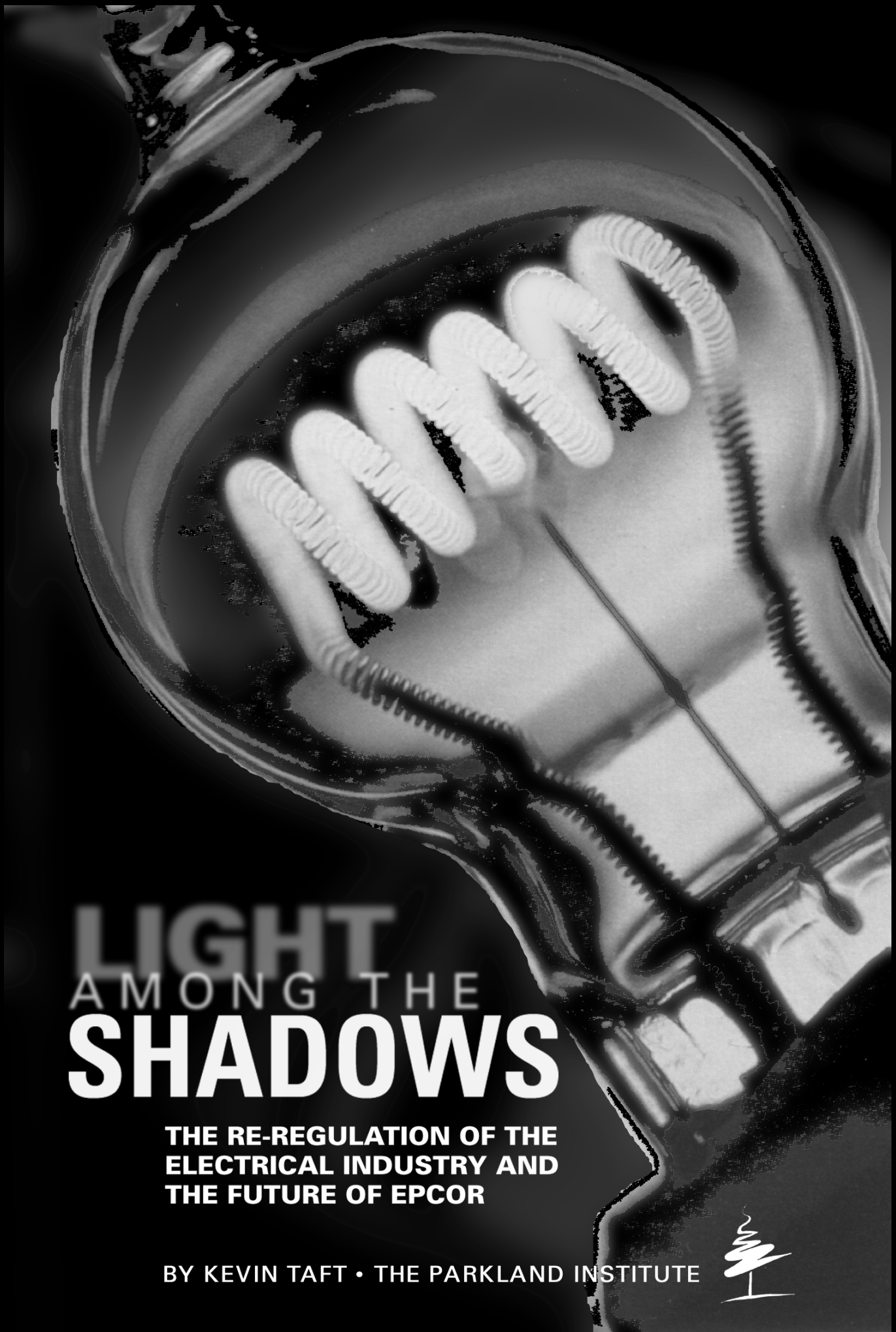

LIGHT AMONG THE SHADOWS

THE RE-REGULATION OF THE ELECTRICAL INDUSTRY AND THE FUTURE OF EPCOR

BY KEVIN TAFT • THE PARKLAND INSTITUTE

EXECUTIVE SUMMARY

...some widely-feared consequences of electric-utility deregulation in North America are actually occurring in Alberta...

The Wall Street Journal, December, 1998.

One of the reasons for splitting the industry at the sell-off six years ago, was to introduce more competition and bring down the consumer price. However, domestic consumers have benefited only marginally while shareholders have seen their holdings soar...

The Times, April 25, 1996.

This study is intended to assist the citizens of Edmonton and their City Council with their deliberations over the future of Epcor and Edmonton Power. It raises many questions and issues, and reveals some of the complications that can be expected with the electrical industry in the future.

This study tries to focus on evidence rather than wishes, on hard-earned experience rather than high-priced plans. In particular it looks at the realities and lessons of regulatory change and privatization in jurisdictions where they have been tried. Edmontonians can benefit from the mistakes and successes of others.

Many sources were used for this study. Among the most important were ***The Wall Street Journal, The Times*** (London), studies and government reports from various jurisdictions, and journals and papers from the electrical utilities industry.

This study is not intended to be definitive. It is meant to explore issues that currently have not been explored, but that could be of profound importance. Among its findings are these:

- City Council can afford to take its time deciding the future of Epcor and Edmonton Power. De-regulation is not a freight train about to run over Edmonton Power. Most U.S. states are proceeding cautiously with regulatory changes. De-regulation is not likely to strip the value from Edmonton Power.
- 'De-regulation' of the electrical industry requires more regulations than ever, and should be thought of as 're-regulation' to adjust the electric utility industry to suit other purposes. It can produce a regulatory nightmare.
- The electricity industry should NOT be understood as a similar case to the telecommunications industry. They are fundamentally different.

- Albertans have enjoyed among the least expensive and most reliable electricity in the industrial world for decades.

- Experience suggests that re-regulation does not reduce prices significantly (even in very high-cost markets), nor does it improve reliability.

- Shareholders of electric utilities tend to do well under re-regulation.

- In Britain, where re-regulation has proceeded the furthest, and where most electric utilities have been privatized, many senior managers, directors, consultants, and financial firms have enjoyed rich financial benefits from privatization and/or re-regulation.

- Customers have often found that re-regulation has some notable drawbacks, including price spikes, risks of market manipulation, and reduced reliability. In both Britain and the U.S. there have been serious disputes between major industrial customers and electricity providers.

- Edmonton Power is a century-old company that exceeds industry standards in every important area and has consistently adapted to technological changes. Technological developments such as fuel cells, cogeneration plants, combined cycle gas turbine generators, and distributed generation are important technologies. But there is no imminent change likely to the basic structure of generators sending electricity down transmission and distribution systems to customers.

- If Edmonton Power is sold it is very likely that control of the company will leave Edmonton (and possibly Canada) and that its local head office will be substantially downgraded. Experience elsewhere suggests that maintenance and customer service staff will likely be reduced if the company is sold, and that there is a distinct possibility that customer service and call centres would be automated and moved to distant locations.

- The potential sale of Epcor or Edmonton Power raises issues concerning conflicts of interest; the future of Epcor employees' pensions; the long-term economic development of Edmonton; and the health of global equities markets.

PART **1**

REGULATORY CHANGE

1 Electricity 'De-Regulation' is not what it seems

Competition and Monopoly

A competitive and open market can be wonderfully productive and efficient. If there are many well-informed consumers who can freely choose among many suppliers, most people will benefit. Restaurants are a good example: there are lots of customers and lots of restaurants. Customers can quickly judge the price and quality of the food, and chefs can quickly adjust their menus. If the choice is poor people can go elsewhere, or prepare their own meals. The result is a wide array of prices and styles of food, and little need for regulation beyond the basics of health and safety.

But some products don't lend themselves to this kind of a market. Historically, electricity has been one of these. For one thing, it usually costs hundreds of millions of dollars or more to get into the electric business. Economists call this a 'high barrier to entry', and it means there are relatively few electricity suppliers. In addition, it makes neither economic nor engineering sense to duplicate high-voltage transmission lines, low-voltage distribution lines, or meters. The costs of these are so high that it would be silly to have, say, five competing electric utilities wired to every house so that customers can freely pick and choose among them. So the kind of competition that occurs with many products doesn't occur with electricity.

Another complication with electricity is that people must have it, not only for luxuries, but also for necessities like furnaces, running water, lights, health care... virtually every aspect of modern life depends on electricity. In the language of economists this means that demand for electricity is not very 'elastic': people need electricity, so demand for it does not change closely with changes in price.

Electricity is tricky for other reasons too. Everyone knows that too much demand on an electric system can cause a black-out, but how may people realize that too little demand can cause a system failure too? Because of the laws of physics, electric distribution systems need to be kept in precise balance. Electric utilities must coordinate supply and demand by the second. In Britain, for example, electric utilities anticipate huge numbers of electric kettles being plugged in for tea moments after certain television programs end, and adjust their supply accordingly.

It gets even more complicated. Unlike any other product electricity cannot be stored. Providers cannot produce extra electricity in the summer to meet the heavy demands of winter. They must have the capacity to meet heavy demand at any time. When it comes to electricity there is no inventory to build up and draw down.

For these and other reasons electricity has been regarded as a 'natural monopoly'. It has been more efficient to allow suppliers to operate as monopolies under the close scrutiny of public regulators, than to attempt to artificially create a competitive market.

In Alberta's case this meant that the province was divided into geographic areas, with different electrical utilities granted legal monopolies to distribute electricity in each area. In return for distribution monopolies, utilities were required to serve all legitimate customers within their areas. Distribution monopolies gave utilities excellent information on customer needs, and so they usually could develop the most efficient generation and transmission. The common result was that utilities ended up with practical monopolies in all three areas: distribution, transmission, and generation. In Edmonton, city-owned Edmonton Power has had this monopoly. Electrical monopolies have been regulated by boards appointed by the provincial government, which have set operating standards. These boards have also set the price of electricity for private utilities. City Councils have set electricity prices where municipalities own the distribution system. In the future, the plan is that prices will be set by market forces.

