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The City of Calgary's Ownership of Enmax Energy Corporation:

Value at Risk

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1 Introduction and Executive Summary

The City of Calgary should sell ENMAX Energy Corporation, the part of ENMAX which competes in the electricity supply business. ENMAX, which is owned by The City of Calgary, consists of two principal parts: ENMAX Power and ENMAX Energy Corporation (EEC). ENMAX Power is the traditional wires-owning distribution company, and is a relatively low-risk, regulated monopolist. EEC is a newer component of ENMAX which operates in the competitive electricity supply business. The electricity supply business in Alberta is a high-risk, competitive commodity business with many firms operating in the market.

The City of Calgary should sell EEC, for many compelling reasons:

1. EEC's involvement in the electricity supply business has no connection to The City's core mandate of providing services to Calgarians. EEC is a competitive, for-profit business operating in various jurisdictions. The only reason to hold on to this business is if The City believes that doing so will be more profitable than selling, and it is willing to impose that risk on citizens. However, making this kind of risk/return calculation is not in the mandate of city government.
2. The energy supply business is risky and EEC's success depends largely on commodity prices. EEC is taking large bets in this business with money that belongs to the citizens of Calgary. Recently, for example, it purchased a 15-year supply of fixed-price electricity for \$567m. If electricity prices fall it will be unable to recover this investment.
3. The decision to purchase the Keephills PPA in 2000 has returned very large profits to EEC. The cashflow from this investment needs to be invested or returned to shareholders. Since the dividend paid to The City is only a fraction of this cashflow, EEC has been investing in new generation assets and developing its market position through attracting new customers. EEC's approach to acquiring customers – offering prices which undercut not only competitors but EEC's own costs – appears likely to lead to millions of dollars of lost profits.
4. Municipal ownership of EEC has resulted in an exclusive energy supply agreement between The City and its wholly-owned subsidiary. The City could have ensured it would obtain the lowest cost through a competitive bidding process. Municipal ownership of a firm in the competitive electricity supply business distorts markets and creates at least the appearance of an uneven playing field, discouraging new investment.

The City of Calgary has been very successful to date in holding EEC. However, the risks involved in holding this company have grown to be very large as EEC's portfolio of assets and of customers has grown, and now is an opportune time for The City to capitalize on this investment. EEC could be sold with net proceeds estimated to be roughly \$1bn. These revenues could be used by The City of Calgary either to meet

current capital needs or to create a long-term risk-free investment yielding annual dividends. Alternatively, The City could distribute shares in the company and allow the citizens of Calgary to hold or sell them, as they wished. The City could retain ENMAX Power, the traditional distribution utility.

In the following sections, I first explore how The City of Calgary and ENMAX arrived at their current position. I show the tremendous value created by the purchase of the Keephills PPA in 2000, and how it has allowed EEC to expand its portfolio. I also show how the investments EEC has been making have substantially increased the risks imposed on The City of Calgary. I then consider what effects municipal ownership of EEC has on the competitive electricity supply market and on The City's own procurement policies. Finally, I examine the governance structure of ENMAX.

A Note on Sources

I have benefited extensively from interviews with many individuals, including employees of ENMAX, The City of Calgary, and competitors, as well as former employees of ENMAX. While these have provided invaluable background, I have relied wherever possible on public sources to ensure the verifiability of my analysis. Data on electricity forward prices and PPA costs are available from the sources listed in this report.

2 How We Arrived Here

This section reviews the structure of the electricity industry, and the history of Alberta's deregulation of the electricity sector. It also examines the nature of the competitive electricity supply business, and how ENMAX acquired the Keephills PPA for what has been demonstrated to be an extremely attractive price.

2.1 Structure and History of Alberta's Electricity Industry

The three main components of the electricity industry are generation, transmission, distribution, and retailing. Electricity is generated at a large number of plants in Alberta using a variety of fuel sources and technologies, including coal, natural gas, co-generation, hydro, and wind. Some electricity is imported over tie-lines between Alberta and its neighbouring provinces. The bulk of generation is in the northern part of the province, while the largest demand is in the south, so a substantial transmission infrastructure is required to move electricity to the cities and larger "loads" or consumers. Because of the physical properties of electricity, transmission is performed mainly by a single firm in any area of the province. After transmission to a city, a local distributor – ENMAX Power in the case of Calgary – delivers the power to homes and businesses. A "system operator" directs which plants are to produce electricity at any given point in time in order to perfectly match supply with demand. Retailers such as EEC make contracts to deliver electricity over the distribution system.

Historically, the entire electricity system was regulated in Alberta.¹ There were three major integrated firms involved in generation: TransAlta, Atco, and EPCOR. These firms built generation plants at the direction of the Energy Resources Conservation Board. However, the system was found to be inefficient in some respects, and in 1995, the Electric Utilities Act was enacted in order to create a framework for competition in the electricity industry. This Act created the province's power pool, through which electricity is traded. The pool provides a mechanism to encourage the use of low-cost generation. This market also provides a benchmark for pricing electricity in Alberta, since all electricity traded over this market receives the same price in any given hour. In 1998, the Electric Utilities Amendment Act spelled out further changes to the industry to create a fully competitive market.

Because almost all generating assets were controlled by only three firms, the province designed a scheme to create competition in the sale of electricity. It set up a system of "Power Purchase Agreements" (PPAs). Each PPA gives to its buyer the right to purchase electricity at cost from a specified plant for twenty years, starting in 2001 (or

¹ For excellent reviews of the history of the Alberta electricity system and the process of deregulation, see Nicole Bacalso "Contractual Hazards Associated with Power Purchase Agreements: A Transaction Cost Approach" MA Thesis, Department of Economics University of Calgary, September 2000; and Daniel, T., J.A. Doucet and A. Plourde, "Electricity Industry Restructuring: The Alberta Experience", in Andrew Kleit, ed., *Electric Choices: Deregulation and the Future of Electric Power*, Lanham MD: Rowman and Littlefield, forthcoming October 2006.

until the closure of the plant, if less than twenty years). Thus, under the PPAs, the owners of the plants are fully compensated for their variable and fixed costs at a level similar to what they would have obtained had the province continued with the old system of regulation. The buyer of the PPA makes profits by selling the electricity into the power pool at a higher price than it pays for it under the terms of the PPA. The province achieved its goal of increased competition because several new firms (the PPA buyers) compete to sell electricity into the power pool.

The PPAs for plants with low costs are, of course, particularly valuable since they offer a stream of profits into the future. The province tried to capture this value through a one-time auction for the PPAs in 2000.² As it turned out, there was relatively little participation in the PPA auction, which meant the government earned considerably less revenue than had been anticipated. Those players that obtained PPAs therefore made very substantial unanticipated profits, particularly in 2001 when power pool prices were unusually high, and quickly earned enough money to be fully reimbursed for the purchase of the PPA at auction.

The deregulated industry has undergone an impressive transformation. A number of trends are notable. First, there has been enormous investment in new generation, in keeping with Alberta's enormous demand growth. There are also many new players: over 30 different firms have invested in new generating units in Alberta since 1998.³ Currently installed generating capacity in Alberta is approximately 11,500 MW, with approximately up to 950MW additionally available through imports from BC and Saskatchewan.

One of the striking changes in the industry is the extent to which firms have tended to become specialized in one segment of the industry, following deregulation. This is very different from the older situation with three firms integrated into generation, transmission and distribution:

- The previously fully integrated firms TransAlta, Atco, and EPCOR have shifted almost exclusively into the generation segment of the industry, having sold off much of their retailing, distribution, and transmission assets.⁴ Other firms, such as TransCanada and EEC have become major players in electricity generation and supply.
- New firms specializing in retailing, such as Direct Energy and Alberta Energy Savings, have entered the market.
- A significant number of other firms which specialize in selling energy to larger commercial and industrial users have entered.
- AltaLink is a new company spun off from TransAlta which is engaged only in transmission.

² The proceeds of the auction were then distributed to consumers as rebates on electricity bills.

³ See Electricity Statistics at the Alberta Department of Energy, available at <http://www.energy.gov.ab.ca/537.asp>, last accessed September 16, 2006.

⁴ For the sake of precision: EPCOR has retained its transmission and distribution assets but sold off its retailing business.

- FortisAlberta owns and operates most of the province's distribution capacity outside of Calgary and Edmonton.

Thus, the industry has shown signs of increasing maturity and sophistication. Firms also appear to have greater confidence (though not certainty) that the deregulated industry will stay deregulated. One piece of evidence for this is the prices paid for PPAs. There continue to be sales of PPAs between firms. The PPAs have a shorter duration remaining, but their prices have risen hugely. For example, in the initial auction, EPCOR paid \$85m for the Battle River PPA. It made enormous profits from that PPA for five and half years, and recently sold it to EEC for \$567m. This is a strong signal that it is not going to be as easy to make money in this competitive market as in the earlier days when firms were less confident in the direction and destination of deregulation in the Alberta electricity market.

The distribution of electricity continues to be a local monopoly in each location. As a result, this part of the industry continues to be regulated so that firms make a predictable rate of return.

2.2 ENMAX's History and Position in the Industry

The City of Calgary's historic role in the electricity system was as a distributor.⁵ It purchased electricity from generators and then sold it to consumers, with a suitable mark-up to pay for its distribution and billing costs. This role was performed by the City of Calgary Electric System, a division of The City administration. This division was separated from City Hall in 1998, when it was incorporated as a wholly owned subsidiary named ENMAX, in order to facilitate its participation in the restructured competitive electricity market.

ENMAX Power, as ENMAX's distribution company, continues to operate in a regulated context, much as before the electricity industry was restructured. It faces few risks, and is fully compensated for its investments. The Energy Utilities Board regulates the prices that it can charge in order to ensure a reasonable return for the shareholder of ENMAX Power.

An interesting – and for this study important – outcome of the PPA auction was that ENMAX took the opportunity to turn itself from a distribution company into an integrated firm, in sharp contrast to the rest of the industry. As Daniel, Doucet and Plourde (2006) note, ENMAX had particularly strong incentives to participate in the PPA auction, since it had a substantial load to serve but owned no supply sources. It therefore purchased two PPAs in the auction, Keephills (a twenty-year PPA now owned by EEC) and Wabamun (a three-year PPA which has expired).

The Keephills PPA has been extremely profitable, and it has therefore changed the position of ENMAX and given it the ability to transform itself by investing some of the cash flow generated by this asset. In order to understand this transformation, it is helpful to review the scale of the profits generated by this PPA. The Keephills PPA, with

⁵ From 1904 to 1928, The City of Calgary was involved in generation of electricity, so its experience in the electricity generation industry is not very recent!

its twenty-year term starting January 2001, was purchased for \$241m at auction. This was a stellar decision from a financial perspective, one of which ENMAX management and City Council may justifiably be proud. In the last five years, wholesale power prices have been high enough to easily pay for this PPA several times over. If ENMAX had simply sold all the power from Keephills into the Power Pool at the prevailing market price, it would have earned the profits shown in the Table 2-1:

Table 2-1
Profits from the Keephills PPA

Year	Profit from Keephills PPA
2001	\$215m
2002	\$64m
2003	\$166m
2004	\$125m
2005	\$208m

Notes: Profit is calculated as the difference between the variable and fixed payments required under the PPA contract and the potential revenues if the electricity from Keephills PPA were sold at the average wholesale spot market price for the year. See Section 4.2 for a discussion of PPA variable and fixed payments.

Since the Keephills PPA had fully paid for itself within two years, any profits beyond this point can be captured by ENMAX. The question is how ENMAX will use these profits. There are basically two options: either it can continue to extract profits from Keephills, and use these profits to make additional investments (or even dissipate the profits through low pricing and weak cost controls); or it can sell the Keephills PPA, capitalizing the value of future profits, and give the money to the shareholder (The City of Calgary) to use. Until now, it has been paying relatively small dividends to The City, and investing heavily into its business. In the following sections, I explore the implications of this investment.

In section 3, I present evidence that EEC has been following a policy of selling electricity at very low prices, presumably as an investment in market share. This is only possible because of EEC's low-cost supply from Keephills. This approach to gaining market share is excessively risky and is not a sound investment. In section 4, I examine how EEC has been investing in the market by purchasing additional generation capacity, which exposes it – and its shareholder – to very considerable unhedged risk. Thus EEC has taken the very substantial profits accruing to it through the Keephills PPA and has used them to capture market share and to make new investments. Neither of these approaches is desirable for a municipally-owned firm.

Ownership of EEC by The City of Calgary is undesirable for other reasons, as I discuss in sections 5, 6 and 7. Section 5 examines, from a theoretical and practical perspective, how ownership by government-owned utilities can harm the competitive market, and weaken incentives to invest in new generating capacity. Section 6 shows how municipal ownership of EEC has distorted The City's purchasing decisions, potentially leading to inefficient outcomes. And Section 7 argues that the governance of ENMAX is

not suited to a company in a competitive industry, which may in turn lead to undesirable risks for the citizens of Calgary.

3 ENMAX Energy Corporation's Low Pricing Strategy

3.1 Introduction

As discussed in the previous section, EEC has substantial cash flow which it can invest in developing its business. It has been investing both in acquiring new supply and in acquiring customers. In this section, I focus on EEC's investment in acquiring new customers through selling electricity at very low prices. Naturally, this strategy has short-term costs, which EEC presumably hopes to recoup in the future.

The first step in exploring EEC's investment in market share is to show that it is in fact selling at very low prices. I begin this step by providing a methodology for determining the correct measure of costs when setting prices. I then compare EEC's retail pricing to available cost measures, to ENMAX's own regulated rate, and to competitive prices. All these measures show that EEC's fixed-rate offerings are priced below a competitive level.

The second step is to consider what kind of effect this would have on EEC's profitability. As its accounts show, EEC appears to be sacrificing considerable profits in order to develop its market position.

I then consider the risks of this strategy. EEC is following a strategy which it presumably expects to be ultimately profitable: however, it involves very large outlays to acquire new customers, while making questionable assumptions about the ability to generate profits from customers far off in the future. Though it is possible that EEC's customer acquisition strategy will ultimately be profitable, it is certainly risky and does not appear to be consistent with profit-maximization. The risks involved are substantial: I demonstrate that EEC could have increased its profits in 2005 by approximately \$100m had it simply sold output from the Keephills PPA into the spot market.

