of Domestic Revenue			
Average Impact of Additional Capital Expenditures on Conawapa			
Preferred Development Plan			
Additional capital outlay in 2025 (real 2014 \$)			
NPV @ 6.00%			
(\$ in millions)			
	Additional Capital Cost		
	\$0	\$1,000	\$2,000
PV of domestic revenue	\$44,230	\$45,016	\$45,839
Increase relative to nil increase	0.0%	1.8%	3.6%

While the sensitivity to cost overrun may not be sufficient to undermine the company, it would greatly damage the value proposition of the Resource Plan in question.

1 **PUB/MPA 1-027(a)**

2 **REFERENCE:**

3 MPA Report Page 61 Line 18

4 **PREAMBLE:**

5 MPA states :

6 In a "normal situation, Manitoba Hydro's guidelines target not only an interest coverage ratio
7 of at least 1.2, but also coverage of typical capital spending requirements from internally
8 generated funds. If the company were not able to meet this objective during a one or two-year
9 drought, it would be unlikely the credit rating agencies would reassess their position on the
10 ability of Manitoba Hydro to be self-sustaining. However if drought conditions continued, and
11 rates were not allowed to rise sufficiently to meet these interest and capital costs, than the
12 shortfall in meeting them would become a focus for attention.

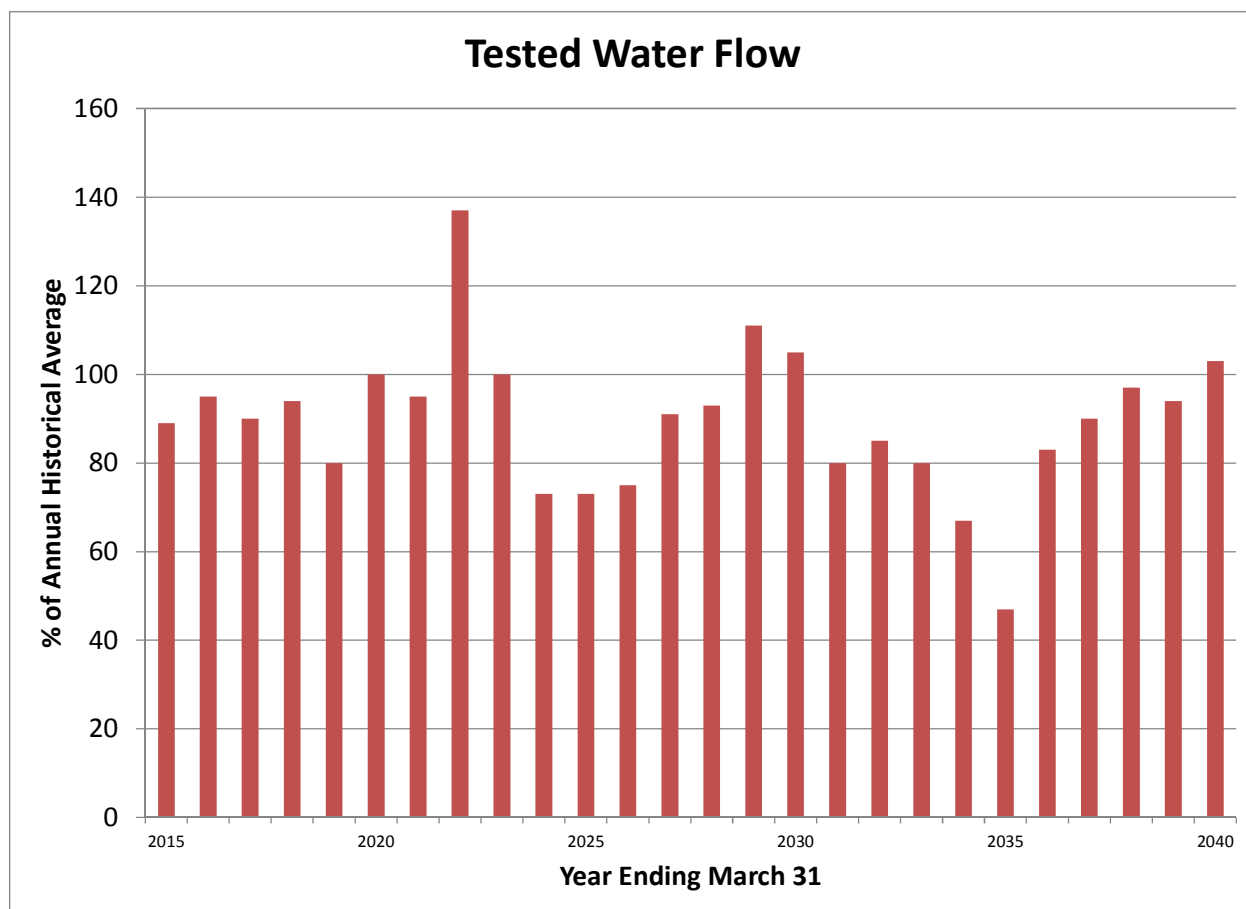
13 **QUESTION:**

14 Please provide a comparative analysis of the impact on net income and financial ratios of a
15 severe 5 year and severe 7 year drought in the 2030's. Please provide the analysis on the basis
16 of the indicated annual rate increase, and where the indicated rate increase is capped at no
17 more than twice the rate of inflation.

18 **RESPONSE:**

19 MPA applied a challenging hydrology scenario to all five of the Plans reviewed in our Report. A
20 graph of the hydrology scenario is provided on the next page.

21



1

2 Several features from this graph should be noted:

3

- Not many of the years have water flow above 100% of the historical average;

4

- There is a fairly significant drought in the fiscal years ending 2024 to 2026 where water flow is below 80% of historical average in each year

5

6

- There is a very serious drought in the years ending 2031 to 2035, with “recovery” really only coming in the late 2030s

7

8

- For the first twenty years depicted, the average water flow is the “flip side” of the experience of the past twenty years in Manitoba (i.e., in the past twenty years, average waterflow in Manitoba has been about 110% of historical average, whereas in the first twenty years depicted in the graph, average water flow is about 90% of historical average)

10

11

12

- 1 • This hydrology scenario actually happened historically (according to the data provided
2 by Manitoba Hydro)

3 Plans 1 (All-Gas), 4, 6, 12 and 14 (the Preferred Development Plan) were all subjected to this
4 hydrology scenario. Reference economics, Reference capital costs and Reference 2012 demand
5 were used for all model runs. In all cases, rate increases on Manitoba ratepayers were capped
6 at no more than two times the rate of inflation. Given the 1.9% rate of inflation in the
7 Reference economics scenario, this means that domestic rates were not allowed to rise by
8 more than 3.8% per year.

9 All Plans were tested under all three energy price scenarios, High/Reference/Low.

10 Despite how severe any period of drought might be, the model runs assume that Manitoba
11 Hydro fulfils all of its contractual obligations, and never declares “adverse water” or “force
12 majeure” under any of its firm export contracts. This means that in some cases Manitoba Hydro
13 may be importing power in order to export it again, or that it is meeting its export obligations
14 by burning natural gas. In reality, if Manitoba were faced with a serious and prolonged drought,
15 it might make economic sense to declare “adverse water” or “force majeure”, however doing
16 so might have longer term consequences with respect to signing future firm export contracts.

17 The tables on the following pages present the information listed below for all five Plans. Each
18 page presents three tables, one each for High energy prices, Reference energy prices, and Low
19 energy prices. (In addition, we have provided a separate, attached file with one table per page,
20 so the tables are larger and easier to read. Placing three tables on a page together facilitates
21 comparisons between the impacts of High/Reference/Low energy prices at a glance).

22 Tables are provided showing the path over 26 years of the following financial indicators:

- 23 • Net Income
- 24 • Equity Ratio (Manitoba Hydro has a 25% equity ratio target)
- 25 • Interest Coverage Ratio (Manitoba Hydro has a 1.2x interest coverage ratio target)

- 1 • Operating Cash Flow (revenues less cash operating expenses and a working capital
2 adjustment)
- 3 • Operating Cash Flow less spending on property, plant and equipment (Manitoba Hydro
4 has a target of 1.2x coverage of “ordinary” capital spending needs through internally
5 generated funds; note that depending on the Plan, many of the years covered will not
6 be “ordinary”; more discussion of this issue will follow)
- 7 • “Implied Stranded Debt” (this is a purely mathematical calculation which shows the
8 capitalization at prevailing Manitoba Hydro interest costs of the difference between the
9 actual interest coverage ratio and the target at 1.2x – further explanation below)

10 The first set of tables depicts the course of Net Income for the five Plans at High/Reference/Low
11 energy prices.

12 Some notable features include:

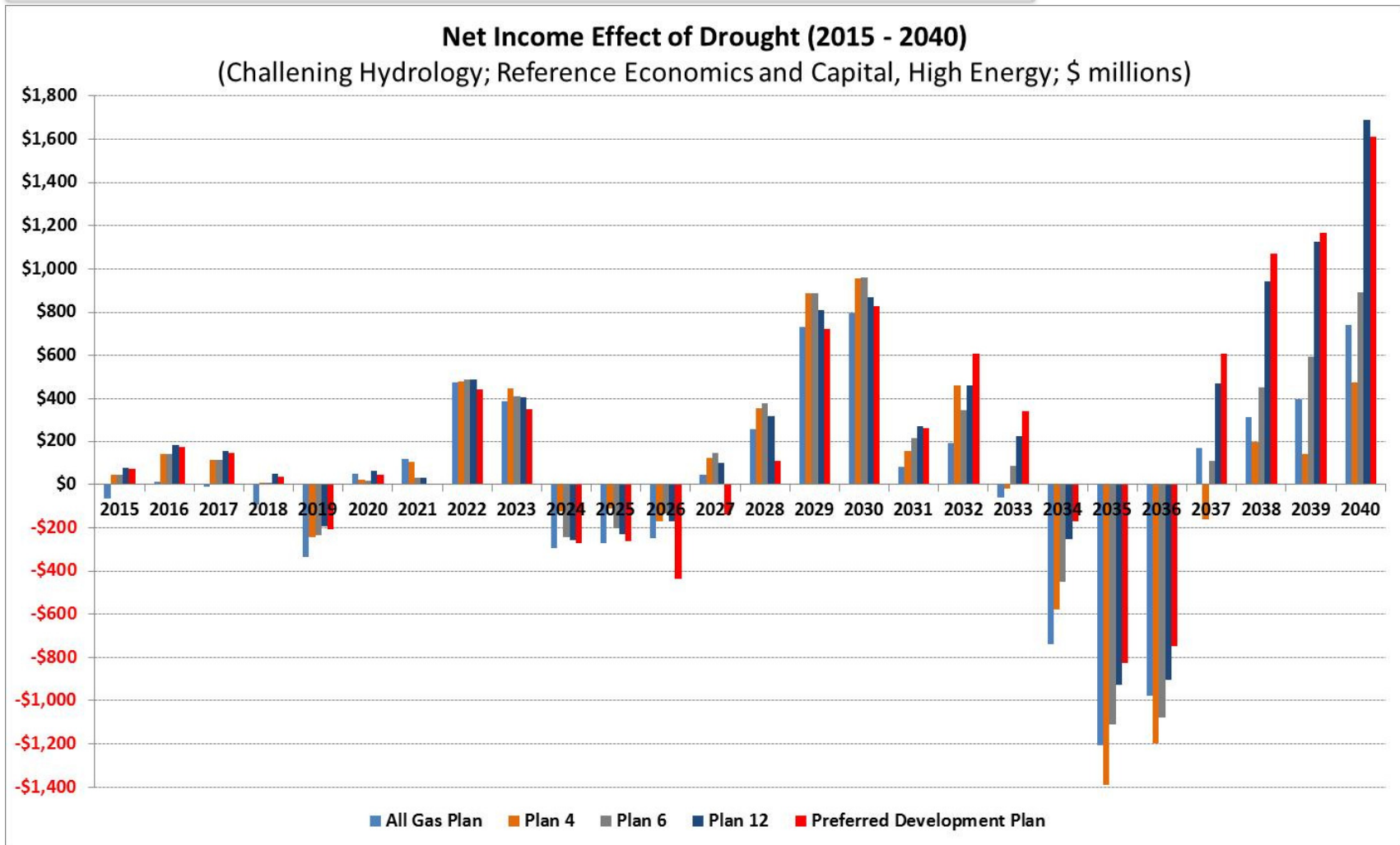
- 13 • Plan 1 (All-Gas) has negative net income for the first five years regardless of energy
14 prices. During this period, the sunk costs of Keeyask and Conawapa are being amortized,
15 which depresses net income by over \$250 million each year. If the writedown had
16 occurred all at once in the first year, then there would be a large loss in the first year,
17 followed by significantly larger Net Income for the remaining years.
- 18 • Plans 4 and 6 include the amortization of the Conawapa sunk costs. Since this is a much
19 smaller amount than the Keeyask sunk costs, it is not nearly as noticeable in the Net
20 Income chart.
- 21 • 2019, which is a poor hydrology year, shows negative Net Income for all Plans. This
22 pattern is repeated for the years 2024 to 2026, which is a drought period. Moreover,
23 Net Income appears to be directly correlated with energy prices, since Net Income is
24 lower (i.e., more negative) with lower energy prices.
- 25 • During the drought of the 2030s, however, experience is different. High energy prices in
26 general cause lower (more negative) Net Income. It should be recalled that each energy

1 scenario is a combination of several variables: export prices, import prices, natural gas
2 prices and carbon prices. In a High energy scenario, given the severe drought of this
3 hydrology scenario, all of the Plans would require imports and/or the burning of natural
4 gas to serve domestic load and firm export contracts. As a result, Manitoba Hydro costs
5 would rise dramatically. At the same time, during a drought opportunity exports would
6 fall to a very low level or zero, hence Manitoba Hydro would earn less revenue. The
7 result is a very significant drop in Net Income. However, in a Low energy price
8 environment, imports and natural gas would cost less, and while opportunity exports
9 are also receiving lower prices their volume is negligible to non-existent in a drought
10 anyway; the result is a less negative Net Income.

- 11 • As between the Plans, the impact on Net Income of energy price scenarios is different.
12 For the All Gas Plan the impact is relatively minimal, as Manitoba Hydro suffers losses in
13 11 of the 26 years with High prices, and 13 of 26 years with Reference and Low prices.
14 However, the impact on the Preferred Plan is much more dramatic, since Manitoba
15 Hydro suffers losses in only 8 years with High energy prices, but 19 years with Low
16 energy prices.
- 17 • As might be expected, Plans with more hydroelectric facilities have higher highs when
18 water is more plentiful (since there will be more opportunity export revenue). However,
19 in the drought period in the 1930s, Plans with more gas facilities have lower lows when
20 Energy prices are high (presumably because of the impact of natural gas prices), but the
21 Preferred Plan has more moderate but more persistent lows when Energy prices are low
22 (presumably because the loss of export revenue dominates the Net Income effects).

