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# COMMENTARY

GOVERNANCE AND PUBLIC INSTITUTIONS

## Power Failure:

Addressing the Causes of Underinvestment, Inefficiency  
and Governance Problems in Ontario's Electricity Sector

Michael Wyman



### **In this issue...**

Ontario's electricity sector is plagued by economic and policy problems that reflect its hybrid status between regulation and the market. There are sensible ways out of the quagmire.

## THE STUDY IN BRIEF

### THE AUTHOR OF THIS ISSUE

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Economic and policy problems plague Ontario's electricity sector six years after the government's initial attempt at market liberalization in 2002. Several changes of direction later, the electricity sector has a hybrid structure of regulation and market forces, with a central procurement role assigned to the Ontario Power Authority (OPA). This paper questions whether a central procurement approach represents the best means of achieving a well-functioning electricity sector and, if not, what better approach exists.

The author examines how to fashion a cost-effective, reliable electricity system to bridge the quickly approaching gap between demand and supply. The system should be able to withstand disturbances and must have adequate resources to meet consumers' power demands at a low cost. Risks — including the risks associated with fluctuations in fuel prices, technological change or plant breakdowns — should be distributed to the lowest-cost bearer of such risks.

The author concludes:

1. There must be counterparties other than the OPA to whom generators can sell their production on a long-term basis. For example, the government should embrace the OPA's calls for establishing load-serving entities or Customer Entitlement Agents.
2. The government should recognize explicitly that the OPA's central procurement mission is transitional and intended to help the sector migrate to a more competitive market environment.
3. Governance must be improved at Ontario Power Generation (OPG), which owns and operates the province's electricity generation, by making its assets available to the private sector. To ensure good governance and accountability at the agency responsible for procurement (be it the OPA or its successors), the government should establish clear performance objectives and criteria.

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INDEPENDENT • REASONED • RELEVANT

Ontario's electricity sector has undergone a dramatic transformation in less than a decade. Under the market liberalization attempted in 2002, Ontario expected that the new climate would stimulate the new generation investment required to meet growing demand. But that optimism proved unfounded. Due to both idiosyncratic and institutional factors, the 2002 reforms were met with volatile electricity prices that produced public discomfort.

The government responded by constraining the market and imposing regulations on retail prices and, later, on wholesale prices. The result of this and other factors was to stifle private investment in generation assets. This lack of investment posed significant political and economic risks, given the importance of adequate electricity reserves to a modern, industrial economy.

The province's next attempt to balance the supply-demand curve was to engage in central procurement. Instead of relying on the market to stimulate investment, it created in 2004 a central body owned by the government — the Ontario Power Authority (OPA) — that would determine the generation required to meet the long-term needs of the electricity system and conduct tenders to procure it. This single, publicly owned entity, rather than a private entity (or a mix of public and private entities), would act as a counterparty to generators in order to purchase their electricity on a long-term basis.

Today, the OPA typically selects the private developer submitting the most favourable terms

for new generation, including costs, from among a number of bidders.<sup>1</sup> The authority passes on to consumers the costs of paying generators for the electricity they produce under their contracts. These costs, typically payments for agreeing to build plants with a certain capacity level and supply electricity into the grid, are built into the electricity rates consumers pay to their local distribution company.<sup>2</sup> In its brief existence, the OPA has contracted with private investors for over \$10.9 billion in new generation investment, or about 8,300 megawatts in new capacity.<sup>3</sup> In the years ahead, the OPA plans to contract for more than \$60 billion in new investment to facilitate upgrades to the electricity system.<sup>4</sup>

There may be changes afoot. A 2007 panel reviewing Ontario's energy agencies recommended that OPA's procurement function be folded into another agency — the Independent Electricity System Operator — to save administrative costs. However, it did not question the idea of relying on a central procurement-based approach. The panel backed that method because “effective and fully competitive electricity markets have been slow to develop.”<sup>5</sup>

This paper questions whether a central procurement approach represents the best means of achieving a well-functioning electricity sector and, if not, what better approach exists. As the review panel noted, “The challenge for the sector is clear: Ontario needs a major infrastructure program that delivers cost-effective resources in a timely fashion.”

The central question is how to fashion such a cost-effective, reliable electricity system to bridge the quickly approaching gap between demand and supply. The system should be able to withstand disturbances and must have adequate resources to meet consumers' power demands at a low cost.<sup>6</sup> Risks — including the risks associated

1 See “Integrated Power System Plan.” Exhibit F, Tab 1, Schedule 1, OPA (2007).

2 Under the system that has been implemented, the OPA owns the contractual right to capacity and other electricity products.

3 OPA Business Plan (2007).

4 OPA Business Plan (2007).

5 See Review Panel Phase 2 Report on Ontario Electricity Agencies (December 20, 2007). It should be noted that the Panel did not have an explicit mandate to “contemplate privatization, nor any changes to the current hybrid market structure in Ontario.”

6 For further detail, see Hunt (2001).

with fluctuations in fuel prices, technological change or plant breakdowns — should be distributed to the lowest-cost bearer of such risks.

The most efficient way of achieving these goals would be to address the failures that have caused underinvestment, both by remedying structural and institutional failures and by rethinking price controls. In this paper, I analyze these failures and provide recommendations for improving the functioning of Ontario's electricity sector by reducing and eventually eliminating reliance on central procurement.

The key factors which have led to underinvestment are: (i) the lack of viable counterparties to whom generators can sell their product on a long-term basis; (ii) poor accountability at Ontario Power Generation (OPG), which owns and operates the province's electricity generation once held by the former Ontario Hydro; (iii) OPG's continued public ownership of key facilities, and (iv) political intervention in prices.

This paper's recommendations to address these problems are that:

- Public-sector actors, including the government and the OPA, should continue and expand efforts to ensure that there are entities other than a public body with whom prospective new generation investors can contract on a long-term basis. For example, the government should embrace the OPA's calls for establishing load-serving entities.
- The government should recognize explicitly that OPA's central procurement function is transitional and that one of its main objectives is to help the sector migrate to a more competitive market environment.
- The government must persist with efforts to improve governance at OPG, including clarifying OPG's mission. It should consider the privatization, by sale or lease, of OPG assets and/or allow OPG to obtain a market-level return on equity.
- To further ensure good governance and accountability, the government should

establish clear performance objectives and criteria for the agency responsible for power procurement (be it the OPA or its successors).