3.2 The Correct Measure of Costs when Setting Prices

I first establish which costs are relevant when setting prices. The cost to a firm of selling a product is not what it paid historically to obtain that product, but the value of its best opportunity. In the jargon of economics, firms should care about *opportunity cost*, not historical acquisition cost. This principle is familiar to anyone who has ever invested in the stock market. Suppose you buy a stock at \$1. Over a year, the price increases to \$10. Your friend offers to buy the stock for \$1.10 apiece, pointing out that this will allow you a healthy return of 10%. You are likely to refuse this offer, since you do not consider the historic cost of acquisition of the stock, but its current value in the market.

In exactly the same way, a firm which purchases an electricity plant does not sell the electricity cheaply when market prices are high, only because the cost of generating the electricity is low. The firm adjusts its prices to account for market conditions and takes advantage of the new market price. The opportunity cost of selling a commodity such as electricity is in fact the market price.

Using the opportunity cost instead of historic acquisition cost as a baseline for prices is important for economic efficiency. When prices are based on something other than opportunity cost, the allocation of the good is likely to be inefficient: it may be allocated to buyers whose valuation is low.⁶ This precisely applies to the case of electricity markets. Electricity is a scarce resource which is expensive to produce. As a general rule, it would be inefficient to allocate that scarce resource to a low-value use instead of a high-value use. If the price is set below the opportunity cost, then allocative inefficiency of this type will certainly result. Other issues may also arise. For example, the firm that sells electricity at a price lower than its opportunity cost will lose potential profits. Note that it will not necessarily make losses from an accounting perspective, just as in the stock market example above a person can make profits and yet not realize the whole potential profit.

Having established this basis for analysis, we can examine EEC's pricing behavior in the remainder of this section.

3.3 EEC's Pricing Strategy

EEC is pricing retail energy below opportunity cost. There are three pieces of evidence for this. First, EEC is pricing its retail energy approximately 25% below that of the nearest competitor for residential retail energy. Second, EEC's retail energy contracts, branded "Easymax" are also priced well below the regulated rate, which is a short term rate based on wholesale prices. Third, EEC's retail prices are below the cost to EEC if it purchased all its requirements at the relevant wholesale market price.

3.3.1 Comparison of EEC Prices with its Direct Competitors

Direct Energy Essential Services (DEES), Alberta Energy Savings (AES) and EEC are all currently (as of October 2006) selling combined gas and energy contracts with a 5-year term in Alberta. The DEES and AES offerings include a fixed price on natural gas, while EEC offers a variable price of gas. However, in most other respects, they are comparable. All the plans have a fixed power price plus a monthly administration charge. Table 3-1 shows how these prices compare:

⁶ It is easy to see why, with a simple example. Suppose that a particular piece of furniture has a value to Mary of \$50. To other people, it is worth \$100. Then a seller's opportunity cost is \$100, the value the seller can obtain in the market. If it is priced at \$40 and sold to Mary, Mary obtains \$10 of surplus value; but if it had been sold to someone else with a valuation of \$100, their surplus value would have been \$60.

Table 3-1
Five-year electricity contracts: ENMAX and its competitors

	DEES	AES	EEC
Price per MWh	\$87.90	\$95.00	\$70.00
Administration Charge per MWh, average	\$3.90	\$7.72	-\$2.56
Total price per MWh	\$91.80	\$102.72	\$67.44

Notes: I converted the administration charge into a price per MWh by dividing by the typical household consumption. I attributed \$4 per month of the administration charge for administration of the natural gas portion of these dual fuel contracts. The negative administration fee listed for EEC requires some explanation. EEC's monthly administration fee for two fuels varies by location but averages \$10.69 per household. I deducted \$4 for the costs of gas administration, and EEC's monthly rebate of \$8.33. This leaves a net administration charge per household of -\$1.64 which is equivalent to -\$2.56/MWh.

The EEC price is 27% lower than the DEES price and 34% lower than the AES price. This seems like a very large difference for a product which is exactly the same when delivered. The EEC electrons are indistinguishable from the DEES or AES electrons, and in fact they are delivered by the same distribution company. DEES and AES have similar contractual terms.

EEC's contract, although cheaper, offers additional flexibility, which is valuable to consumers and costly to EEC. EEC's Easymax offers an unpriced option for consumers to terminate the contract with one month's notice for any reason. This considerably increases the risks of the contract, since EEC must essentially cover its risks forward by purchasing electricity for a term that matches what it has agreed to provide to consumers; however, if the regulated rate drops considerably, consumers may be expected to leave the contract. Then EEC will be left holding supply which it contracted for at high prices and which it can only sell at a low price.⁷ Consumers have an option, and EEC is left holding the risk associated with that option, apparently without compensation. EEC marketing agents consistently informed me that ENMAX would not terminate the five-year contracts except if the customer wanted to terminate it. (See Appendix 3-2 for details of the promises made by ENMAX agents, despite my having advised ENMAX executives that such promises were being made.)

Peter Hunt, a spokesperson for ENMAX, argued that EEC has a different marketing strategy from DEES and AES, relying heavily on advertising its low prices, and a call centre, rather than door-to-door marketing, and this enables it to sell at lower prices.⁸ If door-to-door marketing is expensive and better at attracting poorly informed customers who are unlikely to switch suppliers, then that could help to explain the pricing

⁷ Paul Joskow (2006, p.1) describes this problem: "The biggest problem facing [electricity service providers] is 'competition' from regulated default service and the unpriced option to go and return from regulated to competitive retail prices and back again that is often embedded in it." (Paul Joskow, "Markets for Power in the United States: An Interim Assessment," *Energy Journal*, 27(1)) ENMAX has created this option in its Easymax product apparently intentionally.

⁸ Telephone conversation with Peter Hunt August 9, 2006, 4pm.

differences between these suppliers. However, door-to-door marketing, as I discuss below in Section 3.5, is much lower cost per contracted customer, compared to EEC's strategy of acquiring customers through selling at low prices.

While comparison with other firms does not definitively show that EEC has an incorrect pricing strategy, it is suggestive. ENMAX President and CEO Gary Holden, in a letter to me, explained that he "expects" Direct Energy to match ENMAX's price "in the fullness of time." This seems to imply that Direct Energy may at some point realize that they have overpriced their energy by 36%. Direct Energy is a multinational firm with experience in retailing electricity in jurisdictions all over the world, and has had plenty of opportunity to experiment with different pricing strategies in a variety of markets. It is also a for-profit company owned by shareholders who invest based on its long-term profitability. EEC has been involved in offering fixed-rate electricity contracts only in Alberta since December 2001. Until October 2005, its fixed-rate prices were very competitive with Direct Energy, and its low-price strategy was only introduced at that time. EEC's short-lived experience of its low pricing strategy provides little confidence that it is right and its competitors wrong.

3.3.2 Comparison of EEC Prices with the Regulated Rate

Normally, customers purchasing a long-term contract pay a higher rate than if they buy on a short-term contract. For example, long-term mortgages are typically somewhat more expensive than floating mortgages. A long-term mortgage where the customer has the option to repay the mortgage at any time (an "open" fixed-rate mortgage) is always more expensive than a floating mortgage.⁹ So we should expect that an open, fixed-rate contract like Easymax would be more expensive than the floating rate, such as the regulated rate option offered by ENMAX's distribution arm. In fact, as of October 2006, ENMAX Power's regulated rate in Calgary is \$88.84/MWh, compared to EEC pricing on a fixed five-year rate, with the option to leave at any time, of \$70/MWh. A consumer who signs up for the fixed rate is guaranteed to get a better deal than on the regulated rate, since if the regulated rate ever drops below \$70/MWh, the customer can always switch back to it; but if prices rise, the consumer is protected by the fixed rate. In addition, customers who take the fixed rate and sign up for natural gas from EEC at the regulated rate also obtain a \$100 annual discount.

The regulated rate is supposed to represent the true and fair costs of providing electricity. According to Section 6(1)(b) of the Regulated Rate Option Regulation, "a regulated rate tariff must allow for a *reasonable return* for the obligation on the owner to provide electricity services." [my italics] So let us assume that 88.84/MWh provides for a "reasonable return" for ENMAX Power, given that its rates may vary month by month as its costs change. Compare this to EEC's Easymax fixed five-year price of \$70/MWh, where consumers have the option to terminate the contract at any time. The fixed price imposes additional risks on EEC, but EEC cannot increase its prices. If \$88.84/MWh

⁹ For example, as of August 29, 2006, the posted interest rate on an open, one-year fixed rate mortgage at Royal Bank was 8.2%, while the interest rate on a variable rate mortgage was 6.4%. The bank paid an interest rate of up to 3% on that day, implying spreads of 5.2% and 3.4%, which is quite a large difference.

offers a “reasonable” return to ENMAX Power, then \$70/MWh must be an “unreasonably low” price.¹⁰ Notice that the regulated rate is very close to the prices charged by DEES and AES, suggesting that their prices conform more closely to the cost of providing power.

3.3.3 Comparison of EEC Pricing with Costs

It is, of course, possible that the reason for the difference in prices is that DEES, AES and ENMAX Power simply have higher costs of administration, wholesale power purchasing, or greater expectation of profits, or that they have the “wrong” strategy, while EEC has the “right” strategy. And perhaps EEC is able to offer a lower rate than the regulated rate because EEC expects that power prices will fall over the next five years¹¹, but that customers will not switch from the higher Easymax rate to the regulated rate even if the regulated rate drops below the Easymax rate. So I explored what price EEC would have to charge to break even if it had to source its power from the market at the beginning of a five-year period for each customer. To do this, I had to determine what it would cost for the wholesale power. Then I needed to add to this price a suitable mark-up to account for operations and administrative costs, and a shaping premium. This analysis is described in detail in Appendix 3-1. I obtained data on forward electricity prices from Chase Energy, as described in the appendix.

Recall from Section 3.2 that the correct measure of cost is opportunity cost, which in the case of a commodity market like electricity is simply the commercial value of sales. As of the end of June 2006, the average expected wholesale price for electricity over the following five years was \$60.74. Adding a suitable premium for shaping (to account for the fact that retail customers consume more energy at the most expensive times of day), and a premium for operations, management, general and administrative expenses based on EEC’s 2005 financial statement, I estimate EEC’s break-even price, including administrative fees, to be about \$77.49/MWh, if it had to purchase electricity at the going wholesale market price. This price does not allow for any mark-up for profits, nor a risk factor given the customer’s option to terminate the contract at any time. I have also not included any additional cost to account for other risks, such as counterparty risk, credit risk, settlement risk, legal and operational risk, and Power Pool Charge risk, for which ENMAX Power required a payment of \$1.25/MWh in the Regulated Rate Tariff.¹² Since the Easymax 5-year contract is priced at \$67.44/MWh, EEC appears to be losing at least \$11.30/MWh, not including profit, compared to the costs it would face if it had to source electricity commercially.

An interesting perspective on this is given by the introduction of the EasyMax contract. In October 2005, when EasyMax was introduced, the Alberta electricity market

¹⁰ I discussed this with ENMAX VP Peter Hunt on August 31 2006. He suggested that EEC expects to keep most of the customers it attracts this way even if the regulated price drops below the fixed rate.

¹¹ If so, this would be very odd, since as I discuss in Section 4, EEC has just invested in purchasing a 15-year supply of electricity, which would presumably be much cheaper next year if power prices are considerably lower then.

¹² See EUB Order U2006-110, 2006-2011 RRO Energy Setting Price Setting Plan Negotiated Settlement, Appendix 1, p. 6.

has just entered a period of very high prices. According the ENMAX 2005 annual report, the average spot price of power was \$117/MWh in the fourth quarter of 2005 (p. 34). And yet on October 25, 2005, EEC introduced the EasyMax offer with a price on electricity of \$60/MWh for a one year contract, plus an administration fee less the \$100 annual rebate. Since EEC had to cover not only administrative expenses but also a shaping cost, this price was far from profitable. It is possible that EEC was hoping that power prices would fall to lower levels; if that was indeed the hope, it has been proven wrong, as spot market prices have fallen during only two months to a level which would allow EEC to be close to profitable if it had to source electricity from the spot market.

Indeed, Table 3-2 compares the actual cost of supply had EEC purchased electricity in the forward market at the beginning of a one year term, and the prices it charged for a one-year Easymax contract. The column on the right shows the loss incurred per MWh for Easymax contracts, compared to the market cost of providing electricity.

Table 3-2
The market cost of retail electricity vs. EEC's pricing

	Raw 24/7 Forward One-Year Price	Shaping Premium	OMGA	Total Market Cost	Offered price	Loss per MWh
October 31, 2005	\$74.27	\$8.24	\$9.27	\$91.78	\$58.36	-\$33.42
November 30, 2005	\$74.15	\$8.23	\$9.27	\$91.65	\$58.36	-\$33.29
December 31, 2005	\$73.48	\$8.16	\$9.27	\$90.91	\$58.36	-\$32.55
January 31, 2006	\$67.79	\$7.52	\$9.27	\$84.58	\$58.36	-\$26.22
February 28, 2006	\$57.98	\$6.44	\$9.27	\$73.69	\$58.36	-\$15.33
March 31, 2006	\$63.53	\$7.05	\$9.27	\$79.85	\$58.36	-\$21.49
April 30, 2006	\$62.58	\$6.95	\$9.27	\$78.80	\$58.36	-\$20.44
May 31, 2006	\$60.85	\$6.75	\$9.27	\$76.87	\$58.36	-\$18.51
June 30, 2006	\$63.13	\$7.01	\$9.27	\$79.41	\$73.36	-\$6.05

What is apparent is that from the time Easymax was first offered until the prices were changed at the beginning of July 2006, Easymax prices were far out of line with the market, and continue to be somewhat out of line with the market.

How has EEC been able to charge below-market prices? The answer cannot be lower administrative costs, since my estimate of the break-even prices (i.e. total market cost) depends on EEC's own reported administrative costs. Nor can EEC reduce its costs through a lower shaping premium. Instead, the only way that it could sell for \$20/MWh below the market price is that it has a low-cost source of wholesale supply, the Keephills

PPA, which supplies electricity at a price which is far below the current market cost of wholesale electricity, and it has been basing its prices on historic acquisition cost rather than opportunity cost.

