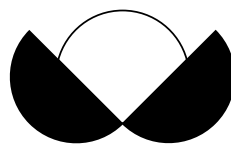


Public Power and the Political Economy of Electricity Competition

The Case of B.C. Hydro

by Marjorie Griffin Cohen

June 2002



Canadian Centre for Policy Alternatives – BC Office

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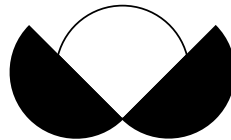
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Introduction

The deregulation and privatization of electricity is occurring rapidly throughout North America, and is threatening the public control of electricity, despite the inability of electricity deregulation to deliver on the promises of lower prices, a secure electricity supply, or increased economic and technical efficiency.

THE ELECTRICAL INDUSTRY IS A VERY BIG PUBLIC BUSINESS THAT NOW HAS THE potential to provide the private sector with huge profits. The deregulation and privatization of electricity is occurring rapidly throughout North America, and is threatening the public control of electricity, despite the inability of electricity deregulation to deliver on the promises of lower prices, a secure electricity supply, or increased economic and technical efficiency. Even countries like Canada, countries that have no supply and prices problems that need “fixing,” are succumbing to the lure of an international, deregulated electricity market. A complex web of factors conspired to spread the deregulation process, even in jurisdictions where existing public utilities serve the population exceedingly well.¹ But this shift is radically altering the character of electrical energy as a common resource.

Until fairly recently it was widely accepted that the electrical industry was best served by large-scale, highly regulated monopoly production. In Canada this meant that electricity was overwhelmingly in the public sector, mainly because the capital costs involved in providing electricity were larger than private corporations wanted to risk. In British Columbia over the last forty years an extensive infrastructure of reservoirs, generating stations, transmission lines, and local distribution and service systems was built by B.C. Hydro to provide electricity to most businesses and residences in the province. This infrastructure did not come easily or without huge costs. Creating large reservoirs and transmission systems required a great deal of money, but even more significantly, caused damage to wildlife habitat, local communities

and the socio-economic way of life of many aboriginal people. But however unpopular, environmentally damaging, or mistimed were the development of these hydro-electric mega-projects, they now provide a secure, reliable supply of inexpensive and “clean” electricity through a system that has been paid for by the people of the province.

This public ownership and control over electricity in this province is about to change dramatically. The most radical proposals are from the Fraser Institute and its supporters. These groups, claiming that any business in the public sector is inherently bad, call for the privatization of B.C. Hydro by breaking it up into several distinct corporations and offering them for sale.² Other measures, such as those proposed by Dr. Mark Jaccard (former Chair of the B.C.

Utilities Commission, the body that regulated B.C. Hydro), are more incremental and involve competition in generation and permitting private electricity producers access to the transmission and distribution systems.³ These initial calls for deregulation, before the debacle of deregulation in California, promised consumers “greater choice, customer responsiveness, lower prices and less risk.” They also promised, “greater social benefits [that] include the economic development and job creation resulting from lower prices and greater returns to publicly-owned assets, and the potential for regionally-dispersed resource development as environmental and social considerations are combined with market reform.”⁴ The serious problems that have ensued with electricity deregulation in the U.S. and the one jurisdiction in Canada where deregulation has been fully implemented, Alberta, shows that these claims were more wishful thinking than an accurate assessment of the way that electricity deregulation proceeds.⁵ Despite these failures the B.C. government intends to proceed with deregulation and the privatization of parts of the B.C. Hydro system.⁶

My intention in this paper is to defend the existence of a public monopoly in the production, transmission and distribution of electrical energy and to argue against the fostering of a competitive market in B.C. In doing this I

will begin with a discussion of the forces driving competition and privatization in North America and follow this discussion with three main themes. One is that privatization—that is, the sale of all public assets—is not necessary to undermine the dominant role and benefits of the public sector in the provision of electricity. The route toward privatization is more circumspect: it can be successfully accomplished in an incremental form and does not require the total and outright sale of all assets as occurred in the U.K. My second main theme will focus on the distinction between conditions for producing electricity in B.C. and those of other jurisdictions that have embraced competitive markets. A hydro-based system like the one in B.C. does not have the problems of high costs and environmental degradation, as do thermal and nuclear-based generation systems. My third main theme is to show that there are huge disadvantages to the public as a result of the deregulation and privatization of electricity. The argument will focus mainly on the fallacious assumption that competition among producers will occur when markets are deregulated. Markets often do not behave the way that textbooks say they do, particularly in the electrical industry where very large corporations have tended to dominate the market wherever deregulation has occurred.

Markets often do not behave the way that textbooks say they do, particularly in the electrical industry where very large corporations have tended to dominate the market wherever deregulation has occurred.

Is Competition Necessary?

For gas or coal generation to displace hydro in new production on a deregulated market, all of the efficiencies of the public entity, B.C. Hydro, would need to be dismantled. This is because providing private power simply would not be profitable if it had to compete with the low-cost and efficient operations of the public system.

THE LANDMARK CASE IN THE DEREGULATION OF UTILITIES IN NORTH AMERICA was the U.S. court decision in 1984 ordering AT&T to open the U.S. telephone system to competition. Since then the U.S. has introduced legislation to deregulate the telecommunications industry, the trucking industry, the gas industry, and the electricity industry. The deregulation of oil and gas in Canada was initiated in the mid-1980s with the Western Accord, an agreement designed to complete the dismantling of the National Energy Program. Since this deregulation began, competition in the gas industry has increased and so to has the privatization of the resource. B.C. Hydro, under the Social Credit government, privatized B.C. Gas in 1989.

The move toward privatization, as a result of the competitive pressures of “globalization,” came slower to the electrical industry than to other industries in the public sector. Until recently the industry was relatively insulated from international pressures because the technological advantages of large-scale production and distribution of electricity created natural monopolies that ensured that this sector was most efficient and met public needs best in Canada as a public corporation. In recent years, changes in the technology of the generation of electricity have made private, relatively small-scale (principally thermal) electrical generation more viable. The electrical industry historically has been considered a natural monopoly, both because of the physical constraints of transmission and distribution and the high capital costs involved in electrical generation. The most efficient relationship between high-voltage transmission and low-voltage distribution demands an exclusive line or network of lines both to reduce costs and to minimize losses of electricity. On the generation side, large production units can take advantage of economies of scale

to produce electricity more cheaply than could several smaller generating units.

Technical changes have not changed the natural monopoly of transmission and distribution, but they have affected the natural monopoly of some forms of electrical generation. While economies of scale historically have dominated the economics of the industry, the use of new technologies, such as combined cycle gas turbines (CCGTs) makes smaller-scale production more efficient and cheaper than it has been. Early gas turbines were relatively inefficient, but in the late 1980s the introduction of CCGTs and the beginning of a cycle of low prices for natural gas, increased the enthusiasm for the use of CCGTs.⁷ Also, the use of gas is environmentally more acceptable than oil, coal and nuclear energy, something that further undermined the use of traditional thermal and nuclear sources of electrical generation.

