Rate Review & Analysis of the North Red Deer River Regional Water Supply System

Prepared for

The Towns of Blackfalds, Lacombe and Ponoka
The First Nations of Montana, Samson, Ermineskin and Louis Bull

by

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Introduction

This report has been prepared for The Communities of Blackfalds, Lacombe and Ponoka (The Communities) and the First Nations of Montana, Samson, Ermineskin and Louis Bull (The First Nations). The objective of the report is to develop comparative rates for four alternatives of providing water transmission service for the North Regional Water System. The rate models provided attached to this report are intended to be a guide to assist the Communities and the First Nations in addressing policies and directions for the proposed regional water service.

Summary of Results

This report applies a "utility" or "rate base" method to determine utility revenue requirements for four alternative systems developed for water service to the Communities and the First Nations. That method differs from the “cash” method employed by the Communities, since it addresses the gross and net values of utility assets and capitalization, service life of utility plant, and sources of capital funding and capital structure. The most significant difference lies in the identification of capitalization of the net investment in capital assets, and assigning costs for a return on municipally funded investment in the utility. The "utility" method can simplify budget-making, since it applies a specific or consistent method to determine the amount of revenue that a utility system should generate in a given year. It provides a basis for allocating costs to functions and then distributing those functionalized costs to specific customers or classes of customers according to demand or cost-causation. Finally, it is the method currently employed by the Energy and Utilities Board for determining rates for investor-owned utilities and municipal utilities providing service beyond municipal boundaries.

The "utility" method will generally provide a more stable, revenue requirement than does the "cash" method, lower than the cash method in the early years of

operation and a higher revenue requirement in the latter years of a project. If the Communities and the First Nations adopt a policy requiring the proposed regional water service to be a profit center, supporting general revenues rather than breaking even, the utility method would provide a better means of assessing the level of income that should be generated, and deemed to be appropriate, using accepted regulatory practice.

Table 1 has been prepared to illustrate how the average unit costs vary for the first three years of operation under four different operating alternatives identified by UMA engineering. Option 1 is for a water pipeline to the Communities only with treated water supplied by the City of Red Deer. Option 2 adds a water treatment plant to a pipeline serving only the Communities. Option 3 extends the water pipeline only to the First Nations and expands its capacity accordingly. Option 4 expands the Option 2 water treatment plant and pipeline to accommodate the First Nations.

Table 1: Average Wholesale Water Costs

	Year 1 $/m^3	**Year 2** $/m^3	**Year 3** $/m^3
Option 1 – Base Case	0.788	0.758	0.734
Option 2 – Water Treatment Plant	0.813	0.726	0.657
Option 3 – Base Case + First Nations	0.754	0.732	0.714
Option 4 – Water Treatment Plant + First Nations	0.693	0.627	0.572

The rates calculated by the model are postage stamp commodity rates for water delivered to each Community and/or First Nation. Therefore, Options 1 and 3 include the cost of water purchased from the City of Red Deer.

A postage stamp rate is the same rate for service regardless of location. It derives its name from the post office practice of charging the same rate whether a letter is delivered to the same city or across the country. If the project proceeds,

consideration should be given as to whether rates should be postage stamp or vary by location.

A commodity charge recovers all costs through the unit cost of water, regardless of whether they vary with the amount of commodity sold or whether they are fixed or related to some other quantity. If the alternative of a water treatment plant is chosen, then consideration should be given to a rate design that recovers the fixed cost of operation through fixed monthly fees and the cost of capacity through capacity charges. The ultimate rate design chosen will depend on the alternative chosen and system design. However, the postage stamp commodity rate provides a useful method of comparison of the alternatives.

In summary, the cost of water delivered under all four alternatives is very close, given that estimates were used for all costs, including the mid-range estimate of the cost of water purchased from the City of Red Deer. Since the cost of water purchased from Red Deer is an add-on to the cost of the transmission-only alternatives, a one cent/m^3 reduction in the cost of purchased water results in a one cent/m^3 reduction in the postage stamp rate. Depending on the ultimate rate Red Deer proposes, the choice of whether to proceed with a water treatment plant may depend on other considerations, such as obtaining approval for the plant or whether the Communities and the First Nations wish to assume the additional responsibilities of operating a treatment plant as well as a transmission system.