From Natural Monopoly to Artificial Market

Albertans pay among the lowest rates in the world for electricity, and receive some of the most reliable and safe service. We have an excellent electrical work force, efficient management and regulatory systems, and ample supplies of coal, natural gas, and water conveniently located near major markets. Alberta's low electric costs are an important advantage for the province's economy, according to Alberta Economic Development. And Edmonton Power is consistently far above the Canadian average in reliability. (Alberta's Manufacturing Industry Highlights, Coopers and Lybrand, Alberta Economic Development, June 4, 1998; Epcor 1997 Annual Report.)

In places such as the U.K., California, and the northeastern U.S., electricity prices are double or more the rates in Alberta. In those places there have been pressures to change the electricity industry. These pressures have led to attempts to transform natural monopolies into artificial markets, a process commonly called 'de-regulation'. This has been controversial and complicated, with decidedly mixed results.

Natural monopolies are not perfect. Regulators usually allow them to earn profits according to how much they invest. In effect, the more they spend the more they earn. As a result, many utilities are tempted to spend more than they need. In some places the result may be a bloated and costly electric industry that is more interested in being big than efficient.

Where this problem is perceived to exist, one solution being tried is to reinvent the entire industry through 'de-regulation'. The natural monopolies are not just ended, they are smashed. Wherever de-regulation has proceeded the general pattern is the same. The generating plants, transmission lines, and distribution systems are broken into separate companies. Generators will compete with each other to sell electricity onto the grid of transmission lines. The transmission companies will become 'common carriers' of electricity, zipping electricity around the continent to distribution companies, without (in theory) favouring particular generators. Major customers will be able to contract with whichever generator they want, getting the best deal for electricity they can. Medium and small customers will buy electricity from retailers, who will buy it in large volumes from generators or others. As well, brokers will buy wholesale electricity in huge quantities for no other purpose than selling it to others at a higher price.

The whole process is managed by arms length agencies and regulators. Among these is a 'power pool', usually a non-profit agency that operates the grid of high-voltage transmission lines, a bit like air traffic controllers juggle aircraft, airlines, busy and slow times, and weather conditions.

In Alberta, the Power Pool reports to a council of stakeholders. Since 1996, virtually all electricity generated in Alberta has been sold to and bought from the Alberta Power Pool.

All these changes work in theory; in practice there have been serious complications. The initiative to privatize electric utilities and create competitive markets for electricity began about ten years ago in Britain. Changes there have been gradually phased in, with repeated delays to address problems of all kinds. Privatization and de-regulation have been also attempted to some extent in New Zealand. In the United States de-regulation has led to divisive and bitter debates. Some states, led by California, are pushing ahead with it. But a Wall Street Journal survey (September 14, 1998) found most states are taking a go-slow approach. There is not a broadly-based consensus on whether de-regulating the electric industry is a good idea.

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The Wall Street Journal, September 14, 1998.

If it's DE-regulation,why are there more regulations than ever?

In the United States the stage was set for de-regulation in 1992 when the Federal Energy Regulatory Commission (F.E.R.C.) issued orders 888 and 889. Each of these orders is about 1000 pages long, and represent only the very beginning of the process. In Alberta, the first decision rendered by the Alberta Energy and Utilities Board under the Electric Utilities Act of 1995 was so big it had to be released in two volumes. Why so many regulations for a process called 'de-regulation'?

One of the great ironies of creating a market out of natural monopolies is that it requires vast increases in regulation. The reason for this is simple: the balances, signals, and safeguards that function like an invisible hand in a real free market must be artificially created and managed when it comes to electricity. It is an 'artificial market'. This requires volumes of laws and regulations to control what can be done, by whom, when, how, to what standard, and at what price. It isn't 'de-regulation' at all, it is 're-regulation' to suit different needs.

In a real free market, price signals occur directly between buyers and sellers without the intervention of regulators. If people think the prices of meals at a restaurant are too high they will choose another restaurant or go home. The restaurant owner gets direct signals from customers that prices or products should be changed. If he responds correctly, business will improve; if not, business will decline.

In artificial markets like that proposed for electricity in Alberta, things get far more complicated. First, customers cannot easily walk away from their electric supply; everyone from ordinary householders to huge industries are dependent on electric companies. This means that sellers enjoy a market advantage over buyers that regulators must persistently counteract. Experience in both the U.K. and U.S. shows that if regulators don't act, price gouging occurs and customers from the biggest to the smallest scream for government intervention. A market is only good if it is fair.

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Second, pricing is so complex that few customers understand it. Prices for electricity vary dramatically hour-by-hour. In a typical 24-hour period the price swings 400%. In re-regulated markets prices can change far more. In both the U.K. and the U.S. re-regulated prices have swung up and down thousands of percent in just a few days, leading to stunning electrical bills, industrial shutdowns, and defaults. (The Times (London), December 6, 1995, p.25; December 7, 1995, p.25; The Wall Street Journal, June 29, 1998, Sec.C, p.1; July 10, 1998, Sec.A, p.2; July 14, 1998, Sec.A, p.3; July 16, 1998, Sec.A, p.4; July 24, 1998, Sec.A, p.2; September 1,1998, Sec.A p.1).

And there is another twist to pricing: in a re-regulated market, medium and small customers on their own cannot know the price of electricity until after they use it. It is like filling up a gas tank before knowing the price per litre. Only huge industrial customers with special staff and equipment will know the cost of power before they buy it. Everyone else will need to contract with retailers to obtain a predictable price. The retailers will be responsible for setting up hedges against price spikes, a costly process that pushes up the cost of predictable and reliable supplies. Regulators must account for all these issues and more, or a 're-regulated' electrical system will collapse in uncertainty.

In addition to pricing problems, it is tough for customers to know who to hold accountable for unreliable supplies and unfair costs. In re-regulated systems there are complicated structures of competing but interdependent companies. If electrical supplies fail customers don't know whether to blame the retailer who sold them their contract to buy electricity; the distribution company who is responsible for the wires that lead to their

house; the transmission company who carries the electricity from the power plant to the distribution company; the power generators; the regulators; or other factors. Experience with power failures in re-regulated systems in the United States makes it clear that assigning responsibility for problems is very difficult. This becomes yet another major issue for regulators.

Momentum has grown among large energy users to rebel against metering and infrastructure charges.

The Times, July 5, 1996. Page 26.

Information Overload

The operation of an artificial market for electricity requires a staggering flow of information. Instead of one supplier working through an integrated transmission and distribution system, there are many players: generators, transmission companies, distribution companies, retailers, customers, brokers, speculators, and regulators. Problems instantly arise: whose electricity is where and when, paid for at what price by which customer?

In Britain over £100 million was spent on changes to electrical meters to help track electricity. Major industrial users rebelled and at times refused to pay portions of their electrical bills because costs of metering and other infrastructure rose so much after re-regulation (The Times, July 5,1996). The British Energy Minister, John Battle, described the computer system required to handle the U.K.'s re-regulated electricity market as "...the most complicated computer system in the Western world" (The Times, June 13, 1997, p.25). California has spent several hundred million dollars (US) on information systems to support the artificial market in electricity (Comments of the Minnesota Office of the Attorney General on Bulk Power Reliability, July 24, 1998, p.16).

A Regulatory Nightmare

Experience in the U.K. and U.S. shows that an artificial market for electricity creates a regulatory nightmare. For example regulators must:

- *intervene to detect and prevent arbitrary price gouging;*
- *anticipate and block takeover bids that could limit competition;*
- *arbitrate between transmission, generating, distribution, and retail companies;*
- *settle disputes about whose electricity was used by whom at what price;*
- *detect and prevent collusion among companies;*
- *address constant and intense conflict between customers and suppliers;*
- *respond to failures, withdrawals, and bankruptcies among retailers and generators.*

All this must be done while maintaining an electrical system that operates smoothly and efficiently.

The costs of this are immense. The Times reports that, ironically, in a 'de-regulated' electrical system one-third of the time of senior managers in utilities is spent on regulatory affairs (January 28, 1994). In the U.S. the federal government through the F.E.R.C., Congress, and other federal agencies, has an important role in electrical regulation, working closely with state regulators. In Britain, where electricity is a national responsibility, there are powerful government agencies including the Monopolies and Mergers Commission and the Office for Electrical Regulation that are constantly handling these matters. In Alberta, where the provincial government has jurisdiction over electricity, one wonders if adequate agencies are in place to perform these roles.

...in a 'de-regulated' electrical system one-third of the time of senior managers in utilities is spent on regulatory affairs.

The Times,
January 28, 1994.

2 Reliabale Electricity: We Won't Know What We've Got Till It's Gone

Factories shut down and homeowners and businesses struggled without power. In the turmoil caused by the shortages the price of electricity soared, at times spiking to $7,000 (US) per megawatt hour.

The Wall Street Journal, June 29, 1998. Section C, page 1.

In the Dark from Ohio to Auckland

Edmontonians enjoy an almost perfectly reliable electrical supply at a cost well below the average of the industrial world. The security of our electrical supply is so good that we take it for granted and imagine that everyone in North America enjoys the same thing. They don't. Edmonton Power is near the top of the industry for reliability, performing well above even the very high average of the Canadian industry. In contrast, the length of power outages in southern Florida, for example, increased year-by-year from 1992 to 1996, reaching an average of 185 minutes each, and yet this was not considered sub-par performance by the U.S. industry (Florida Public Service Commission Review of Florida Power and Light, cited in The Miami Herald, January 10, 1998). Under the proposed changes to Alberta's electrical system the best that Edmontonians can hope for is that things won't get worse. What are the chances that they will?