- The government should embrace the principle of technological neutrality in its dealings with the OPA and the OPG. Moving to lower-emitting power sources should be achieved through environmental regulation (such as a cap-and-trade system) rather than through ministerial directives.

### Background: The Emergence of the "Hybrid" Sector Structure

The Government of Ontario has been deeply involved in the electricity sector for more than a century. It established public ownership over nearly all transmission and generation facilities in the early 1900s. Government involvement has been driven by the large economies of scale in electricity production, particularly the fossil fuel, nuclear and hydroelectricity plants operated by Ontario Hydro.

In the mid-1990s, the province began the process of introducing wholesale competition to Ontario Hydro's near monopoly on generation and transmission. At the time, Ontario Hydro had experienced significant cost increases, notably in relation to the Darlington nuclear facility, which resulted in dramatic increases in electricity prices to consumers.

In 1996, a provincial independent committee recommended "reforms . . . necessary to introduce competition into Ontario's electricity system." These reforms included termination of Ontario Hydro's near-monopoly control on generation and establishing a "transmission system open to all suppliers," including private sector generators (Macdonald Committee 1996).

Three factors spurred this reform: (i) loss of trust in Ontario Hydro, especially its ability to operate cost-effectively; (ii) technological changes that decreased economies of scale in electricity production, particularly the increased availability of efficient, natural-gas fired turbines; and (iii) the

success of wholesale market competition in US jurisdictions as well as in England and Wales.

Following the Macdonald Committee report, the government split Ontario Hydro into two main entities: OPG, which would own the generation assets, and Hydro One, which would own the high-voltage transmission lines and some distribution assets. As well, the province set about making the regulatory reforms and developing the institutions needed to facilitate the development of competitive wholesale and retail markets. It constructed a wholesale market in which generators operated and supplied electricity to buyers based on a spot price set every five minutes. The varying spot price was based on constantly changing demand and supply conditions.<sup>7</sup>

One of the long-term tenets of a competitive wholesale electrical market is that generators compete to determine which supplier can deliver power at the lowest cost. The government created an agency independent of OPG, the Independent Electricity Market Operator (IMO), to oversee the market's operation, including selecting which generators would supply what quantities of power.<sup>8</sup> To deter OPG from abusing its market power, the government instituted a market power mitigation agreement (MPMA) requiring it to rebate to consumers its revenue above certain thresholds. Under the MPMA, OPG was also required to divest the majority of its facilities within fixed time periods.

Finally, the government introduced competition for electricity sales to end-consumers. Private-sector electricity retailers were allowed to compete with (primarily municipally owned) local distribution companies to sell power to retail

consumers.<sup>9</sup> Low-volume retail consumers were to be exposed to the spot price of electricity either on a month-to-month basis, quarterly or yearly, through a “true-up” mechanism.<sup>10</sup>

Wholesale and retail competition began simultaneously on May 1, 2002, two years behind schedule. The new pricing method lost the support of both consumers and the government during its first six months of operation. Several factors, including extreme heat and the unavailability of some key Ontario generation facilities, pushed the cost of power to unusually high levels in the summer of 2002. In response to mounting criticism of the high summer electricity prices from consumers, the government froze retail prices at 4.3 cents per kilowatt hour, the price that consumers had been paying before the market launched (Hrab and Trebilcock 2007).

## The Current Sector Structure

### *The “hybrid” of Regulation and the Market*

Responding to the failure of the preceding regime to stimulate new investment in power generation, the new provincial Liberal government elected in October 2003 made significant changes to the electricity sector. The new approach preserved elements of the competitive market that the previous government had created but placed greater limits on the market's scope and more emphasis on regulation.

Reducing the amount of competition, the government retained the wholesale spot market but limited the amount of generation that would participate in it. It removed OPG's baseload hydroelectric and nuclear generation — 40

7 Ibid.

8 This selection process is commonly known as “dispatch.”

9 Even if a local distribution company owned the distribution network, a private-sector retailer could in theory compete and profit by obtaining contracts to sell power at lower prices or by offering different contract terms to consumers.

10 The Ontario Energy Board in a 1999 decision gave local distribution companies two options with respect to low-volume consumers: to sell at the spot price or at 4.3 cents/kWh with periodic true-ups. The Board found that: “On balance, small volume/residential consumers [i.e., users with peak demand of 50 kW or less] should receive a ‘fixed’ one-year price for SSS [Standard Supply Service] with annual ‘true-ups’ to reflect the actual average spot market price as a component of the next-year fixed price. Large-volume consumers [i.e., peak demand greater than 50 kW] should receive a spot price pass-through.” However, the Board also decided that, “Any distributor when filing its SSS rate proposals may make application for an exemption to the fixed price SSS in favour of a spot price, pass-through rate for small volume/residential and general service customers.”

percent of Ontario's installed capacity — from competitive spot market pricing and fixed the price at which this power could be sold. In addition, it capped the effective price at which OPG could sell power from its other assets (Hrab and Trebilcock 2007).

The government abandoned the requirement that OPG sell off large portions of its assets to the private sector. The latter measure removed the prospect of such generation eventually participating in the spot market in the near future. Since nearly three-quarters of all electrical generation remained in public hands and was priced at levels independent of the spot market, the government essentially ended wholesale power competition (Deweese 2005).

Furthermore, the government introduced a heightened degree of regulation to restrain retail prices from the vagaries of the market. Although it removed the retail price freeze implemented in November 2002, the government dampened retail prices by regulating the price that OPG would receive for its power at the wholesale level. Instead of allowing prices to fluctuate month-to-month, depending on spot prices, the government mandated that retail prices be regulated on a yearly basis by the Ontario Energy Board so as to reflect the wholesale costs of electricity produced during the previous year.

Retail competition persisted to the extent that consumers continued to purchase fixed-price contracts for power from private power retailers, as had been the case under the 2002 regime (Hrab and Trebilcock 2007).<sup>11</sup>

The new government also imposed more regulation and central planning on the institutions and agencies active in the electricity sector. The newly established OPA had a mandate not only to procure new generation but also to centrally plan the system through developing an

“Integrated Power System Plan” and conservation efforts. The government renamed the agency designed to operate the electricity system to the Independent Electricity System Operator from the Independent Electricity Market Operator.

