

BACKGROUNDER



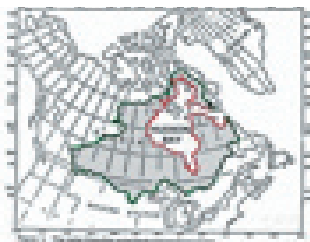
Water Exports

THE 1% SOLUTION

BY DANIEL KLYMCHUK

Executive Summary

This backgrounder explores the idea of a water pipeline from the mouth of the Nelson River in Manitoba to the fast growing South-western United States. During the next few years, the price of water in the United States is expected to rise substantially, since the sharply higher price of new supplies will be shaped by the cost of desalination.



Our business case suggests Manitoba has the potential to conservatively earn \$1.33-billion (figures are in U.S. dollars unless noted otherwise) annually from the sale of just 1 per cent of the fresh water flowing into Hudson Bay. Earnings of this magnitude would end the province's perennial have-not status.

FOREWORD

This backgrounder is an update of a provocative Frontier Centre backgrounder on bulk water exports from Manitoba to the United States, which was written in September 2001. Back then, it caused quite a stir and became the basis for a Frontier Centre column that was published by the Wall Street Journal. Circumstances have changed substantially since then.


The price of construction and energy has increased sharply while the price of desalination, a competitive alternative to bulk piped-water exports has fallen. However, demand for water, especially in the fast growing American Southwest, continues to increase. Does it make sense to export bulk water to this burgeoning market? Where do things stand now?

INTRODUCTION


An enormous volume of self-renewing fresh water flows through Manitoba each year. The system of rivers that drains into Hudson Bay has played an important economic role for centuries. In 1670, King Charles II of England granted a royal charter to a group of fur moguls that was given control of all the lands draining into Hudson Bay. The company that resulted, Hudson's Bay, became a key factor in the European settlement and development of what eventually turned into the Province of Manitoba. In modern times, hydroelectric dams have harnessed the rivers and provided Manitoba's population with a cheap, reliable source of electricity for their use and for export. This domain of 3,846,000 km² feeds about 22,857 m³ per second of fresh water into Hudson Bay¹. This flow is so massive that in 1993 it led Professor M.J. Dunbar of the Centre for Climate and Global Change Research at McGill University

to write an article titled "*Hudson Bay Has Too Much Fresh Water.*" His point is that the bay is the catch basin for so much fresh water that it is not salty enough to support commercial fish such as those found in the Atlantic.

A great opportunity lies in these mind-boggling numbers. If we sold approximately 1 per cent (5.4 billion m³, ironically about equal to the flow of U.S. water into the Red River) of the annual flow of fresh water into Hudson Bay to the United States, the economic effect on Manitoba would be enormous. However, Canadians cringe at the thought of selling water to the United States. It is an irrational fear that will take time to dissipate. If the situation were reversed, and we were bone dry while the United States had vast supplies of fresh water, would we not consider it only right that our American cousins sell it to us?



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Desalination determines the price of fresh water

What are the facts in this extremely emotional issue? First, the United States IS NOT short of fresh water, and will it will NEVER be. What the Americans will become very short of is cheap water. All future sources of fresh water will be relatively expensive compared to today's. The United States uses inexpensive river and ground water, which costs between \$50 and \$100 per acre-foot. (An acre-foot is the volume needed to flood one acre of land to a depth of one foot, or 325,851 U.S. gallons.) In the future, however, the United States will be forced to rely on desalination and recycling. The most widely used method of desalination is reverse osmosis, which employs a mammoth version of the water machines commonly found in grocery stores.

Although the world's 7,000 desalination plants are mainly in the Middle East, there are units in the Caribbean, Florida and California. In 2006, Tampa became the first major U.S. city to adopt desalination as a source of fresh water. The Tampa

facility, which depends on electricity from a coal-fired plant, provides 10 per cent of the area's water needs at a 30-year cost of \$0.66 m³.² (This will increase if tighter carbon emissions are introduced.)

The point is that fresh water is not priceless; in fact, it is worth exactly what it costs to produce, which today, based on the Tampa experience, is \$0.66 m³.

Most water utilities that use desalinated water blend the cost of "new" and "old" water to avoid sticker shock. The cost of desalinated water depends on the salinity of the sea water and the local price of the electricity required for reverse osmosis. For every 100 gallons of sea water taken in, 15 to 50 gallons of fresh water are extracted; the remainder is a concentrated brine solution. Today, processing plants pump the brine out to sea, an expedient that may not be ecologically acceptable in future. One thing has become crystal clear: The cost of desalination is the price of fresh water.

Manitoba water pipeline

Given our location and our cheap, abundant hydroelectricity, Manitoba is uniquely positioned to benefit from an increased demand for fresh water. Imagine a pipeline from Hudson Bay near York Factory to the U.S. border. By diverting the fresh water just prior to where it enters the ocean, Manitoba's ecological system would remain unaffected. The insulated, underground-

pressurized line would extend 630 miles down the eastern side of the province to the U.S. border. On the U.S. side, the Americans would determine the manner of distribution. The Manitoba portion of the pipeline could also serve the fresh water needs of Winnipeg and surrounding areas. If there were a break in the line, the spillage would only be water, not oil.