Assumptions

The construction costs for the various options are as set out at pages 43 and 44 of the UMA report. Capital assets were classified according to the categories set out at page 14 of the UMA report. These assets were depreciated over the service lives set out at page 14 of the UMA report with two exceptions. The construction costs of the low lift facility and the water treatment plant were divided between equipment and structures. Structures were depreciated over the 50 year life of the project and the equipment was assumed to have a useful service life of twenty

years. The SCADA system was depreciated over a 10 year useful service life. Depreciation is a non-cash expense and forms part of the cost of providing service.

Operating and maintenance expenses for Year 1 are as set out at pages 48-49 of the UMA report. A general inflation factor of 2.5% was applied to all expenses. For options 2 and 4, additional increases in the cost of power, heating and chemicals were assumed in proportion to increases in volume. For Options 1 and 3, the price for water purchased in all years from Red Deer was the mid-range value of $\$0.57/m^3$, found at page 52 of the UMA report.

Capital costs consist of the cost of debt incurred to finance the non-grantable portion of the project. The cost of debt was assumed to be the current AMFC rate of 6.25% for a 20 year debenture. As the system operates, the owners of the system will build up equity in the system as the debt portion of financing is paid down. The rate model utilized a cost of equity of 9.25%. This represents the most recent cost of equity set by the Energy and Utilities for investor-owned utilities within the Board's jurisdiction. The operator of the system will fall under the Board's jurisdiction only on a complaint basis. Therefore, the return on equity can be whatever the operator considers to be suitable and financially prudent. Capital costs appear as "return" on Schedule "C".

Provincial grants to the Communities were assumed to be at the rate of 40.6%, as set out at page 50 of the UMA report. Indian and Northern Affairs (INA) grants to the First Nations for additional capacity and connections were assumed to be 100%. The ultimate rate for service on the system will depend on the ultimate level of grants. Both Provincial and INA grants were amortized over the life of the project. Amortization appears as a credit to non-cash expenses in Schedule "C".

10 Year Forecast

At the preliminary presentation of the rate models, the members of the Regional Water Investigation Steering Committee indicated that it would be helpful if the rate model were projected out for a ten year period of initial operation. This has been summarized in Table 2, attached.

The same assumptions that formed the three year forecast are incorporated in the ten year forecast. The forecast consumption is based on the population and volume forecasts for 1, 4, 9, etc. years supplied by UMA. The forecast consumption for intervening years were interpolated linearly. Power costs are inflated by a factor of 2.5%, even though it is not possible to predict the level of prices when the current price cap is removed. However, it should not make too much difference to the relative rates as Red Deer would likely flow through its power costs if water were purchased from that source.

For the purposes of the forecast, Red Deer's price for the purchased water options has been held steady at $\$0.57/m^3$. It is unlikely that purchased supply would be so stable over the 10 year period. Red Deer could decrease its price as volume increases or it could add on any extraordinary cost increases its operations experience.

Similarly, the costs of chemicals and operations could change if environmental regulations change or water quality in the Red Deer River deteriorates. These changes are also not possible to forecast over the next ten years.

Finally, no allowance has been made for replacements or additions to the system. For example, the SCADA system likely would require changes or upgrading as the software and hardware for these systems become obsolete within the 10 year expected life.

Table 2 – 10 Year Projection of Relative Rates

	Year 1 $/m^3	**Year 2** $/m^3	**Year 3** $/m^3	**Year 4** $/m^3	**Year 5** $/m^3	**Year 6** $/m^3	**Year 7** $/m^3	**Year 8** $/m^3	**Year 9** $/m^3	**Year 10** $/m^3
Option 1 - Base Case	0.788	0.758	0.734	0.728	0.723	0.717	0.713	0.708	0.702	0.696
Option 2 - Water Treatment Plant	0.813	0.726	0.657	0.641	0.626	0.612	0.600	0.589	0.572	0.558
Option 3 - Base Case + First Nations	0.754	0.732	0.714	0.707	0.701	0.696	0.690	0.686	0.681	0.676
Option 4 - Water Treatment Plant + First Nations	0.693	0.627	0.572	0.552	0.534	0.518	0.504	0.492	0.478	0.466