In places where electricity has been generated by thermal or nuclear sources the impact of technological change has been substantial. In B.C., where most electrical generation comes from hydro sources, the notion that technologi-

cal change is driving system changes is highly exaggerated. Gas or coal generation would be the most likely sources of new generation in a competitive market, but it is, even in a very low-cost period, still more expensive than water in generating electricity. Price fluctuations, particularly in the cost of natural gas, add risk and act as a deterrent to private investment. For gas or coal generation to displace hydro in new production on a deregulated market, all of the efficiencies of the public entity, B.C. Hydro, would need to be dismantled. This is because providing private power simply would not be profitable if it had to compete with the low-cost and efficient operations of the public system.

The technology that enables the private sector to profitably generate electricity was not, by itself, a sufficient reason to bring about the move toward deregulation of this industry in other countries. Private generation has not invariably lowered the cost of production of electricity and has not been more efficient than generation in the public sector. The process of deregulation and privatization has been fostered by many different things, some of which do relate to specific problems with cost, efficiency, and environmental concerns with electrical generation within individual countries. But, the most significant factors that have created a climate for change across national boundaries are the conditions established by an ideological shift to the right and its related public policy aims of redirecting government activities from those that provide service to people and business to those mainly concerned with creating markets for the private sector.

As international markets began to expand, all kinds of services, such as water and telephone services, which were once the domain of specific nations, became “trade-able.” As with water and telephone services, the possibility of a great international market in investment in electricity has led to the deregulation of international trading and investment rules to permit foreign corporations much greater access to the domestic markets of nations. The pressure from the private sector to deregulate in order to increase competition has escalated, with the result that energy corporations in the public sector are targets—their existence creates an obstacle for competition to work properly.

In B.C. the pressures for change in the electricity industry have had nothing to do with real problems with inefficiency, high costs, and dirty energy. By world standards B.C. Hydro excels as an efficient, low-cost and clean producer of energy.

Prices

Electricity in B.C. is cheap. All classes of customers have among the cheapest electricity in North America. In Canada, only Manitoba has lower rates for all classes of customers. This is mostly because that province does not have the difficult terrain that increases transmission costs in B.C. B.C. Hydro also offers a “postage rate” system of billing, an egalitarian system that charges people across the province the same rate, whether they live in rural areas of those areas that are more densely settled, more accessible, and, therefore, cheaper to serve.

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B.C. Hydro's low rates are possible because its production costs are low and it is efficient. Since comparative data have been collected, beginning in 1970, B.C. Hydro's cost of generating electricity has been consistently lower than the average of the Canadian Electrical Association (CEA), an organization of fifteen major Canadian electric utilities. B.C. Hydro has also maintained, since 1978, below average costs for operations maintenance, and administration. This includes all labour and material costs for the entire system of generation, transmission and distribution, making B.C. Hydro's

level of efficiency in this industry one of the best in North America.

Reliability

B.C. Hydro is reliable – amazingly so – considering the rough terrain over which it transports power and the fierce weather that is characteristic of the province. Since data have been collected on reliability, which is measured as the amount of time that service is available in the distribution system, B.C. Hydro has consistently out-performed the CEA average.⁸ The level of

Table 1: Comparative Electricity Prices in North America
(Canadian cents per kWh) Average Prices on May 1, 2000

Cities Power Consumption	Residential 1,000 kWh and under	Medium Power 1,000 kW – 400,000 kWh	Large Power 50,000 kW – 30,600,000 kWh
Canadian			
Winnipeg	5.89	4.44	2.96
Montreal	6.03	6.10	3.83
Vancouver	6.12	4.56	3.36
Edmonton*	7.51	5.81	5.30
Toronto**	8.32	7.31	6.24
St. John's	8.37	6.22	3.49
Regina	8.20	6.79	4.10
Moncton	9.14	6.62	4.95
Halifax	9.40	8.27	5.57
Charlottetown	10.06	8.80	5.45
U.S.			
Seattle	6.75	5.28	4.92
Portland	9.36	6.40	5.70
Nashville	9.41	8.50	6.41
Houston	12.07	8.85	5.77
Chicago	12.26	10.98	7.09
Detroit	14.63	10.53	7.39
New York	21.24	17.52	12.63
San Francisco	17.18	12.76	7.33
Average	10.30	8.34	6.00
* After deregulation the price of electricity rose from 5 cents to 25 cents per kWh, although a rebate prevented residential customers from experiencing the 500% increase in electricity bills. Large business customers experienced large increases, although this was partially offset by rebates of up to 7.6 cents per kWh.			
** In June 2001 Toronto Hydro-Electric System increased residential rates 8.6% or \$7.35 per month. Medium industrial users' rates increased 8.9% and for large industrials rates increased 11.6%.			
Source: Hydro Québec, <i>Comparison of Electricity Prices in Major North American Cities</i> ; Toronto Hydro Electric System, <i>Important Information about Rates</i> ; National Energy Board, <i>Canadian Electricity: Trends and Issues</i> , May 2001.			

reliability is particularly significant because B.C. Hydro meets its obligations to serve people all over the province, including those in remote and rural areas, areas that are considered “thin” territories where people are very spread-out and, therefore, difficult and expensive to serve.

But the most significant aspect of reliability is related to the kind of long-term planning that an integrated public utility is able to undertake. All classes of customers can depend on a secure supply of electricity at constant prices, something that is not characteristic of a market that is deregulated.

Electricity Conservation

Any kind of large-scale electricity production has negative effects on the environment, but some forms of production are worse than others. Because large-scale dam construction causes substantial damage to both the physical and the social environment it is fairly certain that another project of this sort would not be undertaken in B.C. as long as electricity production remains in the public sector. However, once dams have been constructed and the ability to generate electricity through hydro-power exists, as it does in B.C., there is no comparison between hydro-based electricity and other forms of large-scale electricity generation: hydro-electricity does not pollute the air, contribute to greenhouse gases, or deplete non-renewable resources in the ways that coal, natural gas and other thermal sources of energy do.

In a society that is experiencing rapid population growth and new demands for energy, the most important conservation measure has been to curtail or actually reduce the growth in the demand for electricity. B.C. Hydro has been a pioneer among electrical utilities, through its Power Smart program, in providing incentives for consumers to reduce their power consumption. This “demand side management,” which urges customers to consume less of a product, does not make sense for private companies, but it does for a public utility like B.C. Hydro. This

is because increased consumption means creating new sources of electricity and, even if this does not involve new dams, it can mean expanding the generating ability of existing facilities and expanding transmission and distribution lines, all activities that are extremely expensive: adding new customers to B.C. Hydro can add more in costs than it does to the company’s revenues. Under these circumstances, it makes sense for the company to encourage people to conserve energy so that it can avoid the costs of expanding production. It can do this in a number of ways, including encouraging the use of high efficiency motors in the industrial sector, improved building design in the commercial sector, and in the residential sector, by educating people about the need to conserve and by encouraging home improvements to save energy. It can also set its rates to re-shape energy demand so that pressure is taken off peak periods and shifted to low-usage times. In this way, the capacity of the system does not have to expand, even though more people are served.