In the summer of 1998, The Wall Street Journal and other major media carried a string of articles about a three-day series of power outages in the Midwestern U.S. Factories shut down and homeowners and businesses struggled without power. In the turmoil caused by the shortages the price of electricity soared, at times spiking to $7,000 (US) per megawatt hour. The usual cool weather industrial rate was $30 (US), and the usual rate in summer was $100-$150 (US). Industrial customers filed complaints and sought legal redress from electric companies and electricity brokers. Some electric companies accused others of manipulating the system to their advantage, and there were defaults and bankruptcies resulting from the unprecedented costs. (The Wall Street Journal, June 29, 1998, Sec.C, p.1; July 10, 1998, Sec.A, p.2; July 14, 1998, Sec.A, p.3; July 16, 1998, Sec.A, p.4; July 24, 1998, Sec.A, p.2; Sept. 1,1998, Sec.A p.1).

On February 9, 1998, the power failed in the central business district of New Zealand's biggest city, Auckland. The weather was hot and air conditioners were on full, so people assumed it was a routine blackout caused by an overload. They were wrong: it took the electric distribution company, Mercury Energy, five weeks before power was fully restored. Due to age and unusual circumstance all of the major cables supplying power to central Auckland failed. Residents had to evacuate the area, businesses closed, and

tens of millions of dollars in economic activity were lost. Privately owned Mercury Energy and various authorities face enormous liabilities. (The Report of the Ministerial Inquiry Into The Auckland Power Supply Failure, Executive Council of the Government of New Zealand, July 1998; Guardian Weekly, March 15, 1998; Reuters News Agency, Feb. 22 & 23, 1998.)

Dramatic examples like these are often used to challenge re-regulation and privatization of the electric industry. Behind the explosive headlines, what is the story about the security of our electrical supply? There are competing perspectives. But when they are carefully weighed, the arguments and evidence suggest that the reliability of the electric supply to Edmontonians is likely to worsen under re-regulation. More and longer power failures are a good bet.

The World's Biggest Machine

Supporters of re-regulation argue that electrical companies will insure their supply is secure, or risk losing customers to competitors. Customers will not pay for an unreliable supplier when a reliable one is available at a similar cost. This is a straightforward argument, but in the case of electricity it is a dubious one.

The North American electric grid has been described as 'the world's biggest machine'. It links virtually every electric utility in Canada and the U.S. It is fantastically complicated not only because of its size, but because of the strange product it handles: electricity. The electric grid must remain in perfect balance to function properly. Every generator must be synchronized to maintain proper flows, with turbines across the grid turning at precisely the same speed. And generation and demand must be matched on a split-second basis, because too much or too little supply can cause disruptions. Despite its size the grid is amazingly sensitive: utility engineers can measure the effect of a motor starting in Arizona on a generator in British Columbia.

Perfect balance is not always achieved. Even small problems can be serious, feeding one another and leading to big failures and costly shutdowns. The delicate balance of the system means that repowering can take many hours, even if all the equipment is in good order.

The North American grid evolved as a piecemeal system to spread the risks of power outages and provide back-up supplies. The overall grid is divided into three major areas, and within these are smaller regions that are somewhat independent. All these areas are linked by massive transmission lines that were built so that different areas could support one another during shortages.

Compared to many other areas, Alberta is fairly isolated on the grid. There is only one large transmission line to B.C.; constructing another over the Rockies would be prohibitively expensive. A much smaller line runs to Saskatchewan, but its value is limited. The nature of the grid means that Alberta's electricity is out of phase with Saskatchewan's, so there are technical difficulties limiting any connection to the provinces east of Alberta. There is no tie line to Montana, and building one is not attractive because Montana normally sends power the other direction, to the high priced California market.

Technological Evolution

It is easy to make the mistake of assuming that the technological revolution that has transformed the telecommunications industry is about to do the same to the electrical industry. It isn't. Cable TV companies are now gaining licenses to provide telephone service, creating an entirely new physical infrastructure for telecommunications. This has no parallel with electricity. Further, with computerized switching equipment, fibre optics, cellular phone systems, satellites, and digitalization, telecommunications equipment is outmoded almost as soon as it is released. On the other hand, 30-year-old coal-fired power plants are considered a medium age and sell for multiples of their book values. Power lines that are decades old connect to homes where antique electric lamps are plugged into sockets installed fifty years ago.

Electrical generation is going through constant innovation, as it has for a century. Edmonton Power has stayed at the forefront of this. Changes like cogeneration and combined cycle gas turbine generation (CCGT) are good technological innovations but they are not revolutionary, and technologies like windmills and fuel cells are nowhere near displacing traditional means

of generating and distributing electricity. There is no imminent change to the basic system of electric current flowing from generators, through transmission and distribution wires, to industries and houses. Technological change is a long term consideration, but it is not driving electricity re-regulation.

Engineering Difficulties

Transforming the North American electrical grid into a commodity market through re-regulation threatens reliability from two directions. The first threats are engineering problems. The transmission lines that connect the electric grid were not built to meet the needs of commodity transactions in electricity, where unplanned flows and heavy loads are commonplace. New transmission lines cost more to build than highways and face environmental and landowner opposition, so almost none are being constructed in North America. As a result, existing lines are often loaded to their intended capacity and beyond, and represent a physical limit on transactional capacity. As these limits are approached the reliability of the entire system declines, with markedly higher risks of overloading and breakdown. ("Grid Stress", Monthly Utility Digest, June, 1997; Kiah Harris, P.Eng., "Life After 888 And 889".)

Britain and California have faced unexpected costs of hundreds of millions of dollars in computing, metering, and other infrastructure, costs which have been passed on to customers.

A second technical problem concerns the flow of information, which has been a great hurdle to re-regulation. The need to balance the grid means that precise information must flow to operators throughout the grid at phenomenal rates. The multiplying number of players connecting to the grid under re-regulation means that the flow of information grows exponentially. When this flow isn't smooth, reliability declines. As mentioned above, Britain and California have faced unexpected costs of hundreds of millions of dollars in computing, metering, and other infrastructure, costs which have been passed on to customers.

Business Problems

Other threats to reliability stem from business and regulatory problems. The synchronization and coordination that are necessary for a reliable electric supply are readily achieved when electric utilities are treated as natural monopolies. In Edmonton's case, for example, one company owns and

operates the generators, transmission lines, and distribution system, and manages all retailing. Accountability is clear: when the power fails or the prices change Edmonton Power is on the spot. In the same way, when Edmonton Power invests in equipment and staff, it knows that itself and its customers will benefit.

In a re-regulated system, the clear responsibility that companies once had for reliability is dissolved. Under re-regulation all companies benefit from a reliable system, but because the system is interdependent they receive this benefit whether or not they pay for it. An easy way to understand this is by comparing the electricity utilities to airlines. Airlines spend on aircraft maintenance not merely because of government regulators, but also out of self-interest. If passengers felt that an airline had scruffy and unsafe airplanes they would soon switch to a second airline, knowing that its reliability was independent of the first. But with electricity, reliability is interdependent. If one power plant or transmission line goes out in Alberta it reduces the reliability of the whole system. So the rewards to companies for good maintenance are diffused, and the accountability between customers and electricity companies is unclear.

In short, since power is pooled, reliability is pooled. An unreliable supply hits all retailers equally. As a result, it is in the best interest of individual companies to minimize their investments in reliability and take a free ride on the investments of other companies. Responsible companies can actually be penalized for investing in better reliability, because by improving the system they end up helping competitors at their own cost. The responsible company cannot guarantee customers any better reliability than the free rider. Indeed, the free rider can charge customers a lower price because it spends less on maintenance. As this free rider problem becomes apparent the response is likely to be more regulation.

Reliability also suffers in the re-regulated market because the balance that regulators traditionally maintained among shareholders, customers, the system, safety, and reliability, is clearly shifted so that shareholder interests prevail. The duty of senior managers is to maximize shareholder value. That may mean saving costs by cutting staff too far, reducing safety and

performance margins, and lowering customer service. Cuts like these were widely considered to be factors in the infamous outage in Auckland. Similar concerns have been raised with privately-owned utilities in re-regulated markets in the United States and Britain. Public ownership of Edmonton Power means that shareholder and customer interests are one and the same, eliminating this conflict.

When Un-reliability is Rewarded

Instability in currency, commodity, and stock markets creates profit opportunities for traders and speculators. Likewise, unreliability in the electric market, even the threat of it, can do the same thing. Because electricity is so important to businesses and homeowners, the possibility of it being cut off can lead to near panic. In the 1998 outages in the Midwest U.S., there were allegation that brokers, speculators, and wholesalers were quick to take advantage of the outages to turn a profit. Indiana steel manufacturer Steel Dynamics Inc. had its usual power supply curtailed, and then was offered to be re-supplied with power at $1000/mwh, ten times the rate they expected (The Wall Street Journal, July 10, 1998, Sec. A, p.2.).

Britain faced a similar situation in December, 1995. A cold snap combined with disruptions in the electrical system in France meant demand for power was unusually high. People had to have power to stay warm; unreliability was unacceptable. Over the course of several days the re-regulated wholesale price of power climbed from £50 per megawatt hour, to £73, to £123, and peaked at £965.87 per megawatt hour (about 50 times the usual cost in Alberta). There was no correlation between the cost of production and the price of the product. There was enough electricity to meet demand. But the risk of a power outage in such dire circumstances was threatening, making buyers desperate and inviting market abuse by sellers. (The Times (London) December 6, 1995, p.25; December 7, 1995, p.25.)

During power outages in Alberta in October 1998, Premier Klein and Energy Minister West suggested that the outages may not have been entirely accidental, and called for an investigation. The investigation did not find any wrong doing by industry, but the questions posed by Klein and West were reasonable. Given experience elsewhere and the logic of re-regulated electric markets, sometimes unreliability can be profitable.

Will reliability go up or down?

More and more evidence suggests that power supplies are less reliable under re-regulated power markets. The combination of pressures to reduce costs to the lowest possible levels, and the vastly increased complications of operating the electric system as a commodity market, are taking tolls on reliability in many locations.