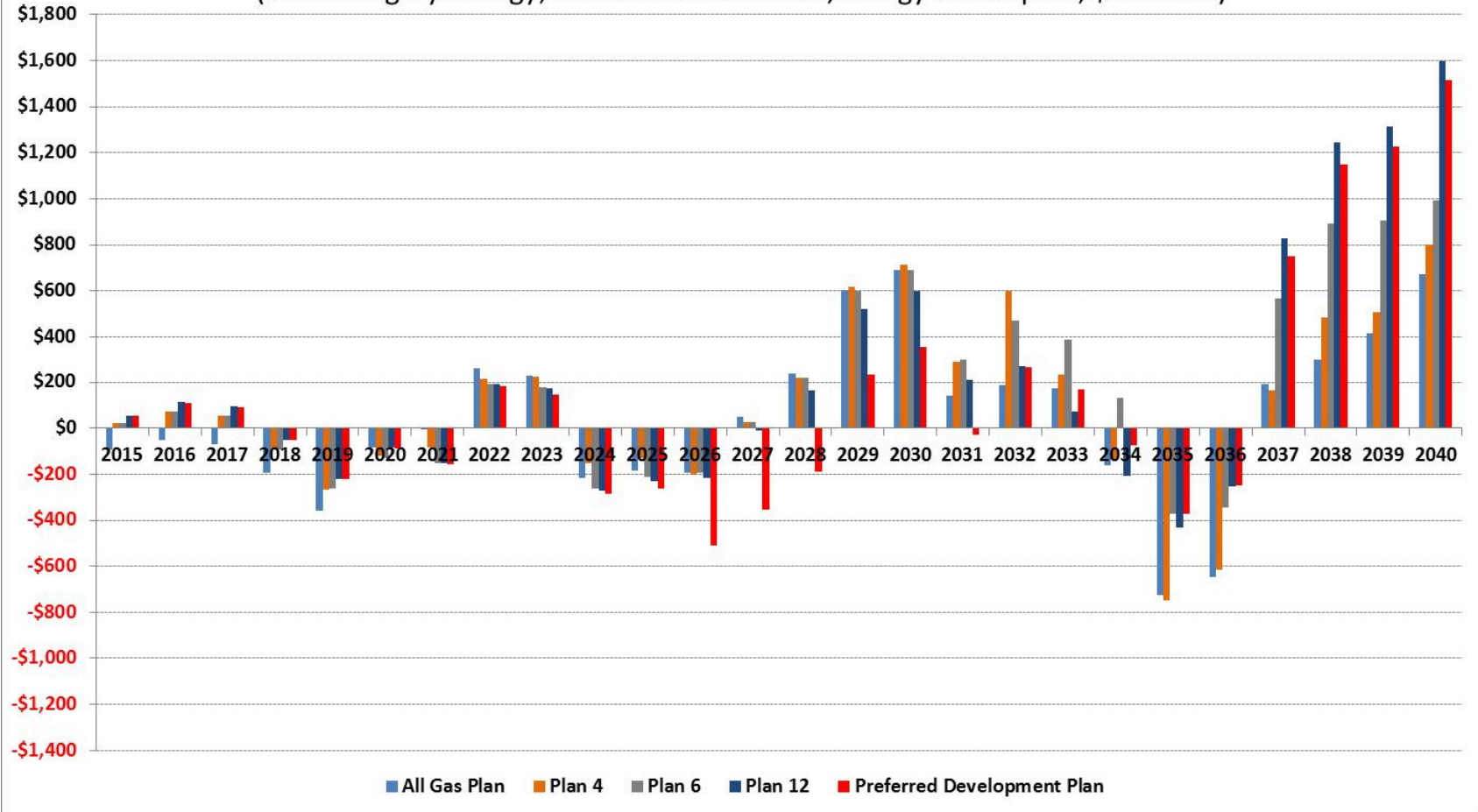
23 Please see the next page.

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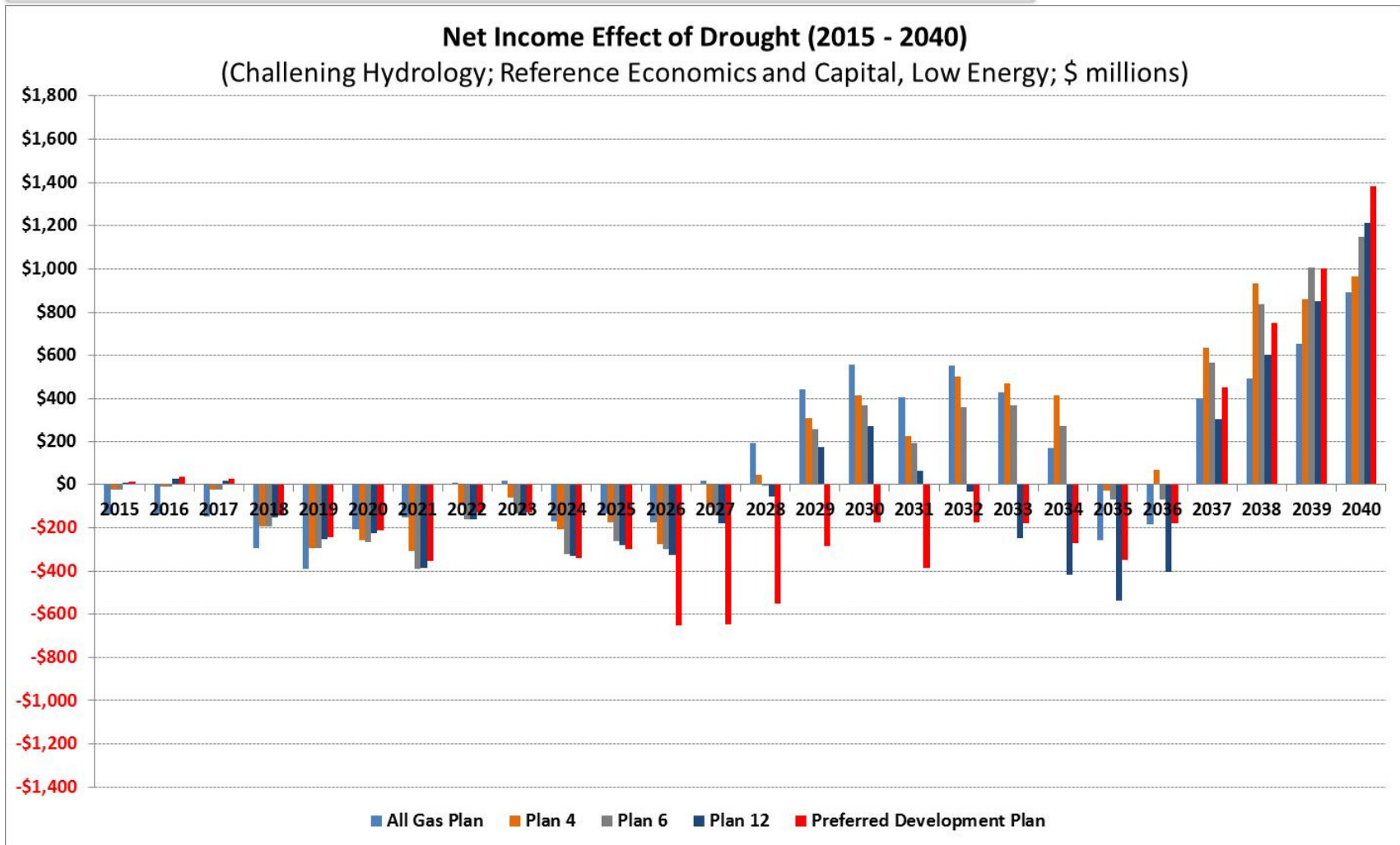


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Net Income Effect of Drought (2015 - 2040)
 (Challenging Hydrology; Reference Economics, Energy and Capital; \$ millions)



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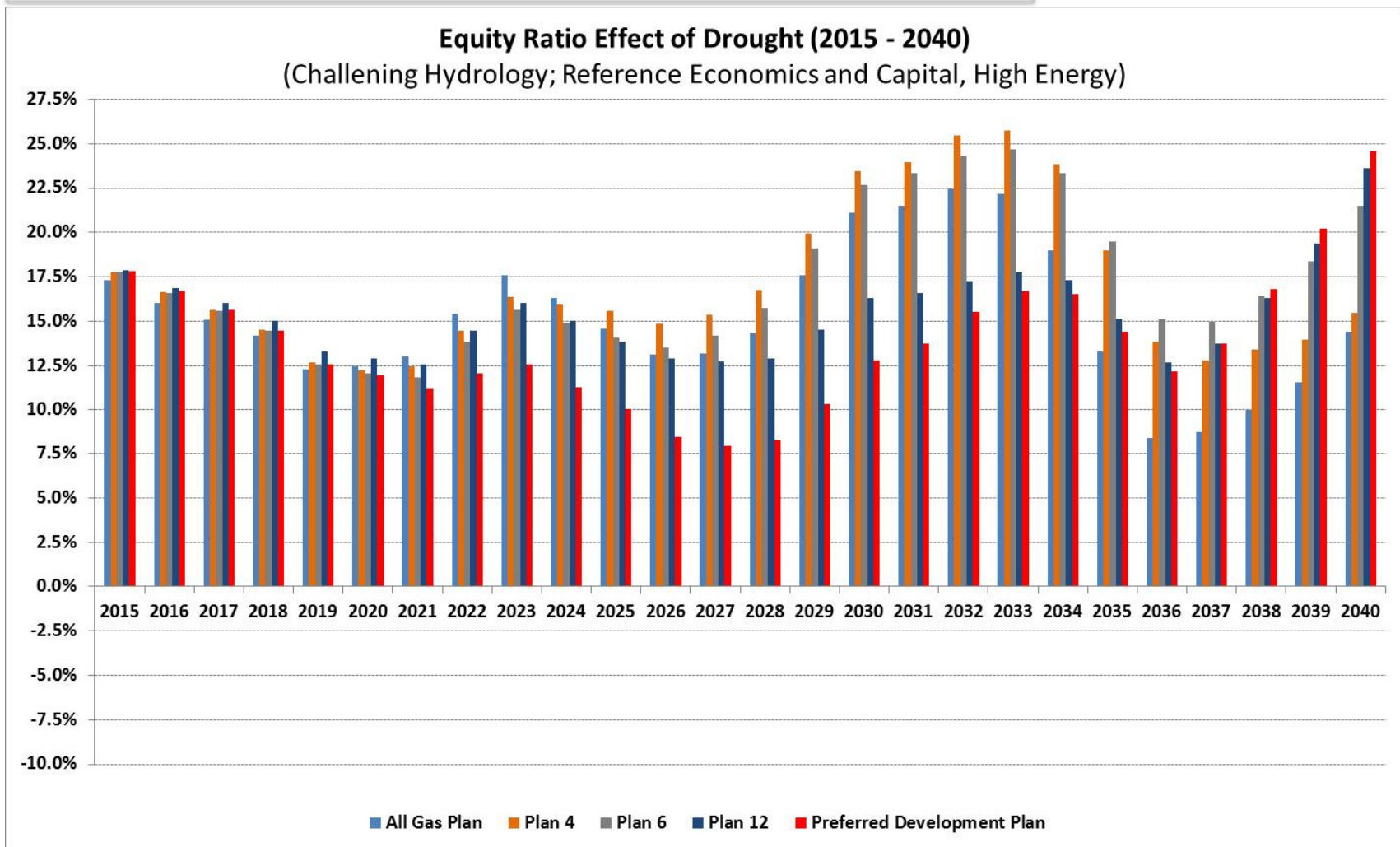
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1 The next set of tables depicts the course of the Equity Ratio.

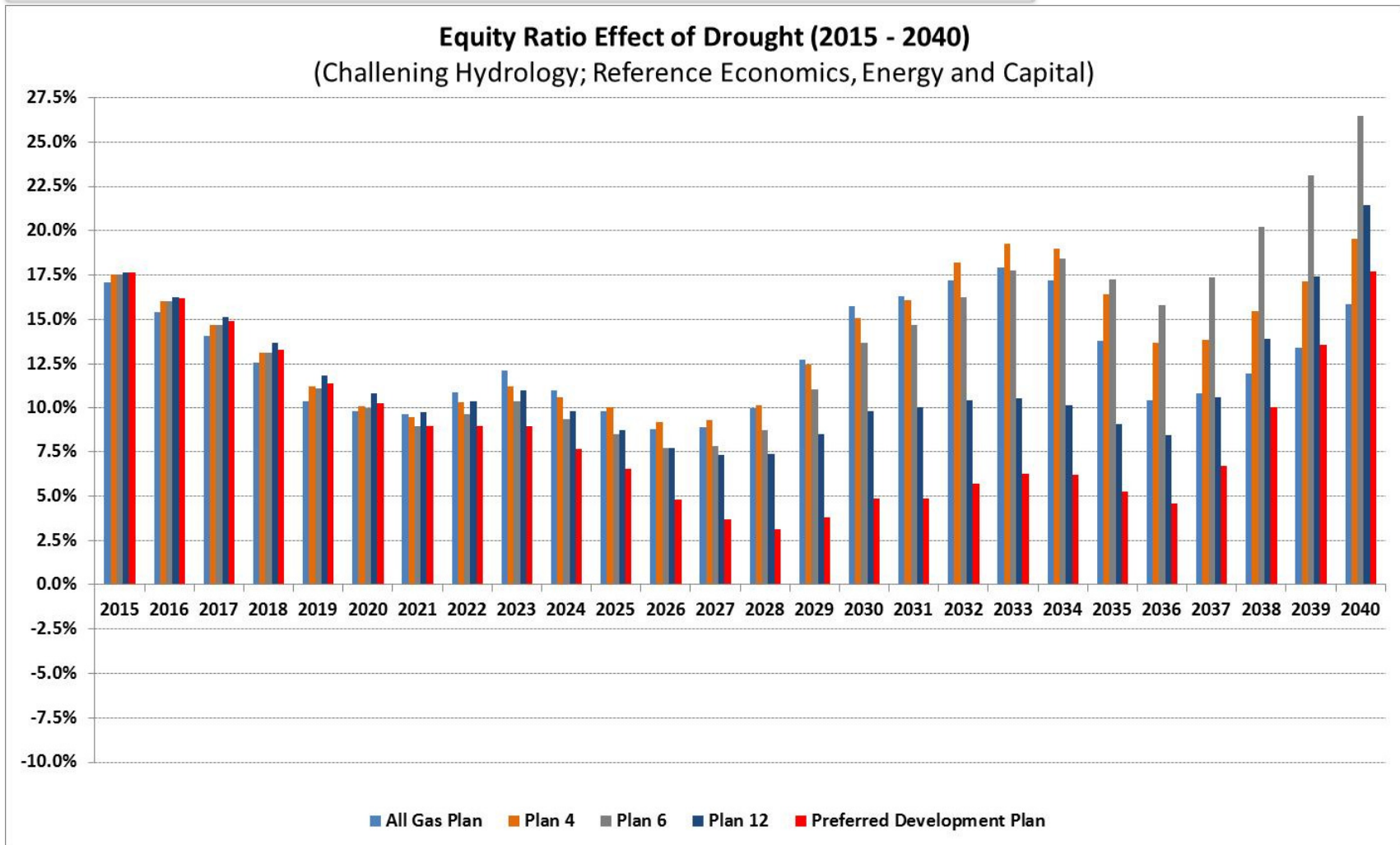
- 2 • None of the Plans, in none of the energy price scenarios, reaches the 25% target Equity
3 Ratio before 2030 at the earliest. Given the periodic droughts happening throughout the
4 26 year period, and the consequent financial challenges, it is very difficult for Manitoba
5 Hydro to reach its targets.
- 6 • Each of the Plans hits its high points in Equity Ratio at different times, depending on the
7 energy price scenario. For example, in the All Gas Plan, High energy prices result in
8 stronger performance in the 2020s, but weaker performance in the 2030s versus Low
9 energy prices. Plan 6 outperforms Plan 4 in the late 2030s with High and Reference
10 energy prices, but not with Low energy prices.
- 11 • It is immediately apparent that over the whole 26-year period, the equity ratio varies
12 directly with energy prices. Across Plans, the average equity ratio is higher with High
13 energy prices, and lower with Low energy prices (however, the exact pattern is different
14 depending on the Plan). This is consistent with the general conclusion above that the
15 Plans perform better under High energy prices (with the exception that All Gas varies
16 relatively little considered as an average over the whole 26 years, but with a different
17 pattern at each Energy price level).
- 18 • The most negative impact on equity ratio is for the Preferred Plan, which with Low
19 energy prices reaches negative equity ratios for the entire period from 2026 to 2039.
- 20 • For the All Gas Plan and Plan 4, equity ratio is directly proportional to energy prices in
21 2020 and 2030 (High energy prices means a higher equity ratio), but inversely
22 proportional in 2040 (High energy prices means a lower equity ratio). This is likely
23 caused by the increasing importance of natural gas costs in these plans as the years go
24 by and more natural gas plants are added.