3.3.4 Sales to Commercial and Industrial Consumers

Retail sales represent only a fraction of EEC's total electricity sales. Sales to commercial and industrial customers represent a significant proportion of revenues. However, normally such contracts are confidential and so I do not have information on the prices EEC has been offering to commercial and industrial consumers or on quantities. However, competitors and ex-employees of ENMAX have confirmed that EEC appears to be following a strategy of offering the lowest price in the market, often at prices which competitors argue create a negative margin.

EEC did bid on a contract to supply the federal government, which I briefly examine, since it offers the most public information on a commercial contract made by EEC. Unfortunately, I am obliged to make some guesses in this case, and so the reader is cautioned that my analysis of this contract is somewhat speculative. I apologize for this.¹³ The federal government recently issued a public tender for supply of all its electricity needs in the Province of Alberta.¹⁴ The requirement was for approximately 234,700 MWh per year for ten years, with 15% of the power to be certified green energy.¹⁵ The electricity was to be fully shaped, with part off-peak, part on-peak, and part on super-peak. (Thus, its characteristics were similar to that of typical residential electricity supply.) EEC was awarded the contract with a total price of \$170,390,438.00.¹⁶ Net of GST, this implies a price of \$16m annually. Given a price of approximately \$10 for each "Renewable Energy Certificate" as indicating the incremental cost of "green" power over normal "brown" power, it is easy to calculate that this implies a price of approximately \$67.00/MWh for normal power and \$77.00/MWh for green power.

What price for shaped power should we have observed in the market? The competition closed on 9 May 2006. As of 8 May 2006, the Chase Energy forward market data I have used above shows an average forward price for the period 2007-2011 of \$60.61/MWh. (I do not have price forecasts beyond 2011.) It is necessary to add a shaping premium, as discussed in section 3.3.3, which I estimate to be approximately 11.1%. This implies a required price of \$67.34/MWh for normal power. There are also administrative costs; under the contract EEC is required to supply electricity to 938 different sites in eleven federal government client departments.¹⁷ Thus, the pricing

¹³ I filed an Access to Information request to obtain more precise pricing information, but while the contract was provided, the actual price information was redacted.

¹⁴ The invitation to tender was issued 21 February 2006 through Merx, solicitation number E0211-057000/B.

¹⁵ See ENMAX news release, dated 8 June 2006, available at <http://www.enmax.com/Corporation/Media+Room/Current+News+Releases/Federal+Government+Choose+ENMAX+Energy+as+Alberta+Electricity+Partner.htm>, last accessed September 14, 2006.

¹⁶ See Merx Award Abstract Reference number PW-\$EDM-603-6143.

¹⁷ The contract, which I obtained under a Access to Information request, requires EEC to collect and aggregate load settlement information, prepare bills, assist departments with energization and de-energization projects, provide annual budget estimates by department, review wire rates for each site,

appears to allow no room for making profits, and if energy prices go up, this contract will certainly be a money-losing proposition. At the very least, it should be measured against the Battle River PPA purchase completed on May 8 2006, which provided a matching supply source. On this basis, it hardly leaves space for covering risks, administrative costs, or profits.

3.4 The Effect of Low Prices on Profits

It stands to reason that if EEC is indeed selling power for less than the price at which it would cover the forward market price plus administrative costs, its profits would be severely reduced. This is apparent in the financial statements of ENMAX. In 2005, EEC sold approximately 5.9m MWh of power from the Keephills PPA. The spot price of electricity averaged \$70.36/MWh in 2005¹⁸. Thus, EEC would have achieved revenues from the Keephills PPA of \$415m had it simply sold all the power from the Keephills PPA into the spot market. According to ENMAX's 2005 annual report, the fixed and variable costs to EEC of the PPA totaled \$192m.¹⁹ Thus, subtracting these costs from revenues, EEC would have earned \$223m before interest and amortization had it simply sold all the power from the Keephills PPA into the spot market. However, according to the ENMAX annual report, on p. 56, EEC's profit before interest and amortization in 2005 was \$116.2m, about half of this potential.²⁰ This implies that EEC lost potential profits of approximately \$100m in 2005.

The profit situation improved in some ways in 2006. EEC recorded profits of \$71.1m before interest and amortization in the first half. This compares to the revenues that would have been generated from simply selling electricity from the two PPAs and the McBride Lake windfarm into the power pool at the average price (less variable and fixed costs under the PPAs) totaling a net \$80m. However, interest and amortization under the Battle River PPA is much higher than that for the Keephills PPA, so the profits after interest and amortization may ultimately be lower.

identify and advise on power factor reviews, identify and advise on opportunities for improving metering equipment, permit auditing by the government of EEC's books, develop a specified data management system available to client departments through a web portal, and various other administrative responsibilities.

¹⁸ Market Surveillance Administrator 2005 Annual Report, p. 2.

¹⁹ I estimated costs of the Keephills, Battle River, and Sheerness PPAs elsewhere in this report. These estimates may not perfectly match the actual costs of the PPA buyers: for example, my estimate of the Keephills PPA cost for 2005 was, at \$213m, considerably above the actual cost. If I have systematically overestimated PPA costs, my estimates of the potential value of these PPAs will be too low.

²⁰ A spokesman for ENMAX noted that this is not strictly an apples-to-apples comparison, since the actual EEC profit figure is arrived at after deducting OMGA costs of \$105m. These OMGA costs include advertising, trading costs, retail and commercial sales costs, management of the other generating capacity, etc. However, if EEC were simply to sell the entire Keephills output into the spot market, its OMGA costs would be trivial, perhaps a few million dollars a year. Thus, simply selling the Keephills output into the power pool is an alternative strategy which would eliminate a large proportion of EEC's costs. A second observation to be made is that forward prices for 2005 were not as high as spot prices: since EEC would have sold at least some of its output forward, it would not have earned as much as \$70/MWh on average.

Note that the losses from low electricity prices are not necessarily gains to consumers in the City of Calgary. EEC sells power all over the province of Alberta, and so the potential losses to Calgarians (as shareholders) from EEC's strategy of selling power at low prices may be very large. In October 2005, an appropriate price for one-year power would have been at least \$90/MWh as seen in Table 3-2 above, but EEC's price was approximately \$58/MWh. The one-year loss on a typical household would therefore have been approximately \$250 at that time, when deducting revenues from opportunity cost. Thus the greater the success of Easymax in attracting consumers, the greater were the losses from it: four thousand consumers would have created a roughly one million dollar reduction in profit. Market sources suggest that Easymax has attracted up to 10,000 residential consumers per month, so that the losses of their strategy may be quite substantial.²¹

3.5 The Risks of ENMAX Energy Corporation's Investment in Market Share

EEC's stated strategy in its low pricing is to increase market share. In this section, I examine the risks involved in this strategy. (I have also heard other possible explanations for EEC's low-price strategy, which are discussed in Appendix 3-3. I don't find these other explanations plausible.) As I will show, EEC's low pricing strategy appears likely to lead to substantial losses compared to what the company could earn.

The obvious reason for a firm to offer a price below opportunity cost is that it hopes to attract customers today through low prices and then increase prices in the future, thus recouping its losses.²² Such promotional discounts are a common strategy in industries where a firm can lock a consumer into the use of the product and then earn profits later because the consumer incurs switching costs when moving from one product to another. For example, many telephone companies offer a discount for three or six months to customers who switch to their service. EEC may believe that after it has persuaded people to switch to EEC, they will be unlikely to move to a different supplier in the future. This will enable EEC to earn above-normal profits on those customers in the future, recouping its costs. However, such an analysis fails to account for the fact that once a consumer has already switched, he/she is much more likely to switch again in the future.

As I have shown above, EEC is losing at least \$10/MWh on Easymax contracts compared to opportunity costs. A typical household consumes approximately 7.7MWh annually, so a 5-year Easymax contract currently implies, for a typical customer, a loss of approximately \$380. In addition, EEC has invested heavily in promoting Easymax through newspaper advertising, a call centre, and its website. It is unknown how

²¹ ENMAX President and CEO Gary Holden said that Easymax was attracting a few hundred new residential customers a day. (See Gordon Jaremko, "Enmax rebates luring in lots of new customers." *Edmonton Journal*, 17 November 2005, p. G1.) If EEC also pursues a low pricing strategy in the commercial and industrial market, that could explain the large losses compared to potential.

²² Monica Giulietti, Catherine Waddams Price, and Michael Waterson, "Consumer Choice and Competition Policy: A Study of UK Energy Markets," *Economic Journal* 115 (October 2005): 949-968.

expensive this is, although the 2005 ENMAX annual report shows that ENMAX increased its advertising expenses by millions of dollars in 2005. So \$380 represents a lower bound on the “purchase price” of a new Easymax customer.

The relevant question here is whether EEC can make enough profits on selling to consumers in the future to recoup the costs of attracting those customers today. In order to make above-normal profits on customers in the future, EEC will have to raise its prices. This, however, may prompt customers to switch to other suppliers. As observed above, the Easymax contract terms allow consumers to leave EEC without penalty if a better deal is offered elsewhere. However, consumers may face some non-financial costs of switching their service to another provider. (For example, the process of obtaining relevant information and then signing a contract may deter a customer from switching if the savings are relatively small.)

There is little experience in Alberta with the value of obtaining a new customer, and the propensity to switch. In the UK, which introduced competitive gas and electricity markets in the 1990s, there has been much more experience, so it is helpful to examine what has happened there. There are two relevant pieces of evidence: the propensity of customers to switch providers; and the amount that firms have paid as a premium for obtaining customers.

In the UK, the rate of switching from the incumbent electricity provider has been around 5% per year, a relatively low rate. However, the rate of switching for customers who have already switched once is around 23% per year.²³ Those consumers who have already switched once are likely to have lower costs of switching, and so acquiring such consumers may increase volumes, without allowing the firm to raise prices in the future.

It is clear that firms should be willing to pay more to obtain customers who are unlikely to switch than those who have already identified themselves as switchers. In the UK, power firms have paid about five times as much to acquire customers from incumbents (£280 to £300) as they have been willing to pay to entice customers to switch over (£50 to £60).²⁴

In Alberta, Direct Energy purchased the retail energy supply business of Atco with “over a million” Alberta regulated rate customers for a price of \$90m, or less than \$90 per customer.²⁵ The value of acquiring such a customer is likely greater than the

²³ Stephen Littlechild, “Beyond Regulation,” Electricity Policy Working Group Discussion Paper 0516, February 2006, p. 8.

²⁴ See, eg. p. 963 of Monica Giuliatti, Catherine Waddams Price, and Michael Waterson, “Consumer Choice and Competition Policy: A Study of UK Energy Markets,” *Economic Journal* 115 (October 2005): 949-968.

²⁵ “Announcement: Atco and Direct Energy Finalize Agreement for Energy Supply Business.” Available at <http://www.atco.com/news/stories/story04/news-atcogroup-042604.pdf>, last accessed August 29, 2006. Alberta Energy Savings purchased EPCOR’s mass-market energy contracts in late 2004. This deal involved the transfer of contracts for approximately 66,000 electricity and 27,000 natural gas service sites, for a price of \$10.975 million. This translates into a price of approximately \$118 per customer. See “EPCOR sells Alberta mass-market natural gas and electricity contracts.” Available at <http://www.epcor.ca/About/Media+Room/News+Releases/2004+Archives/Nov2604.htm>, last accessed August 29, 2006. It is difficult to know how to interpret this price, since this price may have included a margin for customers with contracts above prevailing prices.

value of customers who have already shown a propensity to switch suppliers, which puts an upper limit on the likely value for EEC of acquiring new customers through Easymax. Each Easymax customer could therefore be worth up to \$180, assuming the customer purchases both electricity and natural gas from EEC. (Note that customers attracted away from ENMAX's regulated business in Calgary would be worth half as much, since they are already purchasing electricity from EEC.)

An even more damning piece of evidence is the cost other electricity retailers face for attracting new customers. According to market sources, other electricity retailers typically pay approximately \$150 to third-party marketing agencies for each additional customer signed up for long-term gas and electricity contracts, typically through door-to-door marketing. On this basis, it is hard to justify acquiring new customers through low Easymax pricing, which has a cost per new customer of over \$380.

Thus, there are substantial risks involved in investing in acquiring new customers through offering low prices. While a low pricing strategy reduces current earnings, it is not clear that it is likely to increase future earnings enough to compensate. There are risks of not being able to increase prices enough in the future and risks that customers will switch to other suppliers in the future. Comparing the apparent expense involved in attracting a new customer through Easymax, to the costs of door-to-door marketing, the low price strategy appears likely to lead to substantial lost profits.

3.6 Summary

This section has examined the retail pricing of EEC in the Alberta electricity market. I have presented very strong evidence that EEC is pricing below the opportunity cost of electricity, and far below competitive offerings. The effect of this has been a substantial reduction in the profits EEC could have achieved by pricing to market. This implies that at least some portion of the profits EEC should be capturing from their low-cost electricity supply through the Keephills PPA is apparently being invested in an inefficient and risky attempt to capture market share. This strategy is likely to substantially reduce the profits that should be accruing to EEC and The City of Calgary as shareholder.

4 EEC's Generation Portfolio and Risk Profile

4.1 Introduction

As discussed in Section 2, the Keephills PPA has generated so much profit that it has allowed EEC to invest in trying to capture market share and in acquiring new generation capacity. In this section, I examine the risks of investing in new supply sources. I first estimate the value of EEC's investments in electricity supply. I then examine the risks involved in the City of Calgary's indirect ownership of its two PPAs and other generating assets. I show that the two PPAs owned by ENMAX Energy Corporation have a value of roughly \$1.7bn, which is, however, dependent on volatile electricity prices. This imposes an unacceptable level of risk on The City of Calgary and its citizens. Divestiture or sale of EEC, which would raise net proceeds of approximately \$1bn, would protect the significant gains which have been made, and eliminate risks.