It is now clear..., that, under competition, it will cost extra to maintain the excellent reliability we now take for granted in the U.S.

***Electrical World**, May 1997, p. 47.*

The reliability of the electricity supply in North America is monitored and guided by an industry-wide agency called the North American Electric Reliability Council (NERC). NERC is not opposed to re-regulation, but it has expressed concerns that re-regulation "injects uncertainty" into the reliability picture: "It is likely that legislative and regulatory initiatives will occur at a pace that could overtake the industry's ability to effectively manage them" (NERC Reliability Assessment, 1997-2006). There are also reports that NERC is adjusting its calculations to accept higher levels of interruptibility as normal (The Electricity Daily, June 15, 1998).

A wide range of electrical engineers are stating that reliability is already declining under re-regulation, and will decline further. "It is now clear" says Jack Casazza, one of the world's foremost 'blackout detectives, "that, under competition, it will cost extra to maintain the excellent reliability we now take for granted" in the U.S. ("Electrical World", May 1997, p.47. See also Kiah Harris, P.Eng., "Life After 888 And 889", presented at American Public Power Association Annual Conference, June 15, 1998; Monthly Utility Digest, June 1997.).

State regulators across the U.S. are also worried. The Minnesota Attorney General has released a detailed report expressing concern over electricity reliability under a re-regulated system. Evidence from the U.S. west coast

reveals that reliability will decline under re-regulation. Utah put re-regulation on hold because of concerns about price and reliability. ((Comments of the Minnesota Office of the Attorney General on Bulk Power Reliability, July 24, 1998, p.16); Electrical World, May, 1997; The Wall Street Journal, September 14, 1998, Sec.R, p.4).

In Auckland, the New Zealand government conducted a major inquiry into the prolonged power failure of February and March 1998, making five "significant findings". Three of these stated that Mercury Energy was operating "below industry standards" or was otherwise deficient, and the other two found problems with the company's accountability, monitoring, and corporate governance. Mercury Energy was strongly criticized in other circles for having spent $300 million (NZ) on hostile take-over bids while cutting its work force in half and failing to maintain its operations. (The Report of the Ministerial Inquiry Into The Auckland Power Supply Failure, Executive Council of the Government of New Zealand, July 1998; Reuters News Agency, Feb. 22 &23, 1998.)

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***The Report of the Ministerial Inquiry Into The Auckland Power Supply Failure**, Executive Council of the Government of New Zealand, July 1998; Reuters News Agency, Feb. 22 &23, 1998.*

The electrical grids linking power systems across North America are neither engineered nor managed to handle a full-scale market in electricity. But under re-regulation the grid becomes a site for commercial transactions: electricity is traded back and forth. The number of traders and transactions on the grid soars in the early stages of re-regulation, and jumps to astronomical numbers as the market moves to the retail level. Electricity is expected to be the next huge commodity, creating a market that will rival oil in value and number of trades, and exceed it in price swings and instability (The Wall Street Journal, September 14, 1998, Sec.R, p.13).

Neither the human nor the mechanical systems are in place to manage this, though intense and expensive efforts are underway to cope. In the meantime security of supply suffers; there are accusations of manipulation and collusion; and the risk of stunning price spikes remains.

Alberta's Future: Increasing Demand, Uncertain Supply

In the 1970s demand for electricity in Alberta grew at up to ten percent a year. Even so, in the stability of a regulated environment enough new power plants were constructed to assure a reliable and affordable supply.

In contrast, the uncertainty created by the new regulatory regime in the 1990s means that three or four percent growth in demand is threatening to overwhelm the power grid. Albertans are concerned that there may not be enough electric power. The result could be blackouts that disrupt homes and businesses, and in severe weather could be worse than a mere inconvenience.

There is little experience with re-regulation in a market where power is in short supply. When electric power is in short supply prices tend to rise, and with the new regulations it is likely that Albertans will face higher prices for electricity in the next few years. It may be that these higher prices will encourage companies to build more power plants, eventually increasing supply and decreasing price.

On the other hand, major new power plants cost hundreds of millions of dollars and take two to five years to plan and build. Given the uncertainties of a re-regulated market and the unpredictability of long-term demand, companies are likely to be very cautious about building new power plants for general public supply. Most new plants planned in Alberta are cogeneration plants intended largely for industrial customers, and are unlikely to meet all the growing demand. As well, at least one major plant that was planned for the Wabamun area has been cancelled. It is perfectly possible that under the new regulations the market will decide that high prices and short supply are the optimal balance for investors.

This is a particular risk in an economy as cyclical as Alberta's. Alberta faces both a shortage of electric power and the threat of substantially slower economic growth in the next year or two. This may create a whipsaw effect for consumers who are caught in a system where current supply is tight, but future conditions are too uncertain to stimulate the huge investments required for new supply.

Faced with the risks of a highly volatile economy, unknown competition, unpredictable demand, and the rich rewards of a chronically short supply, the electric industry may be very cautious about expanding electric output for general public use under Alberta's new regulatory regime.

3 'Re-regulation' of Electricity: Who Wins? Who Loses?

Customers go to the Back of the Line

The next time your supper is cooking, your furnace is blowing, your lights are on, or the electricity meter at your business is spinning, consider this: The Wall Street Journal reports that wholesale electricity has surpassed natural gas as the commodity with the most volatile prices (September 14, 1998, Sec.R, p.13). Even under normal conditions electricity prices are twice as volatile as natural gas prices. In extreme circumstances such as heat waves or cold spells, nothing compares: the re-regulated pool price of electricity in some U.S. markets in 1998 ranged from $30 (US) to over $7000 (US) per megawatt hour in a period of days. This would be like the price of oil ranging from $12 (US) to $2700 (US) a barrel and back again. The implications are startling. While most consumers are still protected from this volatility by regulatory provisions, that protection is going to decline or disappear as re-regulation is implemented.

As companies nationwide look to California as an example of what's to come a disappointing fact is emerging: big cost savings many had expected may be years away.

The Wall Street Journal
September 24, 1997.
Sec. A, p.2.

In a market where the commodity is virtually a necessity of life, where there are relatively few suppliers, and where the laws of physics mean there is never inventory, price volatility seems to go in only one direction: up. There are price spikes; there do not seem to be price collapses. Currently in Edmonton, pool prices for electricity normally range from about $10 (Cdn) to $50 (Cdn) per megawatt hour. If experience with re-regulation in Britain and the U.S. is any indication, prices aren't likely to fall from these levels, but they are almost certain to spike upwards, at times by thousands of percent.

In the U.S., the confidence that electricity re-regulation will lead to lower consumer prices is losing strength. "As companies nationwide look to California as an example of what's to come [with electricity re-regulation]" reported The Wall Street Journal on September 24, 1997 (Sec.A, p.2), "a disappointing fact is emerging: big cost savings many had expected may be years away". A year later the same newspaper still had the same analysis: "So who'll end up better off as the market sets rates rather than regulators? It's still hard to tell" (Sept 14, 1998, Sec.R, p.4). Electric utilities in Alberta are making no promises about prices either. Alberta Power's vice-president of transmission, Jim Beckett, has said, "It would be irresponsible to make any claims about lower prices" (Canadian Business, Dec.11, 1998, p.79-83).

Britain has the most experience in the industrial world with re-regulated electric markets, having begun re-regulation a decade ago. Despite high hopes for dramatic drops in customer prices the evidence is not encouraging. When it comes to the potential beneficiaries of re-regulation, the customer seems to go to the back of the line.

Large and Small Electricity Consumers Disgruntled in Britain

Throughout the nineties debates have raged in Britain about the price of electric power. At times, electric companies grant rebates or offer discounts and prices seem to drop. But just as often it seems that customers face price rises. Accusations routinely fly between those who supply electricity and those who buy it, regardless of their size. The prices and regulations for electricity have become political footballs as customers call on regulators or make appeals to the Monopolies and Mergers Commission, as industrial users suggest boycotts, and as politicians to the highest levels are forced to act as referees. (The Times (London), November 11, 1993, p.25; January 28, 1994, p.22; January 23, 1996, p.24; The Sunday Times (London) September 4, 1994, Section 3, p.1.)

The British business and broadsheet press has been filled with stories concerning electricity privatization and re-regulation, and the number of stories has increased markedly as re-regulation has been implemented and controversies arising from it have emerged. It is worth looking at a few of the many cautionary examples of the British experience.

In 1994, ICI, a giant chemical manufacturer, launched a "savage attack" on the electricity industry, claiming its cost of electricity had jumped since privatization. The Times reported that ICI "...reckons its electricity prices have doubled since the electricity industry was privatized in 1990 and blames the inadequacy of the pricing structure and the failure of OFFER, the electricity regulator, to ensure stable and competitive prices" (The Times (London), November 19, 1994, p.25).

In 1996, both the central body of British electricity consumers and an array of industrial users demanded that regulators intervene in the electric market, calling for the powerful Monopolies and Mergers Commission to investigate

(ICI)...reckons its electricity prices have doubled since the electricity industry was privatized in 1990 and blames the inadequacy of the pricing structure and the failure of OFFER, the electricity regulator, to ensure stable and competitive prices.

***The Times**, November 19, 1994, p.25.*

the possibility that price savings were pocketed by the electric industry rather than passed on to consumers. (The Times (London), August 21, 1996, p.24; July 5, 1996, p.26; July 1, 1996, p.48; November 1, 1996, p.25.) In fact, the operation of the entire wholesale market for electricity was routinely called into question by industry and government. At the same time some major users, led by the huge grocery chain Sainsbury's, were refusing to pay portions of their electric bills as a protest against price increases, instability, and unfairness.