25

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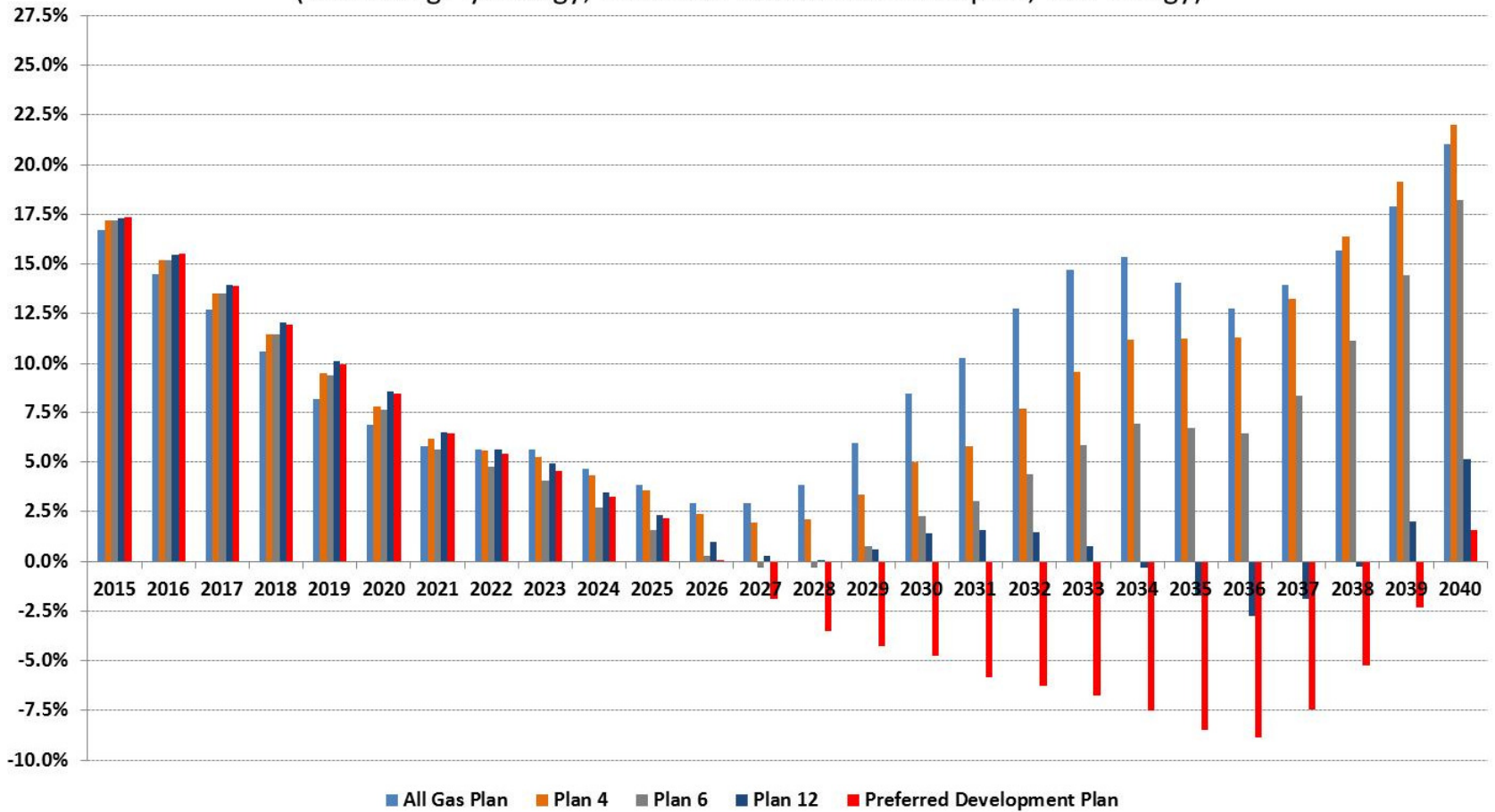


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Equity Ratio Effect of Drought (2015 - 2040)
 (Challenging Hydrology; Reference Economics and Capital, Low Energy)



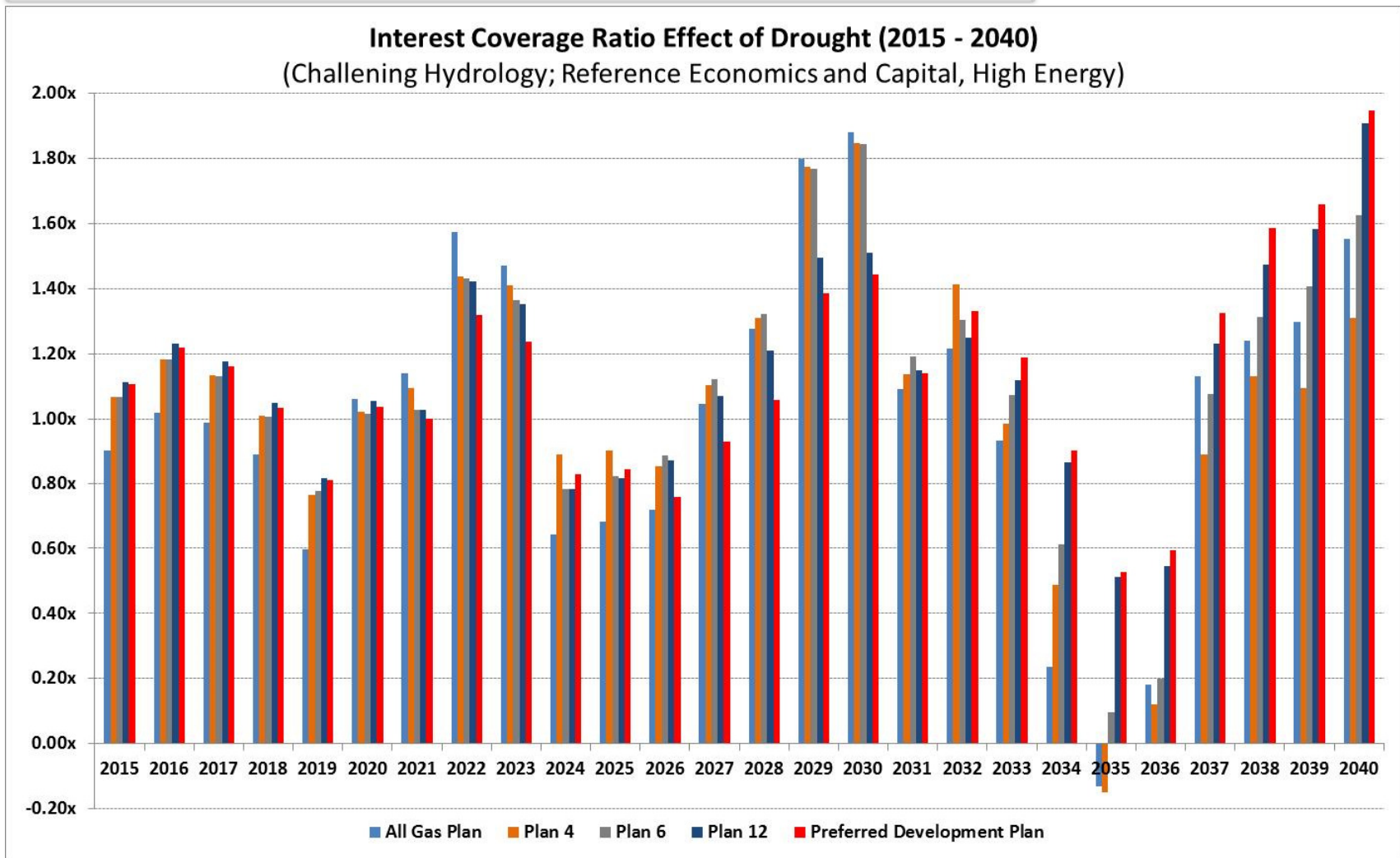
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1 The next set of tables addresses the Interest Coverage Ratio.

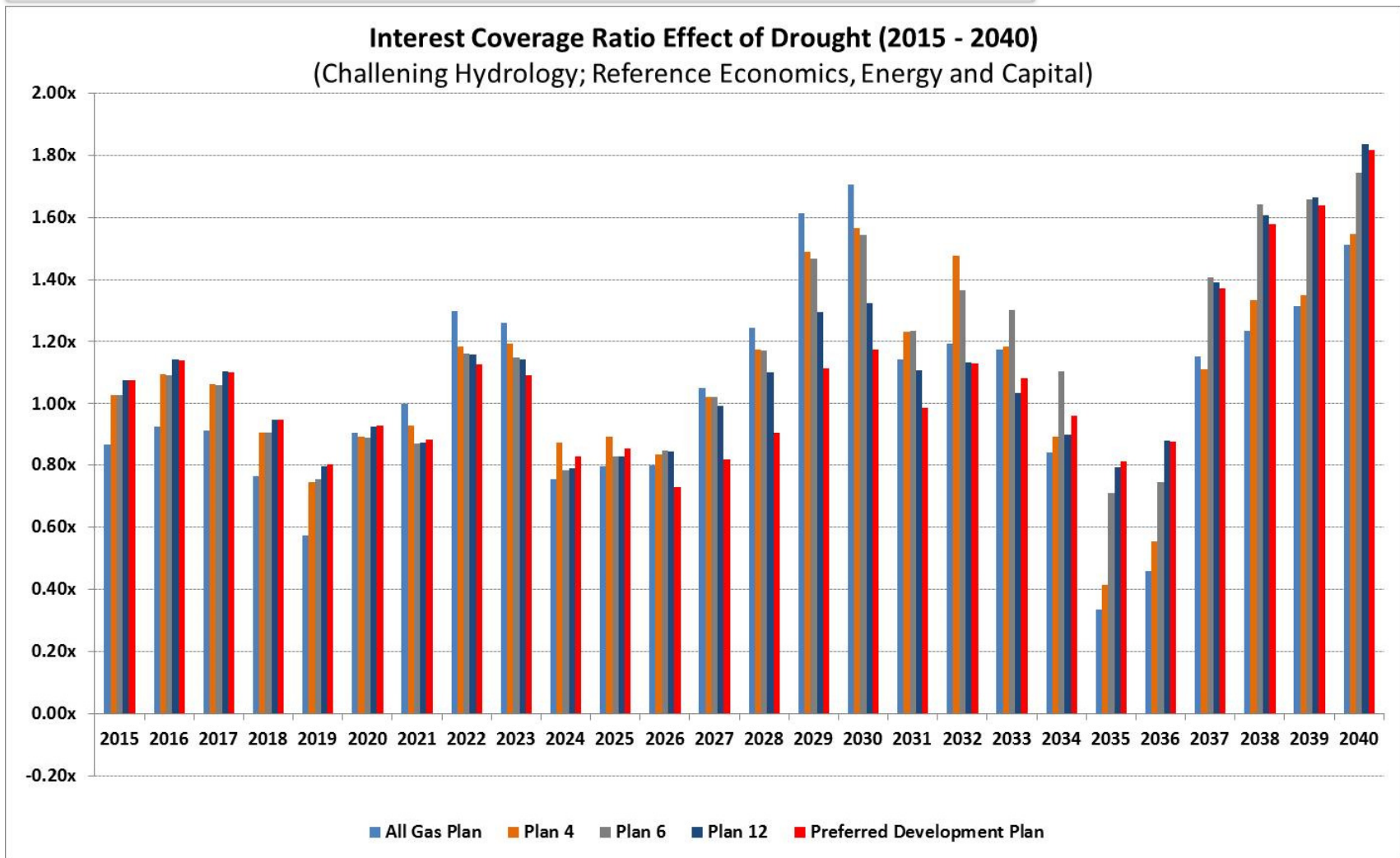
- 2 • The patterns are generally consistent with those for the equity ratio: typically, Interest
3 Coverage Ratios are lower with lower energy prices.
- 4 • Only the All Gas Plan and Plan 4 ever have a negative Interest Coverage Ratio, and that
5 occurs during the depths of the severe drought in the 2030s, with High energy prices.
- 6 • At Reference and Low energy prices, the effects of the 2030s drought are less severe,
7 even though the average of the ratios are lower over time at these price levels.
- 8 • Under Reference and Low energy prices, the Preferred Plan does not reach the 1.2x
9 Interest Coverage Ratio until 2037, despite the fact that construction is completed in
10 2026. With High energy prices, the Preferred Plan does reach the 1.2x Interest Coverage
11 Ratio target a few times in the late 2020s and early 2030s, before the impacts of the
12 severe drought are felt. In all cases, once the drought has passed in the later 2030s, the
13 Preferred Plan's financial performance is very strong (water flow performance is 90%+
14 every year, and getting stronger at the end of the period).