4.2 The Scale of EEC's Electricity Supply Portfolio

In this section, I calculate the approximate level of assets which EEC has invested in the commodity power market. EEC owns two "Power Purchase Agreements" or PPAs related to the Keephills and Battle River power plants. These PPAs give it the right to purchase energy at a pre-determined price (approximately equal to the variable cost of generation) and then to sell it for whatever price it can obtain. The PPAs also require EEC to pay for the fixed costs of running the plants. One of the PPAs is easy to value: EEC purchased the Battle River PPA on May 8 2006 for \$567m. Its current value is therefore approximately the same. I checked the value of the Battle River PPA by comparing it to the recent purchase of the Sheerness PPA by TransCanada. For a discussion of this comparison, see Appendix 4-1. I estimate a rough value for the Keephills PPA by comparing it to the recent sale price of the Battle River PPA. ENMAX is also involved as part-owner of a windfarm at McBride Lake, and as full owner of a windfarm under construction at Taber. The value of both these assets is relatively small, and I therefore focus my attention on the two PPAs.

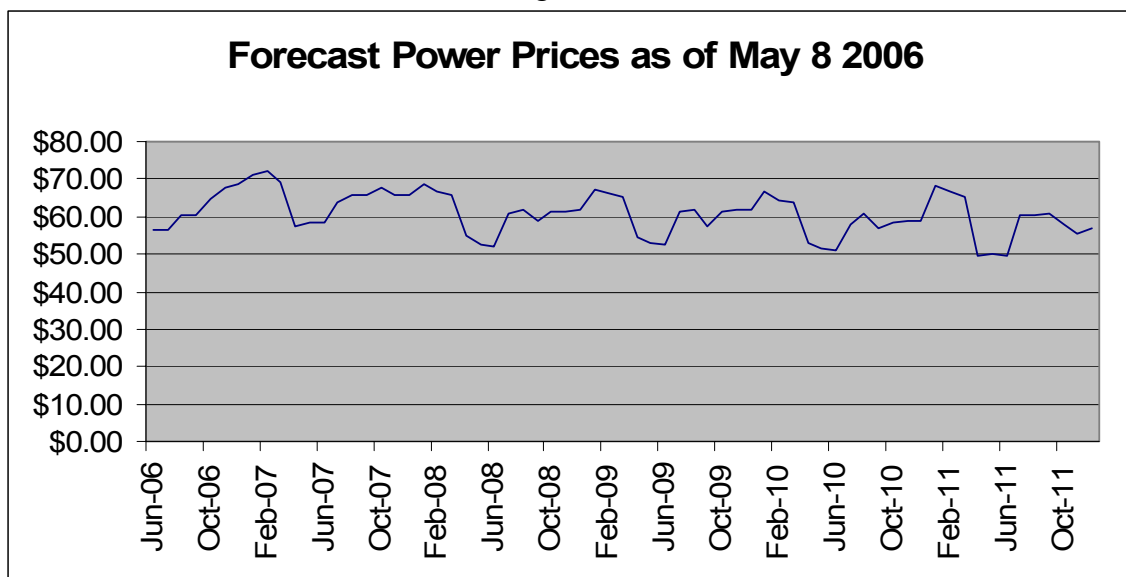
The PPA contracts are complex, and so I commissioned spreadsheet versions of the PPAs which essentially take the terms of the contracts, including adjustments for their many indices, and create a workable product which shows the costs to the PPA buyer of obtaining electricity under the PPA.²⁶ I also used information, obtained from Chase Energy, on forward electricity prices as of May 8, 2006, the day ENMAX finalized the purchase of the Battle River PPA.²⁷ The forward prices extend only until 2011, and

²⁶ The spreadsheets for the Keephills and Battle River PPAs were commissioned from Brooksbank Jenkinson Consultants; the spreadsheet for Sheerness was commissioned from Brooksbank Management Services Inc.

²⁷ ENMAX President and CEO Gary Holden noted that one should be cautious in using what he described as the "illiquid and volume constrained forward price curve" in the Alberta electricity market. (Private correspondence from Gary Holden, dated September 7, 2006.) While accepting that the prices in an illiquid

forward prices beyond then were unavailable to me. I therefore assumed that power prices will stay at the 2011 level until 2020. The reason for this assumption is that I observe very little movement or trend in forward power prices through 2006 – 2011. Forward prices, by month, as of May 8 2006 are shown in Figure 4-1. In addition, coal prices for Battle River beyond 2013 are not listed in the PPA contract. I therefore assumed coal prices would increase at the same rate after 2013 as before it.²⁸

Figure 4-1



Source: Chase Energy Consultants Price Forecast. See Appendix 3-1 for more information on how this forecast is generated.

In any calculation of the current value of a payment in the distant future, the interest rate assumed is very important. A standard approach is to calculate the “internal rate of return”, which is simply the interest rate that makes the net present value of all cash flow from a project equal zero. I therefore calculated the interest rate which makes the purchase of the Battle River PPA just profitable for EEC, given the stated assumptions. At an interest rate of 10.636% per annum, the expected future profits from the Battle River PPA would be just enough to compensate EEC for the \$567m payment it

forward market may not predict the future very well, it is not clear that other players can forecast the market any better. If they could, then they would all be extremely rich. There are two directions price can go: up, or down. EEC appears to believe that prices will increase, based on its purchase of the Battle River PPA, as I describe in this section. But it also appears to believe that prices will fall, based on its sale of Easymax contracts at very low prices.

²⁸ My assumptions on price will most likely be proved wrong in due course. However, from the perspective of determining a current valuation, they are not unreasonable. That is, I am not trying to forecast the future perfectly: I merely wish to obtain a rough measure of the current value of the assets EEC is holding, and their sensitivity to changes in power prices.

made to EPCOR for this PPA.²⁹ At a higher rate, EEC would not have been willing to pay as much; if its required rate of return is less than 10.636%, EEC should find the Battle River PPA an attractive deal. For example, if EEC can borrow at an interest rate of 5% per annum, the Battle River PPA is profitable on an expected basis.³⁰ However, note that in calculating these internal rates of return, I have assumed that there is no risk involved. Given the time horizon, of course, risk is important. A suitable risk adjustment would substantially reduce the internal rate of return of the PPA purchase.

A reasonable inference from this analysis is that ENMAX applies an interest rate of no more than 10.636% in valuing PPAs. I therefore used this interest rate to value the Keephills PPA as of June 1 2006, the day EEC made the first payment on Battle River. I also used the same electricity prices as in my analysis of Battle River. The resulting valuation of Keephills is approximately \$1.22bn. A higher interest rate would make it less valuable; but from the analysis of the Battle River PPA purchase by ENMAX, I know that ENMAX's implicit required rate of return must be no higher than 10.6%, so if anything, ENMAX must value Keephills at a minimum of \$1.22bn.

ENMAX's Other Assets

EEC also owns various other generating assets, including its McBride Lake and Taber windfarms, two new run of river hydro plants, two new plants capturing waste heat from pipeline compression stations, and a contract with Calpine. The value of these projects, and EEC's estimated share of each project, is given in Table 4-1.

²⁹ I assumed that EEC paid for the PPA according to the following schedule: June 1 2006: \$345m; January 1 2007: \$49.3m; January 1 2008: \$49.3m; January 1 2009: \$49.3m; and January 1 2010: \$74m.

³⁰ As a check on my calculations, I also examined the Battle River PPA purchase assuming that power prices averaged \$60.61/MWh, which is the price EEC appears to have bid to supply power to the federal government, as described in Section 3.3.4, less the shaping premium. In this case, the internal rate of return of Battle River PPA increases to 11.9%, although that allows neither for administrative costs, nor for the risks which the PPA entails.

Table 4-1
EEC's investment in generation projects other than PPAs

Project	Total Value	ENMAX Ownership %	ENMAX Share
Calgary Energy Centre ³¹	\$200m	100%	\$200.0m
McBride Lake Windfarm	\$100m	50%	\$50.0m
Taber Windfarm	\$140m	100%	\$140.0m
Clowhom River Hydro ³²	\$60m	65%	\$39.0m
Southern Mainline Gas Compressor Heat Recapture	\$36m	50% ³³	\$18.0m
Furry Creek Hydro ³⁴	\$29m	99%	\$28.7m
Total			\$475.7m

Adding the PPA and non-PPA assets together, EEC's investment in generation is over \$2bn, more than \$2000 per person in Calgary.

4.3 The Sensitivity of PPA Valuation to Power Prices

Keephills and Battle River, according to the calculations above, together currently have a market value of over \$1.7bn. This market value, however, is dependent on electricity prices. The forward prices I obtained predict an average wholesale price of electricity of \$58.48 in 2011. If electricity prices rise by an average of say 30% (or about \$17.50) over the period 2010-2020, the value of the two assets rises to approximately \$2.5bn. On the other hand, if electricity prices fall by 30%, compared to forward prices on May 8 2006, the value of the two assets falls to approximately \$0.95bn. I am not able to predict what will happen to prices and cannot say whether one of these outcomes is more likely than the other. But there is no question that a change in prices of this magnitude is very possible. Table 4-2 shows the average price by year in Alberta since deregulation, and it makes it very clear that prices move substantially from year to year.

³¹ This is a tolling agreement between EEC and Calpine Income Fund in which EEC pays a fee to Calpine for the rights to electricity from the "Calgary Energy Centre" plant, for a period of *twenty* years. The \$200m is my estimate of EEC's obligations under the contract, which was made public October 24, 2006. This estimate may be significantly wrong as there are very limited details available. (See http://www.enmax.com/NR/rdonlyres/1B270F4E-A0DF-4A6B-9A5A-02B94E9E4C26/0/NR_Calpine_Power_Income_Fund.pdf, last accessed October 26, 2006.)

³² Valuation: According to "Enmax tapped to deliver alternative power to B.C." Calgary Herald, p. D4, August 24, 2006, ENMAX CEO Gary Holden stated that green power projects currently cost between \$2.5m and \$3.5m per MW to develop. I have assumed \$3m per MW.

³³ My estimate.

³⁴ Valuation derived as follows: ENMAX 2005 Annual Report lists the purchase price as \$13.3m (p. 31) and also shows that ENMAX assumed \$15.4m of debt associated with this purchase (p. 32).

Table 4-2
Yearly Average Power Prices in Alberta

Year	Price per MWh
2001	71.29
2002	43.93
2003	62.99
2004	54.59
2005	70.36
2006 (Jan-Jun)	55.17

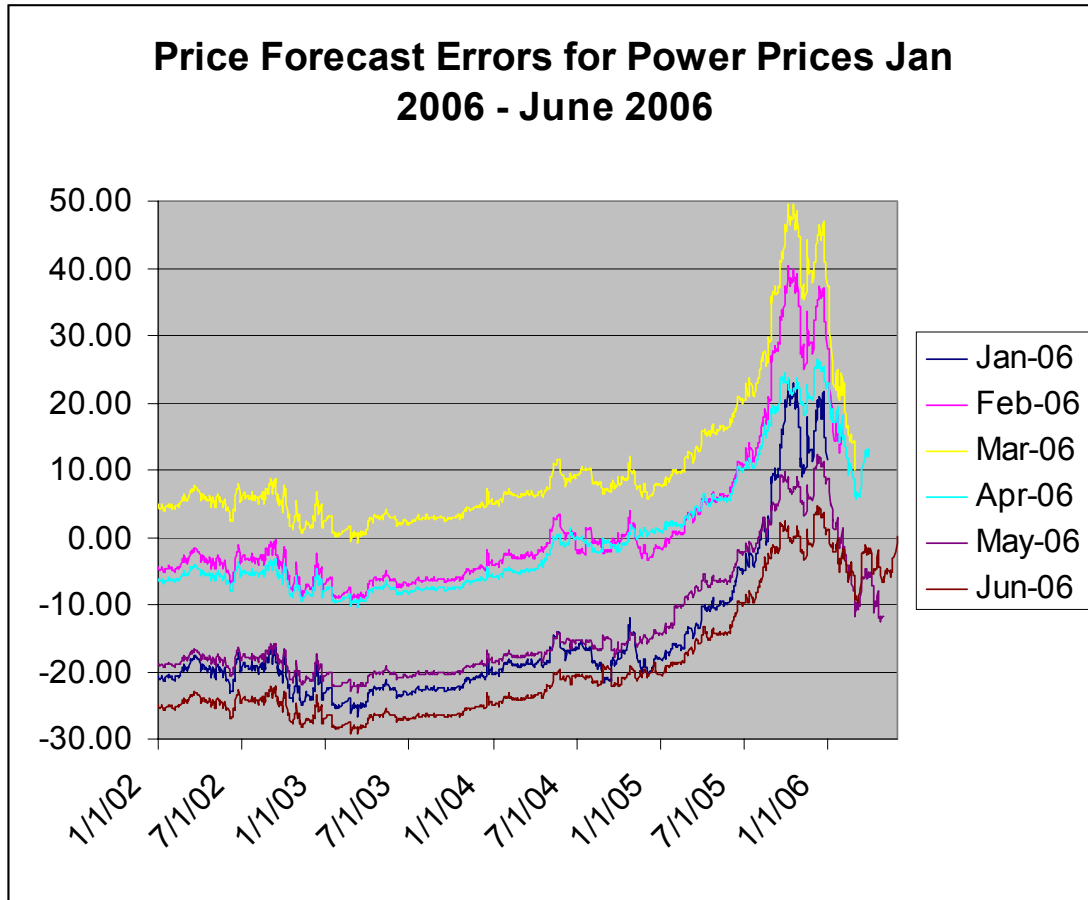
It is worth stressing that electricity markets are exceptionally volatile, compared to other commodity markets. In other markets, storage makes it possible to smooth out prices. But, uniquely in electricity, it is not possible to store the commodity until it is demanded. This results in high volatility on an hourly basis as prices fluctuate. Similar volatility is observed on a daily, monthly, or yearly basis. High volatility, of course, implies high risk for a firm which has contracted to buy a large amount of electricity at a fixed price over a long period of time, but which does not have matching long term contracts to sell the electricity.

The ability of the market to predict power prices, even roughly, is very imperfect, because of the high volatility observed in this market. As an illustration, consider Figure 4-2, which shows the *difference* between the Chase Energy predicted wholesale power price for each of the first six months of 2006 and the actual average power price for each month, starting from January 2002 until the present. Thus, for example, the high point in the graph shows that on October 25, 2005, the predicted price of power in March 2006 was almost \$50 above the actual average price in that month.