Altogether, this brief introduction to the strength of B.C. Hydro’s performance passes what economists refer to as the “inter-ocular” test—they are findings that hit you right between the eyes. B.C. Hydro serves the interests of B.C. extremely well. In identifying the forces in B.C. behind more competitive electricity markets, a distinction needs to be made between the arguments about lower prices and increased efficiency, arguments that are used to justify competition and deregulation and the reasons it is favoured by specific groups of people. The major actors favouring increased competition are private international energy corporations like Duke Energy, Utilicorp, and Calpine, the smaller Independent Power Producers, and a few very large industrial customers who are also potential producers, like Alcan. A competitive market is also favoured by the Liberal government because it is ideologically predisposed to privatization. These groups have a variety of different reasons for supporting

The most significant aspect of reliability is related to the kind of long-term planning that an integrated public utility is able to undertake. All classes of customers can depend on a secure supply of electricity at constant prices, something that is not characteristic of a market that is deregulated.

The electricity market is a huge business and the possibility of revenues shifting from the public sector to the private sector is a powerful motivating influence. Often the motivation for deregulation comes from producers who see great benefits in the ability to engage in power trading, specifically through greater access for exports of electricity to the U.S.

deregulation. Some corporations, such as Utilicorp, Duke Energy and electricity producing industrials, want access to B.C. Hydro's domestic market and feel that under the right conditions (that is, if the advantages of the public corporation are eliminated) they would be able to compete. The electricity market is a huge business and the possibility of revenues shifting from the public sector to the private sector is a powerful motivating influence. Often the motivation for deregulation comes from producers who see great benefits in the ability to engage in power trading, specifically through greater access for exports of electricity to the U.S. Initially some industrial customers supported a deregulated market because they felt they would have greater bargaining power in negotiating lower rates, however, with the ratcheting up of prices in other jurisdictions that have deregulated, the large corporate sector in B.C. is much more fearful of the consequences. The industrial users anticipate that the huge rate increases would create "serious economic dislocation, destroy the fundamental economic health of many firms and result in serious unemployment, community instability and reduced government revenues."⁹

For governments, the issue of whether to deregulate and privatize is an important political one. They need to balance the wish to be seen as responsible to consumer needs with the apparent "inevitability" of change in response to the demands of the private sector. For many countries, outright privatization was attractive because it could offer a source of funds that were particularly valuable at times of economic

crisis. Governments in Canada have, for the most part, been cautious in their approach to deregulation mainly because there are substantial risks involved. Aside from the problems of price escalation and insecurity of supply that has plagued deregulation in North America, foremost in the collective government mind is the potentially serious blow to government revenues that could occur with the elimination of public electrical monopolies. B.C. Hydro returns to the province between \$600 million and \$750 million each year in dividends, taxes, and water rentals, revenues that would be compromised with increased competition. In 2001 B.C. Hydro paid the province \$372 million, in addition to a customer rebate of \$310.¹⁰

The Federal Government has quietly supported the move to deregulate and privatize provincial electrical utilities. The Department of Foreign Affairs and International Trade (DFAIT) has been strongly committed to energy deregulation through international trade agreements. Also, the Federal Government has been very reluctant to challenge the rulings of FERC that have demanded reciprocity and has reduced the requirement for full-scale public oversight for all electricity export permits. Perhaps more cynically one might note that because deregulation and privatization of provincial public utilities is not within the jurisdiction of the Federal Government, it has been less concerned about the implications of these policies and, perhaps, has been willing to use such changes as bargaining chips with the US and other trading partners in international trade negotiations.

Incremental Privatization

SOME ADVOCATES OF DEREGULATION HAVE ARGUED FOR A LIMITED FORM OF competition with a public/private mix of generation of electricity that allows private producers to sell to the industrial and commercial sectors, but not to households. The implication is that “competition in electricity generation does not require privatization.”¹¹ Clearly markets can have some private generation and still retain the important functions of a public monopoly, as occurs now and has for some time in B.C. Some of the power used in B.C. is supplied privately either through self-generation, co-generation, or by West Kootenay Power and Light,

although B.C. Hydro clearly holds the monopoly on the market. B.C. Hydro also buys about three percent of its power directly from Independent Power Producers (IPPs) who have begun production specifically to sell to B.C. Hydro. But the B.C. market is not a competitive market and the move to competition requires the dismantling of the B.C. Hydro system with one specific objective: that is to remove the special advantages it derives from being a vertically integrated public monopoly.

A deregulated market and an increase in competition will slowly, but steadily, erode the proportion of electrical generation that remains in the public sector and it will nullify the public benefits of this public resource. Limited competition initially may appear to be a compromise system that would secure the most treasured aspects of the public monopoly while responding to demands from the private sector for competition in the industry. It is an approach that can assuage the anxiety of politicians: this type of change is not called “privatization,” and does not involve the sale of entire public assets to the private sector, something that tends to bring about public debate and arouse hostility

toward the government from voters. But the introduction of limited competition is a foot-in-the-door approach that allows for a relatively small space to the private sector initially, with the ultimate objective being the expansion of this space as much as possible.¹²

Competition and deregulation are not halfway measures: the transformation of the structure of the industry becomes self-reinforcing so that ultimately, the public nature of the industry becomes completely undermined. An internal momentum develops that ultimately dooms halfway measures. The World Bank, which has a specific interest in the privatization of the infrastructure of mature industrial nations, recognizes the significance of the incremental approach to privatization of electrical industries:

“[IPPs] plant the seeds for a top-to-bottom change in the structure and operation of the government-owned utility – seeds that are hard to stop from growing once they take root... From modest beginnings, IPPs... can lay the groundwork for an upheaval ending in private ownership of much of the generation, transmission, and distribution sectors of utilities.”¹³

Limited competition initially may appear to be a compromise system that would secure the most treasured aspects of the public monopoly while responding to demands from the private sector for competition in the industry. But the introduction of limited competition is a foot-in-the-door approach that allows for a relatively small space to the private sector initially, with the ultimate objective being the expansion of this space as much as possible.

The separation of the functions of generation, transmission, distribution and services is inherently artificial. Any private power corporation would go to great lengths to preserve the integrated nature of its operations, as is increasingly evident from the tendency of the entire electrical energy industry to become increasingly concentrated.

The separation of the transmission system from B.C. Hydro control, as the Task Force on Energy Policy recommends, is a very important step in breaking up the efficiencies and value of an integrated system.¹⁴ B.C. Hydro is a vertically integrated system, which means its generation is supported by its ability to deliver energy over long distances and to distribute it to consumers. The transmission system is a natural monopoly: competition in transmission would be too expensive and unwieldy for this aspect of the industry. The transmission system is an integral part of the existing system and the value of the generation system to B.C. Hydro cannot be separated from the transmission and distribution systems. Any removal of the transmission system from B.C. Hydro would harm both the efficiency and the value of the public asset.