It also enhanced the role of the OEB, the sector regulator. The OEB received mandates to oversee the retail pricing of electricity for residential customers and, beginning in April 2008, the wholesale pricing of OPG's regulated generation. Further, it received authority to oversee the Ontario Power Authority by “licensing” it, reviewing its budget and reviewing its Integrated Power System Plan and procurement processes.<sup>12</sup>

## The Reasons for Underinvestment and the Resort to Central Procurement

### *The Failure of the Pre-2004 Market to Ensure New Investment*

The government's resort to central procurement was essentially a response to underinvestment in new generation under the pre-2004 regime. Before 2004, proponents of a competitive market believed that it would produce investment in “adequate generating plant in the long run, and even in the short run” (Hunt 2001). In practice, the Ontario wholesale market did not ensure new generation investment sufficient to meet growing demand, even if it stimulated limited investment in new gas-fired generation capacity. The OPA noted in 2006 that there was a significant “shortage of local generation” in the greater Toronto area in particular.<sup>13</sup>

**SHORT-TERM FACTORS:** The competitive wholesale market failed to stimulate new generation investment partly due to short-term,

11 The OEB refers to this as the “Regulated Price Plan.” The RPP, which has gone through multiple iterations, currently sets a price of 5.5 per kWh for consumption below and 6.4 cents per kWh for consumption above a certain threshold. Differences between the revenue received through the regulated rate and the actual costs of wholesale power during the previous year are credited to or recovered from ratepayers through a “variance account.” See OEB, “Regulated price plan manual” (March 11, 2005) and OEB, “Monthly variance explanation” (February 22, 2007).

12 *Ontario Energy Board Act* S.O.1998 c.15, s.57.

13 “Ontario's Integrated Power System Plan Discussion Paper 5: Transmission.” OPA (2006).

idiosyncratic factors. The Ontario market opening occurred in the wake of the Enron bankruptcy that reduced the availability of credit to private-sector generators. This made it difficult for generators to respond to rising Ontario spot prices by building new generation capacity.

As an alternative to relying on the spot market to recover their capital costs, many generators wished to establish long-term contracts to sell their power to wholesale buyers. Such contracts would provide price certainty for the sellers. However, generators' low-credit ratings made them unattractive counterparties, thereby impairing the emergence of a liquid, long-term contracting market.

At root, however, the wholesale market's failure to stimulate new investment was a manifestation of problems in the Ontario energy sector agencies' structure and institutions. Specifically, three forces combined to restrict investment: institutional factors, political influence and public ownership.

**INSTITUTIONAL FACTORS:** I have mentioned the lack of viable purchasers to whom generators could contract to sell their power on a medium- or long-term basis. In successful competitive wholesale markets, such as New England and England and Wales, long-term and medium-term contracts have played an important role. In New England, approximately three-quarters of trading is in the form of bilateral contracts (ongoing contracts between generators and wholesale buyers) and only one-quarter is in the real-time spot market.<sup>14</sup>

The main reason that a system of long- and medium-term contracting for power (as opposed to a real-time spot market) failed to emerge in Ontario was that the sector structure unveiled in 2002 lacked creditworthy counterparties willing to act as buyers in long-term contracts.<sup>15</sup> In particular, the sector structure failed to provide for "load-serving entities" (LSEs) and/or a

restructuring of Ontario's numerous local distribution companies to fulfill this function. A load-serving entity acts as an intermediary between loads (clusters of electricity demand, such as a municipality) and the wholesale marketplace, taking the responsibilities and risks of serving the loads.<sup>16</sup>

LSEs are often active in buying and/or selling electricity in a forward market or through contracts to procure energy in the future.<sup>17</sup> LSEs can enable long-term contracting by acting as creditworthy counterparties. But Ontario Energy Board rules made it prohibitive for Local Distribution Companies (LDCs) to enter into long-term power purchase contracts.

**POLITICAL INFLUENCE:** The second cause of underinvestment was that the government found it acceptable, straightforward and appropriate to directly intervene in energy prices for political reasons. During the summer of 2002, some retail consumers faced higher electricity prices, while others anticipated them in 2003 as part of a "true-up" mechanism triggered by 2002's higher wholesale prices. Pressure from the public and the media eventually led the government to announce that retail prices for low-volume consumers would be frozen. The difference between the wholesale market spot price and the frozen retail price would be paid by the Ontario Electricity Financial Corporation, yet another new government-owned entity, established in part to manage the debt of the former Ontario Hydro.

The government's control of energy prices discouraged generation investment. In Ontario's market structure, generators received the market-clearing price in the spot market for the energy they sold into the grid. The difference between the market-clearing price and generators' marginal costs would, in theory, allow generators to recover their capital costs.

14 See "About Wholesale Electricity Trading." Available at [http://www.iso-ne.com/nwssiss/grid\\_mkts/how\\_mkts\\_wrk/whlsle\\_elec\\_trad/index](http://www.iso-ne.com/nwssiss/grid_mkts/how_mkts_wrk/whlsle_elec_trad/index).

15 As used in this paper, "creditworthiness" refers to an entity's financial soundness, including its credit rating, which is an important factor in making it an attractive counterparty in electricity contracts.

16 See "Reducing Reliance on Central Procurement." OPA Integrated Power System Plan, Exhibit F, Tab 2 (2007).

17 "Load Serving Entity Concept for Ontario's Electricity Market." OPA (December 2006).

However, the government's interventions in retail prices made generators concerned that the province might eventually prevent wholesale prices from being sufficiently high enough to recover their capital costs. Potential investors feared that the government would lose enthusiasm for subsidizing the difference between the wholesale spot price and the 4.3 cents per kilowatt hour retail price. Due to this danger, potential generators generally refrained from investing in Ontario electrical power production, absent an explicit price guarantee (Dewees 2005).

**PUBLIC OWNERSHIP:** The failure of the pre-2004 market to stimulate new investment can also be attributed to a Crown corporation's continued ownership of the majority of generation assets. By not making its facilities available for private sector investment, OPG prevented private investment from expanding them or converting them to new generation types, such as from coal to natural gas. OPG also did not make available its rights over certain sites, such as rivers whose hydropower could be developed by the private sector.