Note that forecast errors for future months at a given point in time tend to be positively correlated. For example, in October 2005, predicted power prices for all the months tended to be too high. We see a similar pattern of consistent errors in 2003, when the forecast prices for most months in 2006 were below the actual prices. This tendency of forecasts for future months to be wrong for month after month in the same direction is important, since it suggests that if one forecasts with error for a future period of months, the errors will tend to be in the same direction, and not cancel each other out.

The errors in the forward prices, as Figure 4-2 shows, were quite large relative to actual energy prices, often being greater than \$20 above or below. The average absolute value of the forecast error, over the entire time, was \$11.92, which indicates that on

Figure 4-2



average, a forecast would be wrong by \$11.92 (above or below the actual price).

Thus, predicting where prices will go in the long term is extremely difficult. On the one hand, with Alberta's tremendous economic growth, more generation will certainly be required. If insufficient new generation is built over the next few years, prices could increase substantially. On the other hand, prices also depend on the price of natural gas, which could increase or decrease. If the price of natural gas decreases substantially because of imports of LNG or a slowing US economy, electricity prices could fall substantially.

Thus the PPAs, whose value depends on power prices out to the year 2020, as well as the other generating plants owned by EEC, are extremely risky assets. It is also worth noting that it is unlikely that EEC has been able to hedge much of its risks for the distant future, since there is no forward electricity market for Alberta for the distant

future.³⁵ Most strikingly, the retail contracts being sold by EEC for 1 and 5 years fail completely to offer a hedge on EEC's risks. First, the terms do not match EEC's 15-year commitment under the PPAs. Second, if electricity prices rise, EEC's PPAs are in the money and do not require a hedge. However, if electricity prices fall, so that EEC is losing money (on a fully amortized basis) on its Battle River PPA, the retail contracts provide no protection since they offer customers the option to terminate the contract on one month's notice.

Even if EEC were able to perfectly match its PPA supply sources with long-term demand contracts, it still must accept considerable short-term risks. Under the terms of the PPAs, if the power plant is unable to achieve its contracted amount, EEC obtains an availability incentive payment equal to the average pool price over the previous 30 days times the shortfall in supply. This payment is intended to allow the PPA buyer – EEC in such a case – to purchase electricity from the power pool to supply its customers. However, the times when its PPAs are unable to supply are precisely the times when prices tend to be high. Exactly this outcome occurred for 50 hours on October 3-5 2006, when approximately 514MW of the Keephills and Battle River PPAs were unavailable. EEC would have received compensation through the availability incentive payments, averaging approximately \$110/MWh. But the price in the power pool in the same period was \$558/MWh. Thus, if EEC had to purchase electricity from the pool to meet its contracts to supply, it was losing \$448/MWh, for approximately 50 hours, at 514MW per hour. This implies a loss of over eleven million dollars in just two days. This is an example of the kinds of short term risks the City faces owing to its investment in EEC.

4.4 Other Risks

EEC also faces other significant risks in its business. For example, it faces considerable regulatory risk. A number of jurisdictions in North America which have experimented with deregulation in the electricity sector have later stepped back and introduced new regulations to control prices. For example, the Ontario government introduced a price cap on power prices which significantly changed the profits achievable in that market. If electricity prices in Alberta increase substantially, or there are problems with adequacy in the market leading to brown-outs or black-outs, it is possible that the Alberta government will intervene in the market with unpredictable consequences for firms such as EEC. Adequacy problems are certainly very possible in Alberta, given that the province's growth rate does not appear to be matched by new investment in baseload electricity supply. The regulatory risk for EEC may be quite substantial because in case of regulatory changes limiting EEC's ability to earn profits from the Battle River PPA, it will presumably not be able to make any claim to obtain repayment of the \$567m payment it made to EPCOR.

EEC also faces risks related to the operational status of the Keephills and Battle River power plants. In the case of a "force majeure" outage, where the power plant at

³⁵ EEC has however managed to obtain some long-term contracts, including a 10-year contract with the federal government to supply power to its facilities in Alberta, and a 20-year contract with The City of Calgary, which will be largely supplied through the Taber windfarm presently under construction.

Keephills or Battle River is unable to continue functioning, EEC is relieved from having to make additional capacity payments under the PPA. However, in such a case, EEC will be forced to buy electricity from the spot market in order to supply any contracts it already has. If the price in the market is above the contracted delivery price, EEC could be required to accept large losses.³⁶ The possibility of such a “force majeure” outage is not remote. Battle River, like other power plants, has a heavy reliance on water supply to continue functioning; and if the water supply available to it is insufficient, it has to shut down one or more of its units. This has occurred in the past and is likely to recur. EEC, in such a case, has no way of recovering the purchase price of the PPA (\$567m) or of eliminating the risk of having to pay more in the spot market to supply electricity that it is paid by consumers.

EEC also carries volume imbalance risks in its portfolio. It is generally not able to perfectly forecast what its quantity demanded will be, so that it is unable to perfectly predict how much electricity it should buy to cover this demand. If customers demand more than EEC expected, and electricity spot prices increase at the same time, then EEC will be left with losses. This is a substantial on-going risk.

4.5 What do these Risks mean for The City of Calgary, as Sole Shareholder of ENMAX?

It is helpful to put EEC into the context of The City of Calgary’s budget, as The City is the sole shareholder of ENMAX. In 2005 property taxes raised \$1.1bn for the city. A decrease in power prices of \$17.50 compared to the forecast for the years 2010 - 2020 would lead to a decrease in value of the PPA assets of \$0.75bn, or most of one whole year’s property taxes for the City of Calgary. Of course, it is also possible that power prices may increase: in that case, it seems probable that EEC will invest its excess profits in purchasing more capacity, probably outside of Alberta, or possibly in trying to increase its market share through very low pricing, as described in Section 3. The key point to recognize here is that the PPAs are very valuable assets whose value fluctuates with market prices in the power pool. This price is determined by supply and demand in a competitive market, and, even more than other energy prices, it tends to move unpredictably.

A recent Standard and Poor’s analysis examines ENMAX, from the perspective of a private lender. It notes that “ENMAX Energy Corporation’s exposure to Alberta’s competitive energy wholesale and retail markets poses significant risk to the company’s above-average financial profile... ENMAX’s plan to expand its business carries execution and operational risk; however, its supportive shareholder mitigates some of the associated financing risks.”³⁷ Ownership by The City of Calgary only mitigates financing risks if the taxpayers of Calgary absorb the risks.

³⁶ Note that EEC cannot simply terminate its Easymax contracts, as it has marketed them on the basis that it will not terminate those contracts except in cases of consumer failure to pay.

³⁷ Standard and Poor’s Report on ENMAX Corp, dated 27 April 2005, available at http://www.enmax.com/NR/rdonlyres/90F5E798-391E-41B6-8D16-18D252933C87/0/ENMAX_standard_poors.pdf, last accessed 21 August 2006.

Therefore, it is extremely important that The City review whether participation in the energy supply market is (1) consistent with the mandate of city government and (2) manageable in the context of its Integrated Risk Management Policy.³⁸ In the 2005 Annual Report of ENMAX (p. 4), Mayor Bronconnier is quoted as saying that “We kept ENMAX because it is a good investment.” And to date it has been a good investment. But the question has to be asked whether it is part of the mandate of the City of Calgary to make risky financial investments – even good ones – on behalf of taxpayers.

In the five priorities that City Council established in 2005, there is no mention of making profitable investments in any competitive industry. And yet City Council has an investment of \$2bn in the power generating industry. This is outside the set of priorities of the City. It also appears to be outside the core purpose of city government. Normally, city governments make investments in services and infrastructure which relate to the city governed. Strikingly, Keephills, Battle River, and EEC’s other power plants are not only physically distant from Calgary, they are also irrelevant to any city service or infrastructure. Calgarians obtain their electricity from the competitive electricity market, and it is delivered by ENMAX Power: there is no particular role for EEC.

The City’s Annual Report for 2005 notes that

“ENMAX is a wholly-owned subsidiary of The City and was formed to carry on the electric utility *transmission and distribution* operations previously carried on by the Calgary Electric System, a former department of The City. ENMAX operates in two segments; ENMAX Power, a regulated, wholly-owned subsidiary established to carry out all electricity distribution and transmission service functions, and ENMAX Energy, an unregulated, wholly-owned subsidiary established to carry out all energy supply and retail functions.” [My italics]

The first sentence describes the historic role of ENMAX as having transmission and distribution operations. These are the operations now performed by ENMAX Power. EEC, notably, falls outside this function. It does not even carry out energy supply and retail functions for the entire city, as these are offered competitively by a number of suppliers.

One might suppose that because ENMAX is owned by The City of Calgary, it would operate in a relatively conservative fashion. For example, The City might require ENMAX to control its risks to account for the fact that ENMAX is far and away The City’s largest and most risky investment. However, as ENMAX President and CEO Gary Holden confirmed to me, “our strategy to manage risk in this environment has nothing to do with the ownership structure we have”.³⁹ Thus, while taxpayers have no way of controlling the risks they face from their implicit ownership of ENMAX, this has no effect, apparently, on the risk management strategy pursued by EEC.

³⁸ See Council Policy Number CC011, effective date 6 July 2004.

³⁹ Personal correspondence, dated 7 September 2006.

Since the value of the PPAs depends on future electricity prices, EEC is essentially speculating on future electricity prices, to the extent that it is unable to hedge its risks. Other municipalities have found that such speculation can be dangerous. For example, in the 1990s, Orange County in California was forced to declare bankruptcy after recognizing a \$1.6bn loss from speculation in derivatives. While The City of Calgary does not face such a threat, it does face substantial risk.

4.5.1 An Analogy

A useful way of thinking about the ownership of EEC is the following analogy. Suppose that City Council today suggested borrowing a billion dollars so that The City could purchase a car factory just outside Edmonton. The members of Council have no particular expertise in car manufacturing, but are convinced that it would be a “good investment.” Should they go ahead with this investment? Would it be a prudent and responsible action, consistent with the City’s “Integrated Risk Management Policy”?

Suppose that Council approved the investment, and it turned out well. The new City of Calgary subsidiary then applied for permission to buy another car factory, for \$567m. Because the first investment was profitable, does that mean the second one will be?

Participation in the Alberta electricity supply market is no more a function of The City of Calgary than participating in the automobile business⁴⁰, nor does the City of Calgary possess special expertise in the electricity supply business. In just the same way that the City would never consider buying a car factory, it should not be involved in a risky commodity business like electricity supply. And that means that one of Council’s priorities should be requiring ENMAX to sell its subsidiary EEC.

If City Council believes that the citizens of Calgary would like to own a piece of the energy supply business, then it can give each citizen the option to do so. For example, it could privatize EEC and then distribute shares to all citizens, who could then sell their shares or keep them as they wished. Alternatively, and in a more straightforward manner, The City could order the sale of EEC and its assets, and then use the proceeds to reduce taxes. Citizens who wished to use their tax reduction to buy shares in electricity companies could do so.

4.6 Summary

In this section, I have first described the scale of EEC’s electricity supply assets at risk in the electricity generation market: EEC has assets worth roughly \$2000 per city resident. The cash flow created by the Keephills PPA has been used to enable EEC’s investment into new generation, such as the Battle River PPA. But the result of this investment, as well as the appreciation of the Keephills PPA since the time of purchase, means that EEC now has a very substantial portfolio of assets whose value is substantially dependent on

⁴⁰ It should be recognized that since electricity is supplied to Calgary households and businesses by a competitive industry, EEC does not perform an essential service; ENMAX Power, in contrast, is the only electricity distributor in Calgary and performs an essential service in the city. Thus ENMAX Power is regulated, and EEC is not.

the future movements in electricity prices. The City may see its investment in EEC appreciate in value in the future, if electricity prices rise; but power prices may also fall, which could lead to large losses.

As EEC CEO Gary Holden explained in a recent interview, “Deregulation simply has put the risk on the people with the ambition to build instead of [on] the ratepayer.”⁴¹ In the case of EEC, the risk is being put on the citizens of Calgary, who are funding EEC’s ambition to build. Given the scale of EEC’s risk exposure, it is inappropriate for a municipality to be involved in ownership of this asset. The City can control the risk it takes by selling EEC and investing the money in a lower-risk asset or portfolio of assets, or by using the proceeds to pay for current unfunded capital needs.

⁴¹ Shannon Sutherland, “A needed jolt to the system,” *Alberta Venture*, October 2006, p. 129.

5 The Effect of Municipal Participation in the Competitive Electricity Supply Business

5.1 Introduction

One of the most persistent concerns I heard in interviewing competitors of EEC was that they did not feel that they were competing on a level playing field. They expressed concerns of the following sorts:

1. EEC does not follow profit-maximization goals and its behaviour is therefore unpredictable and in some cases harmful to the market.
2. EEC may have a lower cost of capital which gives it advantages.
3. EEC has used its unique status in the city to obtain marketing advantages.

In this section, I investigate what effect such concerns are likely to have on the functioning of the Alberta electricity supply market. I first examine the academic literature on the effects of government participation in competitive markets; and then examine how this relates to the situation in Alberta.

5.2 Analysis of the Effect of Government Participation in Competitive Markets in Other Jurisdictions

Government-owned firms in competitive markets may have quite different objectives from for-profit companies. The reasons for the differences are many:

- Government-owned firms do not have strong incentives to make very large profits in their own jurisdiction, as that may lead to claims that the government is practicing extortion against its own citizens. Sometimes the government or government officials have other objectives which may conflict with profit-maximization.
- Government-owned firms, as I discuss in greater depth in Section 7, do not face the same level of scrutiny by investors as do firms with publicly-traded shares, nor do they necessarily face the same requirements to divulge information as firms with publicly-traded shares.
- The managers of government-owned firms do not fear the threat of being replaced in a take-over; their job security is more dependent on political elections, which shifts their incentives towards concern for re-election of the incumbent rather than maximizing profits.
- Government-owned firms may be able to benefit from support from the owner for borrowing, potentially reducing their capital costs.
- Government-owned firms may benefit from special tax treatment.