Over the years various ways have been worked out to compensate B.C. Hydro for the transmission of electricity generated by other producers. This “wheeling” is predictable and is conducted in typical ways that respond to the demand for open access without giving up exclusive controls over their wires.¹⁵ As one analyst noted, “the key fact here is that someone else’s energy is passing along utility wires with the permission of – and under a mutually acceptable contract to – the wires of the owner.”¹⁶ The proposals to sever the transmission system from BC Hydro are quite distinct because they demand that access be given to private generators or power brokers for the purpose of serving B.C. Hydro’s own customers or for export. Because private electricity will occupy utility wires in a permanent way, this affects the use of public property much more severely than does the access that is acquired through specific wheeling agreements, access that has already been given by the B.C. Utilities Commission. The B.C. Hydro system was designed as an integrated whole and when the public corporation can no longer have control over the timing, extent or nature of how the transmission system is used, the entire value of

the system to the public is compromised. Control of the grid enables B.C. Hydro to maximize efficiencies by treating the reservoirs (and the Burrard Thermal Plant) as an integrated system. Power can be generated from the most favourable, cost-effective location and moved through the system on the basis of B.C. Hydro’s priorities. However, this becomes much more difficult if other players have equal call on the limited transmission capacity and, therefore, are allowed to prevent B.C. Hydro from operating in an integrated way.

The separation of the functions of generation, transmission, distribution and services is inherently artificial. Any private power corporation would go to great lengths to preserve the integrated nature of its operations, as is increasingly evident from the tendency of the entire electrical energy industry to become increasingly concentrated. As will be seen in the next section, the acquisition by gas companies of electricity utilities reflects the strong tendency for survival in the energy industry to rely on developing a critical size of operation. Once transmission is separated from B.C. Hydro, the two next logical steps for those in pursuit of the B.C. Hydro market will be to insist that a systems operator control the entire electrical system in B.C. and to push for the general use by the private sector of reservoirs for storage.

The disastrous deregulation exercise in California and the difficulties Alberta encountered in establishing sufficient supplies through a deregulated market has not thwarted the calls for deregulation in B.C. The most common justification for deregulation is that it is inevitable and that the forces for change are sweeping and cannot be stopped.¹⁷ Usually when the benefits from deregulation are cited, the demonstration effects of other jurisdictions where the results have not been disastrous are held up as examples of models to follow.

The conditions in Canada in general, and in B.C. in particular, are sufficiently different from those in other jurisdictions that the claims about the benefits of electricity deregulation cannot

be assumed and need to be closely examined in the context of the specific circumstances of this province. Competitive markets that have opened up elsewhere have been pursued because of a distinct set of circumstances that do not apply to B.C. The mimicking of public policy in the U.S., or the United Kingdom, cases that are frequently cited as possible models for B.C., is inappropriate for the social and economic conditions in this province. The “global trends” argument – that is, that because deregulation has occurred elsewhere, similar changes will be essential in B.C. – cannot be accepted uncritically.¹⁸

The scope of the changes in other countries and the trajectories they have taken are fairly distinct, ranging from the very radical approach of outright privatization in Great Britain, to the more gradual deregulation of the industry in the U.S. While the ultimate results may be surprisingly similar, the political “taste” for privatization, coupled with the distinct characteristics of the electricity industry in each country, has promoted different routes moving toward the same ends – that is, the domination of the industry by a few large private corporations. In all cases market deregulation has been controversial and has encountered substantial campaigns against it by labour and consumer groups: both groups, for good reasons, anticipate and fear the domination of the market by the private sector.

My main point in this section will be to show that when real problems with prices, efficiency, or electricity supply existed in other countries, the need for change was to find solutions that would produce the result that B.C. already has. There are specific dangers in pursuing solutions for problems that are more imagined than real, particularly because the market solutions pursued elsewhere have not produced the results promised. In virtually all cases there were unforeseen effects that turned out to be more serious than expected.

Public policy to encourage competition through the deregulation of electricity in the

U.S. and outright privatization in the U.K. had some relationship to the economic problems the industry faced in each country. The justification for change in each case was persistently high prices, although the reasons for high costs were distinct. Any variety of solutions could have been used to solve the problem of high prices, but the political fashion in both countries favoured a shift toward competition and deregulation.

Changes in the U.S.

In the U.S. the shift in thinking favouring competition in electricity production began in the late 1970s as a result of the sharp increases in costs due to the oil crises and the huge costs over-runs and dangers from nuclear power generation.¹⁹ Ninety percent of the electricity in the U.S. comes from nuclear fission or steam from burning fossil fuels: thermal generation from coal accounts for about 52%, natural gas 15% and nuclear power about 19% of total production. Clean sources of energy, make up 11% of the U.S. supply, with hydroelectric generation account for about 9% of total production and wind and solar energy only 2%.²⁰ [The contrast with Canada is striking: 60% of electrical production comes from hydropower, 19% from coal, 13% from nuclear, 7% from gas, and less than 1% from renewable resources other than water.²¹ B.C. Hydro’s electrical generation is even more hydro-based with about ninety percent provided by hydroelectric generation and 10% by thermal plants.]

The 1978 Public Utility Regulatory Policy Act (PRUPA) required U.S. utilities to purchase power from private producers if it could be obtained at costs that were less than those associated with building new facilities.²² This was the initial attempt to introduce competition for electricity supply, a direction that was driven by a U.S. Supreme Court ruling that antitrust laws applied to the electric power industry and that federal regulatory agencies had to take into account the impact of their decisions on com-

When real problems with prices, efficiency, or electricity supply existed in other countries, the need for change was to find solutions that would produce the result that B.C. already has. There are specific dangers in pursuing solutions for problems that are more imagined than real, particularly because the market solutions pursued elsewhere have not produced the results promised.

The ability of traders to gain market control has been a significant aspect of the newly deregulated systems, something that has resulted in extreme cases of instability such as occurred when California tried to move to a fully deregulated system. These traders are in a spectacularly advantageous position to control prices and manipulate supply.

petition. At the same time there was a growing dissatisfaction with nuclear energy that heightened the sense that massive public spending on mega-projects to provide energy had not served the public well.²³ The monopoly of power utilities, it was argued, had encouraged the huge capital-intensive approaches to supplying electricity and since costs could be passed on to the consumer, there was little incentive to see either alternative sources of supply or to develop more efficient facilities.

The initial regulatory constraints on utilities paved the way to encouraging greater private participation in the industry. This “competition” was greatly accelerated through the Energy Policy Act of 1992 by two important means. One significantly expanded the number of generating entities that could be exempt from regulatory controls covering operations and pricing, and created a whole new class of producers called ‘exempt wholesale generators’ (EWG). These EWGs could be owned by the electric utilities or could be private, independent entities. The other way in which the 1992 act accelerated competition was through greater support for access for wholesale transmission (wholesale wheeling) so that any EWG could be assured transmission to either its own utility or to other utilities at distant locations. These changes were further strengthened by regulatory changes in 1996 ordered by the Federal Energy Regulatory Commission (FERC) under orders 888 and 889. These orders removed monopoly power from utilities and mandated the separation of transmission from generating and other functions of the utility. The result of these regulatory changes was to increase competition between utilities and to generate a significant supply outside traditional utilities. Utilities have historically not competed with each other, but with the rise in wholesale wheeling, utilities were encouraged to attempt to increase their market shares at the expense of other utilities. As a result, the relative cost structure of other utilities became more significant

to the security of markets that were once assured.