Moreover, OPG was "not well run" in managing these facilities (Manley 2004). Its inefficiencies contributed at least partially to the unavailability of key OPG-operated nuclear facilities in the summer of 2002 and the price spikes triggering direct political control over retail prices in November 2002.<sup>18</sup>

### Problems with Central Procurement: A Comparative Perspective

In its 2004/2005 reforms, the government created the OPA to solve the problems that had led to underinvestment. In particular, the government believed this new body would provide investors with a long-sought, creditworthy counterparty for long-term contracts, thereby stimulating new generation investment. At least in the initial

period, the OPA was expected to contract with private generators — rather than OPG — for new generation capacity.

It is true that over the short-term, central procurement is likely to secure more steel in the ground. The OPA has the legal characteristics and financial mechanisms necessary to be a creditworthy counterparty, with enabling legislation providing the power to impose the cost of its procurement contracts on ratepayers.<sup>19</sup>

The OPA has already demonstrated a track record of stimulating significantly more new generation investment than did the spot market in the pre-2004 period. Most of the OPA's procurement processes (including requests for proposals) thus far have attracted significant numbers of proposals. While less than 2,200 megawatts of new projects were constructed during the 2000-2003 period, the OPA in the 2005-2007 period signed contracts for more than 8,000 megawatts of new generation. Meanwhile, firms interested in participating in anticipated future OPA procurements are investing large amounts of money in developing their project plans and purchasing sites.

Nevertheless, central procurement by a single purchasing agency is not the best long-term approach to remedying power generation underinvestment. Even if it secures investment in the short run, this approach ought to be used only as a means of transitioning to other mechanisms for stimulating generation investment.

Typically, other jurisdictions adopt single-buyer central procurement as a transitional step to a competitive market and/or an emergency measure. Indeed, central procurement is comparatively expensive and typically results in the purchaser paying contract prices above spot market prices and allocates most market and technology risk to ratepayers.

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18 OPG Review Committee, *supra*.

19 Although the OPA's obligations are not explicitly guaranteed by the province, it has been given power in the Electricity Act to "establish and impose fees and charges to recover the costs of doing anything the OPA is required or permitted to do under this or any other Act." *The Electricity Act* specifically states that, "For greater certainty, the OPA may, subject to the regulations, establish and impose charges to recover from consumers its costs and payments under procurement contracts."

In emerging markets with a history of state-owned generation, central procurement through a single purchasing agency is usually implemented as an intermediate step in constructing competitive markets. In particular, central procurement is often employed to spur private investment where generators perceive investment risks to be high.

A market structure based on long-term contracts allocates credit risk to the buyer and ultimately to ratepayers or taxpayers.<sup>20</sup> But long-term contracts shelter sellers from the credit risks often associated with non-state purchasers in developing countries: single-purchaser buyers are typically agencies that are state-owned and hence (generally) good credit risks. Sheltering generators from these risks helps stimulate capital investment by private-sector generation investors (Hunt 2001).

For example, South Korea's former state-owned monopoly generator, KEPCO, acted as a single purchaser as the first phase in the country's shift to a competitive market in the early 2000s. The second phase involved greater wholesale competition (Byrne 2004). Central procurement has also been used as a mechanism for stimulating the development of independent power producers in China (Chun 2005).<sup>21</sup>

But central procurement by a single entity has been used sparingly in developed countries that have restructured their electricity markets since the 1990s. In the instances where it has been employed in developed countries, centralized procurement as defined above is generally used as a transitional, limited or tightly regulated measure.

Portugal's Public Electricity System, for one, introduced long-term contracts as a way of stimulating the growth of Portuguese independent power producers ahead of the emergence of a

competitive Iberian power market to be developed jointly with Spain (IEA 2004). Meanwhile, in certain US states, government-owned power authorities own a relatively small amount of power capacity that is used to supply the power needs of the broader public sector and industries that government wishes to subsidize.<sup>22</sup>

Central procurement has also been used as an emergency measure to prevent imminent supply disruptions in jurisdictions with competitive wholesale markets. California used central procurement as a last-resort to ensure that generators maintained operations and new construction amidst a collapse of creditworthiness among buyers and other market challenges in 2001. The US federal government's refusal to use its authority to force generators to "keep supplying electricity without assurances that they would be paid" made it "clear that if the State of California did not take action, the lights would go out as suppliers refused to generate electricity unless they were assured of adequate payments by a creditworthy entity".<sup>23</sup>

To protect against that eventuality, the California Department of Water Resources signed 10-year power purchase contracts worth approximately \$43 billion. The state's primary motivations were "to provide incentives to generators to make their plants available to supply electricity" and "to facilitate completion of new . . . plants" in this unusual context (Joskow 2001).

The Illinois Power Authority, which has a mandate to engage in central procurement, appears set to purchase electricity using shorter-term contracts and in a significantly more regulated fashion than the OPA. "The IPA will periodically seek bids for electricity from generators such as Exelon, Ameren, Midwest Generation and others" and "then negotiate for the lowest possible prices for residential

20 Credit risk in the electricity context is the risk that the counterparty will not perform his obligations or pay damages, including inability due to financial failure or insolvency. See Hunt (2001).

21 The Chinese State Council is the supreme executive organ of state power in China.

22 See, for example, the New York Power Authority.

23 "California's Electricity Crisis." Paul Joskow, Paper, MIT, September 28, 2001.

consumers.”<sup>24</sup> Thus far, prior to IPA’s formal establishment, Illinois has delegated the IPA’s responsibilities to its predecessor, which appears to be signing five-year contracts, in contrast to the OPA’s 20-year standard. Moreover, the IPA must seek approval of the state legislature for all contracts worth more than \$1 billion, and its acceptance of specific bids is at the authority of an external state agency.<sup>25</sup>

There are two main reasons jurisdictions are reluctant to use centralized procurement, except as a short-term or limited measure. First, such procurement allocates risk unfavorably and, second, it is relatively expensive from the buyer’s standpoint. Centralized procurement normally results in all or most of the market, technology and credit risk being shifted to the buyer and ultimately to ratepayers. Long-term contracts also typically result in the seller bearing construction and operational risk.