A large number of academic studies have argued that these differences make governments very tough competitors in markets.⁴² John Lott, in particular, has argued that government-owned firms are particularly likely to act in a predatory way, setting prices so low that competitors are driven away. He notes (1999, p. 94) that both theory and the empirical evidence suggest that government-owned firms are motivated more by goals such as output, employment, or revenue maximization, rather than by profit-maximization. This in turn is likely to lead to below-cost pricing strategies.

David Sappington and Gregory Sidak develop a model in which the manager of a government-owned firm has additional incentives to maximize sales growth and not just profits. They find that

the diverse goals of a public enterprise lead it to act more aggressively toward its rivals than does a private enterprise. A reduced focus on profit leads the SOE [state-owned enterprise] to price competitive products below cost. It can also increase the SOE's incentive to raise the costs of existing rivals, to erect entry barriers to preclude entry by potential rivals, and to understate costs and to adopt inefficient production technologies to circumvent regulations designed to foster competition. Each of these activities precludes the operation of more efficient competitors and thereby reduce social welfare.⁴³

Richard Geddes examines case studies of a number of competitive government-owned firms.⁴⁴ He shows that it has been very common for government-owned firms to expand out of traditional businesses into new fields where existing competitors may be disadvantaged. Below-cost pricing is commonly used by these government-owned firms.

If private, for-profit firms find that they are competing against a government-owned firm which appears to be pricing below cost, they will naturally consider leaving such a market or minimizing their investment into it. Indeed, even if the government-owned firm is not pursuing such a strategy, competitive firms may be nervous about the possibility of such behaviour.

5.3 The Effect of EEC on Competition in Alberta

As discussed above, the appearance of unfairness – or even the apprehension of it – can deter potential competitors from entering or investing into a market, or may lead actual competitors to exit from the market. Section 3 of this report demonstrated that there is reason to believe that EEC is pricing at levels which are in fact below cost, and which are certainly far below competitive prices. In this respect, it appears to be conforming to the

⁴² See for example Lott, John, “Predation by Public Enterprises”, *Journal of Public Economics*, 43(2), November 1990, 237-251; Lott, John, *Are Predatory Commitments Credible?* Chicago: University of Chicago Press, 1999; and Peltzman, Sam, “Pricing in Public and Private Enterprises: Electric Utilities in the United States”, *Journal of Law and Economics*, 14(1), 1971, 109-147.

⁴³ David Sappington and Gregory Sidak, “Anti-competitive behavior by state-owned enterprises: incentives and capabilities” in R. Geddes, ed., *Competing with the Government: Anticompetitive Behavior and Public Enterprises* (Hoover Press, 2004), at p. 14.

⁴⁴ Richard Geddes, “Case studies of anticompetitive SOE behavior,” in R. Geddes, ed., *Competing with the Government: Anticompetitive Behavior and Public Enterprises* (Hoover Press, 2004).

claims made by Lott and Sappington and Sidak. This should lead to apprehension by firms in the market that EEC is not in fact following a profit-maximization strategy, and we can reasonably expect firms to be hesitant, in these circumstances, to invest in the Alberta electricity supply and retailing markets. I provide in the next section additional evidence suggesting that the playing field is not quite level, and that EEC is favoured by The City.

6 The City of Calgary's Energy Supply Agreement

6.1 Introduction

In this section, I examine the decision of the City of Calgary to give EEC an exclusive energy supply contract for a twenty-year term. I consider the city's process of choosing an untendered supply contract. I also discuss the effect that such a contracting process is likely to have on taxpayers and on the development of a competitive electricity industry in the province. The City's ownership of EEC has distorted the choices and has led to what is likely an inefficient, and costly, outcome.

6.2 The Contract Terms

The City of Calgary in 2005 signed an "Energy Supply Agreement" with EEC. The terms of the contract are not public, but some information is available. The terms of the agreement include the following:

- The term is twenty years starting January 1 2007.
- The annual nominal purchase quantity is expected to be about 350,000 MWh. At a price of about \$70/MWh, this implies that the value of this contract is approximately \$25m annually.
- At least 75% of the electricity is to be generated by "green" power sources such as wind turbines.
- The prices are based on a "long-term capital cost of project approach"
- To supply the green power, EEC is building a new windfarm at Taber.
- The City will also buy all its gas requirements from EEC on a "market price" basis.

The City of Calgary is one of the largest electricity consumers in southern Alberta, and so obtaining a twenty-year exclusive contract with The City is quite a coup for EEC. This therefore raises the questions of whether (a) the process The City followed in arranging an exclusive supply agreement with its subsidiary was fair; and (b) whether the arrangement is good for city taxpayers.

Normally, governments in Canada are bound by various laws to use competitive contracting procedures in order to ensure – among other things – that there is no discrimination against firms in other provinces.⁴⁵ For example, Article 14 of the Trade, Investment, and Labour Mobility Agreement between British Columbia and Alberta, which came into effect in April 2006, requires Alberta and BC to "provide open and non-discriminatory access to procurements of their government entities where the

⁴⁵ The Agreement on Internal Trade between the provinces and the federal government requires open procurement practices for any contract for goods and services greater than \$100,000 offered by a municipality (Annex 502.4, added to the agreement in 1999).

procurement value is: a) \$10,000 or greater for goods; b) \$75,000 or greater for services; or c) \$100,000 or greater for construction.” It appears that the exclusive supply contract with EEC signed by The City would not be permissible under this agreement.⁴⁶

6.3 The Process for Arriving at this Agreement

In 2004, the Utilities and Environment committee developed an “Energy Supply Strategy.” A city report dated April 2004 observed that there were three basic options for acquiring energy: (a) “Continuation of the status quo ad hoc type of relationship with Enmax;” (b) “Competitive Requests for Proposals;” or (c) “Alliance with Enmax”.⁴⁷ The report then recommended the “Alliance with ENMAX”, giving as the *sole* reason, that ENMAX is a wholly owned subsidiary of The City of Calgary.⁴⁸ These recommendations appear to have been incorporated into a recommendation from the Land and Asset Strategy Committee, which was then voted into effect by City Council on 7 March 2005.⁴⁹ The result was that the Council agreed to enter into a “Strategic Alliance with ENMAX where ENMAX is the sole supplier of the The City’s natural gas and electricity needs.”⁵⁰

Thus, as of March 2005, The City had agreed to enter into an agreement to buy all its electricity from EEC, apparently solely on the basis of EEC being a wholly-owned subsidiary of The City. Obviously, such an agreement would leave The City with little negotiating room as to the price it paid for electricity, so the agreement required that EEC would have a “collaborative ‘open-book’ approach” to allow The City to ensure that EEC was not making excessive profits.

While EEC may have had an “open book” for The City, so that The City could ensure that EEC was not making more than a reasonable return on its electricity sales, such an approach does not enable the buyer to know what other firms would have charged for the same electricity. It also gives no incentive for EEC to try to reduce costs, since realistically The City can only judge whether EEC is charging more than its costs, not whether EEC’s costs are too high. These are important reasons why governments normally use open, transparent contracting methods for obtaining goods available in competitive markets.

The “alliance” with EEC also allowed for the price at which The City purchased electricity to include a charge for an “Energy Management Allowance” which was to be an “Allowance to manage energy procurement and City usage through the Energy Management Office.” Thus, The City is paying EEC to manage procurement of energy from EEC, the sole supplier. This appears to be like paying the store to manage your purchases.

⁴⁶ However, the contract pre-dates the agreement.

⁴⁷ Corporate Engineering Report to ALT, UE2004-31, Attachment 2, 13 April 2004.

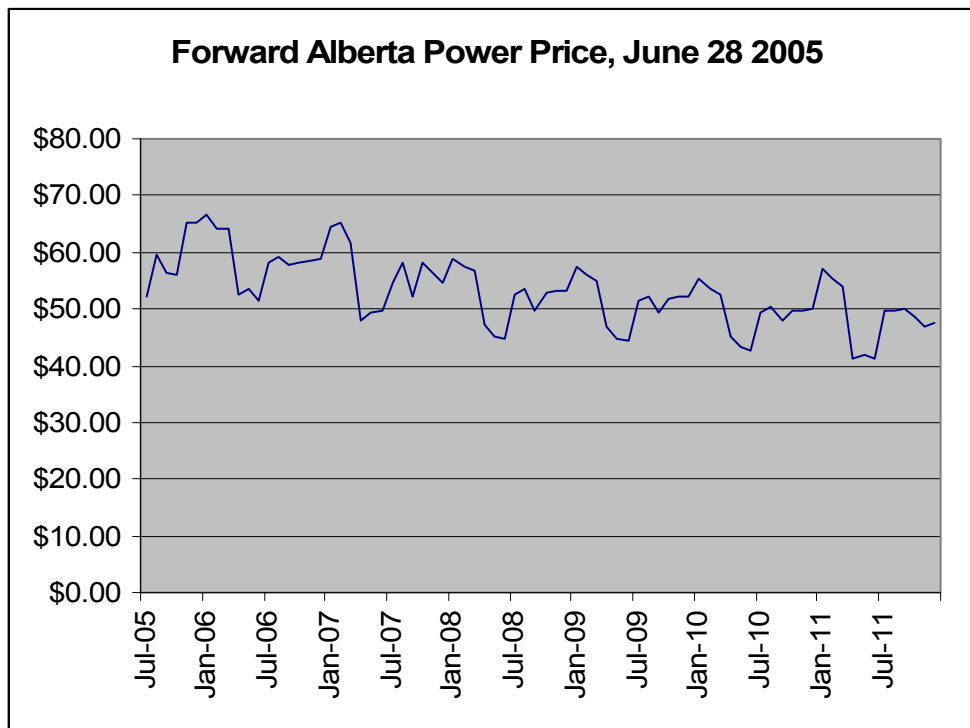
⁴⁸ The General Manager of Asset Management and Capital Works for The City, Brad Stevens, kindly confirmed to me in a telephone conversation that he knew of no other reason for the exclusive supply arrangement with EEC except that it was a wholly-owned subsidiary.

⁴⁹ The recommendation from the committee, contained in LAS2005-29, is confidential.

⁵⁰ Asset Management and Capital Works Report to the Land and Asset Strategy Committee, LAS2005-124, 28 June 2005, City of Calgary, p.1.

The preliminary prices provided by EEC increased at a rate greater than 2%. According to LAS2005-124, the “annual rate increase is in line with forward Alberta electricity pricing forecasts,” and “Preliminary pricing generally tracks current forecasted electrical energy prices.” It would be interesting to know where the Asset Management and Capital Works group obtained their forecasts. I examined the Chase Energy forward prices as of the date of the LAS2005-124 report. Figure 6-1 shows the predicted forward prices from this commercially available source. The forward electricity prices, as of that date, showed a declining trend, not an increasing one.

Figure 6-1



The budget implications listed in LAS2005-124 explain that the long-term supply agreement will enable The City to purchase at least 75% green electricity starting in 2007, “without a significant initial rate increase, and structured to a pre-established rate formula over the remaining 19 years of the contract.” One way of parsing this is that the contract is arranged so that The City can obtain cheap “green power” now, while facing high prices twenty years in the future. This approach is defended by referring to (unspecified) price forecasts which show increasing prices.

LAS2005-124 identifies two “high risk” areas of the Energy Management Strategy. Paying prices which are far from market was not one of them. The first “high-risk” area was apparently scheduling. The second high-risk issue was described as follows:

Public

Due diligence standards for transactions between related parties need to be very high due to the potential for scrutiny by external parties such as the public, regulators, ENMAX competitors, etc. An in-depth 3rd party due diligence assessment must be conducted.

As it happens, scrutiny by the public – that is to say, the taxpayers of The City and hence the ultimate owners of EEC – is not easy. The City refuses to release details of any of the terms of the transaction, or the due diligence assessment.⁵¹ Indeed, The City has refused to divulge who conducted such an assessment, or whether it was favourable. However, the title of the assessment was released in the McNally report, which is described below. The assessment was titled “Report to City of Calgary – Review of Proposed Rates of Return – Long Term Power Purchase Agreement” and was prepared by “Third-Party Consultant”. Judging by the title of the assessment, it only examined the rates of return achieved by EEC in the project, and did not therefore include an assessment of whether The City of Calgary was well-served by having a long-term agreement, or whether it was likely that a process of competitive requests for proposal might not elicit lower prices.

6.3.1 The McNally Report

The City was required by provincial regulations to commission a separate independent third-party assessment of EEC’s ownership of the Taber windfarm. This assessment was conducted by McNally Valuations in late 2005 and submitted to the Minister of Energy.⁵² The report noted (p. 7) that “due diligence when entering into a large long term contract would normally be expected to include a competitive market bid process to ensure the lowest possible price is achieved for the rate payers.”

The McNally Report analyzes the Taber windfarm project on the basis of the Electric Utilities Act, which outlines, as one of its purposes in S. 5(c):

To provide for rules so that an efficient market for electricity based on fair and open competition can develop in which neither the market nor the structure of the Alberta electric industry is distorted by unfair advantages of government-owned participants...

The McNally Report “reviewed the role of the shareholder in ENMAX corporate governance and corporate governance procedures in general to assess whether

⁵¹ I filed a Freedom of Information request to obtain documents related to this agreement. Regrettably, the City declined to provide any documents at all regarding this agreement, although since it is an exclusive supply agreement for the City, it is hard to see how any competitor would be able to use the information against EEC.

⁵² McNally Valuations, Inc., “Independent Assessment of a Proposal by ENMAX Green Power Inc. to hold an Interest in a Generating Unit under Section 95(10) of the Electric Utilities Act,” November 29, 2005.

shareholder involvement has benefited ENMAX in a way that would prevent investor-owned companies from competing with it on a level playing field.” (p. 11).

The Report concluded that “The City of Calgary has not used its corporate governance influence to provide a benefit for ENMAX or its subsidiaries in respect of the Proposal.” This conclusion at first seems very strange, given that the City has an established policy of buying electricity only from its subsidiary EEC to the exclusion of investor-owned companies, even if they have lower prices. However, the McNally Report only referred to whether EEC had benefited from having a municipal government influence it, not whether EEC had benefited from influencing the municipal government.