The important lesson from the U.S. process is that the regulatory changes that occurred initially were relatively minor, and because they applied to wholesale wheeling only, did not appear as threatening as would total competition and complete deregulation of the market. But the small initial steps were deceptive and masked the important role of wholesale wheeling as a first step in open competition at both the wholesale and retail level.

In addition to the regulatory changes that occurred over the past few decades, changes in technology in power generation provided an important impetus to independent power producers (IPPs) to both promote and take advantage of the competitive environment. But even more significant in changing the shape of the industry has been the spectacular rise in the role of power traders like Enron and Duke Energy as a result of the increased trading possibilities that arose from the deregulated system. The ability of traders to gain market control has been a significant aspect of the newly deregulated systems, something that has resulted in extreme cases of instability such as occurred when California tried to move to a fully deregulated system. These traders are in a spectacularly advantageous position to control prices and manipulate supply in a way that leads one analyst to refer to their actions as akin to the actions of junk bond traders on Wall Street in the 1980s.²⁴ A report by California’s electricity grid managers concluded that 98% of the trading bids between May and November of 2000 were driven up by noncompetitive patterns of behaviour. According to an attorney who is involved in a class-action suit against the traders in California, “the whole trading thing is just a front that lets them game the market. They can get away with it because no one (outside the industry) can figure out what they are doing.”²⁵

Implications for B.C.

U.S. REGULATORY CHANGES HAVE HAD A DIRECT EFFECT ON CANADIAN OPERATIONS, primarily because of the need or desire to export energy into the U.S. As the electrical market became deregulated in the U.S. the reciprocal trading arrangements that existed needed to be renegotiated, if Canadian exports were to continue, or accelerate, as most electrical utilities had hoped. As long as the trading was focused on the wholesale wheeling level, Canada was not much affected by the changes in the U.S. In B.C., Ontario, or Quebec, the principle means adopted by major buyers of electricity (with a few minor exceptions) was through long-term contracts with a regulated utility. Opening up transmission lines under these conditions was not a serious threat to the monopsony position of the utility because there was not any other substantial buyer, other than the public utility, for U.S. energy.

This fairly secure position in the international trading of energy changed with the trajectory established in California to initiate retail wheeling in that state. Retail wheeling would allow sellers of electricity to market their energy not only to utilities, but also to major industrial users, commercial establishments and, eventually, to households. The high cost of nuclear power, which caused rates to be about 50% above the national average, was the major driving factor for a deregulated system in California.

In Canada the prospect of exporting power to customers other than utilities in the U.S. seemed an attractive possibility, particularly for utilities in provinces that had excess generating capacity. But it was equally clear that this would necessitate granting similar kinds of access to U.S. producers to the Canadian market. Since exporting utilities in Canada relied pri-

marily on hydro generation and the costs of production were low, the threats to substantial market penetration seemed relatively slight. However, this has proved to be shortsighted because the drive to export is causing very substantial changes as a result of an increased harmonization of the systems in the two countries.

As can be seen from Table II, in 2000-2001 B.C.'s export revenues increased enormously with the export price rising from 47.2 cents per MWh in 2000 to 227.1 cents per MWh in 2001. This was largely because of the disastrous problems with deregulation in California that bid up the price of electricity. Revenues from the California market accounted for 42% of the total electricity trade revenues BCH actually received, although \$289 is still to be recovered because some California utilities defaulted on their obligations to the power exchange and

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system operator. Also, BCH faces charges of ‘gouging’ California and may have restitution to pay when the matter is decided in U.S. courts.²⁶ The revenues BCH received from trade increased from 32% of total revenues in 2000 to 69% of total revenues in 2001, representing a substantial ratcheting up of the significance of electricity trade to government revenues. It is not expected that these kinds of conditions in the export market will be replicated in the future, but nevertheless the prospect of very substantial revenues from exports encourages moves to conform to the U.S. regulatory system. One issue that should be noted is that a relatively large volume of electricity is traded outside B.C. by Powerex. This ‘trading’ does not represent exports, but the buying of large amounts of electricity from U.S. generators and reselling it to U.S. customers. These transactions are very substantial in dollar terms, but do not truly reflect the physical ‘export’ of power. In some respects the sums involved in these transactions tend to over-state the real value of the export of electricity and, as a consequence, skew policy decisions in favour of exports.

While the volume of electricity trade sales did not increase dramatically, the revenue from these sales did. The result was a net income in 2001 (before rebates to customers and the rate stabilization account) of \$859 million, \$314 million higher than the previous year. Domestic tariffs have been frozen since 1993 resulting in the real cost to customers (adjusted for inflation) declining by 12% in the past decade. The volumes of electricity trade sales did not change much from the previous year, but are up about 128% from 1999 and 243% higher than in 1997. This is largely a result of power trading through PowerEx, rather than an increased generation in the hydro system. In 1998 PowerEx received a 10-year blank export permit from the National Energy Board to facilitate trading activities.

Until the election of the Liberal government in 2001, B.C. managed to stave off the strong pressure from the private energy sector to deregulate the electricity market. A major task force undertaken in 1997-98 ended without agreement among its members, although the task force chair, Mark Jaccard (who was head

Table 2: BC Hydro Exports and Revenues

	2001	1999	1997	1995	1993
Exports (gigawatt-hours)					
Domestic	48,131	45,791	44,658	42,043	40,562
Exports	23,900	18,715	9,826	3,927	5,643
Total	72,031	69,852	54,484	46,981	47,686
Exports %	33%	27%	18%	8%	12%
Revenue from Exports (\$\$ millions)					
Domestic	2,431	2,351	2,262	2,145	2,006
Exports	5,458	739	164	142	172
Total	7,889	3,043	2,426	2,289	2,178
Exports %	69%	24%	7%	6%	8%

Source: B.C. Hydro Annual Reports, 2001, 1996.

of the B.C. Utilities Commission), strongly favoured deregulation.²⁷ The Government had asked Jaccard to find a consensus among the various stakeholders represented on the Task Force. However, there was opposition to his deregulation proposals from labour, environmental and consumer representatives. Unable to achieve consensus, he issued his own report as Chair, but the Government did not adopt its recommendations.

Since the election of the Liberal government strong signals indicate that deregulation and privatization of some parts of the system are extremely likely. The first step was the appointment of Larry Bell as both CEO and Chair of the Board: under his leadership of BC Hydro in the 1980s under a Social Credit government, he oversaw the privatization of B.C. Gas, which was then part of B.C. Hydro, and since then he has been a director of TransAlta, Alberta's main private electrical corporation.