15

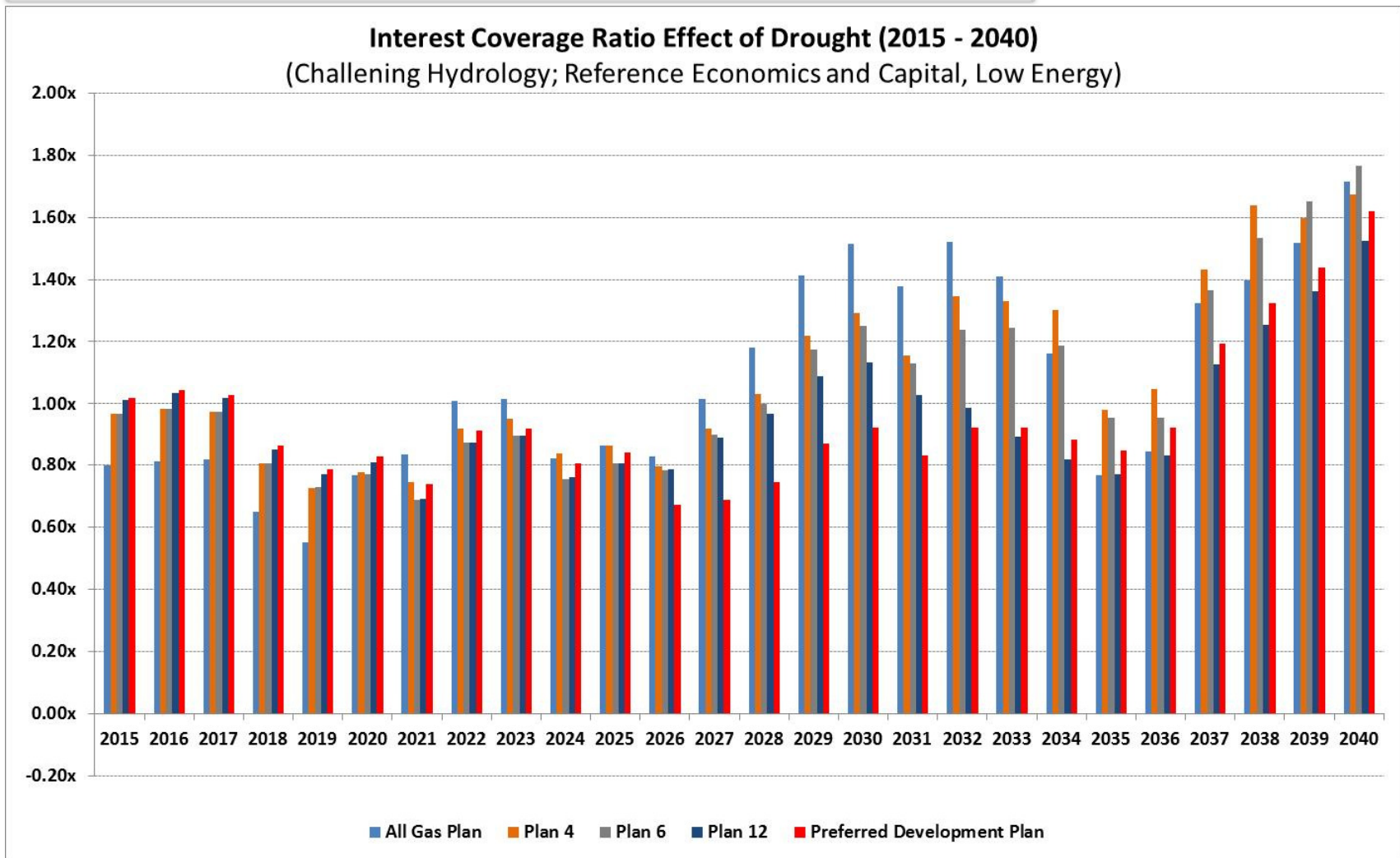
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1 The following pages contain tables for Operating Cash Flow, and Operating Cash Flow less
2 spending on property, plant and equipment.

- 3 • Operating Cash Flow consists of Revenues less Operating Expenses (such as wages,
4 materials, interest on debt, etc.), but does not include non-cash items such as
5 depreciation. If this measure is negative, it means that Manitoba Hydro would have to
6 borrow money to pay its cash expenses. This happens in only a few cases across all of
7 the Plans. At High energy prices, negative operating cash flow occurs during the severe
8 drought of the 2030s at least once across all Plans. At low energy prices, the Preferred
9 Plan suffers negative cash flow after it comes into service in the late 2020s.
- 10 • Operating Cash Flow less spending on capital goods shows whether Manitoba Hydro
11 must issue debt to pay for its capital investments. During the construction of major
12 assets, such as Bipole, Keeyask, Conawapa and new gas plants (for those Plans that have
13 them), it is to be expected that new debt is required. When major investments are not
14 underway, however, Manitoba Hydro's target is to not require new debt. Note that
15 refinancing of existing debt (when it comes due) is not included in this figure. In years in
16 which operating cash flow is more than enough to cover capital investments, then
17 Manitoba Hydro would be able to retire debt principal that comes due.
- 18 • The Preferred Plan's operating cash flow is almost always directly proportional to energy
19 prices, with the exception of during the most severe droughts (when operating cash
20 flow is worse during high energy prices, presumably because of the cost of imports). In a
21 Low energy price environment, with this challenging hydrology scenario, Manitoba
22 Hydro would be an issuer of new debt every year until 2036. Principal payments on debt
23 would begin only in 2037. This is consistent with the Preferred Plan's performance on
24 Equity Ratio, as described above. At Reference and High energy prices, Manitoba Hydro
25 issues less new debt during construction of the Preferred Plan, and actually pays
26 outstanding debt principal in the early 2030s before the drought sets in.

- 1 • For All Gas, less new debt is issued in total than in the Preferred Plan (which is
2 consistent with the fact that much less capital is spent under the All Gas Plan). Until
3 2024, High energy prices mean that less new debt is issued, but after 2025 High energy
4 prices require more debt to be issued.
- 5 • Plans 4 and 6 generally follow the pattern of the All Gas Plan, with High energy prices
6 being beneficial in the early years, and Low energy prices being beneficial in the later
7 years. As with the other financial metrics, Plans 4 and 6 are in an intermediate position
8 as compared to the extremes of the All Gas and Preferred Plans.
- 9 • Plan 12, in which Conawapa comes into service in 2031, has extremely large capital
10 expenditures in the late 2020s, which is apparent from the charts.

11 For reference, the table on the following page provides information on the in-service years for
12 major infrastructure in each Plan.

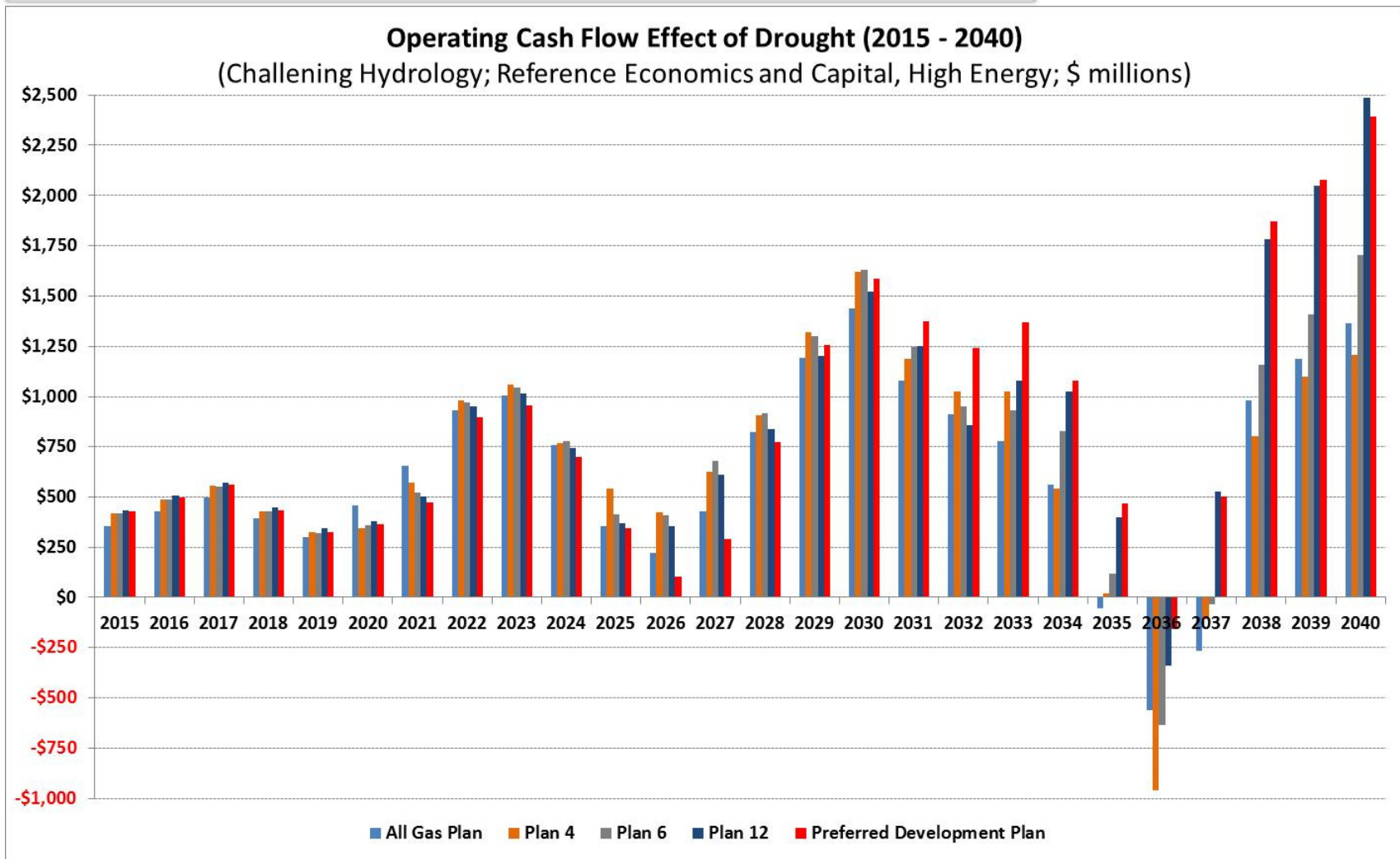
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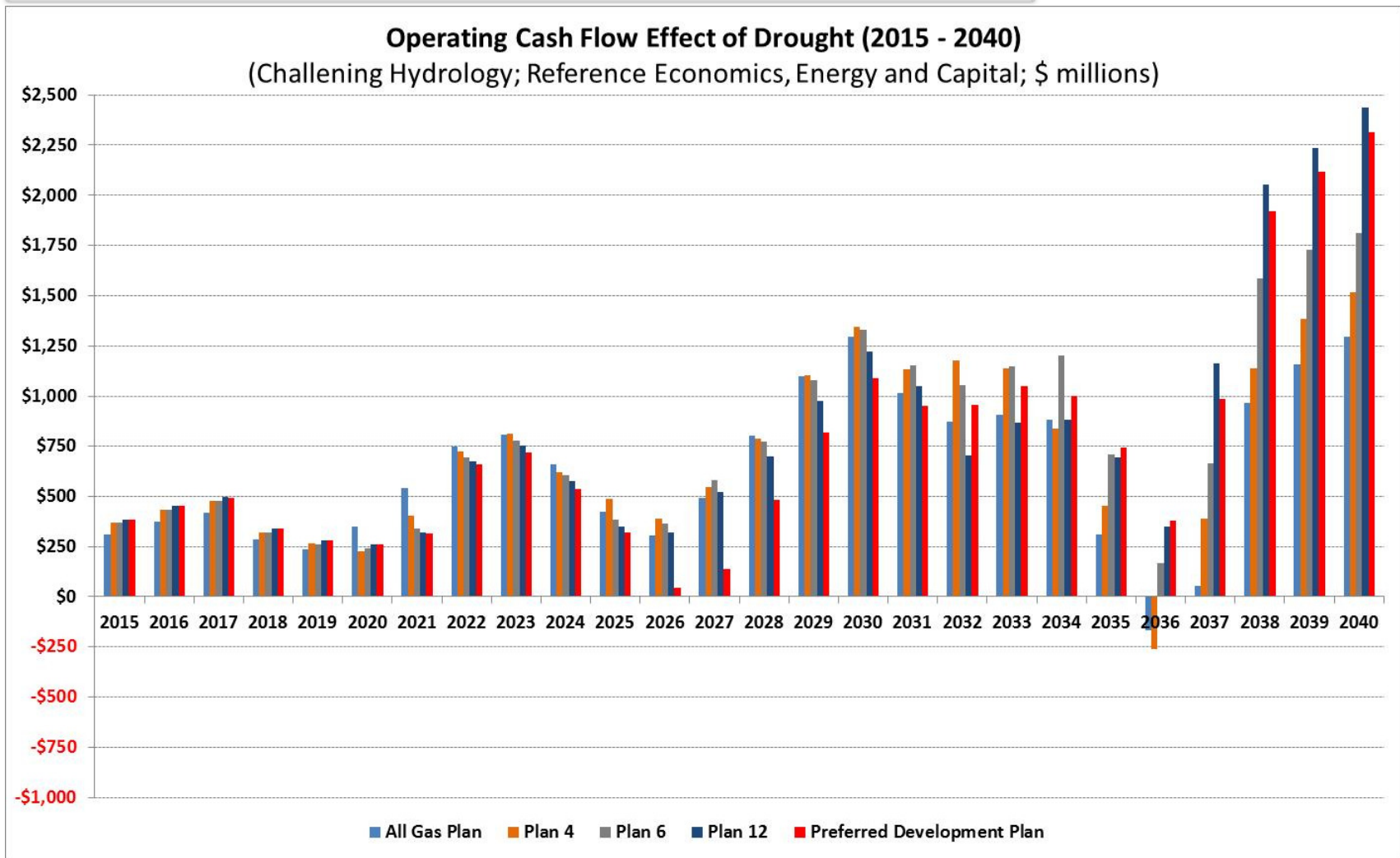
Year (ending March 31)	All Gas	4	6	12	Preferred
2015					
2016					
2017					
2018	Bipole III	Bipole III	Bipole III	Bipole III	Bipole III
2019					
2020		Keeyask	Keeyask	Keeyask	Keeyask
2021		250 MW Tx	750 MW Tx	750 MW Tx	750 MW Tx
2022					
2023	Single cycle				
2024					
2025		Single cycle			
2026	Single cycle				Conawapa
2027					
2028					
2029	Single cycle				
2030		Single cycle			
2031					
2032	CCGT		Single cycle x2	Conawapa	
2033		CCGT	Single cycle		
2034					
2035	Single cycle		Single cycle		
2036					
2037					
2038	CCGT				
2039		CCGT			
2040			CCGT		

