

**Manitoba Hydro 2016/17 & 2017/18 General Rate Application
MIPUG/YATCHEW-1**

Section:	Various	Page No.:	
Topic:	Dr. Simpson and Dr. Compton's evidence: 'The Effect of the Proposed Hydro Rate Increase on the Manitoba Economy'		
Subtopic:			
Issue:			

PREAMBLE TO IR (IF ANY):

The evidence of the Coalition experts, Simpson and Compton, indicates as follows:

“The initial fall in demand as households, firms and government sectors readjust their spending patterns is the direct effect, but this is only the spark that will then propagate throughout the economy.” [page 4]

and

“Additionally, the fall in industry demand may lead to lower wages, fewer jobs and the closure of some vulnerable companies. This will further reduce household demand for goods and services, creating an additional impact on the economy.” [page 4]

and

“Our preferred estimates indicate that due to the proposed increase in real hydro prices, the Manitoba economy will be 3.4% smaller after seven years than it would have been in the absence of hydro price increases above the inflation rate. Moreover, the hydro price change will result in close to 3900 fewer jobs in the province after seven years than would exist without the price increases.” [pages 2 – 3]

QUESTION:

- (a) Please indicate if the conclusions of Dr. Yatchew should be read to be at odds with the conclusions of Simpson and Compton.
- (b) Does Dr. Yatchew's conclusion that the “net effect on GDP may eventually be modest” accord with Dr. Simpson and Dr. Compton's conclusion that the Manitoba economy will be 3.4% smaller after 7 years than it would have been with more moderate rate increases? If not, please provide a full description of the differences in input

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assumptions and modelling that Dr. Yatchew applied as compared to those of Dr. Simpson and Dr. Compton.

- (c) Please confirm that in respect of industry and load response, both Dr. Yatchew and Drs. Simpson and Compton, conclude that industry closures are a separate matter not fully addressed by elasticity estimates. For example, this is in reference to Dr. Yatchew's excerpt that "In the presence of sufficiently high rate increases, there may be significant risk of loss of load in one or more market segments, in ways that cannot be directly extrapolated from price elasticities based on historical data, but may be heralded by experience elsewhere" (page 16) appears similar in scope to Dr. Simpson and Dr. Compton's comment that industries "relocating their energy intensive production outside the province" implies that demand declines may be underestimated in their work (page 15). If confirmed, please provide a description of the appropriate tools to assess economic impacts in the event of industrial closures, particularly noting that Manitoba has a small industrial customer base which is primarily located outside Winnipeg in areas that may be highly dependent economically on the industrial activity.

RESPONSE:

- (a) The conclusions are not necessarily inconsistent. I have not reproduced their analysis but have no basis for disputing it.
- (b) Drs. Simpson and Compton conduct a partial equilibrium analysis which is widely used to track industry impacts and potential job losses. Such analyses, are not intended to assess the potential for creation of additional jobs or subsequent increases in GDP that result from resources that have been released. An analysis of this type at a disaggregate level is *theoretically* possible, but difficult as it would require predicting which industries would expand to absorb freed resources. I prefer to inform my judgements based on the rapidity with which an economy responds to shocks, and the impact on the longer-term GDP trajectory. I am not aware of empirical analyses of the broader GDP impacts of large electricity price increases.¹ However, as noted in the report, the oil price shocks of the late 1970s explain a cumulative reduction of 3% in U.S. GDP and the financial crisis of 2008 explains a 5% cumulative reduction in U.S. GDP.

¹ Some European countries have experienced large electricity price increases as a result of intensive renewable energy programs and there have been some analyses of the competitiveness of industry (e.g., as a result of the German *Energiewende*).

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- (c) The elasticities recommended in the report, and those typically estimated in the electricity demand literature, represent average responses. They are not industry specific. Some industries might experience a stronger price response than the average, others a weaker response.

To assess the impacts on particular communities and on specific enterprises would require an analysis at a granular level of the specific circumstances on a case-by-case basis. Such analysis is certainly possible, but has not been conducted in preparation of this report.

RATIONALE FOR REFUSAL TO FULLY ANSWER THE QUESTION: NA

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Section:	Executive Summary	Page No.:	
Topic:	Impacts on industry		
Subtopic:			
Issue:			

PREAMBLE TO IR (IF ANY):

The executive summary notes Manitoba has a larger than average potential for substitution to natural gas where it is available (item 4, page i).

Further, Dr. Yatchew notes that substitution to natural gas is a “significant risk” to Manitoba Hydro (item 5b, page ii) and that load reductions or erosion such as this is “sub-optimal” particularly as Hydro is in a period of surplus capacity and load reductions “will erode revenues at a time when marginal costs of production are low”.