The Liberal government's Task Force on Energy Policy issued its interim report in November 2001 in which it advocates moving to a deregulated system based on a 'market' price, the establishment of an independent transmission company, and separating generation and distribution into distinct companies with the possibility that the generation company be broken down into multiple companies in the future.²⁸ 'Market price' appears to mean bringing prices to consumers up to the level equivalent to that of export prices. It also recommends that the Province eliminate the requirement for provincial Energy Removal Certificates that are

now necessary in order to export energy from B.C., that industrial and high-voltage customers be able to participate in the wholesale market, and all generators of electricity be encouraged to develop facilities for domestic and export customers. It specifically discourages any type of pricing arrangement, such as that initiated by Quebec, which provides customers with electricity at "below market prices." If these recommendations are implemented, as is highly likely, B.C. electricity prices will be integrated with those in the U.S. because B.C. customers will be competing with American customers for electricity and new sources of generation will come primarily from the private sector. The Interim Report calls for price increases of 30% for residential customers, 40% for commercial customers and 60% for industrial customers.²⁹

The significance of allowing private corporations to export electricity from B.C. is rapidly capturing the attention of major U.S. electricity traders. The private sale of B.C.'s major gas exporter, West Coast Energy, to the U.S. corporation Duke Energy, is a further signal that B.C. is about to experience a deregulated regime that would allow private producers to export electricity. Duke Energy is an aggressive private electricity producer and trader and was a major player in the California deregulation story. According to California state officials, Duke Energy participated in the most "egregious example of price gouging:" Duke Energy charged the state \$3,800 for a single megawatt hour, a more than 12,600% increase over the \$30/Mwh charged the previous year.³⁰

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The Problems with Deregulated Markets

THE PROBLEMS WITH INTRODUCING MARKET COMPETITION IN THE ELECTRICAL industry can be grouped, roughly, around two main issues: those related to non-market values and those related to corporate concentration.

Public Needs

The first problem relates to the inherent limitation of the market in generating “efficiency” when values, other than property values, are at stake. The market is a good allocator of resources under certain circumstances – namely, when costs relate to something that is traded on the market. The market is less efficient and produces more dubious outcomes when issues economists refer to as ‘externalities’ are at stake. The market is very selective about what it values, and the less the value is related to hard cash, the more suspicious the market becomes of its significance. The market is good at recognizing the value of private property, but it is very inefficient in placing a value on public property, the environment, and other public policy objectives like equality and fairness. While the notion of “choice,” as exercised through the market, appeals to the democratic nature of a society based on the significance of individual will, the public has recognized, through time, that market incentives cannot promote the public’s collective interests: markets, which are inherently individualistic and which rely on individual decision making, cannot represent public needs and interests.

In B.C. the public resource (water) has been used to meet the needs of households and industries while providing mechanisms for dealing with environmental and other social concerns. Because electricity production is owned by the people collectively, and managed through the government, a variety of different, and sometimes competing, objectives, including intangible ones can be considered in production and distribution arrangements. The ability to weigh different objectives can be and often is criticized for being too susceptible to political whim. Nonetheless, there are ways in which the collective will can be exercised through public ownership that are not possible when ownership is private.

Imperfect Markets

The second major problem with markets is that how they behave is less predictable than textbooks would lead one to believe. The classically competitive market is one where there are a great many sellers and buyers of a product – so many that no seller or buyer will be able to influence the supply or the prices paid. In this ideal world the price guides production and distribution decisions so that the most efficient

use of the resource is achieved. In the real world, competitive markets are rare and occur only in those industries that have relatively small entry costs. This is not a condition that exists in the electrical industry and the call for deregulation of the electricity market in B.C. is occurring at precisely the same time that competitive forces are being thwarted through massive industry concentration in both North America and throughout the world.³¹

The arguments favouring a deregulated electrical industry rest on the contention that competitive markets ensure the efficient generation and distribution of energy. The assumption is that with many small, independent producers of power, the market price will provide the best mix of energy sources, given specific regional conditions and costs.

The assumptions of the superiority of private markets can be challenged in a number of ways. The most common is simply to look at the performances of public and private electrical companies to see which ownership structure perform best. The overwhelming evidence is that the ownership structure is not significant in determining either cost or level of performance. The most exhaustive study, which examined 768 thermal power plants in 14 countries, tried to test the theoretical notion that privately owned utilities would exhibit superior efficiency. The findings indicate that, “large electrical utilities were unlikely to exhibit significant differences in efficiency across ownership types.”³² Similar findings have been observed by studies done in the U.S., although frequently these studies indicate, like that of John E. Kwoka for the Harvard Institute of Economic Research, that “it is public—not private—ownership that results in superior price and cost performance.”³³

While ownership is not the crucial issue in the cost/efficiency debate, the type of fuel used to generate electricity is very significant and this is where publicly owned utilities have an advantage. Publicly owned electrical utilities are likely to exhibit greater efficiencies because they

are more likely to have access to low-cost hydro power.³⁴ This finding (of the significance of the types of fuel used) is also confirmed in U.K. studies that examined only thermal generation. These show that if competition introduces the use of less expensive fuels, as happened in Britain when gas replaced coal, this will result in greater efficiencies.³⁵ Other factors that enhance the efficiencies of publicly owned utilities are the advantages they receive from lower capital costs, due to financing advantages, and exemption from most taxes.³⁶

The superiority of the market, through competition, can also be challenged by the ways that imperfect markets dominate the industry when deregulation occurs. These imperfections arise as a result of corporate mergers, acquisitions and predatory pricing – all of which create unanticipated and exceedingly unattractive distortions in public policy outcomes. The evidence is compelling that in electricity markets that have experienced deregulation and privatization, corporate concentration in the energy field occurs very rapidly, allowing market control to be exercised by private energy producers or traders from the outset. From the very beginning of privatization in the U.K., foreign firms rushed in to control the market. According to one energy analyst, “the new structure failed [to be competitive] either because it was infeasible or the government lacked the political will to enforce it, so that the industry now lies at the mercy of the players, which inevitably maintain a strong interest in stifling competition, because real competition increases risks and reduces profits.”³⁷ The U.K. market was also affected by regulatory changes in the U.S.: the U.S. 1992 Energy Policy Act allowed, for the first time, U.S. electrical companies to invest in foreign corporations. The attractiveness of foreign markets led to a huge increase in mergers and acquisitions by U.S. firms and an astronomical growth in size in relatively small, insignificant regional power producers. Deregulation in the U.K. rapidly led to the U.S. ownership of two-thirds of that country’s re-

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With the huge growth of international power players, instability becomes an inherent feature. The dangers to the public are clear from the fallout from Enron's reprehensible business practices. The inability of the federal regulators to understand the complexities of the arrangements of this massive company created a "regulatory black hole" that leaves the public unprotected from market manipulation.

gional electricity companies.³⁸ The results of this market power meant serious problems with excess profits and a mark-up of prices over costs of 25% over a long period of time.³⁹

Within the U.S. electricity industry concentration has proceeded at a phenomenally rapid rate since the beginnings of deregulation. Between 1996 and 1998 there were an average of 12 merger and acquisition announcements annually and there are currently 9% fewer investor-owned utilities than there were at the beginning of the 1990s.⁴⁰ One of the major differences in the new round of mergers, aside from the quantity of mergers taking place, is the size of the companies merging: they have involved some of the largest companies in the industry, giving the merged companies considerable market power. For example, the merger between FPL Group of Florida and Entergy Corporation of Louisiana gives the new company 11% of the U.S. nuclear power generation market. Another company, Exelon, resulting from the mergers between Unicom (Illinois) and PEOC Energy (Pennsylvania) will account for 17% of total nuclear capacity in the country.