In 1997, the Chemical Industries Association, which represents ICI, Shell, BP, and other chemical companies, charged that prices had jumped unacceptably under re-regulation and privatization. In a striking statement the Association's director of business and environment showed deep disillusionment:

> *"We had expected electricity privatization to benefit the consumer. But the operation of the [electricity] pool is working against the interests of major industrial users and damaging their international competitiveness."* (The Times (London), January 14, 1997, p. 28).

These stories from Britain are more than mere anecdotes. They are part of a larger pattern. OECD analysis shows that electricity prices in Britain rose from 1983 to 1994, a period that includes the last six years of the public monopoly system and the first four years of the privatized and re-regulated system. This same information shows that among G-7 countries, Canadians consistently enjoyed the cheapest electricity. (OECD, International Energy Agency Statistics, Energy Prices and Taxes, Fourth Quarter, 1995.)

...the N.C.C. calculates that consumers paid almost £1 billion more than was necessary to electric companies from 1990 to 1995.

***National Consumer Council**, 1997.*

In 1997, the National Consumer Council (N.C.C.), an independent agency primarily funded by the U.K. Department of Trade and Industry, looked closely at the effects of electricity re-regulation in Britain in a major study titled Electricity Takeovers: the implications for consumers. They found private, re-regulated electric companies often fail to pass on savings to consumers. In fact, the N.C.C. calculates that consumers paid almost £1 billion more than was necessary to electric companies from 1990 to 1995. It also argued that electric companies focus too heavily on merger and takeo-

ver activity, which reduces competition and raises electricity prices because of the cost of takeover financing. (As the people of Auckland, New Zealand found through their five-week power outage in 1998, the cost of financing takeovers may also divert resources from important maintenance work.)

According to the N.C.C., re-regulation, privatization, and mergers have made it much more difficult to track pricing and cost trends, a distinct disadvantage for consumers. The N.C.C. found that there have been modest and gradual price declines for electricity in Britain, but these result mostly from regulatory pressures and savings that would have occurred regardless of re-regulation or privatization, such as the cut to the mandatory coal subsidy levied on power plants. (Electricity Takeovers: the implications for consumers, June 1997, National Consumer Council, London, England.)

Confused in the U.S.A.

Re-regulation in the United States has just begun in comparison to Britain. Some states have embraced it and some have rejected it. It is proving to be a more difficult and less fruitful exercise than was first anticipated. "The devil is in the details", Jeffrey Skilling told The Wall Street Journal on September 24, 1997. Skilling is president of giant Houston-based electric company Enron, which has set up a major presence in California and is considered likely by some analysts to do the same in Alberta. The 'details' range from the costs of new meters and aggressive marketing campaigns, to the cost of financing corporate takeovers, to the fact that about half of a typical small consumer electric bill is devoted to transmission and distribution costs, where potential savings through privatization and re-regulation are negligible.

If substantial savings cannot be achieved through re-regulation in the huge California market, where the cost of electricity is 50% above the U.S. average, might they be achieved elsewhere? Some New England states, where electricity costs are also steep, are trying other approaches to re-regulation, speeding it up, slowing it down, or absorbing some losses at public expense. But whether or not these will work in the long run is unclear.

Robert Anclien, a utilities expert with Anderson Consulting in the U.S., feels that big industrial users will see lower electric rates, but as for residential users, "...There may or may not be savings". The electric industry will get more efficient, he suspects, but there is no guarantee that consumers will benefit. (The Wall Street Journal, September 14, 1998, Sec.R, p.4.) The British experience may be more likely, where shareholders rather than consumers benefit. This wouldn't be surprising in that many of the same corporate giants now own electric utilities in both the U.S. and Britain.

But even some big industrial users are going to be unhappy. The chaos that disrupted the Midwest U.S. electricity markets in the summer of 1998 alarmed many key players on the American electricity scene. When re-regulated wholesale prices jumped to thousands of dollars a megawatt hour, some industries called for greater regulation, including price caps. Steel Dynamics, one of the industrial users hardest hit by the outages and price spikes, filed a formal complaint with the F.E.R.C. in Washington, stating that "...the situation in the Midwest is in a state of crisis that constitutes an emergency" (The Wall Street Journal, July 10, 1998, Sec.A, p.2).

Tepid Consumer Response

The disappointing benefits for consumers are undoubtedly one reason that interest and support for re-regulation and privatization among consumers is muted. Some customers do save money: a pilot project by New York State Electric & Gas found that the 14 businesses that participated saved an average 14.5% on electric bills, though this is in a setting where electric prices are very high. Other companies see no benefits to re-regulation. In analyzing consumer response, The Wall Street Journal quoted an executive with a California food company, who noted that savings were as little as one percent: "For most companies there isn't much in the way of savings" (September 24, 1997, Sec.A, p.2). When, after a decade of preparation, re-regulated retailing of electricity fully reached homeowners in Britain in the autumn of 1998, industry analysts expected 90-95% of customers to remain with their existing electric suppliers, and fewer companies offered retail electricity than was anticipated (The Times (London), September 14, 1998, p.44).

At least some electric companies in the U.S., including the giants Enron and Utilicorp United, have had poor results from attempts at retailing electricity services (The Wall Street Journal, September 14, 1998, Sec.R, p.4). And a 1997 pilot project by electric companies in Pennsylvania discovered that residential and small business consumers were confused by electric re-regulation, and felt the savings were small and the risks high. "As Pennsylvania found out, selling consumers on the benefits of utility deregulation may be tougher than some companies and politicians expected" (The Wall Street Journal, December 15, 1997, Sec.A, p.1).

The Creep Toward Private Re-regulated Monopolies

If the skeptical attitude to price improvements in the U.S. parallels the British experience, so does the concern that meaningful competition is declining. In Britain, the Monopolies and Mergers Commission is frequently investigating monopolistic and anti-competitive trends in the industry, and the government has had to block various mergers and takeovers. In the U.S., The Wall Street Journal reported that "Deregulation has already led to rapid consolidation among utilities... that could lead to diminished competition and higher prices down the line" (September 14, 1998, Sec.R, p.4).

Deregulation has already led to rapid consolidation among utilities... that could lead to diminished competition and higher prices down the line.

The Wall Street Journal
September 14, 1998, Sec. R, p.4.

Proponents of electricity re-regulation foresee highly competitive electric companies driving prices down and services up. But others see it differently, and are especially worried about declining competition as mergers reduce the number of companies, and new suppliers are discouraged by the high cost of entering the market: "Small electricity consumers will end up paying more for their power in another decade because there will be fewer suppliers competing for their business" predicts energy economist Eugene Coyle (The Wall Street Journal, September 14, 1998, Sec.R, p.4). He is concerned that energy producers will reach a 'detente' and stop building plants in order to raise prices.

He is not alone. In 1997, the top antitrust enforcer in the U.S., Assistant Attorney General Joel Klein, suggested that Congress should establish a 3-year moratorium on electricity utility mergers as re-regulation is implemented. It is difficult, he said, to see where competition will come from in such a rapidly shifting climate (The Wall Street Journal, November 6, 1997, Sec.B, p.18).

In Britain, re-regulated electric companies have been favourite targets for takeovers: of the 12 publicly-owned Regional Electric Companies that were originally privatized, none remain independent. One concern about declining competition is the trend toward global electricity conglomerates that will attain unhealthy levels of market power. Government, major industries, and smaller consumers in Britain have watched this trend with worry, and some mergers have been blocked. (The Times (London) April 25, 1996, p.1, p.25; July 5, 1996, p.26; October 29, 1996, p.29).

A different concern about market concentration comes from the trend toward integrated electric, gas, water, and telecommunications utilities. In other words, single companies are working toward offering complete packages of electricity, telephone, gas, cable TV, and water services. Supporters of this trend argue that there are economies of scale, overlapping rights of way, and other benefits. But with this concentration the obstacles to market entry get higher and higher for new competitors; the risk of massive market concentration jumps; the opportunities for price and supply manipulation multiply; the regulatory headaches intensify; and the mismatch between consumers and suppliers completely disrupts the basic balance necessary for a free market. (Electricity Takeovers: the implications for consumers, National Consumer Council, London, 1997; The Times (London), September 14, 1998, p.44)

Priority One: Shareholders

Most customers do not win much from electricity re-regulation, but shareholders of electricity companies usually do. Reflecting on six years of experience with re-regulation and privatization in Britain, The Times wrote in a front page story:

"One of the reasons for splitting the industry at the sell-off six years ago was to introduce more competition and bring down the price to consumers. However, domestic consumers have benefited only marginally, while shareholders have seen their holdings soar and have received many special pay-outs." (April 25, 1996, p.1).

The traditional regulatory framework for utilities had independent regulators balancing the interest of shareholders and customers. The new regulatory framework presumes that free market forces will force shareholders to account for customer interests. In practice, market forces in the electricity industry are not, and perhaps can never be, free enough to respond fully to customer concerns.

In the first six years of privatization and re-regulation in Britain, 43,000 jobs were cut.

The Times
April 25, 1996, p.1

Because re-regulation appears to reduce the security of returns to shareholders from utilities, managers are expected to routinely earn returns that regulators would once have found intolerably high. To do this they must cut costs on such things as maintenance, service, and new equipment, and keep prices as firm as possible. The trends suggest this is exactly what is happening. In the first six years of privatization and re-regulation in Britain, 43,000 jobs were cut (The Times (London) April 25, 1996, p.1). In the U.S. from Florida to the Pacific northwest, government regulators and electrical engineers are concerned that staff and maintenance cuts stimulated by actual or threatened re-regulation have already reduced electrical reliability (Electrical World, May 1997; Florida Public Service Commission Review of Florida Power and Light, cited in The Miami Herald, January 10, 1998). Yet consumer prices have remained stubbornly high, except when governments or regulators intervene despite re-regulation.

Britain offers the longest and clearest evidence on shareholder returns with re-regulated utilities. As part of the process of re-regulating electric utilities, the publically-owned electric companies in Britain were privatized through a series of public share offerings from 1991 to 1995. Through that period share values in these companies easily outperformed the FT-SE 100, Britain's main stock market index (The Sunday Times (London) August 6, 1995, sec.4, p.1). In many cases share values more than doubled from 1991 to 1995.