By this logic, investor-owned utilities are on a level playing field: they can build windfarms too, although they won’t be able to sell to The City of Calgary. Provided they can find a buyer willing to pay similar amounts of money for large amounts of electricity on a twenty-year basis, they will not be disadvantaged compared to EEC. The McNally report does not try to assess whether there is a level playing field with respect to the opportunities to sell electricity. Undoubtedly from the perspective of investor-owned utilities, they may feel that being shut out of major contracts to supply wind-generated electricity somewhat inhibits their competitiveness in building new wind generation capacity.⁵³ However, to the Assessor of the McNally Report, the playing field is level.

6.4 Discussion

The City’s decision to establish a “strategic alliance” with its subsidiary, sole-sourcing its electricity and gas from EEC and not to require competitive bids from other competitive power companies is a straightforward, automatic way to ensure that the prices The City pays are higher than they would otherwise have been. Competition between sellers is beneficial for consumers not because it ensures that the rate of return earned by the winning bidder is low – it doesn’t necessarily achieve that – but because it is a way for consumers to get low prices. In turn, that is a way of ensuring that firms which have low costs are the ones that are chosen to produce. The concern of The City that EEC not earn too large a return is fundamentally irrelevant, since any profit made by EEC accrues to The City as sole shareholder. What The City needed to find out was how to obtain the desired green electricity at the lowest cost to The City: whether to produce it through its subsidiary EEC, or to buy it from a third party.

If EEC has relatively high costs of building wind generation capacity, compared to other firms, the citizens of Calgary will ultimately end up paying higher taxes (or receiving fewer services) because The City of Calgary decided not to ask for competitive bids. Had other firms made higher bids than EEC, The City could still have chosen EEC and been no worse off. But if another firm had made a lower bid, The City and its citizens would be better off. So why did The City not ask for competitive bids? Was EEC worried that another firm might underbid it? The only acceptable justification for not opening up the bidding process to other firms would be if the costs of assessing bids were

⁵³ I found, in conversations with third parties excluded from bidding from The City’s business, that they did indeed feel disadvantaged.

too high. It is hard to believe that would be relevant in the context of the size of the project.

It is also important to consider how the decision of The City of Calgary to stick to in-house production of electricity is likely to distort the Alberta electricity market. Investor-owned firms will recognize that they are at disadvantage, and will therefore be less inclined to invest in generation capacity in Alberta, as discussed in Section 5.

Finally, it is worth reflecting that this case study is another example of why The City of Calgary should not own EEC: municipal ownership has led The City away from normal competitive bid practices. This in turn is likely to lead to inefficient outcomes in terms of which firms should build new generation capacity, since as a general rule, and holding other things equal, it is better for firms with low costs to build electricity generation than firms with high costs.

7 Corporate Control of ENMAX Energy Corporation

7.1 Introduction

In this section, I examine the nature of corporate control exercised over ENMAX. ENMAX is a wholly owned for-profit subsidiary of The City of Calgary. ENMAX as a Corporation reports to a Board of Directors (appointed by City Council), who are responsible for the approval of all business plans and business decisions up to a threshold of \$30m. Any expenditure above \$30m must be approved by City Council.

7.2 Who Controls ENMAX Energy Corporation?

According to a Resolution of the Shareholder of ENMAX dated 22 January 2002, unless the Shareholder agrees, the Board shall not approve, and the Corporation shall not enter into any arrangements to:

- a) agree to any contract, agreement or commitment out of the ordinary course of business or acquire or establish any additional business or make any material change in or terminate or suspend any material part of its existing businesses;
- b) issue, or enter into any agreement to issue, any shares of any class or any securities convertible into any shares of any class or grant any option or other right to purchase any such shares or securities convertible into any shares;
- c) make any single capital expenditure in excess of \$30 million.

Thus, all substantial capital projects, such as buying the Battle River PPA, must be approved by City Council. Within The City, City Council has ultimate authority to approve projects, which means that in general all substantial capital projects will be voted on by Council.⁵⁴

In other investor-owned utilities, the Board of Directors of the company is ultimately responsible for all decisions, on behalf of shareholders. Normally, it would delegate smaller matters down to the management of the company. City Council, in this case, is the real Board of Directors, since the ENMAX Board has responsibility only for business decisions up to \$30m. A natural question arising from this is whether City Council is well equipped to make decisions concerning ENMAX acquisitions and divestitures.

Although in principle the city Aldermen are responsible for approving major investments by ENMAX, in practice they are not given the tools or opportunity to exercise well-informed control. In interviewing Aldermen, I was informed that because major strategic decisions regarding ENMAX are confidential, the Aldermen are not normally informed of the nature of what is being proposed before they enter a meeting on

⁵⁴ In 2003 and 2006, City Council voted to give authority to the Mayor to make decisions on behalf of City Council, in case any urgent ENMAX business matters arose during the summer recess.

ENMAX. Furthermore, they cannot discuss the specific proposals with their professional staff, on the basis of confidentiality. Thus, the only information on which they can base decisions – such as the approval for EEC to invest \$567m in the purchase of the Battle River PPA – is information which they are given during a presentation on ENMAX’s business plans, and which must be immediately acted on.

The problem of corporate control is further exacerbated by the background of the Aldermen. The Aldermen are bright, capable, and committed. However, they generally do not arrive at City Hall having acted as CEOs of major companies, which is the background of most corporate directors. So how does the City Council assess a decision such as the purchase of the Battle River PPA? One might imagine that they would require a team of city experts on the electricity industry to provide a quick analysis. Unfortunately, there is no such team, and the professional staff at City Hall have no opportunity to provide input.

Similarly, the Board of Directors of ENMAX has only one member with experience of the electricity industry – the CEO of ENMAX himself. The remainder of the Board includes one ex-politician (Mike Harris), two current aldermen, two past employees of the City of Calgary, a communications consultant, two lawyers, an entrepreneur in the oil and gas industry, and an investment banker. While all the board members have had distinguished careers, they collectively appear not to have experience of risks and opportunities in a competitive electricity market, with the exception of the ENMAX CEO.

7.3 The Discipline of the Market for Corporate Control

In the case of an investor-owned firm, some – though not all – investors regularly track the performance of the firm. Large investors, such as pension funds and mutual funds, hire analysts who carefully examine the reports of the firm and other relevant information. And securities firms and other investment firms write reports concerning the prospects and risks of the firm. Note that such analysts operate independently and outside the firm, and individuals who can correctly predict the direction of the firm’s shares can make immense profits. When the firm is outperforming expectations, its share price increases. When its profits lag, the share price typically also falls, because those investors who have been following its performance in the market sell their shares, or do not buy more. Firms which consistently underperform compared to the opportunities which appear to be available will typically end up being purchased by other firms or investors who install new management. There is a market for corporate control, which offers a strong discipline to firms and their managers.⁵⁵

There is a large academic literature on this point. For example, Luis de Alessi argues that “The crucial difference between private and political [i.e. government-owned]

⁵⁵ Lori McLeod, “Activist investors have changed landscape,” National Post August 17 2006, p. FP3, quotes Randy Lampert, managing director of Morgan, Joseph and Co., on the importance of activist investors: “A convergence of factors that are market, regulatory and judicially driven, have set the stage for professional investment managers to have a direct, immediate impact on the way a company conducts its business.”

firms is that ownership in the latter effectively is nontransferable. Since this rules out specialization in their ownership, it inhibits the capitalization of future consequences into current [share] transfer prices and reduces owners' incentives to monitor managerial behavior."⁵⁶ Managers of government-owned firms may therefore have an unusually wide discretion to pursue their own objectives.

What kind of discipline does a municipally owned utility have? If it underperforms, The City does not necessarily sell it, though it may recruit new management. However, the measures for underperformance are not well defined, nor does anyone have strong incentives to monitor how the firm is doing. This is quite different from investor-owned firms. In the municipally-owned firm, there is no share price and there are no outside analysts. In principle, the shareholder of ENMAX could hire analysts to monitor the activities and prospects of the firm. But it does not. No one on Calgary's City Council has a personal financial stake in the success or failure of ENMAX. No one can make profits by correctly anticipating the next quarterly results, and so no one does try to monitor what is happening. And in fact I was able to confirm in several telephone conversations with staff and Aldermen at City Hall that there is no team with responsibility for monitoring the performance of ENMAX, with the exception of the Board of Directors.

The result of no monitoring is that the firm does not face the same harsh discipline of having to make business decisions which will enhance shareholder value and the profits of the firm. There are numerous ways that this lack of discipline could show up in the firm's decisions. The firm might be less aggressive about reducing costs, whether through its purchasing policies, hiring decisions, equipment purchases, and so on. It might pay too much for the assets it buys. It might fail to account for risks properly. As an alternative, the firm might be less aggressive about increasing its revenues. It might price too low, for example, in an attempt to expand market share at the expense of profits. When a firm lists shares, investors notice those things, and their decisions to buy and sell shares of the company provide instant signals to the firm about management policies. Managers who ignore those signals for very long soon find that they are out of work. But no one has such a strong incentive to notice what is going on with ENMAX. Is it pricing too low and not making enough profits on each sale? City Council wants to make sure that ENMAX is paying a substantial dividend. But do they know what a suitable dividend for this firm should be? Are they aware that selling ENMAX subsidiary EEC would create a windfall of a billion dollars while eliminating a risk that The City has no mandate to hold?

The bottom line is that because ENMAX is wholly owned by the City, it lacks the discipline created by investors, and City Council does not have the expertise or the staffing to duplicate that kind of discipline. It is no criticism of the Aldermen to say that they cannot duplicate the activities of thousands of private investors who scrutinize businesses in the hope of making profits. The skills required to be elected and to succeed as Aldermen are unlikely to be the same set of skills which are used in corporate

⁵⁶ Luis de Alessi, 1980, "The economics of property rights: A review of the evidence," *Research in Law and Economics*, 2, 1-47, at p. 27.

evaluations. ENMAX therefore lacks an important outside discipline, which must weaken the effectiveness of its management.

7.4 Confusion over the Role of The City as Shareholder, Customer, and Consumer Advocate

The City plays three roles in its relationship to ENMAX. On the one hand, it is the sole shareholder. As discussed in Section 6, it is also a significant customer. And historically, The City of Calgary has intervened in regulatory hearings in the gas, telecom, and electricity industries on behalf of the consumers of Calgary. However, this role of consumer advocacy is in conflict with its position as shareholder of ENMAX. As described in an internal City memorandum, this has sometimes been problematic:

ENMAX is also confused about its shareholder's objectives. While it has been established and given a profit mandate with management performance incentives, it is at the same time faced with public interventions by its shareholder designed to reduce profits.

Because of this conflict, Council determined that The City should not actively, publicly intervene in EUB proceedings where ENMAX was an applicant. The hope was that the majority of utility rate payer benefits could still be achieved from City intervention in other applications, without the contradiction of a direct public ENMAX intervention.⁵⁷

As The City soon discovered, however, even that was inadequate, since evidence that it raised in regulatory interventions against other parties was brought into ENMAX hearings; and it suffered a loss in credibility for failing to intervene in ENMAX hearings. Therefore in 2005 the City decided to fully withdraw from all regulatory interventions related to consumer interests in electricity and gas, except inasmuch was necessary "to protect the interests of the City of Calgary in its role of municipal government."⁵⁸

The City, as it has discovered, cannot effectively be shareholder, customer, and consumer advocate. The three roles simply do not coincide. And it is regrettable that in its desire to make money as a shareholder of ENMAX, The City has given up its role in representing and advocating for the citizens of Calgary in utility hearings. This is a role which it performed well, and which was a natural function for a city government. To give up this proper role of advocating for its citizens in order to maximize the value of a for-profit enterprise (in which it earns profits from its citizens and others) seems a perverse result.

7.5 Conclusions

The discipline created by the market for corporate control represents a systematic reason why ownership by the City of a firm in a competitive business such as the electricity supply market is basically untenable. A municipal owner cannot offer the same control of

⁵⁷ City Manager's Report to Council, 26 October 2004, ORG2004-2(b), p. 2.

⁵⁸ Bylaw # 30M2005 of the City Gas Power and Telecommunications Committee, adopted 16 May 2005.

management, since it lacks the incentives to monitor what is happening in the company. Where there are strong reasons for a city government to provide a service, such as, perhaps, water or electricity distribution, then it may be possible to overlook its failings of corporate control.⁵⁹ But in the case of electricity generation in a competitive market, there is no good reason for a municipality to invest in the industry, and many reasons, including faulty corporate control, not to.

⁵⁹ Note that in the cases of water, gas, and power distribution, there is typically a regulator who exercises another level of discipline. No such regulator controls the competitive electricity supply market.

8 Conclusions and Recommendations

This report has examined the The City of Calgary's participation in the electricity supply market through ENMAX Energy Corporation (as distinct from ENMAX Power, the distribution utility). EEC currently has tremendous value, but has become an increasingly risky asset for The City to hold. Now is the right time to realize that value, as the economy is booming and the industry is becoming increasingly competitive. This is a different choice from 2001, when a decision was made to retain ownership of ENMAX as a single firm. ENMAX itself has split into two clearly differentiated parts – ENMAX Power, which has a historic and continuing utility role in the city, and EEC, which is a competitive participant in electricity markets and has no particular role in city life. And EEC has grown to hold more and more risky assets.

The report has shown that there are many reasons the City of Calgary should not continue to hold EEC:

- (1) Ownership of a competitive energy marketing company is outside the mandate of the city government.
- (2) Ownership of EEC creates substantial financial risks for the city government, potentially threatening the viability of core programs.
- (3) Ownership of EEC imposes risks on citizens without giving them any choice in the matter; if the City sold EEC and then gave tax reductions to citizens, citizens could purchase shares in electricity companies if they wished to.
- (4) The City lacks expertise to manage an investment in a competitive company such as EEC.
- (5) Public ownership of a firm in this competitive market distorts city purchasing decisions and creates at least the appearance of an uneven playing field, discouraging investment in the Alberta electricity industry.

Fortunately, there is a simple solution to these problems: The City of Calgary should order ENMAX to divest EEC and its assets. The sale of EEC would create at least \$1bn in net proceeds, while still allowing The City to benefit from continuing dividends from ENMAX Power. The City could use that money in a number of ways:

- It could pay for the unfunded items (\$1.12bn) identified in its 2006-2010 Corporate Capital Budget Plan; or
- It could invest the money in a lower risk asset, such as a diversified investment portfolio, and then obtain a yearly dividend which it could use to reduce taxes or fund increased services.