In contrast to the breaking up of the various components of public utilities, the private energy sector is rapidly integrating electricity utilities with natural gas firms, coalmines, and other forms of power generation. The electricity market is so lucrative that even oil giants like Texaco and Shell are entering the electricity market. According to the head of Shell Exploration and Production Company, "we are committed to gas, and so to ensure access to markets and customers, we must get into the power business."⁴¹ The emergence of the electricity energy con-

glomerates is seeing total returns in this sector far outpacing every other energy sector.⁴² Enron, until its recent spectacular decline, was the largest buyer and seller of natural gas and electricity in North America, Scandinavia and the U.K. According to its former CEO and President, "our wholesale energy merchant business – the buying, selling, financing and packaging of natural gas and electricity – is really the center of the universe for us now."⁴³

This is ironic in an era that lauds and even demands the disintegration of vertically integrated public utilities: private corporations are busily replicating significant aspects of the structures of public monopolies, although not with the guarantees for public accountability. Clearly electricity generation will drive much of gas growth in the future and any energy company that wants to expand will do all it can to acquire electricity generation firms.

Industry concentration leads to restrictive practices, a lack of transparency, and price spikes. Even the U.S. Department of Energy, an agency that supports deregulation, recognizes the problem of market power when markets deregulate:

"Sharp price spikes are not new to pool-based electricity exchange systems. In countries that have adopted pool-based electricity trading systems, such as the United Kingdom and Australia, concerns have arisen about the connection between price spikes and market power. In the wake of California's recent experience with its electricity pool, a similar concern has arisen that suppliers may have achieved excessive market power."⁴⁴

The main point to take from this is that with the huge growth of international power play-

ers, who can fairly rapidly shift in and out of markets because of their size, instability becomes an inherent feature of the system. Investment in new facilities, when it occurs, will be made with a shorter-term profit horizon than was typical of regulated utilities, a tendency that largely ignores national capacity issues. The result is a cycle of capacity shortage that exacerbates price spikes, a process that itself encourages under-building.

The dangers to the public of this private integration of energy resources are clear from the fallout from Enron's reprehensible business practices. The inability of the federal regulators (FERC) to understand the complexities of the arrangements of this massive company created a "regulatory black hole" that leaves the public unprotected from market manipulation.⁴⁵ While other large players may escape Enron's fate, their power in manipulating the market is comparable and something the international system has no mechanism to control.

Shocking examples of market 'gaming' by energy traders were uncovered by the U.S. Senate hearings into the price manipulations in the California energy market. Enron, in conjunction with other trading companies including B.C. Hydro's subsidiary PowerEx, created phantom congestion on electricity lines, and posted sham sales of electricity when, in fact, nothing was sold. The point of these market manipulations, described by colourful names like "Death Star", "Get Shorty", "Ricochet", and "Incing", was to drive prices up beyond what they would have been in a competitive market.⁴⁶ Enron was not alone in engaging in these manipulations and several large companies, including Duke Energy, Dynergy, the Williams Companies,

Mirant and Calpine have been put on notice by regulators that they need to "preserve all material that discusses such trading strategies."⁴⁷ The difficulty with 'gaming' is that in many cases, these manipulations, while unethical, may not be illegal. This means that strong regulatory bodies will be needed not only to uncover illegal practices, but also to identify practices that distort the market and make rules against them. In the U.S. this type of regulation is at an extremely elementary stage and it simply does not exist in Canada.

If market manipulations occur in B.C., this province would be even more vulnerable than California was. This is because it is very unlikely that BC would invest the resources in regulatory capacity to be able to adequately review the practices of the energy traders and to pursue this through legal channels. But even more significantly, BC would be dealing with another country, not another state that was also subject to the same regulatory rules. It could be very difficult for BC to get information about such practices when they were being carried out south of the border and, it is hard to imagine that the U.S. regulatory body, FERC, would pursue a Canadian complaint against U.S. companies with much vigor. In a deregulated market, it will be extremely difficult for a small province with very limited resources and regulatory capacity to identify and overcome sophisticated gaming practices originating in another jurisdiction. It is more likely electricity market manipulations would occur without B.C. even being aware of them.

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Conclusions

SHIFTING TO A COMPETITIVE DEREGULATED MARKET FOR ELECTRICITY PRESENTS considerable dangers to all jurisdictions where the public provision of electricity has provided efficient, low-cost, and highly reliable electricity. The usual justifications for deregulation are that it will foster “competition among many large and small electricity generation companies,” that would “bring the usual benefits of lower long-run prices.”⁴⁸

It is proceeding as though a competitive market can be assured, that it will meet the real needs of security of supply at reasonable prices, and that they will improve efficiency in the industry. The assumptions of the B.C. government’s Task Force on Energy Policy are clear on this issue: “Competitive markets provide the best price signals for investors and consumers, ensuring both the right supply response to growing needs and enhanced energy efficiency.”⁴⁹

Yet experiences with deregulation in North America have not been good. In all cases problems have arisen with market control that have led to price distortions and serious shortages.⁵⁰ While these are considerations for any jurisdiction, I have argued in this paper that deregulation presents risks that are particularly unnecessary in British Columbia because the public system of providing electricity has worked so well. It was designed as an integrated public utility that has an obligation to supply the people with electricity at a regulated price that is determined by the cost of production. It has managed to be a low-cost, efficient provider of energy for a variety of very important reasons: a) the public has maintained a long-term investment in its infrastructure of dams, transmission, and distribution lines; b) energy is provided mainly by water; and c) it is an integrated system that gains efficiencies by having control over generation, transmission, and distribution.

The costs of deregulation to people in British Columbia are potentially enormous. The most obvious relates to the increased costs of electricity for everyone, but for industries where electricity is a major input the cost increases may affect their willingness to exist in B.C. Clearly, B.C.’s comparative advantage in energy would be reduced or eliminated and when

this occurs, both investment and jobs will decline. Some parts of the province will be particularly hard hit, as our current uniform pricing shifts more toward pricing based on the costs of delivery. This will particularly affect rural and remote areas, areas that are more difficult to serve. The biggest loss will relate to the increased export of electricity to the U.S. and the lack of security of electricity supply for people in B.C. Unfortunately, once a deregulated market is established, the rules of international trade agreements will prevent a re-regulation that could guarantee the kinds of results that existed under a regulated government monopoly.⁵¹

Throughout this argument for the continued public ownership of electricity in B.C. there is an implicit approval of B.C. Hydro’s ability to meet the needs of people in this province. This approval is tempered, however, by the recognition that there are some very serious flaws in the current ways in which B.C. Hydro operates. B.C. Hydro, although a regulated monopoly, has, in many instances, been a law unto itself: either corporate management or politicians, who have their own needs to serve, often undermine openness and accountability. These problems are serious, but not insurmountable. Correcting the existing problems with B.C. Hydro, however, are relatively easy compared with the enormous disruptions that a major restructuring of the system will entail.

Electricity is not a commodity like other commodities: it is an industry that provides for human survival in a densely populated and complex world. Electricity is the basic infrastructure for every industry and virtually every job in the country. The significance of who controls this industry cannot be underestimated.