For example, shares bought in the initial public offer in National Power rose from 175p per share in 1991, to 383p per share in 1995, and those in PowerGen rose from 175p in 1991 to 490.5p per share in 1995. An investment of £1000 in Eastern Electric in 1990 reached £1,860 at the end of 1991, £3,302 at the end of 1994, and £3,863 by the summer of 1995. And while the electric grid in Britain was valued at just over £1 billion when it was privatized in 1989, Salomon Brothers estimated its value at £5 billion by 1994. Even among the electric companies whose share values did not perform well, the strong dividends still made them attractive investments. (The Times (London) September 7, 1996, p.4; The Sunday Times (London), October 16, 1994, Sec.3 p.1; August 6, 1995, Sec.4, p.1.)

In fact, these companies paid such handsome dividends and other bonuses to shareholders —without providing substantial price cuts or service improvements— that industry and consumer groups cried foul. Government regulators intervened with price controls and other measures in 1995.

Despite these interventions share prices and shareholder benefits remained excellent. When restrictions on mergers were relaxed that same year, takeover bids drove share values even higher. In 1997, in response to more criticisms from a wide range of consumers and regulators the British government imposed a windfall tax on electric utilities. And still, dividends remained excellent and share values strong. So despite price controls and rollbacks, and a windfall tax, electric utilities in Britain in the long run are strong performers for shareholders, a story that has been well-covered in the business press. (See for examples The Sunday Times, (London) July 9, 1995, Sec. 2, p.6; The Times (London) September 7, 1996, p.4, and January 14, 1997, p.25.)

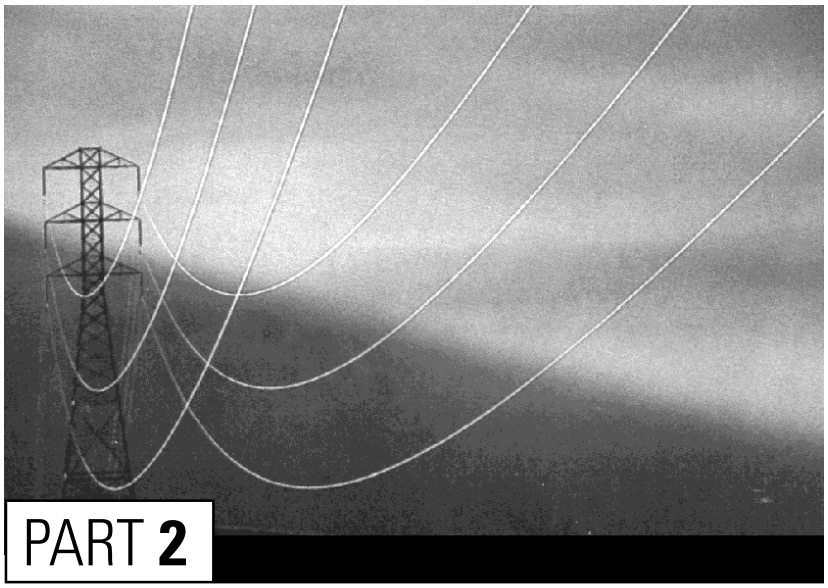
The National Consumer Council in Britain has looked carefully at the imbalance between shareholder and customer benefits in the privatized and re-regulated electric market. In its 1997 report Electricity Takeovers: the implications for consumers, it cites some examples and case studies as part of its analysis. Yorkshire Electricity, for example, announced a £110 million buy-back of its own shares and a 34% dividend boost for shareholders in

1996, while offering a 6.6% price cut. However, almost all of Yorkshire's price cut stemmed from the government's reduction to the fossil fuel levy. The N.C.C. found that after taking this into account Yorkshire's prices were reduced just 1.1%. This pattern appears to be common throughout the industry.

The N.C.C. concluded that while there have been modest price reductions, mostly as a result of regulatory intervention on behalf of consumers, shareholder's gains have been both "far greater" and "more immediate".

In Canada, some power generators are anticipating wonderful returns from re-regulation. The Noranda Forest company, for example, operates a 238-megawatt hydro generating station near one of its mills in Quebec. The asset value of the station is about $35 million (Cdn). But Noranda estimates the power operation may be worth $400 million (Cdn) because of potential sales to the re-regulated electricity market in the U.S., where Noranda anticipates power supplies from other energy sources will decline. Other companies across Canada are considering similar opportunities (The Wall Street Journal, May 6, 1998, Sec.B, p.9).

In the U.S., where re-regulation started more recently than Britain, the long-term trends are not clear, but investors seem confident of good returns. The market for power plants is strong, with even 30-year-old coal-fired plants selling at more than three times book value (The Wall Street Journal, October 26, 1998, Sec.B, p.4). Only time will tell whether these investments are wise, but if the British experience is any indicator, shareholders of electricity companies in a re-regulated environment stand to do very well indeed.



PART **2**

EDMONTON POWER

4 Edmonton Power: Deep Roots, Strong Growth

Reliability, Profitability, Customer Service

Edmonton Power is Canada's largest municipally-owned fully-integrated electrical utility, and the second largest electrical generator in Alberta. It owns three plants with a total capacity of 1701 megawatts: the coal-fired Genesee plant (820MW) and two gas-fired plants, Clover Bar (660 MW) and Rossdale (221MW). As well, Edmonton Power operates over 560 kms. of transmission wires and 9,000 kms. of distribution lines. It serves about 230,000 residential customers and 27,000 commercial customers. Edmonton Power is operated under the umbrella of the City of Edmonton's power and water utility, 'Epcor'.

Edmonton Power is reliable and profitable. It is consistently in the top quarter of Canadian electrical utilities in terms of both the low frequencies and the short durations of power outages. In 1997, the net income for Edmonton Power was $91.0 million on revenues of $823.7 million. Edmonton Power easily contributed the largest portions to Epcor's $116.3 million net income, and to Epcor's dividend of $66.9 million paid to the City of Edmonton. Edmonton Power's return on average equity in 1997 was 14.9%.

Edmonton Power achieved these results while reducing customer prices. From 1994 to 1999 its residential rates fell 10.5%, adjusting for inflation.

A Long History of Success

Edmontonians are accustomed to success from their power company. Formed by local residents as a private company in 1891, the Edmonton Electric Light Company first operated a coal-fired steam plant near the Low Level Bridge. In 1901 it was sold to the City of Edmonton for $13,500, and three years later the old plant was replaced with a new one built at the present location of the Rossdale Generating Station.

Edmonton Power has grown along with the city it serves. The output of the original 1905 generator at Rossdale was 450 kilowatts (kW), and this expanded decade-by-decade as demand for electricity grew. At its peak in the 1960s the Rossdale station generated 405 megawatts (MW), 900 times the capacity of the 1905 station. By then, Edmonton needed more power

than even the greatly enlarged Rossdale plant could generate. In the late 1960s the Clover Bar Generating Station was built along the North Saskatchewan River at the city's eastern edge. Four turbines were installed in the plant during the 1970s, so that by 1979 Edmonton Power's total generating capacity was 1,050 MW.

Another major expansion followed on the heels of Clover Bar. Beginning in the late 1950s City Council and Edmonton Power began testing and acquiring leases for coal in the Genesee area, 50 kms. southwest of the city near the North Saskatchewan River. With Alberta's power demands growing by ten percent a year in the 1970s, Edmonton Power planned a huge new coal-fired plant at Genesee. Construction began in 1982, but completion of the plant was delayed because of the province-wide economic slowdown in the 1980s. The first unit began operating in 1989, and a second in 1994. As the more efficient Clover Bar and Genesee plants have come on stream the capacity of Rossdale station has been reduced to 221 (MW), though plans are underway to expand it once again.

A Leader in Innovation and Technology

Edmonton Power has always stayed on top of the electrical industry. Even in 1911 it offered the second lowest rates in the country. In 1928 it installed one of the world's first 10-MW steam turbo-generators at Rossdale; in 1931 it operated the largest steam boiler in Canada; and in 1959 the Rossdale plant operated the largest gas turbine generators of their kind in Canada. The Clover Bar plant incorporated the first spring supported foundation in North America, providing a smoother and quieter operation. Edmonton Power's commitment to leading edge technology is shown in the Genesee plant, which has the lowest operating costs and highest efficiency ratings of any in North America.

Environmental concerns have provided particular challenges in the 1990s. Since 1992 the Clover Bar Station has burned methane recovered from a nearby landfill to help fuel its turbines. Edmonton Power was one of the first companies in Canada to do this, and remains the only one in Alberta doing so. Methane is a particularly harmful contributor to climate change. In 1997, the Clover Bar generating plant became the first fossil fuel plant in Canada to achieve ISO I400I registration, and Edmonton Power won a national award for a community tree-planting program (Epcor 1997 Annual Report, p.5).

Edmonton Power is a signatory to a 1995 agreement between the Canadian Electricity Association and Natural Resources Canada, committing the company to reducing and offsetting carbon dioxide emissions. Carbon dioxide is a major contributor to climate change, and an important target for environmental programs. Edmonton Power plans to reduce annual carbon dioxide emissions by one million tonnes by the year 2000.

Locally Grown

Edmonton Power's roots lie directly with the early pioneers of the city. Since the City of Edmonton bought the company from local shareholders in 1901 there have been occasional calls to sell it. In 1928 an offer was made to buy Edmonton Power by Canadian Utilities, which along with Alberta Power is now a subsidiary of Atco. City Council voted unanimously to reject the offer. In 1930, Calgary Power (the forerunner of Transalta) proposed unsuccessfully to buy Edmonton Power. Opponents to the sale rallied around sayings such as, "Calgary Power will not bring industries to Edmonton. The motto of the Council should be Edmonton First!" In 1983 Alderman Paul Norris called for the city "empire" to be cut back by selling the Genesee plant. Despite these debates Edmonton Power has remained in the hands of the City of Edmonton as a profitable, reliable operation, leading in technology, service, and value.