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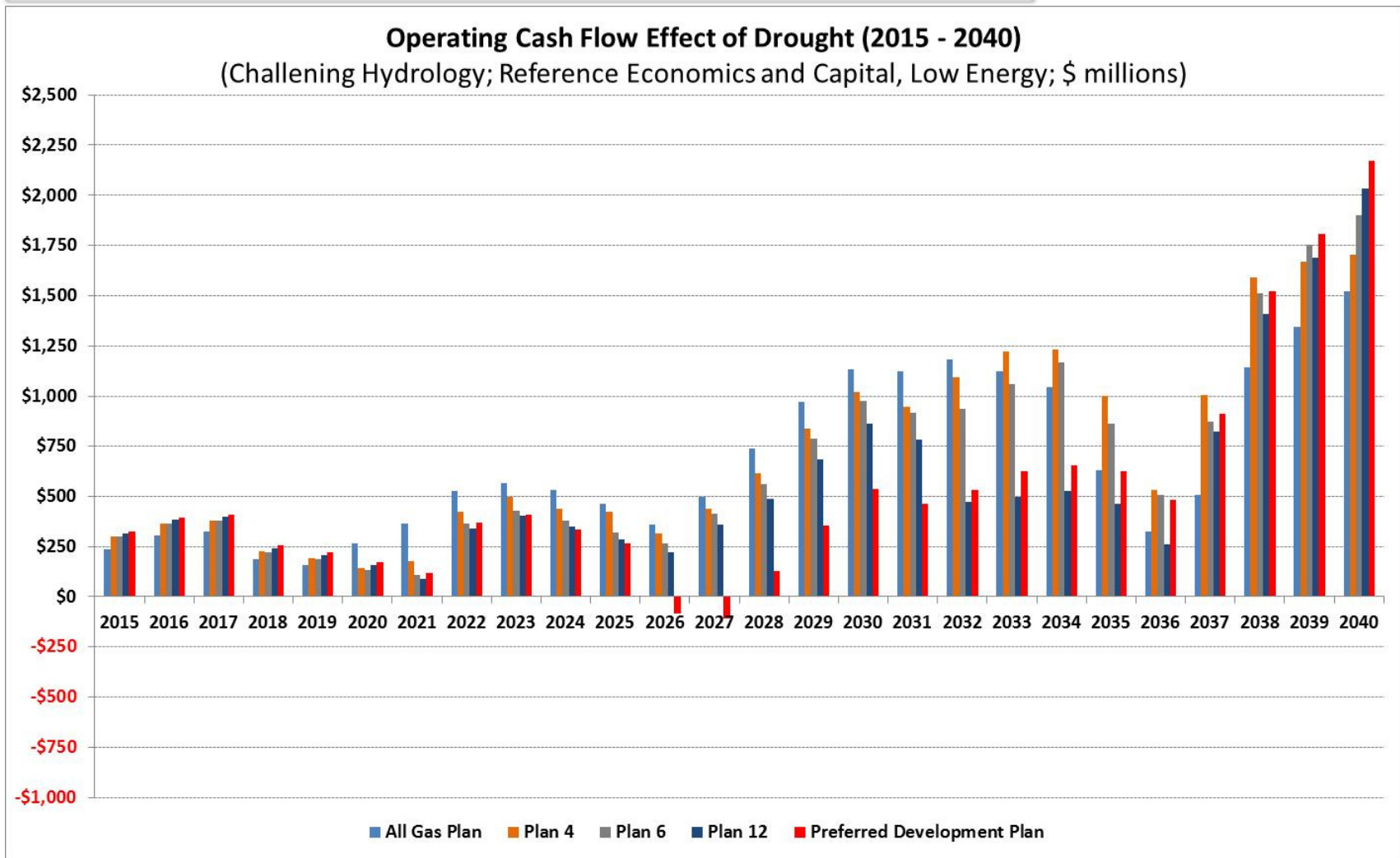
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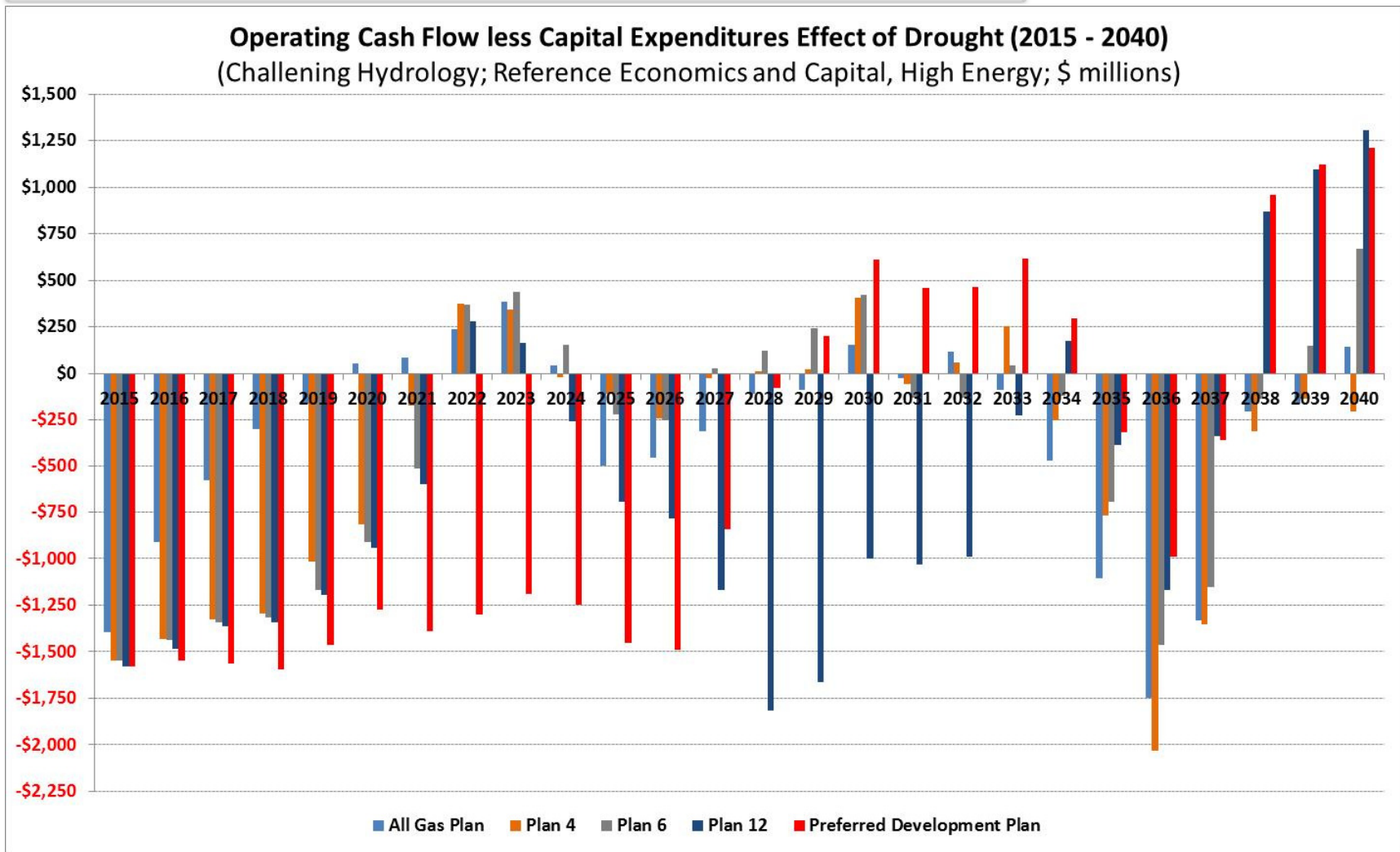
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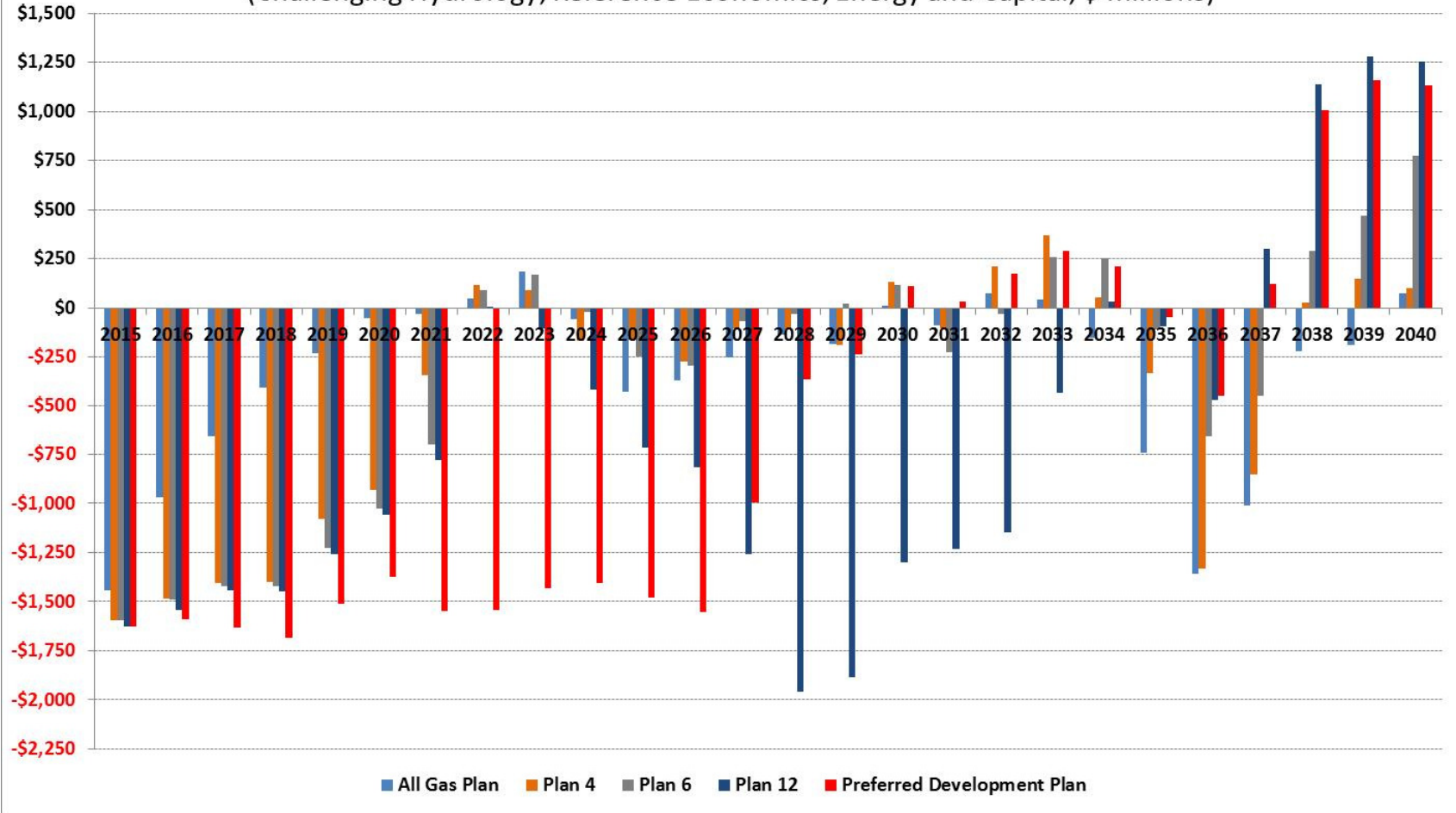


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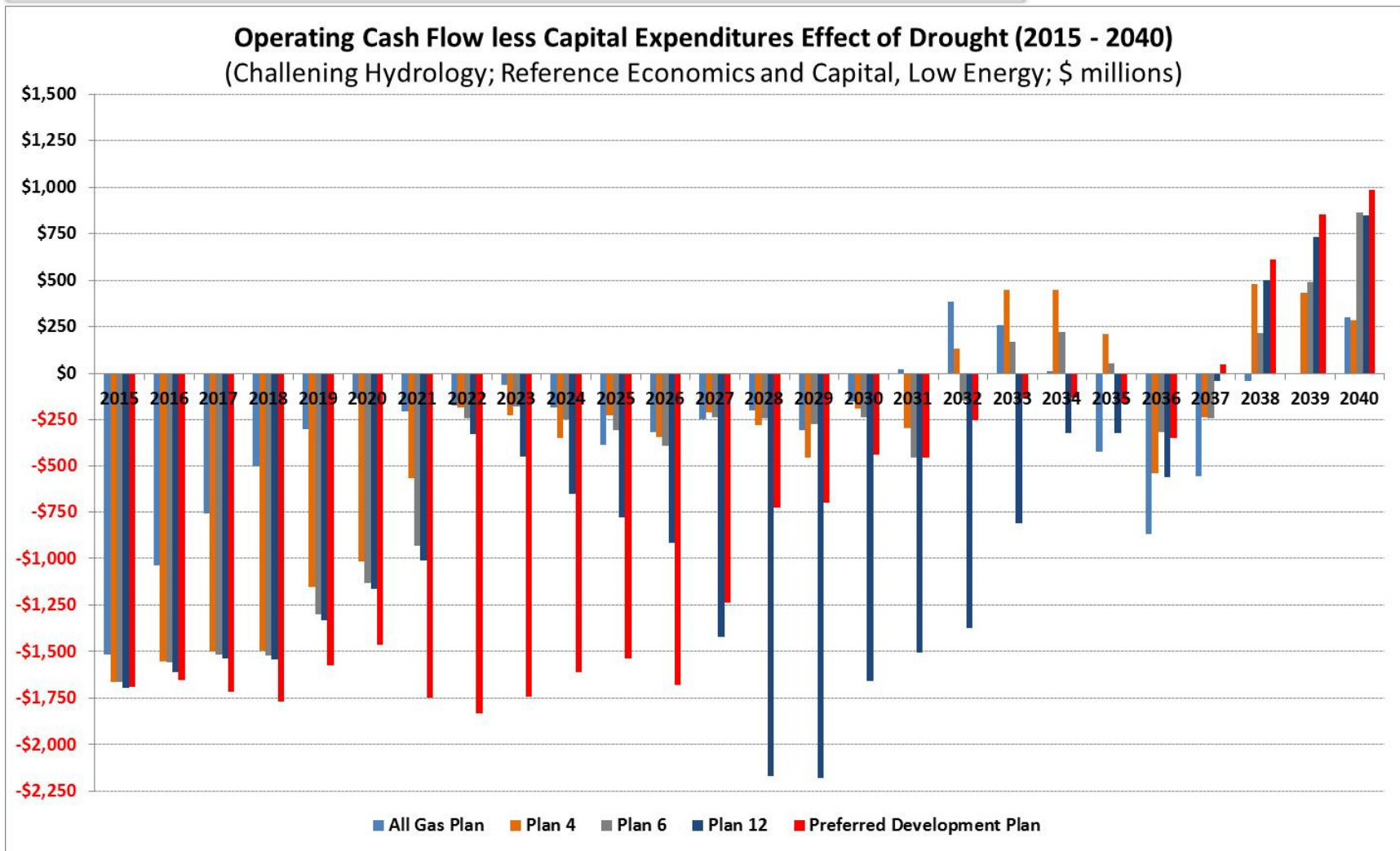


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Operating Cash Flow less Capital Expenditures Effect of Drought (2015 - 2040)
 (Challenging Hydrology; Reference Economics, Energy and Capital; \$ millions)



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1 The last item, “Implied Stranded Debt”, requires careful explanation. This is simply a
2 mathematical calculation, NOT an expression of financial judgement. In many ways, it can be
3 considered to be the upper boundary of what might be considered by observers to be the debt
4 at risk at Manitoba Hydro, in a time of financial distress. It is provided here for illustrative
5 purposes only.