Given the tremendous needs faced by the City at this time, and the opportunity to solidify value which is otherwise at risk, this seems like the right time to divest EEC.

The discussion in this document, of course, also has implications for other government-owned electricity generation utilities. For example, EPCOR creates enormous risks for the citizens of Edmonton through its ownership of electricity plants in Alberta and elsewhere.⁶⁰ Sometimes these risks don't work out very well: provincially owned Ontario Hydro created a debt of approximately \$20bn which consumers are now repaying through a special tax on electricity use in the province.⁶¹ There is a strong case for governments to avoid investing in risky industries when markets can perform exactly the same function. Taking on risks in electricity markets should be a choice for investors, not a requirement for residence in a city.

⁶⁰ The CEO of EPCOR, Don Lowry, provided an interesting perspective on this in a recent speech, discussing investment in new electricity generation facilities in Alberta: "As an industry, the market responded: more than 3,800 megawatts of new power generation has come online in Alberta since 1996 – more new capacity than we've seen built in any other province. It required no government debt, and no provincially-backed contracts. From a customer and taxpayer perspective – and this is key – no taxpayer dollars have gone into any new plants ... Investors built and paid for that power capacity at their own risk..." (Speech to Ontario Energy Association May 11, 2006, available at <http://www.epcor.ca/NR/rdonlyres/71D89E68-35EF-4873-B502-1C4E5D5F6D54/0/DonLowryOntarioEnergyAssociation051106.pdf>, accessed September 19, 2006). Of course, as Mr Lowry must be aware, one of the largest new power plants in the province was built by EPCOR. The "investors" who took the risk on building that power capacity were the citizens of Edmonton. The management of EPCOR appears to believe that EPCOR is owned by "investors" but this is a very strange way to characterize residents of the City of Edmonton.

⁶¹ See Michael J. Trebilcock and Roy Hrab, "What Will Keep the Lights on in Ontario: Responses to a Policy Short-Circuit," C.D. Howe Discussion Paper 191, December 2003.

Appendices

Appendix 3-1 Determining the competitive cost of retail power

I obtained forward power prices from Chase Energy Consultants for each month from July 2006 to June 2011, as of June 30 2006. Chase Energy explained its methodology for forecasting power prices as follows: “Chase Energy uses the Natural Gas Exchange posted forward natural gas prices for settlements and the NYMEX natural gas forward prices adjusted back to Alberta from the basis differential and posted forward foreign exchange. Chase Energy uses a combination of posted power prices from Natural Gas Exchange, forward natural gas prices on Natural Gas Exchange, historical heat rates from settled natural gas and power, and forecast supply/demand including retired and planned generation to create the estimated forward Alberta power settlements.” (personal email from Bob Hesson, Chase Energy, August 20 2006.)

I calculated the average forward price for that time period as \$60.74. I then added a shaping premium, which accounts for the fact that when a firm supplies power to retail consumers, they tend to consume more power during peak periods, when power is most expensive.

To calculate the shaping premium, I used prices obtained from the full-requirements auction for the Calgary Regulated Rate Option consumers for the year 2005 and the first half of 2006. These auction prices may be thought to include the shaping premium, as well as a premium for volume risk, which EEC also faces in its EasyMax product. I calculated the ratio of the average price of electricity supplied under the auction to the Chase Energy forward prices as of the dates of the auctions for the same periods to obtain the shaping premium. This premium was 9.92% for the 2005 auction, and 13.45% for the first half of 2006 auction. Using a weighted average (weighting the 12-month 2005 auction twice as heavily as the 6-month 2006 auction), I obtained an average shaping premium of 11.1%. This amount is added to the average forward price to obtain a shape-adjusted expected cost of power over the period of \$68.22/MWh. I confirmed in discussion with industry experts that my calculated premium of 11% was similar to their estimates.

I also needed to consider operating, maintenance, and general and administrative (OMGA) costs. To calculate the appropriate amounts, I used the ENMAX 2005 Annual Report. Operating, maintenance, and general and administrative costs include billing costs, bad debts, and advertising, which collectively represent at least half the total amount of OMGA costs for EEC. EEC reported total OMGA costs of \$105m in 2005. I subtracted \$5m from this as the upper bound on the operating and maintenance costs of EEC’s share of the McBride Lake windfarm facility. This left OMGA of \$100m, on EEC’s total revenues of \$1152m. Of this total \$1152, electricity sales were \$1046m. I apportioned the \$100m OMGA costs between electricity and gas on a pro rata basis, so that the share to electricity was \$91m. EEC sold 9804GWh of power during 2005, which implies an average cost of \$9.27/MWh for OMGA costs.

Adding up the straight power cost, the shaping premium, and the OMGA costs, we obtain an average cost of power of \$77.49, as shown in the table below.

	\$/MWh
Straight forward price	60.74
Shaping premium	7.48
OMGA	9.27
Total cost of electricity	77.49

Appendix 3-2 Easymax marketing

Under the Easymax contract terms, ENMAX has an option to terminate the contract. Specifically, the contract states that “We can end this Agreement without cost or penalty on 1 month’s notice to you, at our option.” However, ENMAX is not marketing the contract based on this small print and so termination based on a change in wholesale prices would be difficult, if not a violation of the contract made with customers.

According to the Code of Conduct established by the Alberta government, energy marketers “must not promise things that are not contained in the contract.”⁶² When I called ENMAX Customer Service to enquire about signing up for Easymax, I enquired about termination and was told that ENMAX would only terminate the contract based on “poor credit” and not for any other reason. (Telephone conversation with Gurbinder at ENMAX August 8 2006, at around 9:50am.) On a separate call, my research assistant was informed that ENMAX could only terminate the contract if the same property was under contract to a different retailer. (Telephone conversation with Aleem at ENMAX August 8, 2006, at around 10:40am.)

I informed Peter Hunt, Vice President of ENMAX Corporation, about these calls on August 9 2006, explaining that the ENMAX customer service agents were claiming that ENMAX would not terminate the agreement, despite what appeared to be a clear exit clause for ENMAX in the small print of the agreement. I called ENMAX customer service again on August 21, 2006, at which time I was told that the 5-year rate was “locked in”, and that ENMAX “would not terminate” the agreement. (Telephone conversation with Anna at ENMAX at around 4:50pm.) I spoke with Peter Hunt again on August 31, 2006. I informed him that ENMAX agents were still making promises not contained in the contracts actually offered, and that this violated the Code of Conduct for Electricity Marketers. However, when I again telephoned customer service September 7, 2006, I was informed that the five-year rate was secure and that ENMAX “would not terminate” the contract unless the customer contracted with another company to supply electricity (Telephone conversation with Sobi at ENMAX at around 4:30pm). I telephoned again on October 26, 2006 and was told “we guarantee what we’re saying to

⁶² (See “Electricity and Natural Gas Contracts” January 2006, available at http://www.governmentservices.gov.ab.ca/pdf/tipsheets/energy_mark.pdf, last accessed August 30, 2006.

you... we're bound to the 7¢ price for the full five years." (Telephone conversation with Christine at ENMAX at around 9:30am.)

Thus regardless of the fine print, early termination of these contracts would be a violation of contractual terms offered to consumers, in what appears to be a consistent marketing campaign apparently authorized at the highest levels of ENMAX.

Appendix 3-3 Alternative Explanations for EEC's "Low-price" Strategy

Subsidized Electricity

The low electricity prices EEC is offering to consumers can be seen as a subsidy. Subsidies are in some situations desirable and may be offered to correct a market distortion. For example, schooling is subsidized in Canada because education is believed to be of great social importance, and without free schooling, it is believed that some children might not attend school. On the other hand, paying a subsidy where no such market distortion exists is undesirable for a number of reasons:

- A subsidy leads people to consume a product even if their valuation of the product is below the cost of providing it. This is "allocatively inefficient" in the jargon of economics, since it leads to a misallocation of resources towards to the subsidized product.
- An energy subsidy is harmful to the environment. Since the subsidized energy leads to greater consumption of electricity, and the extra energy that is consumed is produced in coal or gas plants, such a subsidy leads to greater use of our resources than should occur, as well as leading to additional air pollution and greenhouse gases.⁶³ Whatever stance one takes on the Kyoto treaty, there is no question that encouraging people to use more energy is not good for global welfare.
- An energy subsidy, when offered selectively by only one firm, tends to undermine competition, as I describe in section 5.
- An energy subsidy of this sort, because it encourages people to switch from the regulated rate option offered in their region, may lead to greater instability of power demand for the RRO provider. Greater demand instability means more risk for the RRO provider, which in turn requires the RRO provider to charge higher prices.
- The energy subsidy creates a transfer from the taxpayers of Calgary to consumers of electricity. It is hard to justify such a transfer of wealth from Calgarians to other parts of Alberta and other electricity consumers such as the federal government.

⁶³ This is particularly at odds with ENMAX's proclaimed interest in the environment.

Overall, it is difficult to justify offering a subsidy on electricity. An alternative justification for offering a product below cost could be that the firm wishes to try to attract new customers, on whom it plans to make profits in the future.

Predatory Intent

Another possible reason for a firm to price below opportunity cost in the market is to eliminate competitors. Since Easymax is priced so far below competitors' offerings, it seems possible that DEES and AES will experience great difficulty in obtaining sufficient market share to maintain a viable presence in the Alberta market. If competitive firms leave the market, it is possible that EEC would be able to increase its prices for fixed rate contracts, although it would likely face the constraint of not being able to price far above the Regulated Rate Tariff.

There is wide experience with government-owned firms acting in a predatory manner. As Sappington and Sidak (2004, p. 2) note:

Even though they may be less concerned with generating profit, SOEs [State-Owned Enterprises] have stronger incentives than profit-maximizing firms to pursue activities that disadvantage competitors. Furthermore, such incentives can become more pronounced as an SOE's concern with profit becomes less pronounced.

However, under Section 50(1) of the Canadian Competition Act, "Every one engaged in a business who engages in a policy of selling products at prices unreasonably low, having the effect or tendency of substantially lessening competition or eliminating a competitor, or designed to have that effect, is guilty of an indictable offence and liable to imprisonment for a term not exceeding two years." Undoubtedly the officers of EEC would not wish to engage in a criminal offense and so I assume that the explanation for their very low pricing must have some other explanation than an attempt to lessen competition.

The Philanthropic Utility

Some of the individuals I interviewed claimed that the purpose of EEC's low pricing policy is to create the impression of a generous municipally-owned utility which is willing to sacrifice profits so that consumers can get low prices.⁶⁴ The idea is that a

⁶⁴ This perspective is supported by the claims ENMAX's CEO has made concerning the regulated rate option offered in Calgary. From January 2005 – June 2006, Calgarians who chose the "regulated rate option" for electricity were supplied at a price determined in an auction won by other electricity providers. ENMAX did not set the "regulated rate tariff". However, on January 17 2006, ENMAX CEO Gary Holden made the claim, still available on ENMAX's website, that "we are pleased we have been able to keep Calgarians' energy prices about 30 to 40 per cent lower than regulated rates elsewhere in Alberta." (Quoted in "ENMAX electricity bills hold steady in Calgary despite rising costs in Alberta," available at <http://www.enmax.com/Corporation/Media+Room/Current+News+Releases/ENMAX+electricity+bills+ho>

municipality should not be earning too much money from the supply of an essential service such as electricity. I am unable to assess whether this explanation is true or not. Given that the executives of ENMAX are likely to be compensated partly on the basis of the profitability of the company, I find it unlikely that they would wish to sabotage profitability in order to create the appearance of corporate benevolence. The City administration may, however, encourage such a policy, though that seems to imply a greater degree of interference by The City in the operations of ENMAX than has been apparent to me.

If, however, this explanation is correct, such behaviour is not justified. The citizens of Calgary have hardly authorized a policy of providing low-cost electricity to consumers outside of Calgary, and such a policy would, as I have discussed above, be economically inefficient and environmentally harmful.

Appendix 4-1 A comparison to the Sheerness PPA

In late 2005, the Balancing Pool sold the Sheerness PPA through a public process to TransCanada. It is reasonable to assume that the price reached through that public process reasonably reflects the valuation a private company would put on the Sheerness PPA. The Balancing Pool announced its intention to sell this PPA in June 2005, at which time it solicited expressions of interest either for the entire PPA or for pieces of it.⁶⁵ The auction process attracted many participants and a final sale to TransCanada Energy Ltd was announced in November 2005.⁶⁶ The open process used and the fact that many participants were engaged implies that the sale price is likely to have reflected a fair valuation of the PPA. I calculated, using the same strategy as described in Section 4.2, the internal rate of return required for the purchase of this PPA to break even. This implies an internal rate of return of 10.944%, a little above the Battle River PPA internal rate I calculated as 10.636%. (The higher internal rate of return implies that the Sheerness PPA was acquired at a more attractive price for the buyer. However, the difference is small given the error I am likely to have made in valuing the future stream of electricity sales and future costs.)

The assets are not entirely comparable. Two differences stand out. First, the Battle River generating units are quite old. One unit was commissioned in 1969 and one in 1975. These units are therefore likely to be less reliable than the Sheerness units. Second, the Battle River units have had frequent force majeure outages owing to water shortages, which reduces their value. And third, in case of force majeure, TransCanada likely has

ld+steady+in+Calgary+despite+rising+costs+in+Alberta.htm, last accessed September 7, 2006.) ENMAX had nothing to do with these lower prices in Calgary – the only reason was that there was a full requirements auction to supply the Calgary RRO business.

⁶⁵ See “Sheerness PPA Capacity to be offered for sale”, letter from Balancing Pool, dated June 17, 2005, available at <http://www.balancingpool.ca/pnp/notices/sheernessPPAcapacitySaleOffer.pdf>, last accessed August 21, 2006.

⁶⁶ See “Sale of Sheerness PPA and Allocation of Surplus Funds to Consumers”, letter from Balancing Pool, dated November 21, 2005, available at <http://www.balancingpool.ca/annual/Sheerness%20PPA%20Sale.pdf>, last accessed August 21, 2006.

some recourse to obtain repayment of the price it paid to the Balancing Pool. No such recourse is likely available to EEC for its Battle River PPA, which was purchased from EPCOR, not the Balancing Pool.