5 Privatizing Edmonton Power: Issues to Weigh

The citizens of Edmonton through their city government are in the unusual position of being both the sole shareholder and the dominant customers of Epcor and its subsidiaries, the largest of which is Edmonton Power. City Council faces a confusing situation when it considers the future of Edmonton Power. This confusion is created almost entirely by regulatory changes being enacted by the Alberta Government.

As electricity customers, most Albertans face substantial risks from these regulatory changes. Albertans have enjoyed among the least expensive and most reliable electricity in the world for decades. It would appear they have more to lose than to gain from an overwhelming change to the electrical system. The evidence from jurisdictions where re-regulation has been tried is not particularly encouraging. Even though most of these jurisdictions, such as Britain and California, began re-regulation with electrical rates far above Alberta's, they have not seen privatization and re-regulation lead to significant price drops. Where price drops have occurred, as in Britain, they result more from regulatory and government action than from market forces. Reliability, which is excellent in Alberta's electrical system, seems to show more signs of declining than improving in re-regulated jurisdictions. In short, electricity has not yet proven to be a good product for competitive and open market forces.

There have been various responses to the changes proposed for Alberta. Some, including Transalta, have supported them. Others have questioned and criticized them, including Alberta Power and the Mayor of Calgary. The City of Medicine Hat, which like Edmonton owns its own integrated electrical utility, has achieved a unique solution to the confusion by being legislatively exempted from major portions of re-regulation. This may be an option worth pursuing for the City of Edmonton as well.

Shareholders of electrical utilities have generally done very well after the kinds of regulatory changes proposed for Alberta, and there is little reason to think that Edmonton Power will not earn a strong dividend for the City of Edmonton well into the future. It is worth noting that shareholders in Transalta and Alberta Power do not seem to be proposing mass sell-offs.

The risks for the City of Edmonton in continuing to own Edmonton Power are not excessive. If, despite this, Council wishes to sell the company there are some important issues to weigh.

Who Will Buy?

In response to regulatory changes Edmonton Power has been divided into several subsidiaries, including: Edmonton Power Generation Inc., Edmonton Power Transmission Inc., and Edmonton Power Distribution Inc. In considering whether to sell some or all of these companies City Council must ask: who will buy? Edmonton Power's assets include the generating stations at Genesee, Cloverbar, and Rossdale; the high-voltage transmission lines that carry the power from these plants to the low-voltage distribution system; and the distribution system itself. Depending on regulatory decisions and market conditions, these could be sold either as a single integrated system or as separate entities to different buyers.

Genesee's generating units "...have the lowest operating costs and the highest efficiency ratings of any in North America..." and can be readily expanded.

***Epcor 1997 Annual Report**, p.21.*

In whole or in pieces, Edmonton Power is likely to attract strong buyer interest. It is a low-cost producer with high quality assets, selling in a market where supply is short. It exceeds industry standards in virtually every area. There are convenient and reliable supplies of natural gas near its Clover Bar and Rossdale plants. There is a long-term supply of low-sulphur coal next to the Genesee plant, first secured when Edmonton City Councils began testing and buying coal leases in the area in the 1950s and 1960s in anticipation of future growth. Genesee's generating units "...have the lowest operating costs and the highest efficiency ratings of any in North America..." and can be readily expanded (Epcor 1997 Annual Report, p.21). All three of Edmonton Power's generating plants have excellent access to water supplies, markets, and the transmission grid. Its transmission and distribution infrastructure is in excellent condition, and it enjoys cordial customer support and good labour relations.

A sale is likely to take one of two possible forms. On one hand, one or a few large corporations could buy the assets directly, similar to the way that EdTel was sold to Telus. On the other hand, City Council could undertake an initial public offering of shares to a wide market, giving individuals the

chance to buy shares along with major investors. In addition, City Council could sell either a minority or a majority interest in any of the assets. The following discussion assumes a majority sale. While the issues identified below would be somewhat different with a minority sale, they do not disappear, for minority shareholders could pressure Edmonton Power in the same directions as a majority shareholder.

If Edmonton Power's assets were to be sold directly to one or a few corporations it is virtually certain that those would be giant utility companies based in other cities, quite possibly other countries. Potential buyers include a few Canadian companies, or any of several American, British, or other foreign companies. Among those reported to have some interest in buying Edmonton Power is AEP Resources, the Toronto-based subsidiary of a very large American utility company, AEP (The Edmonton Journal, January 21, 1999, p.B3). The Wall Street Journal reports that AEP is the largest utility in the American Midwest, operates the largest transmission system in the U.S., and was caught up in controversy after power outages in the U.S. Midwest in June, 1998 (July 10, 1998, Sec.A, p.2; July 24, 1998, Sec.A, p.2). Another company expressing potential interest is Alberta Power, part of the Calgary-based Atco group that already owns the natural gas utility in Edmonton. If City Council decides to sell Edmonton Power it is likely that many other companies would look carefully at the opportunity, including offshore companies wanting to expand into North America.

On the other hand, instead of selling to one big buyer City Council could sell through an initial public offering of shares (IPO). This would allow small investors, including individual Edmontonians, to buy shares in Edmonton Power. This approach was taken by the British government when it privatized its electrical companies. Shares in privatized British electrical utilities were popular with small investors and have generally performed very well.

However, the broad shareholder base this initially created in the U.K. has narrowed because of takeovers and mergers. There has been serious concern about the increasing concentration of electric utility ownership in fewer hands, stimulating various government investigations and rulings (The

Times (London) April 25, 1996, p.25). As well, the rapid rise in foreign control and ownership of the U.K. electric industry has been controversial. The Times reported that by 1996, six years after privatization began, "U.S. companies...now own or influence more than 25 per cent of the U.K. industry", and were hoping to raise that level.

Losing Another Head Office

Experience elsewhere strongly suggests that control of Edmonton Power would move out of Edmonton if it were sold. If it were sold through a direct sale, control of the company would likely move elsewhere immediately. If it were sold through an initial public offering a move may take longer, but is still likely to occur. Even with a broad initial shareholder base, Edmonton Power would be such a tempting target for takeover and merger activity that it would be unlikely to remain an independent Edmonton-based corporation in the long run. For example, none of the twelve Regional Electric Companies privatized in Britain have remained independent.

Were control to be shifted out of Edmonton, various functions now performed in the city would be integrated into the new parent company. Head office functions relating to the assets that were sold would no longer be needed in Edmonton, and Epcor's head office would shrink, possibly dramatically. City Council needs to weigh the issues involved in losing one of the last large corporate head offices in Edmonton, including the economic costs (high quality jobs and high quality spin-offs such as legal, accounting, and design activity) and the symbolic changes to Edmonton's image to both its own citizens and to outside investors as being at the periphery of the business world.

Losing Customer Service and Jobs

When new owners take over an electric utility there are several areas they typically look at to recover the costs of their investment. The electricity industry is capital intensive and the fixed costs are high, so the easiest target for savings is staff lay-offs in areas such as management, maintenance, and customer service. In Britain, 43,000 jobs were cut from the electric industry in the first six years after privatization and re-regulation (The Times (London) April 25, 1996, p.1).

In addition to head office functions, customer telephone centres and service dispatch centres are likely candidates to be moved from Edmonton to remote locations. For example, Entergy, a big New Orleans-based private utility, closed its local offices and established one automated customer call centre to cover Texas, Arkansas, Louisiana, and Mississippi, saving about $100 million. Edmontonians made over 429,000 phone calls to Epcor's customer service centre in 1997. With the sale of Edmonton Power, they could end up dialling to an automated call centre hundreds or thousands of miles away when they have service issues or power outages, something increasing numbers of Americans face. (Arkansas Democrat-Gazette, August 10, 1998; Epcor 1997 Annual Report.)

Another area where staff cuts are common is in maintenance such as upgrades, repairs, and tree trimming. In some cases these may lead to justifiable gains in efficiency. On the other hand, they may involve undesirable cuts to safety margins and performance levels that can take years —or unusual conditions— to become evident. Nova Scotia Power, a crown corporation privatized in 1992, cut its work force by about 20% in the next five years, from over 2400 to about 1900. In December 1997, power outages caused by severe weather lasted up to three days in some areas, and drew accusations that staff cuts contributed to the scale and length of the outages. Nova Scotia Power denied the charges, saying that additional crews would have made no difference, though not all observers agreed (The Halifax Herald, Dec. 2, 1997; correspondence).

The difficulty of drawing a direct connection between reliability and cutbacks is reflected in a report of the Florida Public Service Commission, which oversees electric utilities. In its review of a steady decline in the quality of service, and a "consistent increase" in the average frequency and length of outages from 1992 to 1996, it said, "Though it is difficult to identify precisely where and how, it appears that FPL's [Florida Power and Light's] reductions to operations and maintenance costs over the period studied have also reduced distribution service quality...". Unlike officials in Nova Scotia, officials with FPL did not dispute this kind of statement. The vice president of distribution for the company said, "We do not disagree — we did see deterioration in electric service", and "Clearly, we were not

doing all the things we were doing in the past. It got to the point where it was no longer acceptable" (Florida Public Service Commission Review of Florida Power and Light, cited in The Miami Herald, January 10, 1998; plus press reports).

Finally, the British experience is that privatized electrical utilities operating under re-regulation can be surprisingly heavy-handed in dealing with customers. British electric utilities "...forced their way into more than 25,000 homes..." in 1996 to install pre-payment meters or to take other action against delinquent customers, drawing public criticism and rebuke. Given that electricity is almost a necessity of life in Edmonton at certain times of the year, City Council may wish to consider how it would prefer delinquent customers to be handled. (The Times, February 6, 1997, p.24.)