However, long-term contracts through a single purchaser provide generators with shelter from significant risks, such as market prices dropping due to decreases in demand, or their product becoming uncompetitive because of technological improvements in alternative generation. If the market prices that subsequently materialize are significantly lower than expected, it is the buyer and not the seller who bears most (or, in the cases of some contract structures, all) of the effective cost. In addition, buyers in long-term contracts frequently assume significant credit risks, since private generation investors frequently possess low- or medium-grade credit ratings (Hunt 2005).<sup>26</sup>

Central procurement contracts in practice frequently result in buyers paying prices

significantly exceeding spot market prices, in spite of the fact that buyers bear the risks just discussed. California’s contracts, for example, were struck at above-market levels (Joskow 2001). This phenomenon can be partially attributed to the fact that buyers in central procurement markets may be very eager to ensure that new capacity is built in the near term (Green 1999). Where buyers are extremely eager to build new facilities, suppliers can exert a substantial premium for agreeing to do so.

These problems also present themselves in Ontario. Many of the OPA’s contracts result in a significant amount of market and technology risks being borne by the OPA and, indirectly,

Many of the OPA’s contracts result in a significant amount of market and technology risks being borne by the OPA and, indirectly, Ontario ratepayers.

Ontario ratepayers. Most of the 2005/2006 contracts for new natural gas capacity gave generators a right to support payments covering their fixed costs (and other payments covering certain aspects of their variable costs) regardless of the future direction of spot market prices.<sup>27</sup> In addition, generators receive payments even if future competing technologies make

their product uneconomic.

It is unclear whether recent OPA procurement contracts will in the long run be expensive relative to future spot market prices, as has proven to be the case in California. Many projects under OPA contracts incorporated rates of return on equity comparable with industry norms. OPA CEO Jan Carr suggests that the authority’s contracts will provide generators with payments designed to cover only their capital costs and will shift risk to ratepayers only “to the extent necessary to make investment feasible” (Carr 2005).

However, anecdotal evidence suggests such contracts may be overly priced to the benefit of generators. A former Ontario deputy minister of

24 “Illinois back in power market; electricity experiment will be watched closely.” *Chicago Tribune* (July 29, 2007) and Illinois Public Act 095-0481 (2007).

25 See *Chicago Tribune*, supra.

26 Hunt, supra.

27 These contracts are known as Clean Energy Supply (CES) contracts.

energy involved in the 2003/2004 procurements has suggested that generators were able to extract a premium for agreeing to construct new generation when the government was desperate to ensure adequate power supplies:

What has the government's policy-induced crisis wrought? It has led to . . . the Ontario Power Authority entering into numerous deals to secure replacement generation . . . in order to rush ahead with new generation to deal with the self-inflicted crisis. In this instance . . . everyone on the other side of the deal knows the government is in panic mode." (Purchase, 2007).

Even assuming that the OPA manages to mitigate the related cost-effectiveness problems that have plagued other jurisdictions, there are other compelling reasons why central procurement ought, at best, be a transitional measure. First, central procurement affords an avenue for political factors to intrude on generators' investment decisions and thereby produce inefficient decisions.<sup>28</sup> In a well-functioning, competitive, wholesale market, private investors make investment decisions based primarily on market information, even if they indirectly take into account political preferences for locations and technologies. Competitive wholesale markets "overcome highly politicized processes of investment" (Hunt 2001).

In contrast, central procurement places the choices of when, where and what to build largely in the hands of central planners (Hunt 2001) who may base their plans on government-set, politically influenced parameters. The current Liberal government has used its legislative powers to mandate that OPA planners include and ignore certain technology choices.<sup>29</sup> These measures may arguably be promoting inefficient decisions regarding generation technology (Purchase 2007).

Moreover, Ontario electricity's system currently bears the cost of administering both a wholesale market and a procurement-based system. Unlike the developing countries earlier discussed, Ontario has already made the substantial investments associated with developing and operating a market, including the IESO computer models, facilities and human resources. Central procurement adds to such burdens the ongoing costs associated with running the bureaucracy, including the OPA, necessary to oversee procurement.

Reducing the role of procurement would reduce the high overhead costs associated with running this hybrid system. Such costs are substantial: the OPA and IESO operating budgets total more than \$190 million annually.<sup>30</sup> Folding the OPA's procurement function into the IESO, as recommended by the 2007 Review Panel on the province's electricity agencies, would reduce, but not eliminate this cost.

In the near term, central procurement is likely to achieve more generation investment than did the pre-2004 competitive wholesale market. In the long run, however, Ontario should seek to reduce its reliance on this method of stimulating generation investment. Central procurement results in questionable cost-effectiveness and allocates risk in ways unfavourable to ratepayers. These problems are compounded by the opportunities for political intervention in investment decisions and the high administrative costs.

## An Alternative to Relying on Central Procurement

The alternative to central procurement is to rely on a competitive wholesale market — including long-term contracts — to promote new investment. Counting on a competitive wholesale market to stimulate new investment will require addressing the root causes of underinvestment in

28 Harris (2006).

29 Minister of Energy Dwight Duncan letter to OPA CEO Jan Carr, June 13, 2006.

30 The OPA will spend approximately \$57 million in 2007 and the IESO spent about \$133 million in 2006.

the pre-2004 market. As noted above, these were: the absence of creditworthy counterparties for new generation, continued state ownership of generation assets and poor governance (at OPG), along with political control of energy prices.

#### *Fostering Creditworthy Purchasers for Long-Term Contracts*

Disengaging the central procurement function of the OPA (or its successors) will require fostering creditworthy purchasers for long-term contracts. The government and public sector actors could achieve this by enabling intermediaries to buy power in the form of long-term contracts and then resell such power to consumers, or resell power to other entities that would then resell power to consumers. These types of intermediaries, or “load serving entities,”<sup>31</sup> would provide counterparties willing and able to contract with generators to buy their power on a long-term basis.<sup>32</sup>

The government and the OEB could also consider giving Local Distribution Companies the mandate and ability to engage in long-term contracting.<sup>33</sup> For example, the OPA or government could provide that LDCs must have adequate contracted provision of capacity reserves to meet their projected peak load requirements (Oren 2005).

Even if LDCs were so mandated, intermediaries such as LSEs would still have a role. An individual LDC, or even a group of LDCs, might not wish to contract for large blocks of a given plant’s long-term capacity, partly due to the risk that its customers might at some point flee to retailers. In such a case, an LSE could buy such power and resell it in smaller blocks on shorter

terms to LDCs to meet their near-term requirements.<sup>34</sup> LSEs could also assist LDCs in hedging their risks in forward markets.