QUESTION:

- (a) Please indicate what information Dr. Yatchew was provided about the industrial customer base on Manitoba Hydro, and any specific company-by-company profile for use of electricity. For example, Was Dr. Yatchew made aware of the availability of natural gas to the various industries?
- (b) Given Manitoba industrial makeup is dominated by firms that either must use electricity for production (e.g., electrochemical, arc furnace, pipeline pumping) or are located outside of natural gas served areas (forestry, mining), please confirm that natural gas substitution is not an option for most industrial uses. In this case, do any of Dr. Yatchew’s conclusions change or require further comment?
- (c) At page 26, Dr. Yatchew summarizes the results of a recent American study which indicates the potential for industrial long-term elasticities to be at -1.4 (for every 10% increase in the real price of power, industrial loads are lower by 14%). Dr. Yatchew indicates this elasticity is higher than other recent studies, and that “the authors attribute

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the large industry price elasticity to the concentration of electricity intensive industries in low-price states”. Given Manitoba fits this profile of having a large concentration of electricity intensive industry, does Dr. Yatchew believe there is a reasonable chance Manitoba may experience this degree of elasticity (e.g., the 45.6% real price increase by 2025² leading to a 63.8% decline in industrial energy usage)? If not, please provide any evidence as to why high price responses of this nature should not be expected in Manitoba.

- (d) Please provide any further information that may be available about the “elasticity” to regulatory signaling (page v), as noted at page 28, “Indeed, the *anticipation* of a succession of rate increases will likely have an impact on business investment decisions in the near future” (emphasis in original). Provide any definition of “near future” as used in this quote. Will this be a hidden impact (i.e., Manitoba may never know what was lost in terms of potential new industry)?
- (e) Dr. Yatchew further concludes that “Indeed, the specter of increasing rates, in the near or more distant future, may have already discouraged investment” (page 45). Please provide any references or concrete examples of the specter of increased rates leading to industry response in other situations of which Dr. Yatchew is aware.

RESPONSE:

- (a) Company-by-company data were not provided or used for the analyses underlying the report. Natural gas availability to specific enterprises was not made available.
- (b) For those enterprises not having access to natural gas, substitution to natural gas is not an option. In the presence of sufficiently high electricity prices, and with access to natural gas, self-generation may be an option.
- (c) As noted by the authors of the study, and repeated in the report, these large elasticities are probably driven by cross-sectional data effects, reflecting a degree of self-selection of electricity intensive industries to states where industrial electricity prices are low. The implication is that, in order that these large responses materialize in Manitoba, there would likely need to be a large-scale exodus of these industries. Locational decisions, however, are driven by numerous factors, electricity/energy prices among them. For these reasons, I do not believe these high elasticities to be the best predictors for the Manitoba setting.

² See Simpson and Compton page 6.

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- (d) If there was a clear indication that electricity prices are to increase by 50% in real terms over the next decade, I would expect this to be taken into account in the next business planning cycle, particularly by entities for which electricity costs comprise a significant portion of total costs. The impact would be somewhat challenging to predict, and in this sense, would be “hidden”.
- (e) Investment decisions require predictions of input costs (and output prices) over a future time-frame. Thus, *expectations* of future prices are a standard part of textbook investment modeling. Expectation of higher future electricity/energy input prices reduce the present value of profits. I have not compiled a list of specific industry responses to *expected* energy prices. However, in general terms, higher European electricity prices have been of considerable concern to European industries and to policy-makers. Conversely, the shale revolution, and the expectation that natural gas prices will remain low in North America for the foreseeable future, have led to the expectation of a manufacturing resurgence.

RATIONALE FOR REFUSAL TO FULLY ANSWER THE QUESTION: NA

**Manitoba Hydro 2016/17 & 2017/18 General Rate Application
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Section:	Executive Summary	Page No.:	
Topic:	Provincial electricity demand		
Subtopic:			
Issue:			

PREAMBLE TO IR (IF ANY):

Dr. Yatchew notes that under the elasticities selected (which do not include the impacts of potential industrial closures), the price increases should be understood to lead to “stagnant” electricity demand over the next 10 years, even before DSM effects. (page 32)

QUESTION:

- (a) Please clarify if Dr. Yatchew’s conclusion regarding stagnant electricity demand includes the impacts of Codes and Standards DSM (but just not DSM programming) or is this a load projection before Codes and Standards savings are applied (i.e., with Codes and Standards advancements Manitoba would expect decreasing usage, even without any DSM programming)?
- (b) Is it Dr. Yatchew’s view that at a time of large surpluses and low marginal costs, that declines in usage are sub-optimal?
- (c) Provide a definition of “sub-optimal” and indicate what tests should be applied to determine when usage is optimal, particularly with respect to activities (e.g., DSM programming, load building incentives to new industry) that changes the level of load.
- (d) Please provide Dr. Yatchew’s assessment of electricity demand over the next 10 years under the elasticity values cited in paragraph 72 at page 26.
- (e) Dr. Yatchew cites that with the proposed rate increases “the longer-term outlook for electricity demand growth is not favourable”. Please provide a definition of “favourable” as used in this excerpt (at least with respect to Manitoba’s supply conditions over the next 10 years).

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- (f) Dr. Yatchew notes that the projected rate profile “is more in the nature of a step function over six years, followed by a rapid decline to increases close to the rate of inflation”. Has Dr. Yatchew reviewed the response to PUB/MH-II-21a-b with regard to the potential for substantial rate decreases in year 11 (in this response, indicated at -24% over 3 years)? Does Dr. Yatchew have any views about the “step function” nature in light of this type of rate scenario? Can Dr. Yatchew comment about the rationales underpinning planning for this type of rate scenario?

RESPONSE:

- (a) Elasticities, because they are in most cases estimated from actual consumption data rather than data that have been purged of DSM effects, will to a degree reflect DSM effects. Furthermore, the energy and electricity intensity trends (discussed in Section C.3 of the report) also informed my selection of elasticity benchmarks.
- (b) Yes.
- (c) Ideally, one would like to minimize idle capacity. In settings such as Manitoba, where capacity additions are ‘lumpy’, periods of excess capacity are difficult to avoid. (Note again the advantages of scalability of supply additions enjoyed by solar, wind, storage and fracking, discussed in sections B.3 and B.5 of the report.) In present circumstances, the concern is that large increases in electricity prices will delay absorption of excess capacity.
- (d) Paragraph 72 cites sectoral elasticities obtained in a panel data analysis using state-level U.S. data. The long-term elasticities are “-0.5 for the commercial sector, -1.1 for the residential sector and -1.4 for the industrial sector”. Assuming an average elasticity of -1.0, then a 50% increase in the real price of electricity implies a 50% decline in electricity demand. As noted by the authors, and in the report at paragraph 72, these results are likely driven by the cross-sectional nature of the data. I do not recommend an average elasticity of -1.0 for forecasting or planning purposes.
- (e) In this context, the term “not favourable” is used to reflect impact of price increases and the potential for a recession, both of which would have an adverse impact on electricity demand.

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- (f) This information request and its response underscore the long-term cyclical pressures on rates and financial ratios that occur as a result of “lumpy” investments, as is the case with large hydraulic projects. Therein lies the value of the exercise.

However, projection exercises over such a long time-frame are speculative. Manitoba Hydro notes at page 2 of its response to PUB/MH-II-21a-b “Manitoba Hydro ascribes limited value to forecasts a decade or more in the future given the potential for volatility in key assumptions many of which are beyond Manitoba Hydro’s ability to accurately predict or control.”

The response indicates reductions of 19.75%, 3.12% and 1.11% in the years 2027, 2028 and 2029 respectively (at page 7). I am not aware of instances where a regulated utility has reduced overall rates by 20% in a single year. Prices can drop dramatically in short spans in competitive markets (such as in commodities markets).

RATIONALE FOR REFUSAL TO FULLY ANSWER THE QUESTION: NA

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Section:		Page No.:	
Topic:	Economic Impacts		
Subtopic:	Taxes		
Issue:			

PREAMBLE TO IR (IF ANY):

QUESTION:

- (a) As part of Dr. Yatchew's work, did the significant effects he outlines to the Manitoba economy arise only because of the 7.9% proposed rate increase, or did he take into account that this rate increase (for many classes) will also lead to further erosion of household economic resources due to the added GST, Provincial Sales Tax and City tax that will be paid on the extra bills?
- (b) If taxes were not taken into account, can Dr. Yatchew give an estimate of the added economic impact that should be assumed due to this additional adverse effect on the macroeconomy?

RESPONSE:

- (a) The impact will depend on how the funds that are collected through taxes are spent. Funds that remain in Manitoba and lead to incremental governmental spending may have a stimulative effect.
- (b) While the response would depend on the disposition of funds, the magnitude of the macroeconomic impact is likely to be small, especially when compared to other sources of variation in macroeconomic drivers.

RATIONALE FOR REFUSAL TO FULLY ANSWER THE QUESTION: NA