Weather Extremes and Power Failures

Power failures are more likely to occur in extreme weather, when the need for electricity is greatest. In the United States this is often during heatwaves, when air conditioners are in heavy use. Blackouts in these circumstances lead to discomfort, and can pose health threats for frail people susceptible to the heat.

In Alberta the risks arising from power outages is greatest during the winter, when long hours of darkness create heavy demands for lights, and cold weather causes furnaces to run hard. In central Alberta a prolonged mid-winter power outage (eg. 24 to 72 hours) could be catastrophic, with wide-spread property damage and major health risks. This is a major reason that high reliability has been such a priority for Edmonton Power and for the Canadian electrical industry in general.

City Council should be aware that all the following are distinct possibilities if it sells Edmonton Power: the loss of head office command to another city or country; the decline of corporate sensitivity to the needs and situation of Edmonton as it becomes a small profit centre in a giant utility; a cut in maintenance and other staff; and an automated customer call centre located in a distant city or country. The implications of any or all of these are that the risks of severe effects from a midwinter power failure rise markedly.

Potential Conflicts of Interest

Electric utility privatization has been plagued with concerns about conflicts of interest. Enormous sums of money are involved, and individuals and corporations can make spectacular gains. In Britain this has raised serious questions concerning individual executives and advisors who have made personal fortunes from privatizations. The scale and nature of conflicts of interest took some time to become evident. In 1994, four years after privatization began, it became public that all twelve chairmen of the regional electric companies (the publicly-owned distribution companies that had been privatized) had made at least £1 million out of privatization, and six had made £2 million. In addition, 63 senior managers and directors of these companies had earned an average of £466,000 each in share options. (Coventry Evening Telegraph and PA News Service, Dec. 23, 1994).

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Coventry Evening Telegraph and PA News Service
December 23, 1994

The tumult over conflicts of interest continued for years as more information came out. The chief executive of Scottish Power saw his pay rise from £63,175 before privatization in 1991, to £255,218 in 1993-94. The chairman of Northern Electric had his pay rise from £75,151 in 1989-90 before privatization, to £208,000 in 1994. In cases where the value of assets was underestimated in Britain, and then rose substantially after privatization to market levels, managers with initial share options did particularly well. (The Times (London) August 12, 1994, p.4; The Sunday Times (London), October 16, 1994, Sec.3, p.1.)

The debate over fair compensation and conflict of interest also embroiled senior managers who benefited handsomely from takeovers and mergers. The Times reported that by 1996, utility chiefs had enjoyed a windfall of over £22.5 million "...after their privatized companies succumbed to takeover bids" (December 28, 1996, p.23). The debate was fuelled by consumer disappointment and anger over costs that did not fall and services that did not improve. (See also The Times (London) July 1, 1995, p.1, p. 23; Nov.16, 1996, p.27; Dec.31, 1996, p.25.)

Just as major banks and their subsidiaries sell a range of products such as RRSPs, business and car loans, mortgages, and estate planning services, they also sell IPO and privatization services. In recent years privatizations have provided significant opportunities for banks to sell their services (eg. the privatizations of Air Canada, Petro-Canada, Telus, and Nova Scotia Power). Utility privatizations are particularly attractive for banks to promote because they tend to be large companies with low risk.

As an example of bank sales efforts in this area, in 1994 RBC-Dominion Securities proposed to the City of Calgary that all or some of Calgary's electricity, water, and sewer assets be privatized through the services of RBC- Dominion. In their presentation, RBC-Dominion encouraged privatization on grounds that included the "current attractiveness of the stock market", and predicted that "We... anticipate that consumer rates would be regulated by the Alberta Public Utilities Board... ensuring the continuance of reasonable, stable utility rates in the City of Calgary". Calgary City Council eventually rejected RBC-Dominion's proposal. Meanwhile, stock markets are now wavering, the Alberta Public Utilities Board has been replaced, and regulated stable utility rates will soon be gone, unless the provincial government changes course. (A Presentation to The NAP Committee of the City of Calgary, RBC-Dominion Securities Investment Banking, April 19, 1994.)

Edmonton City Council would be prudent to watch carefully that the organizations and individuals advising it on the sale of Edmonton Power have a complete arm's length relation to the process. If Edmonton Power were sold as a direct sale the fees paid to advisors and consultants would be at least several million dollars. (The fees and disbursements for the sale of EdTel, a much smaller company than Edmonton Power, were over $3.9 million, almost double the amount budgeted.) In addition a sale of this magnitude opens major opportunities for banks to arrange lucrative financing.

An IPO for Edmonton Power could involve shares worth up to $1.5 billion or more, which could be easily the largest IPO in Canada in any given year. As a fairly low-risk offering the fees paid to a securities firm or bank for managing the IPO could range anywhere from one to six percent of the total value of the share sale, or $15 to $90 million dollars. An additional benefit to advisers is the experience and credibility they would gain from the sale of Edmonton Power. Some business analysts regard the potential privatization of Edmonton Power as a bellwether for the future of public utilities in Canada. If it proceeds, those who work on it could then position themselves well to handle other potential sales across the country, such as the possible sale of Ontario Hydro.

Because of potential conflicts of interest, City Council should insure it is getting impartial information from its advisers, consultants, and managers. Before making any decisions City Council may wish to consider legal and contractual mechanisms to prevent advisors, directors, and managers in the privatization process from benefiting from the process. These mechanisms might include a form of restrictive covenant; provisions in the procedures used to appoint directors; or changes to by-laws. By doing this, City Council can increase its confidence that it is getting objective information.

Other Issues

A number of other issues will emerge if the decision is made to sell Edmonton Power. The mismanagement of pension funds by privatized electric utilities has sometimes caused problems and led to legal disputes. In Britain, the Pensions Ombudsman found that some pension surpluses from the electricity industry were wrongly used after the industry was privatized. The sums involved were in the hundreds of millions of dollars (Cdn). The fate of Edmonton Power employee pension funds (historically paid to the Local Authorities Pension Plan) would need to be clearly determined. (The Times (London), Dec. 5, 1996, p.25.)

Environmental pressures are expected to increase on the electric utility industry, especially as a result of the Kyoto accord and its commitments to reductions in the emission of greenhouse gasses. Coal-fired power plants are major sources of carbon dioxide and other greenhouses gasses. Of the

three major electric utilities in Alberta, Edmonton Power is least dependent on coal. Just under half of Edmonton Power's generating capacity is supplied from the coal-fired Genesee plant, with the rest coming from the gas-fired Rossdale and Clover Bar plants. This proportion will become even more favourable if the planned expansion to Rossdale proceeds. By comparison, the large majority of the Alberta generating capacity of Transalta and Alberta Power is coal-fired. To Edmonton Power's further advantage, Genesee is the most efficient of the major coal-fired plants in Alberta (Sundance, Genesee, Keephills, Wabamun, Sheerness, and Battle River).

The timing of the sale, if it were to proceed, would be absolutely crucial. While RBC- Dominion Securities advised Calgary City Council that the mid 1990s were a good time to sell utility assets because of the strong equities market, the current condition of equity markets is vulnerable and mixed. The effects of this on a sale would need to be weighed. As well, the experience of the British government with its privatizations offers several lessons. Among these, it appears that hurried, massive sell-offs tended to get lower returns than slow, carefully staged sales. (The Times (London), Dec. 16, 1998, internet edition; The Flotation of Railtrack, Report of the Comptroller and Auditor General, London, Dec. 16, 1998, press release.)

Another issue is the potential role of Edmonton Power, and the impact of regulatory change, on Edmonton's economic development. The Edmonton region has a large chemical industry and many metal fabrication businesses. The chemical and metal industries appear at times to have been particularly unhappy with electricity re-regulation in Britain and the U.S., and it may be worth focussing on the impact of electricity re-regulation on the stability and growth of Edmonton's economy.

6 Conclusion

This study was undertaken to provide a broad sense of the issues relating to both the re-regulation of the electrical industry, and the potential sale of Edmonton Power. Even with very limited resources and a short time frame it became immediately apparent that re-regulation of electricity is a very controversial and complicated process that has not shown the service improvements or cost benefits (industrial or residential) that were originally wished. It has, however, served the interests of shareholders well, and has benefited many advisers, consultants, directors, and managers in the electric utilities and finance industries.

Re-regulation is not a freight train bearing down on the citizens of Edmonton

Britain has moved the farthest with re-regulation and privatization. In the United States some states are proceeding rapidly with regulatory change, most are going slowly, and some are not proceeding in any meaningful way. There is widespread skepticism about the value of re-regulation.

There is no need whatsoever to hurry with a decision on privatizing Edmonton Power. By all accounts it is a high performing company that meets the needs of its shareholder and customers well, and is unlikely to suffer a decline in its value. While technological changes are occurring in the industry, the industry does not appear to be near the kind of revolutionary transformation that has hit the telecommunications industry. Fuel cells, distributed generation, combined cycle turbine generators, windmills, and other developments are worth monitoring closely. They may present as many opportunities as threats to Edmonton Power's viability. It is a company with a strong record of welcoming new technology.

Environmental concerns about coal-burning power plants are not a particular threat to Edmonton Power either. Over half its generating capacity is from gas-fired plants, and this proportion will increase if the Rossdale plant is expanded. Further, the Genesee plant is the most efficient of Alberta's coal-fired plants.

This study found no compelling evidence to support the sale of Edmonton Power. Indeed, it may be more important than ever that the citizens of Edmonton control a fully integrated power utility, given the problems with price and supply that are likely to come with re-regulation.

When Edmonton City Council considers the future of Edmonton Power it must consider the issues raised in this report. It should pursue advice from a broad range of sources, and pay particular attention to those sources which are at a full arm's length from the sale process. If this Council proceeds with the sale of Edmonton Power, it will be taking a momentous decision with permanent and irreversible implication for the future of Edmonton. It must be taken with utmost care.

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