In combination with fostering the growth of LSEs, the government should embrace the OPA’s efforts, such as its cooperation with the Natural Gas Exchange (NGX), to develop a forward price curve by facilitating forward auctions. These auctions help generation developers and LSEs to determine appropriate prices for future electricity production.<sup>35</sup>

#### *Ending the Provincial Ownership Stake*

The government should immediately signal that the OPA’s purchasing role, currently the subject of substantial ambiguity, is transitional — OPA CEO Jan Carr suggests that the authority should be a “transitional agency” and will at some point “do itself out of a job.” Reflecting this view, the OPA’s 2007 business plan suggests that, “Over time, as the market develops sufficient ability to ensure timely investment in supply resources, the need for OPA procurement activities will decline.”<sup>36</sup>

However, there is significant uncertainty among industry players about the OPA’s central procurement mandate. Some express doubt that a procurement bureaucracy would willingly “do it itself out of a job.”

Under current regulations, the OPA is mandated not to engage in procurement before making an assessment of “the likelihood that investment by other persons will meet the need for electricity supply.” This sentiment should be firmed up by amending the *Electricity Act* to place a sunset clause on the OPA’s procurement

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31 See OPA “2007 Business Plan” and “Ontario’s Evolving Electricity Sector.” Jan Carr presentation to APPro 19th Annual Power Conference, Toronto, November 13, 2007.

32 These or similar types of entities have also been called “Customer Entitlement Agents.” See Carr, November 13, 2007, *supra*.

33 As discussed above, LDCs are currently required by the OEB to purchase their power from the spot market and precluded from entering long-term contracts.

34 See Independent Power Producers’ Society of Ontario Final Argument, Ontario Energy Board, Standard Supply Service Code Proceeding, OEB File No. RP-1999-0040.

35 “Integrated Power System Plan.” OPA (2007).

36 OPA Business Plan 2007, *supra*.

mandate, stipulating that such mandate be reassessed periodically and, if necessary, modified.

### *Establishing more Accountability*

To address another cause of underinvestment, the government must strengthen the governance of all electricity-related public-sector bodies. Clearly, the OPA must to some degree be independent of government: the separation of procurement from the core policymaking role of government enhances the credibility of procurement efforts with potential investors and can act as a check against the government assisting political allies to obtain contracts.

At the same time, there are compelling arguments that independent agencies in the energy sector should be accountable to government. Accountability acts as a way of controlling agency costs, of reining in the natural inclination of bureaucracies to pursue their own interests at the expense of the objectives of the government and the public interest.

Bureaucrats sometimes seek to maximize their budgets in order to further their job security, remuneration or prestige. In the absence of constraints, procurement bureaucrats may tend to engage in more long term-contracting than is necessary to help protect their jobs. Bureaucrats might also be motivated to open contracts to entities with which they might want to seek job opportunities in the future.<sup>37</sup>

On paper, the OPA achieves a good balance between independence and accountability. The *Electricity Act* formally guards against undue government influence by preserving independence for the OPA in its internal operations and in specific aspects of its procurements. Although the government may constrain procurement decisions by regulation, the minister of energy is given power to direct particular procurement efforts only until “the Board’s first approval of the OPA’s

procurement processes,” which will likely take place in late 2008 or early 2009.<sup>38</sup>

The internal operations of the OPA are effectively in the hands of the OPA board of directors, removed from the minister’s formal control. On the other hand, the *Electricity Act* provides several formal mechanisms to ensure that the OPA is accountable to government, such as the requirement that the minister of energy approve the OPA’s business plan. As well, the independent OEB must approve the OPA budget and review the OPA’s proposed procurement processes.<sup>39</sup>

Nevertheless, in practice, these accountability measures may prove insufficient. Even if the OEB has a formal mandate to review and approve the OPA budget, it is unclear that it has the tools for effective review or what criteria should be used. The OEB’s legislative mandate to assess “cost effectiveness” and “economic prudence” are restricted to the Integrated Power System Plan.

Clearly, the current mechanisms for monitoring the OPA’s operations, budget and priorities and addressing any perceived problems could be significantly improved. The OPA lacks externally imposed guidance on what constitute appropriate performance criteria and targets although, in their absence, the OPA has attempted to develop its own criteria in its 2007 Business Plan. The result is the unsatisfactory situation where the OPA could counter charges of poor performance by referencing unclear performance criteria.

OPG’s inefficiencies and continued ownership of key generation assets were important reasons for the failure of the 2002 competitive wholesale market. Since 2003, issues associated with the governance of OPG continue to hold back investment in new generation.

The Agency Review Panel noted that “OPG continues to operate in an environment of uncertainty” about what objectives it should be pursuing. OPG has been given a mandate to continue to hold its existing assets, but “it is not

<sup>37</sup> Majone (1999).

<sup>38</sup> *Electricity Act*, supra, s.25.4

<sup>39</sup> *Electricity Act*, supra, s.25.31.

clear whether or how OPG will be allowed [by the government] to expand in future.” This uncertainty may be “hobbling its ability to operate as a commercial entity and generate earnings adequate to support new investment.”

The current approach presents the double disadvantages of (i) preventing OPG from using its resources to invest in new generation, while (ii) discouraging and restricting private sector involvement in certain new generation. The latter occurs because OPG continues to hold on to key sites, preventing private developers from building on or converting them, and “from the perspective of other market participants, the possibility of support from the Province can be seen as providing OPG with an unfair advantage over private-sector generators.”<sup>40</sup>

OPG’s inefficiencies and uncertainty of mission are largely reflections of the special corporate governance challenges presented by state ownership. The market’s power to align the interests of the owners and managers of state-owned enterprises (SOE) is highly limited. The objectives that SOE managers should be pursuing are often blurred by government, which makes monitoring managerial efficiency difficult. Consequently, the government typically has less ability to monitor management than owners of private enterprises (Schleifer and Vishny 1997). Managers are also often hindered in managing effectively by political interference.<sup>41</sup>

Product market competition is extensive for Ontario’s non-SOE generators due to the operation of the hourly spot market and OPA tendering processes that are designed to award contracts to the lowest-cost bidders. In contrast, OPG’s management is unfairly sheltered from the effects of poor performance in the product market.