Costs

What would such a pipeline cost? A good comparable in terms of scope of construction is the California Water Project³, an aqueduct that will run 621 miles from the mountains of northern California to San Diego (with 500 miles completed to date). This project was not rushed, because the state's water needs have not until recently been perceived as urgent. When completed, it will deliver 5 billion m³ of fresh water annually. The price tag for the California Water Project stood at \$1.7-billion when the contract was bid on in the 1960s, which makes the cost data almost as old as Jerry Lewis. Constructed today, a similar pipeline of the same capacity would cost approximately \$35-millionCdn per mile. It would need the capacity of a 30-foot-wide conduit or its equivalent in smaller pipes, with an 8 m³ per second flow in order to supply 5 billion m³ annually. In addition, a pumping station would be required every 50 miles since the

water would be forced upward from sea level to 750 feet (the elevation at the U.S. border). Beyond the border, it is downhill to the Gulf of Mexico.

The second largest expense after the carrying cost of the project would be the cost of electricity to power the pumping stations --- about \$700-million Cdn based on an estimated consumption of 2,500 megawatts at 3.5 cents per kilowatt hour. This project would not require Manitoba Hydro to expand its capacity since there is sufficient power in the off-peak hours to power the pumping stations along the pipeline. In effect, Hydro would experience a windfall profit of \$700M without a nickel of additional investment. Wages, benefits and maintenance would round out the operating costs. Based on the California experience, approximately \$100-million Cdn per year would be required.

Total cost of the Manitoba pipeline in Canadian dollars would be as follows:

a) A \$22-billion construction cost carried at 3.375% over 30 years	\$1.166B
b) Annual electrical power consumption	\$7B
c) Annual wages and maintenance	\$1B
Total annual cost:	\$1.966B



Revenues

Now let us examine the revenue side of the equation. Based on the cost of desalination, our achievable sale price is 0.66 cents per m^3 . Simply assuming the same 5 billion m^3 the California project produces, our revenue would be \$3.3-billion. Based on the project carrying all costs, the annual profit would be \$1.33-billion. However, if we assume the U.S. federal government will carry the cost of the project, as with most water projects in the United States, then the profit is an impressive \$2.49-billion annually. The best scenario for Manitoba would be to sell the water contract to a pension fund. Pension funds find utilities very attractive, because a government guarantees the cash flow. At a competitive cap rate of 5 per cent, the lump sum value of the contract would be \$26.6-billion if all cost is carried or \$49.8-billion if the U.S. government carries the cost of the project. Canada's pension fund is very active in this area. In 2006, the Canada Pension Investment Board together with Osprey Acquisitions Limited purchased the Anglia (England) water utility from the then private owner AWG. The Ontario Teachers' Pension Plan purchased 50.1 per cent of the Chilean water utility from the government in 2007. What could be better than a pipeline financed by the U.S. government, ownership of the project in the hands of Canada Pension, and the people of Manitoba with at least \$26.6-billion in the bank?

Water revenues would end our have-not status

Selling water would change Manitoba's economic prospects dramatically. The province has become completely dependent on federal transfers and subsidies. This has had the unintended effect of creating a relatively moribund, high-tax province with little population growth. The percentage of Manitobans living below the poverty line has increased over the last two decades. Our health and university systems need a serious injection of cash that we do not have. Manitobans, like most Canadians, are more in debt than ever before, without any relief in sight. Water exports would provide the capital to exit this hopeless circle of poverty and debt.

Why should we think about selling now? The cost of desalination continues to drop with the passage of each decade, and if we do not act soon we will ultimately price ourselves out of the water market because a Manitoba project is expensive compared to, say, a possible British Columbia effort. To assume that no other province will sell water in the future is an unforgivable error in judgment. We will become mere spectators as other provinces cash in.

The challenge before us is not one of technology or financing. It is time for all Manitobans to take a stand to resolve the issue ourselves. The Manitoba legislature should choose an all-party task force to investigate this question. In the end, a referendum may be the only way to establish our policy. This issue will put Manitobans' common sense to the test.



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ABOUT THE AUTHOR



Daniel Klymchuk held executive positions in strategic planning of corporate real estate requirements for 23 years with Canada Safeway Limited and CIBC. He is a member of the International Council of Shopping Centres, a worldwide organization devoted to promoting understanding of private and public real estate development on communities. He is past president of the Canada Safeway Credit Union. Currently, he is acting as a consultant to charitable organizations regarding their strategic, long-term real estate needs.

The Frontier Centre for Public Policy is an independent, non-profit organization that under-takes research and education in support of economic growth and social outcomes that will enhance the quality of life in our communities. Through a variety of publications and public forums, the Centre explores policy innovations required to make the eastern prairies region a winner in the open economy. It also provides new insights into solving important issues facing our cities, towns and provinces. These include improving the performance of public expenditures in important areas like local government, education, health and social policy.

The author of this study has worked independently and the opinions expressed are therefore his own, and do not necessarily reflect the opinions of the Board of the Frontier Centre for Public Policy.

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