6 Recall that the formula for “Interest Coverage Ratio” is $(\text{Net Income} + \text{Interest})/\text{Interest}$.
7 Manitoba Hydro’s target for this ratio is 1.2x, which means that positive Net Income should be
8 at least 20% of the size of interest costs in any given year. This is a measure of financial health,
9 and assuming that this target is built into Manitoba Hydro’s rate planning, it is a “cushion” of
10 financial resources which could be devoted to debt in the event that revenues are less than
11 anticipated in any given year.

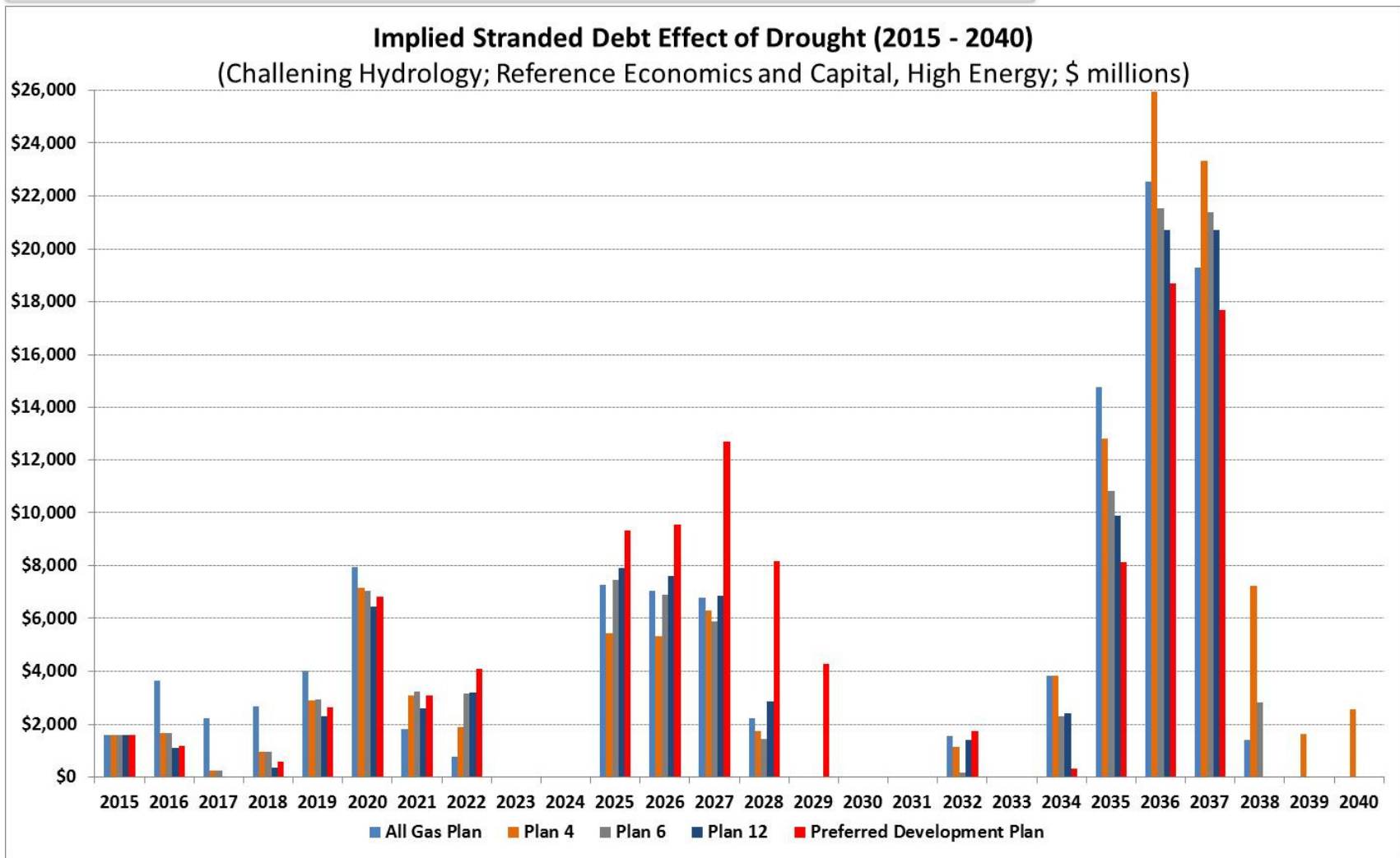
12 If the Interest Coverage Ratio falls below 1.2x, it means that the targeted financial cushion did
13 not materialize. It also suggests that Manitoba Hydro’s finances are not as robust as intended.
14 In the extreme, this relates to the question of whether Manitoba Hydro is “financially self-
15 supporting”.

16 The calculation for “Implied Stranded Debt” measures how much additional Manitoba Hydro
17 revenue, or how much of a reduction in expenses, would be required to achieve the 1.2x
18 Interest Coverage Ratio target (since a problem with Net Income can be solved either by adding
19 revenue or reducing expenses). This “missing” Net Income is then capitalized at Manitoba
20 Hydro’s cost of debt (which in the Reference economics scenario is assumed to be 6.30%) to
21 arrive at the *maximum* implied amount of Manitoba Hydro debt that is not being financially
22 supported by Manitoba Hydro.

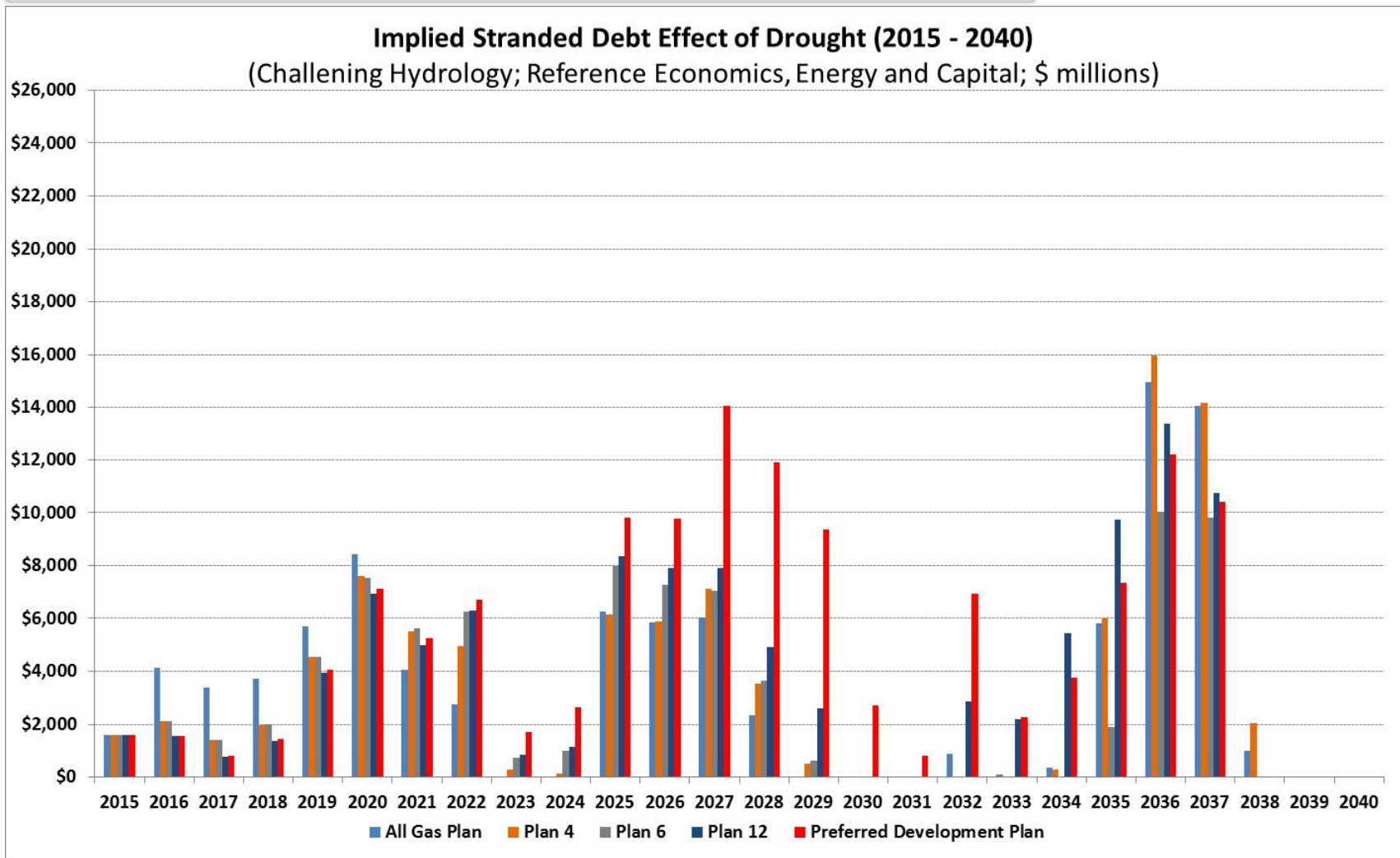
- 23 • At High energy prices, Implied Stranded Debt is very episodic, and very closely
24 correlated with poor hydrology years across All Plans. High energy prices also exhibit the
25 highest Implied Stranded Debt figures during the drought of the 2030s.
- 26 • At Low energy prices, Implied Stranded Debt is a much more consistent problem for
27 most Plans. Given that Implied Stranded Debt is inversely related to the Interest

- 1 Coverage Ratio (i.e., the lower the Interest Coverage Ratio, the Higher the Implied
2 Stranded Debt), this is not surprising.
- 3 • The Preferred Plan in the Low energy price scenario suffers from \$10 billion or more of
4 Implied Stranded Debt from 2025 to 2037, before improved water flow and opportunity
5 export revenue finally makes the problem disappear.
 - 6 • As noted in our Report, financial distress that is closely correlated with drought
7 conditions – as occurs with High energy prices in the charts below – is unlikely to raise
8 concerns among financial analysts and credit rating agencies, even if that financial
9 distress is sharp. However, if financial distress is persistent over time, as is the case in
10 the Low energy price scenario chart, questions are much more likely to be raised.

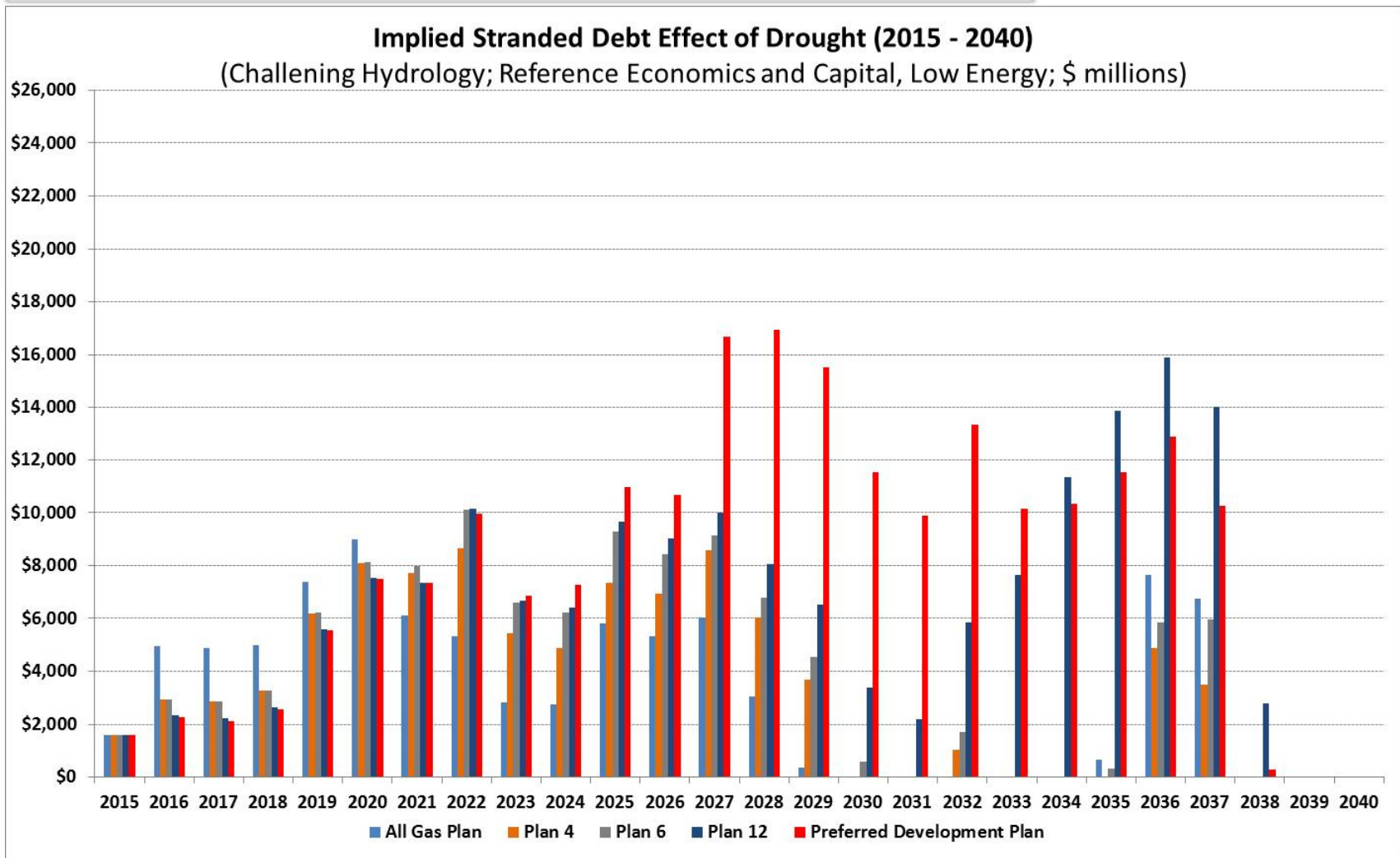
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1 **PUB/MPA 1-027(b)**

2 **REFERENCE:**

3 MPA Report Page 61 Line 18

4 **PREAMBLE:**

5 MPA states :

6 In a "normal situation, Manitoba Hydro's guidelines target not only an interest coverage ratio
7 of at least 1.2, but also coverage of typical capital spending requirements from internally
8 generated funds. If the company were not able to meet this objective during a one or two-year
9 drought, it would be unlikely the credit rating agencies would reassess their position on the
10 ability of Manitoba Hydro to be self-sustaining. However if drought conditions continued, and
11 rates were not allowed to rise sufficiently to meet these interest and capital costs, than the
12 shortfall in meeting them would become a focus for attention.