Notes

- ¹ For a more thorough discussion of the factors behind deregulation and privatization in Canada see my following publication: Marjorie Griffin Cohen, *From Public Good to Private Exploitation: GATS and the Restructuring of Canadian Electrical Utilities*, *Canadian-American Public Policy*, 48 (December 2001), pp. 1-79.
- ² Bruce Howe and Frank Klassen, *The Case of BC Hydro: A Blueprint for Privatization* (Vancouver: The Fraser Institute, November 1996).
- ³ Dr. Mark Jaccard, "Reforming British Columbia's Electricity Market: A Way Forward," *British Columbia Task Force on Electricity Market Reform: Second Interim Report*, December 1997.; Mark Jaccard, *California Shorts a Circuit* (Toronto: C.D. Howe Institute, February 2002).
- ⁴ Jaccard, "Reforming British Columbia's Electricity Market," Executive Summary, p. i.
- ⁵ Alberta's deregulated electricity market caused such serious price spikes that the government initiated a \$2.3 billion rebate to customers in order to cushion the impact. See Rick Wallace, *The British Columbia Advantage*, (Edmonton: The Parkland Institute, 2001).
- ⁶ See B.C. government *Strategic Considerations for a New British Columbia Energy Policy*, Interim Report of the Task Force on Energy Policy, November 30, 2001.
- ⁷ In a combined-cycle turbine the excess heat from a gas turbine powers a second steam turbine. This process has enabled efficiencies to rise from 30%, which was typical for the fossil-fueled steam-electric plants and the more conventional gas turbines, to about 60%. [Henry R. Linden, "Technology as an Enabling Force in the Global Restructuring of the Electric Power Industry," *The Electricity Journal* 8, 10 (December 1995), p. 54.]
- ⁸ B.C. Hydro, Annual Report 2001.
- ⁹ Ian Mulgrew, "Energy task force report 'a dangerous piece of work'," *The Vancouver Sun*, January 14, 2002.
- ¹⁰ B.C. Hydro, Consolidated Financial Statements.
- ¹¹ Jaccard, 1997, p. 1.
- ¹² The selling-off of assets is not necessary to undermine the benefits of a public system. Myron Gordon has shown how the leasing of the Bruce Nuclear Reactor in Ontario leaves the public with all of the future costs of decommissioning, while allowing a private British firm to reap enormous benefits from a public asset. Myron J. Gordon, "Disastrous Electric Power Privatization," *CCPA: Behind the Numbers*, vol. 4, no. 1 (April 4, 2002).
- ¹³ Elliot Roseman and Anil Malhotra, "The Dynamics of Independent Power," *Public Policy for the Private Sector*, Note No. 83 (Washington, D.C.: The World Bank, June 1996).
- ¹⁴ Task Force on Energy Policy, p. 24.
- ¹⁵ Wheeling is the term used by the industry to refer to the transmission of electric power from one system to another through the owners of a transmission line. Wholesale wheeling refers to transmission from a generator to a utility. This is in contrast to "retail wheeling" which refers to the ability to deliver electricity to the final customer.
- ¹⁶ John Rowe and Paige Graening, "Property Law: It's Physical – and Logical," *The Electricity Journal*, September 1996, p. 46.
- ¹⁷ Examples of documents that argue the inevitability of deregulation and competition in Canada include: National Energy Board, *Canadian Energy: Supply and Demand to 2025* (Ottawa, 1999); Energy Council of Canada, *The Benefits and Deficiencies of Energy Sector Liberalization*, paper prepared for the World Energy Council Meeting, Lisbon, Portugal, May 1997.
- ¹⁸ For examples of this argument see Mark Jaccard, "Reforming the Electricity Industry: A British Columbia Perspective," *Policy Options* (April 1996); British Columbia Utilities Commission, *The British Columbia Electricity Market Review* (Vancouver: BCUC, September 1995).
- ¹⁹ The nuclear disasters associated with Chernobyl and Three Mile Island, coupled with the immense cost of maintaining the safety of nuclear facilities made this source of energy particularly unattractive at this point.

- A CBC *Ideas* program, "Counting the Cost" (Jan. 5 & 6, 1998), graphically depicted the horrors of nuclear energy failings and claimed that retrofitting nuclear reactors in Canada to make them safe would cost \$130 billion.
- ²⁰ Energy Information Administration, *The Restructuring of the Electric Power Industry: A Capsule of Issues and Events*, January 2000, p. 4.
- ²¹ These figures are based on 1999 production.
- ²² For a comprehensive examination of the historical changes in U.S. electricity regulation see Richard J. Gilbert and Edward P. Kahn, "Competition and Institutional Change in U.S. Electric Power Regulation," in *International Comparisons of Electricity Regulation*, ed. by Richard J. Gilbert and Edward P. Kahn (New York: Cambridge University Press, 1996), pp. 179-230.
- ²³ Christopher Flavin and Nicholas Lenssen, *Powering the Future: Blueprint for a Sustainable Electricity Industry* (Washington, D.C.: Worldwatch, 1994), p. 12.
- ²⁴ Michael Liedtke, "Action on Energy Trading Floors Reverberate in Power-Hungry California," *The Associated Press*, April 17, 2001.
- ²⁵ *Ibid.*
- ²⁶ According to the Annual Report, a portion of the unpaid revenues has not been recognized as revenue because it may be uncollectible. BC Hydro Annual Report 2001, p. 38.
- ²⁷ Dr. Mark Jaccard, *Reforming British Columbia's Electricity Market: A Way Forward*, British Columbia Task Force on Electricity Market Reform: Final Report, January 1998.
- ²⁸ B.C., *Strategic Considerations for a New British Columbia Energy Policy*, Interim Report of the Task Force on Energy Policy, November 30, 2001.
- ²⁹ *Interim Report*, op. cit., p. 22.
- ³⁰ Timothy Egan, "Once Braced for a Power Shortage, California Now Finds Itself with a Surplus," *The New York Times*, November 4, 2001, A17.
- ³¹ For a discussion of the contrary forces of market liberalization and industry concentration see John Ernst, "Public Utility Privatisation and Competition: Challenges to Equity and the Environment," *Just Policy: A Journal of Australian Social Policy*, no. 9 (March 1997), pp. 14-26.
- ³² Michael G. Pollitt, *Ownership and Performance in Electric Utilities: The International Evidence on Privatization and Efficiency* (Oxford: Oxford University Press, 1995), p. 185.
- ³³ John E. Kwoka, "Public vs. Private Ownership and Economic Performance: Evidence from the U.S. Electric Power Industry," Discussion Paper No. 1712 (Cambridge, Mass: Harvard Institute of Economic Research, February 1995), p. 1.
- ³⁴ *Ibid.*, p. 5.
- ³⁵ Pollitt, p. 156.
- ³⁶ Kwoka, p. 5.
- ³⁷ Steve Thomas, "Electricity Reform in Great Britain: An Imperfect Model," *Public Utilities Fortnightly*, June 15, 1996).
- ³⁸ ILO, *Public Services Privatisation Research Unit Paper*, ILO Ref IC 12-0-41/CS 1-04, July 10, 1997, p. 13.
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