

## NEEDS FOR AND ALTERNATIVES TO (NFAT)

### Elenchus Undertaking # 92 (Transcript page 4951)

**Elenchus to prepare a description of the adverse scenario, and to lay out a recommended scenario for Manitoba Hydro to run through its models to determine the impact on the Preferred Development Plan as compared to others. And that will be prepared with consultation with other IECs as appropriate.**

#### Response:

In describing the adverse scenario, Elenchus notes that low domestic demand is not, in itself, a negative risk provided that export prices exceed the full cost of production. Lower than forecast domestic demand will result in higher than forecast exports which could result in increased revenue if the net revenue from exports exceeds the lost revenue due to reduced domestic sales. Consequently, the essential feature of a “worst case” adverse scenario would be that it combines low domestic demand with low export prices.

Elenchus has sought to describe an adverse scenario that allows Manitoba Hydro to undertake an economic evaluation expeditiously by adapting an existing scenario that has already been prepared. The two elements of the adverse scenario (low domestic demand and low price) are each discussed below.

An example of the conditions that could give rise to this combination of adverse factors would be a significant unanticipated decline in the demand for grid power, perhaps due to evolving technologies that make it economic for customers to self-generate or adopt competitive options such as micro-grids that incorporate new generation and storage (grid parity). This scenario would result in constrained pricing for all utilities (i.e., Manitoba Hydro and its export customers) that would reflect the cost of competitive options rather than the fully embedded cost of generation, transmission and distribution. Utilities would either have to match the competitive price of new options and sell at a price below full cost recovery, or else face a dramatic loss of customer demand. If this were occurring on a continental basis, Manitoba Hydro would tend to see little or no load growth (assuming it adopts “competitive prices” to avoid customers going off grid) while at the same time seeing export revenues seriously curtailed.

For purposes of this adverse scenario, it is assumed that a strategy of discounting power to retain customers would be adopted in both the domestic and export markets. Hence, all available energy would be sold, but at a low price.

## **Domestic Demand Assumption**

Manitoba Hydro Exhibit #156 provides an analysis based on “the assumption of flat load growth beyond 2022/23 results in a hypothetical circumstance.” In that exhibit, Manitoba Hydro states:

*The analysis of this hypothetical circumstance uses the economic output from existing reference cases which require new resources in 2023/24 (2013 planning assumptions and updated Keeyask capital costs), and the following additional assumptions:*

- *The no new generation case was based on the All Gas plan up to and including 2022/23, with existing export commitments beyond 2022/23 based on contract terms and conditions.*
- *The Keeyask & 750MW interconnection case was based on Plan 5 19/Gas25/750MW (WPS Sales only) up to and including 2022/23, with existing export commitments beyond 2022/23 based on contract terms and conditions.*
- *No domestic load growth (flat load) beyond 2022/23.*
- *From 2023/24 to 2048/49 all energy volumes were held constant.*
- *Beyond 2048/49, the long-life asset evaluation methodology was applied.*

*As shown in the following table, if there is no load growth assumed beyond 2022/23 and surplus energy is valued using the 2013 long-term price forecast, building Keeyask and a new interconnection results in an incremental net present value of \$395M (at real WACC of 5.4%) relative to building no new generation. This analysis is considered conservative from an export power pricing perspective because it values uncommitted dependable surplus energy at the long-term dependable export price forecast rather than using values consistent with recently signed contracts.*

This scenario is consistent with Elenchus view of an adverse scenario from a load growth perspective. However, for the reasons discussed above, the pricing scenario assumed for this exhibit is not consistent with an adverse scenario that also assumes constrained pricing in both the domestic and export markets due to grid parity in Manitoba and export markets, or some other factor.

## **Export Price Assumption**

Manitoba Hydro's analysis of its Preferred Development Plan includes a "low" energy price scenario which is an aggregate of six 20 year forecasts of MISO on-peak and off-peak energy and capacity prices prepared by six independent consultants. It is shown in the Potomac Economics report in Figures 6, 7, and 8.

Elenchus has attempted to identify a low energy price scenario consistent with the grid parity assumption that is supported by the evidence on the record. Based on this review, Elenchus is of the view that the record does not provide a solidly supported price forecast that is significantly more adverse than Manitoba Hydro's low energy price scenario.

That being said, the point being made by Elenchus during cross-examination preceding Undertaking #92 (beginning at Transcript page 4923) is that over the time frame that Manitoba Hydro's analysis relies on to realize a financial advantage for the Preferred Development Plan, it is not feasible to provide an adverse pricing scenario that can be supported by currently available information.

In particular, the illustrative scenario on which the adverse scenario referred to by Elenchus should be based assumes that technological advances result in grid parity at a low price. This scenario assume a continuation of the downward price trend in new generation technologies, particularly renewable energy technologies, possibly with a disruptive technology that results in a significantly lower cost options for consumers. In addition, the most adverse scenario in the coming decades for suppliers of grid power, including Manitoba Hydro, would be a disruptive energy storage technology that allows consumers to adopt a simple, reliable and low-cost option that involves either self-generation or stand-alone micro-grids. In either case, if the cost of grid power is not artificially reduced below full cost recovery, consumers would disconnect from the grid and electric utilities would face a "death spiral" with ever declining demand and ever increasing prices. It is not feasible to forecast the future competitively-constrained domestic price or the export price under this scenario since it depends on the cost associated with technologies that have not yet been developed.

While both the scenario and any associated prices are necessarily speculative, it is the view of Elenchus that this scenario is a distinct possibility and that if it should occur it is quite feasible that market-constrained prices will decline in the coming decades.

For purposes of informing the Board in its deliberations, Elenchus recommend that a scenario with decreasing nominal prices be considered although the scenario would necessarily be hypothetical. A relevant scenario might be based on nominal prices that decrease 1% annually beyond 2022/23 (matching the timing of flat domestic load in the scenario considered in Exhibit 156).