The government did not permit OPG to go bankrupt nor exact penalties on all but the most senior OPG management in spite of its dire

performance over several years prior to 2003.<sup>42</sup> On the contrary, the minister of energy took measures to ensure that OPG would avoid bankruptcy, announcing that the government would guarantee and effectively assume a significant portion of OPG’s growing debt load.

The government’s ability to monitor OPG management is undermined by its tendency to obscure OPG’s mission and performance and intervene in its management. The 2004 Review Committee on the future of the OPG suggested that the authority’s performance be evaluated by the type of criteria used to measure “commercial” generators’ performance. This proposal has only been superficially implemented.

The government’s control of the way OPG creates power, and the prices it charges, make it difficult to evaluate OPG’s performance on the same basis as private generators. Government setting of output prices inherently limits OPG’s earnings by capping its revenues, the top line of a profit calculation. As a result, managers can blame poor profitability on the government’s revenue limit. For example, in 2006, OPG’s earnings declined by 25 percent. OPG’s financial documents acknowledged the decline, but suggested that, “Earnings in 2006 were significantly affected by a reduction in gross margin from electricity sales primarily due to lower average sale prices.”

Moreover, it may be unclear whether OPG’s lower cost efficiencies are due to poor management or politically imposed obligations to use less cost-efficient technologies that meet the government’s environmental priorities.

The government must clarify OPG’s mission and performance objectives, a critical prerequisite for improving OPG’s governance and efficiency. It should give OPG a mandate either to (i) expand existing generation or (ii) sell or lease its sites to the private sector. In the long term, the latter option may represent the best means of

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40 Agency Review Panel Phase II report, *supra*.

41 This is not an exhaustive list of the corporate governance challenges faced by state-owned enterprises. Another important challenge is the significant power of public sector workers.

42 OPG Review Committee, *supra*.

encouraging greater accountability because it would reduce the governance challenges associated with state ownership.

Medium-term or short-term OPA contracts with private developers proposing to purchase or lease de-controlled OPG facilities could be used to facilitate de-control. Such contracts would give a private developer a guaranteed revenue stream to offset the risks associated with committing to make lease or interest payments to acquire rights to the facility. The privatization of the Bruce nuclear generating station was facilitated in this way.

Although some might argue that allowing private involvement in OPG assets exposes the government to criticism that it made a bad deal, it need not be so. The government has successfully engaged in public-private partnerships in healthcare infrastructure without attracting widespread criticism. A majority of public opinion is open to the idea of greater public-private partnerships in electricity generation.<sup>43</sup> The inefficiencies associated with keeping OPG's infrastructure in its current state offer a powerful argument for taking a new course.

### *Ending Political Interference*

If the government decides to keep OPG's assets in public hands, it must ensure that the prices at which OPG's energy is sold are based primarily on market forces rather than political considerations. As discussed above, the government currently regulates the price of OPG's hydro and nuclear generation and sets an upper revenue limit on OPG's unregulated generation as a mechanism for dampening retail prices. The return on equity that the government allows OPG is currently well below industry norms, resulting ultimately in lower consumer electricity prices.<sup>44</sup>

Controlling OPG's output prices in this fashion risks prolonging the institutional problems that led to underinvestment in several ways. First, when OPG is permitted only a below-market return on equity, it becomes difficult to monitor the company's performance. Is its sub-industry financial performance due to poor cost efficiencies or to its capped revenue and limited ability to make capital expenditures?

Second, controlling OPG prices may create the perception among potential investors that the government is open to manipulating prices and thereby expropriating private-sector generators' investment and rents. In an environment where a private-sector entity invests and "the other party, the government, has strong incentives to behave opportunistically," governance "becomes crucial to motivate the operator to invest and to restrain the opportunistic behavior of the government" (Holburn and Spiller 2002).

Third, to the extent OPG maintains a mandate to operate key facilities, OPG's artificially depressed wholesale prices prolong the process of keeping OPG assets out of the hands of potential private-sector investors. By capping the price at which OPG can sell its baseload power into the market, the government is restricting incentives for private generators to build baseload facilities. The result is that developers will concentrate on facilities designed to supply loads at peak times even if this is not consistent with the needs of the system.

To remedy this situation, the government must stop controlling the price at which OPG sells its power for political ends. The fact that the OEB will have begun to set the prices OPG receives for its nuclear and hydroelectric power as of mid-2008 is a positive step in this regard. However, the government ought to make clear that the OEB will not be subject to political considerations in its rate-regulating function.

<sup>43</sup> See Canadian Council for Public-Private Partnerships. "Trends in Canadian Support for Public-Private Partnerships." (2006).

<sup>44</sup> Ministry of Energy News Release, (February 9, 2006). In 2003, the government began regulating the price at which OPG's baseload nuclear and hydroelectricity power would be sold. In addition, the government capped the effective price at which OPG could sell power into the spot market from its other assets, which constitute 33 percent of Ontario's installed capacity. See Hrab and Trebilcock (2007). The costs incorporated into regulated retail rates reflect not only the costs of private-sector generation sold through the spot market, but also the price of generation produced by OPG at government-set prices.

Under present legislation, the government may tell the OEB to use specific methodologies and assumptions in selecting OPG's rate of return.<sup>45</sup>

If the government does prescribe specific methodologies or assumptions, it should allow OPG to achieve a market-level return on equity. This approach would entail increased prices for consumers but reduce the current barriers to investment and corporate governance.

Insofar as it intervenes in OPG affairs or OPA procurements, the government should clarify its commitment to the principle of technological neutrality. Ensuring that Ontario moves towards lower-emitting sources of supply is a valid policy goal. However, environmental regulation should be done explicitly as environmental regulation rather than in the guise of electricity policy. Market mechanisms — such as cap-and-trade systems and carbon taxes — could help stimulate generators to use lower-emitting technologies.

In contrast, ministerial directives to prescribe generation technologies in central procurements represent an inappropriate mechanism. Although the government, on paper, exercises little direct control over procurement, the technological characteristics of generation is, in practice, driven largely by ministerial directives.

Although the OPA controls the specific terms of procurements, such procurements must be made “in accordance with its approved integrated power system plans” (IPSPs).<sup>46</sup> In turn, the legislation specifically provides that the IPSPs must reflect any ministerial “directives . . . that set out . . . goals relating to . . . the production of electricity from . . . particular generation technologies.”<sup>47</sup> Similarly, the government has on occasion used ministerial directives to direct the OPG to employ certain technologies over others.