13 **QUESTION:**

14 For the analysis in (a) please indicate the level of potential MH debt which could be
15 unsupported

16 **RESPONSE:**

17 Please see the response to PUB/MPA 1-027(a) above.

18

1 **PUB/MPA 1-027(c)**

2 **REFERENCE:**

3 MPA Report Page 61 Line 18

4 **PREAMBLE:**

5 MPA states :

6 In a "normal situation, Manitoba Hydro's guidelines target not only an interest coverage ratio
7 of at least 1.2, but also coverage of typical capital spending requirements from internally
8 generated funds. If the company were not able to meet this objective during a one or two-year
9 drought, it would be unlikely the credit rating agencies would reassess their position on the
10 ability of Manitoba Hydro to be self-sustaining. However if drought conditions continued, and
11 rates were not allowed to rise sufficiently to meet these interest and capital costs, than the
12 shortfall in meeting them would become a focus for attention.

13 **QUESTION:**

14 Please Indicate the potential level of Government support required in each alternative.

15 **RESPONSE:**

16 As noted in PUB/MPA 1-027(a) above, the Implied Stranded Debt that results from a shortfall in
17 meeting Manitoba Hydro's Interest Coverage Ratio target is one possible way of calculating the
18 potential level of required government support of Manitoba Hydro. However, as was noted,
19 this is likely a *maximum* boundary for that potential support.

20 In the charts above, a challenging hydrology scenario was presented, coupled with
21 High/Reference/Low energy price scenarios. All charts assumed Reference economic variables
22 (e.g., interest rates and inflation), Reference capital costs (i.e., no cost overruns on
23 construction), and Reference 2012 demand (i.e., domestic demand growth in Manitoba remains
24 relatively robust).

25 The scenarios presented in the charts are definitely NOT a "worst case" for any of the Plans. A
26 "worst case" scenario would include all five of the following:

- 1 • Challenging hydrology with extended periods of severe drought
- 2 • Either High or Low energy prices, depending on whether a Plan is dependent on natural
- 3 gas (in which case High natural gas prices would be damaging) or dependent on
- 4 hydroelectric exports (in which case Low export prices would be problematic).
- 5 • High interest rates putting upward pressure on debt interest costs
- 6 • Cost overruns on major construction projects
- 7 • Low and/or falling domestic demand (which if coupled with export prices lower than
- 8 prevailing domestic rates would put significant upward pressure on domestic rates)

9 The charts above depict the impact of the first two of these situations, but not the other three.

10 Nevertheless, even with only two of the five challenging conditions present, it becomes
11 apparent that financial distress at Manitoba Hydro can be real.

12 For the All Gas Plan, periods of drought coincide closely with financial distress. Implied
13 Stranded Debt can reach more than \$20 billion in the severe drought of the 2030s if energy
14 prices are simultaneously High. However, with Low energy prices, the same drought results in
15 Implied Stranded Debt of less than \$8 billion. During the shorter drought of the mid-2020s, the
16 impact is relatively similar regardless of energy prices, at about \$6 billion of Implied Stranded
17 Debt. In the case of both droughts, Manitoba Hydro's finances recover quickly as soon as the
18 drought is over.

19 An argument can be made that financial analysts would be reluctant to claim that Manitoba
20 Hydro is no longer "financially self-supporting" if financial distress appears to be caused solely
21 by a drought. As long as rates continue to rise at a steady clip (which they are presumed to do
22 at 3.8% per year), then the financial distress should be presumed to end as soon as water flow
23 returned to normal. While the Interest Coverage Ratio for the All Gas Plan in 2035 and 2036 is
24 very bad (it is actually negative in 2035 if energy prices are High, which implies that Manitoba
25 Hydro would need to borrow to cover operating expenses), it would be considered "expected"

1 that the government would provide assistance to distressed companies in a crisis induced by
2 drought.

3 During the course of these droughts, Manitoba Hydro could offset some of its financial distress
4 by seeking higher rates (i.e., increases greater than 3.8%). However, it would not make sense
5 for the company to raise rates dramatically only to see them fall just as dramatically a few years
6 later when water flows improved. It is unlikely that such management of rates would be viewed
7 positively by customers. The alternative is that the government simply provide the debt
8 necessary for Manitoba Hydro to continue its business, subject to the risk that credit-rating
9 agencies might consider some portion of that debt to be “unsupported”, and recognize it to be
10 part of the government’s own “tax-supported debt”.

11 A very different situation presents itself with the Preferred Plan. If energy prices are High, or
12 even Reference, then instances of financial distress for the Preferred Plan are very much tied to
13 water flows: in both the drought periods of the mid-2020s and the 2030s, financial distress
14 represented by the Implied Stranded Debt can reach high levels (as much as \$18 billion in the
15 2030s). However, financial results improve dramatically with water flows. Similar inferences can
16 be drawn as those for the All Gas Plan.

17 In the case of Low energy prices, however, the distress faced by the Preferred Plan is arguably
18 more serious. The drought of the mid-2020s occurs when capital expenditures for Conawapa
19 are very high, and results in Manitoba Hydro taking on more debt than it otherwise would if it
20 had more cashflow from internal sources. Even with the recovery in water flows in the late
21 2020s, Manitoba Hydro’s financial metrics do not recover: Interest Coverage Ratio never
22 reaches 1.0x, the equity ratio is negative, and internal cash flows are never sufficient to cover
23 capital expenditures, even though the construction of Conawapa was completed in 2025-26.
24 Implied Stranded Debt only falls to the \$10 billion range just before the drought of the 2030s
25 starts, and then the metric deteriorates again.

26 The persistence of the financial distress, even in the face of improving water flows from 2027 to
27 2030 – and annual rate increases of 3.8% per year – is the critical signal that may raise real

1 questions about the ability of Manitoba Hydro to be financially self-supporting. Absent
2 significant rate increases, continued financing of Manitoba Hydro by the government may come
3 to be viewed by financial observers as a tax-supported subsidy. At that point, the
4 reclassification of up to \$10 billion of Manitoba Hydro debt to the “books” of the government
5 could become real in the minds of the capital markets. Depending on the financial
6 circumstances of the Province at that time, this may be easily managed, or not. However, once
7 the perception of Manitoba Hydro changes, it would take time and effort to reverse the views
8 of analysts about the financial nature of the corporation.

9

1

2 **PUB/MPA 1-027(d)**3 **REFERENCE:**

4 MPA Report Page 61 Line 18

5 **PREAMBLE:**

6 MPA states :

7 In a "normal situation, Manitoba Hydro's guidelines target not only an interest coverage ratio
8 of at least 1.2, but also coverage of typical capital spending requirements from internally
9 generated funds. If the company were not able to meet this objective during a one or two-year
10 drought, it would be unlikely the credit rating agencies would reassess their position on the
11 ability of Manitoba Hydro to be self-sustaining. However if drought conditions continued, and
12 rates were not allowed to rise sufficiently to meet these interest and capital costs, than the
13 shortfall in meeting them would become a focus for attention.

14 **QUESTION:**

15 Please elaborate on the amount of reserves the Province should establish for the Preferred
16 Development Plan and alternatives given the drought impacts determined.

17 **RESPONSE:**

18 As noted in PUB/MPA 1-027(c) above, it is the combination of a drought scenario and a Low
19 energy price scenario which creates potential financial challenges for the Preferred Plan. In a
20 High or Reference energy price scenario, it is unlikely that the Preferred Plan would reach such
21 persistent levels of financial distress that mitigation would be required (note that cost overruns,
22 unexpectedly low domestic demand or high interest rates could also create challenges for the
23 Preferred Plan – the point being that drought in and of itself is unlikely to undermine Manitoba
24 Hydro's finances if the Preferred Plan is adopted).

25 In the case described above of challenging hydrology and Low energy prices, Manitoba Hydro
26 suffers negative Net Income from 2018 to 2036, unabated. In some years, losses amount to

1 more than \$500 million. These annual losses would register in the Province’s overall income
2 statement (but are adjusted away by credit rating agencies reviewing the Provincial books
3 because at least as of now Manitoba Hydro is not considered to be supported by taxes). The
4 government could reduce the pressure on Manitoba Hydro by reducing or eliminating the debt
5 guarantee fee, water rental fees, or capital taxes. However, doing any of these things might
6 create the appearance that the government is subsidizing Manitoba Hydro, which perhaps even
7 more quickly calls into question Manitoba Hydro’s status as financially self-supporting.

8 Alternatively, the government could announce that it is temporarily suspending such charges
9 while water flows are poor and drought conditions are present, and then collecting those
10 suspended fees in the future from export revenues, when water flows return. In effect, the
11 government would be “timeshifting” some of Manitoba Hydro’s costs from drought periods to
12 non-drought periods, in order to lessen both the depth and duration of financial distress.

13 A proactive alternative would be for the government to set up a “drought contingency fund” of
14 some kind, which would be used to offset Manitoba Hydro’s payments to government during
15 drought events. After being drawn down, the fund could be replenished through a charge on
16 export revenues. Initially, the government could create the fund based on the tax revenues it
17 receives from the economic activity related to construction of the Keeyask and Conawapa
18 facilities.

19 In the period 2025 to 2035, water rental fees and capital taxes on Manitoba Hydro in the
20 scenario described above together amount to approximately \$300 million per year. The debt
21 guarantee fee ranges from \$300 million to \$400 million per year. If these charges were
22 “suspended” or “delayed” during drought periods, then Manitoba Hydro would be much less
23 likely to suffer negative net income, it would be closer to achieving its debt ratio targets, and its
24 equity ratio would not deteriorate so badly. The downside for the government is that these
25 amounts are real revenue for the government, and the lack of these revenues push the
26 government’s budget towards deficit (during a drought, there may be other factors also
27 weighing on the government’s budget, such as support for the agricultural sector, which will
28 surely be affected by drought as well).

1 Establishing a fund of \$1 billion or more, drawn from whatever source, to be used to offset
2 losses at Manitoba Hydro suffered during droughts, would be a significant positive step to take
3 to protect against downside scenarios, such as the one described above for the Preferred Plan.
4 A fund of that size would be sufficient to offset all water rental fees and capital taxes for three
5 years, in the event a severe drought. A larger fund would could also offset the debt guarantee
6 fee, or provide coverage for longer durations. It may well be that such a fund would never be
7 used, if water flows remain high for many years. In that case, export revenues at Manitoba
8 Hydro might be high enough to quickly pay off debts, and dramatically reduce the susceptibility
9 of the company to financial distress. In such a case, the fund could be wound down. However,
10 having such a fund in place would be insurance against a significant level of financial distress,
11 and the particularly difficult circumstances that could arise when drought is combined with
12 other challenges, such as low export prices, or cost overruns.

13 Even in the case of other Plans, having a form of “drought insurance fund” to protect against
14 losses at Manitoba Hydro would ensure that rate increases are not the only mechanism by
15 which Manitoba Hydro can mitigate the financial distress that would be caused by inevitable
16 droughts.

17

27

1 **REFERENCE: Chapter 8: Determination and Description of Development Plans 2012**
2 **GRA PUB/MH I-133 (a), (b), (c) & (d)/MH Exhibit #38**

3

4 **QUESTION:**

5 Please file Manitoba Hydro's Drought Mitigation Plan and discussion.

6

7 **RESPONSE:**

8 Manitoba Hydro's energy planning criteria requires that sufficient energy resources must be
9 available should there be a repeat of the lowest recorded coincident water supply conditions.
10 Manitoba Hydro's annual power resource planning process incorporates this criterion to ensure
11 that sufficient energy resources are planned over the long-term to serve Manitoba load
12 requirements. The Power Resource Plan, which documents the results of the resource planning
13 evaluation, forms one of the components of Manitoba Hydro's preparedness planning for
14 droughts. The 2011/12 Power Resource Plan is available in Appendix B of the NFAT filing.

15

16 In the operating timeframe, Manitoba Hydro operates its power system consistent with its
17 planning criteria. It manages its reservoir storages, dispatches its generation fleet and manages
18 its export obligations on an ongoing and continuous basis in a manner that maximizes net
19 revenue while maintaining a reliable and dependable supply for Manitobans. This practice is
20 used under all water conditions, including during droughts. To the extent that the cost of
21 drought can be mitigated in the operating horizon, Manitoba Hydro will achieve this as a matter
22 of course utilizing all available resources available at the time as long as reliability of supply for
23 Manitobans is maintained.

24

25 During lower flow and drought conditions when hydraulic supplies are insufficient to meet the
26 provincial demand, Manitoba Hydro augments the hydraulic supply with more expensive
27 thermal or purchased electricity, whether produced in province or in the extra-provincial

1 markets. Under extremely low flow conditions Manitoba thermal generation may be dispatched
2 in order to provide voltage or contingency support. Additional energy beyond these reliability
3 needs is generally purchased in the external markets given that Manitoba thermal generation is
4 generally much more expensive than energy purchased in the external markets.

5

6 Under drought conditions The Climate Change and Emissions Reduction Act permits Manitoba
7 Hydro to operate the coal fired unit at Brandon G.S. The decision to operate the station during
8 extreme drought conditions will be made at that time by the Executive of Manitoba Hydro
9 having considered all the relevant factors. Should Manitoba Hydro elect to operate the coal
10 fired unit, there may be some cost savings to the Corporation depending upon whether
11 Brandon coal fired energy displaces higher priced market energy.

12

13 To the extent that Manitoba Hydro is exposed to additional financial risk during drought as a
14 result of uncertain market and natural gas prices, Manitoba Hydro may choose to hedge that
15 risk by purchasing electricity/natural gas forward contracts or options. The decision to hedge to
16 manage Manitoba Hydro's financial risk will be made by the Executive of Manitoba Hydro
17 having considered all the relevant factors at that time.