In theory, ministerial directives can be an appropriate tool for achieving accountability by

public agencies. Ex ante “binding policy directives may be a more desirable accountability mechanism than ex-post Cabinet appeals” where they are made following an open, analytical process giving fair and due consideration to different views (Janisch 1996). Janisch also suggests “a public forum for formulating directives.”

But it is unclear that ministerial directives are appropriate tools for achieving accountability as used in the case of the OPA.<sup>48</sup> The technological choices contained in the ministerial directives thus far do not appear to be the result of an open, analytical process. In early 2006, the minister did conduct several informal town hall meetings and solicited input from the OPA and some stakeholders before issuing a directive prescribing what supply mix the OPA should target in summer 2006.<sup>49</sup>

Nevertheless, the government appeared to have decided on the desired result before the process began. In October 2005, news reports stated that the minister of energy “offered an emphatic ‘no’ when asked whether he’d be willing to revisit the Liberal government promise to stop burning coal.” Moreover, the government had committed itself to achieving certain levels of renewable generation in 2004 before the consultation process began.<sup>50</sup>

The use of ministerial directives to dictate technological choice for political reasons is worrisome for two reasons. First, the government is picking winners with imperfect information as to costs and characteristics. In selecting wind power over a more traditional generation option, for example, the government is picking the means of achieving emissions reduction while ignoring information about other options to reduce emissions cost-effectively. As a well-respected former deputy minister of energy put it: “By

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45 *Ontario Energy Board Act* S.O. 1998 c.15, s. 88; for political sensitivities on rate regulation, see Ontario Energy Board. “OEB Denies Interim Payment Increase for OPG Regulated Prices.” Press Release. Feb. 8, 2008.

46 *Electricity Act*, supra, s.25.31.

47 *Ibid.*

48 See ministerial directives of June 2006 regarding supply mix, which prescribed certain generation technologies, as discussed in Part I.

49 Dwight Duncan speech to Toronto Board of Trade (April 3, 2006).

50 Steve Erwin, Ontario coal-burning plants advocates ‘neanderthals’: Duncan, October 11, 2005, CP and Canoe News.

demonizing coal, and otherwise politicizing energy technology and fuel choices, the premier, minister of energy and their political advisers made a fundamental error in public policy” (Purchase 2007).

The ministerial directive model could become a more appropriate tool for achieving accountability in three ways. First, the government should be cognizant of the need to employ a neutral, open and objective process for formulating its directives regarding integrated power system plans (IPSPs). For example, government should avoid staking out specific positions on technological choice prior to hearing the views of stakeholders. Although technological choice may inevitably become an issue in public debate, the government need not commit itself to one side before hearing all views.

Second, the government could give the OPA and OPG, to the extent that it remains state-owned, more control over choice of generation technology. Such a development would not require legislative change. *The Electricity Act* merely gives the minister power to prescribe “generation technologies”; it does not require it. Instead, the government could simply tell the OPA to select a generation method that achieves certain output characteristics (such as baseload, intermediate or peaking generation), reliability levels and costs. The government could also specify that the generation the OPA selects must achieve specific levels of carbon emissions reduction. The OPA would then decide, considering all technological options, which one meets these requirements.

Some may suggest that reducing government influence over Ontario’s electricity prices and technology choices is unachievable, given the importance of electricity production to Ontario’s economy and environment. My response to this criticism is twofold. First, this paper is not recommending removing all government

influence over technology choice: it is merely recommending that such influence be channeled through environmental regulation rather than through direct influence over Crown corporations and ministerial directives. This recommendation is consistent with academic writing suggesting that technological change is best stimulated through market-based initiatives, such as carbon caps or a cap-and-trade system.

Second, other jurisdictions have successfully found ways of mitigating direct government influence over wholesale electricity prices, even if not eliminating such influence altogether. The US regulatory system, for one, restricts the ability of state politicians with power over electricity policy to influence wholesale electricity prices. It vests certain powers in the board of the independent system operator, the federal-level agency responsible for oversight of energy decisions.<sup>51</sup> And the courts sometimes have the power of judicial review of administrative decisions relating to wholesale price levels (as is the case in Ontario).<sup>52</sup>

Although state Public Utilities Commission members may be government appointed, a state government typically exerts less influence over its Public Utilities Commission than does the Ontario government over the OEB and the OPA. Because these commissions have fewer incentives than state-level politicians to favour consumers’ interests over generators’ interests, they provide checks and balances on the influence of state politicians.<sup>53</sup> The removal of technology choice from the hands of politicians has not caused public outcry in these jurisdictions.

## Conclusion

Building a well-functioning electricity sector requires that the institutional factors that led to chronic underinvestment be addressed. While central procurement will help Ontario meet the

51 For example, the Federal Energy Regulatory Commission, which has jurisdiction over transmission pricing issues and which has to approve wholesale price cap levels in certain instances.

52 State governments have jurisdiction over retail power markets.

53 Holburn and Spiller (2002).

needs for more generation investment in the short run, it is questionable that it is the best mechanism of achieving a well-functioning electricity sector in the long run. Meanwhile, central procurement in other jurisdictions has resulted in buyers paying prices significantly exceeding spot market prices, in spite of the fact that buyers bear technology, market and credit risks.

A summary follows of recommendations for government and public-sector bodies to achieve Ontario's energy supply needs within the next few years:

- (i) There must be counterparties other than the OPA to whom generators can sell their production on a long-term basis. For example, the government should embrace the OPA's calls for establishing load-serving entities or Customer Entitlement Agents.

- (ii) The government should recognize explicitly that the OPA's central procurement mission is transitional and intended to help the sector migrate to a more competitive market environment.
- (iii) Governance must be improved at OPG by making its assets available to the private sector. To ensure good governance and accountability at the agency responsible for procurement (be it the OPA or its successors), the government should establish clear performance objectives and criteria.

The government should embrace the principle of technological neutrality insofar as it deals with the OPA and the OPG. Moving to lower-emitting power sources should be achieved through environmental regulation, such as a cap-and-trade system, rather than through ministerial directives to the OPA and OPG.

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## Notes

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