28

1 **REFERENCE: Chapter 11: Financial Evaluation of Development Plans; Section: 11.4;**
2 **Page No.: 19-21; Figures 11.8 & 11.9**

3

4 **QUESTION:**

5 Please provide a table indicating the retained earnings (reference) based on each of the
6 selected eight development plans.

7

8 **RESPONSE:**

9 The following table provides the retained earnings balances at the end of the 5-year drought
10 period for the three development plans under the reference scenario included in the drought
11 analysis. The following three development plans analyzed under the 5-year drought conditions
12 were selected as a representative sample of all development plans analyzed in the financial
13 evaluation reflecting the impacts on an all-gas plan, a hydro/gas plan and an all-hydro plan.

14

Retained Earnings at End of Five Year Drought

REF-REF-REF

Millions

	<u>2014/15 Drought</u>	<u>2021/22 Drought</u>	<u>2027/28 Drought</u>	<u>2031/32 Drought</u>
Plan 1 All Gas \$	390	\$(189)	\$ 2,547	\$ 3,450
Plan 4 K19/Gas/250 \$	854	\$ 545	\$ 3,244	\$ 4,170
15 Plan 14 K19/C25/750 Preferred Plan \$	1,222	\$ 1,639	\$ 4,929	\$ 5,622

1 **REFERENCE: Chapter 11: Financial Evaluation of Development Plans; Section: 11.4;**
2 **Page No.: 19-21; Figures 11.8 & 11.9**

3

4 **QUESTION:**

5 Please provide a table of the total upside retained earnings P75 and P90 for each of the eight
6 development plans.

7

8 **RESPONSE:**

9 The following table provides Retained Earnings balances for each cumulative probability
10 percentile at the end of the 5-year drought period. The development plans analyzed under the
11 5-year drought conditions were selected as a representative sample of all development plans
12 analyzed in the financial evaluation reflecting the impacts on an all-gas plan, a hydro/gas plan
13 and an all-hydro plan.

14

Retained Earnings Balance at end of 5 Year Drought
Millions

Drought	Development Plan	P10	P25	P50	P75	P90
2014/15	1 - All Gas	\$ 58	\$ 113	\$ 374	\$ 521	\$ 616
	4 - K19 Gas 250 MW	\$ 456	\$ 651	\$ 843	\$ 1,014	\$ 1,141
	14 - K19 Sales C25 750	\$ 750	\$ 1,037	\$ 1,207	\$ 1,427	\$ 1,582
2021/22	1 - All Gas	\$ (1,237)	\$ (930)	\$ (274)	\$ 155	\$ 444
	4 - K19 Gas 250 MW	\$ (702)	\$ (411)	\$ 469	\$ 955	\$ 1,334
	14 - K19 Sales C25 750	\$ 566	\$ 908	\$ 1,587	\$ 2,051	\$ 2,406
2027/28	1 - All Gas	\$ 1,425	\$ 2,358	\$ 2,545	\$ 3,413	\$ 3,618
	4 - K19 Gas 250 MW	\$ 1,905	\$ 2,722	\$ 3,229	\$ 4,211	\$ 4,445
	14 - K19 Sales C25 750	\$ 3,393	\$ 4,435	\$ 4,924	\$ 5,894	\$ 6,394
2032/33	1 - All Gas	\$ 2,467	\$ 3,205	\$ 3,599	\$ 4,143	\$ 4,665
	4 - K19 Gas 250 MW	\$ 2,769	\$ 3,902	\$ 4,168	\$ 5,062	\$ 5,617
	14 - K19 Sales C25 750	\$ 3,819	\$ 5,116	\$ 5,554	\$ 6,746	\$ 7,474

1 **REFERENCE: Chapter 11: Financial Evaluation of Development Plans; Section: 11.4;**
2 **Page No.: 19 - 21**

4 **PREAMBLE:** Drought can have significant financial impacts on Manitoba Hydro.

6 **QUESTION:**

7 Please calculate, for each development plan depicted in Table 11.8, for the P50 cases only, the
8 average rate increase that would be required beginning in year 3 of the examined drought
9 scenarios, in order to return to the planned financial performance by the end of the 10th year
10 after the end of the drought (i.e., if a drought began in 2021/22, compensatory rate increases
11 would begin in 2023/24, with the objective of returning to retained earnings and debt coverage
12 ratios equivalent to the non-drought expectations by the end of year 2035/36).

14 **RESPONSE:**

15 The following incremental equal annual rate increases (starting in year 3 and continuing for 10
16 years) are required to return to the same level of retained earnings as in the comparative
17 scenario without drought.

**Incremental 10 Year Rate Increase Required to Recover from Drought
P50**

	5 year Drought Beginning 2014/15 Drought	5 year Drought Beginning 2021/22 Drought	5 year Drought Beginning 2027/28 Drought	5 year Drought Beginning 2032/33 Drought
1 - All Gas	1.27%	1.62%	1.53%	1.32%
4 - K19 Gas 250 MW	1.27%	1.63%	1.82%	1.75%
18 14 - K19 Sales C25 750 MW	1.15%	1.58%	1.95%	2.32%

19
20 The following table provides the retained earnings at the end of the same 10-year period in the
21 without drought case.

**Target Retained Earnings Achieved Through Incremental Rate Increases
P50**

	5 year Drought Beginning 2014/15 Drought	5 year Drought Beginning 2021/22 Drought	5 year Drought Beginning 2027/28 Drought	5 year Drought Beginning 2032/33 Drought
1 - All Gas	1,818	5,052	6,142	7,159
4 - K19 Gas 250 MW	2,615	6,209	7,521	8,688
1 14 - K19 Sales C25 750 MW	3,726	8,249	9,957	11,340

1 **REFERENCE: Chapter 8: Determination and Description of Development Plans; 2012**
2 **GRA PUB/MH I-133 (a), (b), (c) & (d)/MH Exhibit #38**

3

4 **QUESTION:**

5 Please describe Manitoba Hydro's understanding of what an appropriate drought reserve is and
6 how it is arrived at.

7

8 **RESPONSE:**

9 Manitoba Hydro does not maintain a reserve specifically for drought. While drought is a major
10 risk, Manitoba Hydro faces a number of risks. The primary means Manitoba Hydro utilizes to
11 mitigate financial losses resulting from these risks is through its long-standing 75:25 target for
12 the debt/equity ratio.

13

14 The absolute level of equity is also an important consideration in determining its adequacy.
15 With drought being one of the most significant risks faced by Manitoba Hydro, retained
16 earnings should be sufficient to withstand a recurrence of the worst drought on record.

29

1 **PUB/MPA 1-004(a)**

2 **REFERENCE:**

3 MPA Report Page 37 Line 21

4 **PREAMBLE:**

5 Natural gas prices and the development of a carbon regime have implications on the export
6 prices achieved by Manitoba Hydro as well as the fuel costs incurred from an "All Gas" plan.

7

8 MPA states that building hydroelectric facilities as part of the chosen Resource Plan has the net
9 effect of making Manitoba Hydro's financial results more dependent on export results, whose
10 value will in turn be determined by both the quantity and price. Testing the Resource Plans with
11 respect to the range of potential export/import prices over time is critical to estimating future
12 impacts of the choice being made.

13 **QUESTION:**

14 Please discuss the implications on the comparative resource plans if export prices are lower
15 than forecast

16 **RESPONSE:**

17 Manitoba Hydro included future export prices in their "Energy" group of variables, which
18 consisted of export prices (both on-peak and off-peak for the MISO market), natural gas prices
19 for consumption in Manitoba, and carbon emissions costs. As a result, they did not test the
20 impact of export prices in isolation. Given that Manitoba's main export market is MISO, and
21 marginal prices in MISO are set by natural gas-fired electricity generation units for some portion
22 of every year, it may be considered reasonable to link these different factors.

23 Please see the MISO 2012 State of the Market Report, Appendix page A-5, where the following
24 information is provided:

1 “Since approximately half of MISO’s generation mix—and the majority of its
 2 baseload capacity—is coal-fired, these units tend to set price in most hours.
 3 Natural gas and oil resources typically only set prices during the highest-load and
 4 ramp-up hours. Hence, these fuel prices have a greater impact on load-weighted
 5 average prices than the percentages suggest.”

6 However, technology changes in unpredictable ways, so it may not necessarily be true in the
 7 future that natural gas prices will continue to be strongly related to MISO prices.

8 Notwithstanding these limitations, it is apparent that some plans are more sensitive to export
 9 prices than others. As noted in Figure 14 (page 53) of our report, export revenues are a much
 10 larger portion of total revenues for the Preferred Plan vs. the All-Gas Plan under all sets of
 11 assumptions. Plans 4 and 6 (which include Keeyask but not Conawapa), would have a level of
 12 export exposure between All-Gas and the Preferred Plan.

13 If the “Economic” and “Capital” sets of variables are held constant at Reference levels, then the
 14 sensitivity of the Plans to the “Energy” set of variables can be examined.

PV of Domestic Revenue Comparison of Sensitivity to Energy Scenarios Economic and Capital Scenarios at Reference (in millions)										
	6.00% Discount Rate					10.00% Discount Rate				
	Plan 1	Plan 4	Plan 6	Plan 12	Plan 14	Plan 1	Plan 4	Plan 6	Plan 12	Plan 14
High	\$44,107	\$41,868	\$42,317	\$42,409	\$41,991	\$23,441	\$22,810	\$22,991	\$23,274	\$23,268
Reference	\$43,791	\$42,878	\$43,301	\$44,727	\$44,230	\$23,623	\$23,476	\$23,633	\$24,285	\$24,148
Low	\$43,695	\$44,192	\$44,585	\$47,375	\$47,037	\$23,724	\$24,017	\$24,169	\$25,122	\$25,037
Sensitivity from Low to High	0.94%	-5.26%	-5.09%	-10.48%	-10.73%	-1.19%	-5.02%	-4.87%	-7.35%	-7.06%

15
 16 These model outputs suggest that those Resource Plans which are export intensive are
 17 significantly more sensitive to low Energy price scenarios. The Preferred Plan (14) requires
 18 domestic Manitoba ratepayers to bear a significantly higher burden (i.e., the NPV of domestic
 19 revenues is higher) if the Energy variables as defined by Manitoba Hydro are low.

20 The requirement that Manitoba ratepayers are responsible for all Manitoba Hydro costs over
 21 time means that export prices have an inverse impact on ratepayers: when export prices are
 22 high, ratepayers benefit, when export prices are low, ratepayers must pay more. The choice of
 23 Resource Plan will make a significant difference to the exposure of ratepayers to export prices.

Comparison of Additional Domestic Revenue - Reference Vs Low Export Prices

	2032			2062		
	No Carbon	Reference	Difference	No Carbon	Reference	Difference
All Gas	1,737	1,564	173	2,289	3,754	(1,465)
K22/Gas	1,879	1,602	277	2,813	2,984	(171)
Gas/C26	2,112	1,820	292	2,834	2,860	(26)
K19/Gas/250MW	1,866	1,560	306	2,938	3,050	(112)
K19/C25/250MW	2,340	1,894	446	2,525	2,363	162
K19/Sales.C25.750MW	2,296	1,876	420	2,477	2,256	221
k19/Imp/C31/750Mw	2,130	1,784	346	2,582	2,373	209
K19 Imp/Gas/750 MW	1,936	1,605	331	2,902	3,042	(140)

Source :No Carbon - PUB/MH I-185b

Reference - Appendix 11.4 Tables

30

1 **PUB/MPA 1-011(b)**

2 **REFERENCE:**

3 MPA Report Page 34 Line 34

4 **PREAMBLE:**

5 MPA states the reason for long-term change in direction could be many, but most easily
6 conceived our some change in technology which allows consumers to dramatically reduce their
7 consumption...

8 **QUESTION:**

9 Please discuss the implications on both domestic and export demand related to technological
10 change that brings about grid parity and discuss how the changes in demand in both the
11 domestic and export markets may impact ratepayers and the Province.

12 **RESPONSE:**

13 “Grid parity” is the idea that an individual electricity consumer could potentially self-generate
14 for their own needs at substantially the same cost as an electricity provider, and therefore
15 effectively cease being a customer (the impact from the electricity company perspective is the
16 same as spontaneous conservation, except the customer often remains connected to the grid
17 as a backup or part-time alternative to the self-generation).

18 It is MPA’s understanding that legislation in Manitoba is very strict with respect to customer
19 self-generation, potentially limiting the likelihood of this risk in the province. In the MISO
20 market, however, the possibility of grid parity from a variety of technologies is real, certainly in
21 the medium to long term. For example, continued improvements in cost and efficiency may
22 result in photovoltaic arrays being as cheap as daytime grid energy, and natural gas-fired
23 combined heat and power facilities for industrial or commercial purposes could soon be
24 competitive with traditional purchased energy options.

- 1 The result of any such eventuality would likely be to drive down, or at least prevent the further
- 2 growth in prices in the MISO market. Given the sensitivity of various Resource Plans to export
- 3 prices, any potential for such a future outcome is a risk.

31

1 **REFERENCE:** Chapter 11: Financial Evaluation of Development Plans; MH Exhibit # 112 -
2 Cost of Deferral

3

4 **QUESTION:**

5 Please indicate the cost by component related to a one-year deferral of Conawapa and Keeyask
6 beyond the current ISD based on both High, Reference and Low Capital Costs and High,
7 Reference and Low Financing Costs.

8

9 **RESPONSE:**

10 The table below shows the estimated costs of deferral for Conawapa and Keeyask between the
11 Preferred Plan (Keeyask 2019 and Conawapa 2025) and Plan 2 (Keeyask 2022) and Plan 7
12 (Conawapa 2026) under the high, reference and low capital cost and economic indicator
13 scenarios. Note that in-service costs for Keeyask 2020/21 are not readily available and the
14 deferral costs shown in the table reflect a 3-year deferral.

15

16

Economic Indicators	(Millions Current \$)		
	Low	Reference	High
Capital Costs	Low	Reference	High
Conawapa 2025/26 (Plan 14 - Preferred Plan)	7,557	9,347	11,887
Conawapa 2026/27 (Plan 7 - Gas/C26)	7,729	9,685	12,517
1-Year Deferral	172	338	630
Keeyask 2019/20 (Plan 14 - Preferred Plan)	4,865	5,508	6,454
Keeyask 2022/23 (Plan 2 - K22/Gas)	5,222	6,242	7,726
3-Year Deferral	357	733	1,272

1 Estimated projected deferral costs for both projects consist mainly of increased escalation and
2 capitalized interest. A breakdown between 2012 Constant Dollar Cash Flows, Escalation and
3 Capitalized Interest for Conawapa 2025/26 and Conawapa 2026/27 under the reference
4 scenario can be found at pages 13 and 15, respectively, of **Appendix 11.1 – Net Capital**
5 **Expenditures**. A breakdown for Keeyask 2019/20 and Keeyask 2022/23 under the reference
6 scenario can be found at pages 9 and 11, respectively, of the same appendix.