Green Energy Politics in Canada: Comparing Electricity Policies in BC and Ontario

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Comments welcome

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As part of efforts to reduce greenhouse gas emissions and promote economic development, many jurisdictions are reforming their electricity sectors with new policies designed to promote clean energy (Jaccard et al 2012; Holburn 2012). In Canada, the two most active jurisdictions in this regard are Ontario and British Columbia. Both provinces embarked on aggressive sustainable energy (especially electricity) policy initiatives in the 2000s that have become intensely politicized. In Ontario, the 2003 election of Premier Dalton McGuinty's and the Liberal Party brought to power a party committed to accelerating the introduction of renewable energy and phasing out the use of coal to generate electricity. The enactment of the Green Energy and Green Economy Act in 2009 dramatically increased subsidies for renewables. In British Columbia, the BC Liberal Party led by Premier Gordon Campbell privatized new sources of electricity in 2002, and then adopted ambitious greenhouse gas reduction targets in 2007. When the Clean Energy Act was adopted in 2010, the province expanded its commitment to the clean energy sector through ambitious self-sufficiency requirements and the promotion of electricity exports. In both cases, the ambitious polices became the subject of intense political controversy over the rising cost of electricity.

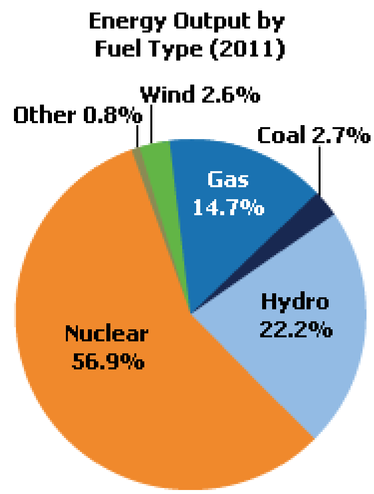
This paper will compare these two provincial policies to develop insights into Canadian provincial politics on significant environmental and nature resource issues and energy policy dynamics more generally. For each province, we will briefly describe the electricity system and how it is governed in terms of relations between public and private operators, the role of regulatory commissions and their relationship to the parliamentary system in place. We will then describe and compare the policy shifts during the 2000s and early 2010s, focusing on efforts to promote renewable electricity and the policy instruments used to do so. We will also address the dynamics of the political backlash that occurred in both provinces, and how the party in power responded to those criticisms. The analysis will reveal the similarities and differences in the two provinces' energy policies, and explanations for those patterns. We will conclude by drawing out more general implications for the challenging transition to low carbon energy futures.

The Electricity System – Ontario

In order to describe Ontario's electricity system, it is useful to move from generation, through transmission, ultimately to distribution and the end-use (that is, the electricity services delivered) of the electricity. In this section, the system is briefly described in this way.

Ontario's electricity supply is predominantly provided by a fleet of large-scale power stations that are located within the province. More specifically, there is 34,079 MW of installed generation capacity in Ontario's electricity market. (There is a small additional amount of generating capacity that operates within local distribution service areas and that does not participate in the province-wide system operator-administrated market.) In terms of 'kinds' of generators, the fuels powering these stations are as follows: nuclear (11,446 MW or 34%); natural gas (9,549 MW or 28%); coal (3,504 MW or 10%); hydro (7,947 MW or 23%); wind (1,512 MW or 4.4%); and various others, including woodwaste and biogas (122 MW or 0.4%).[1]

Of course, capacity does not translate into energy 'production' on a one-to-one basis, for there are various factors that determine the extent to which particular power stations are deployed ('on-line'). In 2011, these various kinds of generators contributed the following to the province's total electricity production in 2011: nuclear (85.3 TWh or 57%); hydro (33.3 TWh or 22%); natural gas (22.0 TWh or 15%); coal (4.1 TWh or 2.7%); wind (3.9 TWh or 2.6%) and various others, including woodwaste and biogas (1.2 TWh or 0.8%).[2] Net exports were modest in 2011, representing 6% of total generation (12.9 TWh of exports, and 3.9 TWh of imports).[3]



Turning to transmission and distribution, there are more than 30,000 kilometres of transmission lines that criss-cross the province, moving electricity from the aforementioned generators to large-volume consumers and utilities for distribution.[4] After 'stepping down' the voltage, distribution companies – often called 'local distribution companies' in Ontario parlance – distribute electricity to homes, smaller businesses and institutions.[5]

Electricity demand in Ontario is divided among major sectors in the following way: the commercial/institutional sector accounted for 40% of end-use demand in 2009; the residential sector, 31%; the industrial sector, 27%; and the agricultural sector 2%. Within each sector, particular processes

[1] Data are for 31 January 2012, and are taken from http://ieso.ca/imoweb/media/md_supply.asp#ImportsExports
[2] http://www.ieso.ca/imoweb/media/md_newsitem.asp?newsID=5930
[3] http://ieso.ca/imoweb/media/md_supply.asp#ImportsExports
[4] http://www.ieso.ca/imoweb/siteShared/power_system.asp
[5] http://www.ieso.ca/imoweb/pubs/local_distribution/Ontario_LDC_Map.pdf

dominated. In the commercial sector in 2009, auxillary equipment and motors accounted for 61% of electricity demand, with lighting (20%), space heating (just over 9%) and space cooling (just under 9%) being the other major end-uses. In the residential sector, appliances (at 41% of total demand) were the major contributor, with space heating contributing about one-third (significant in those approximately 13% of homes that predominantly use electric heat, modest in others); lighting (13%) and space cooling (7%) ranked third and fourth. Finally, in the industrial sector, pulp and paper, iron and steel, chemicals and mining are the major sub-sectors using electricity.[6] Collectively, electricity demand in Ontario is highest in the summertime,[7] and it amounted to 141.5 TWh in 2011,[8] with a single hour peak of 25,450 MW on 21 July.[9]

Electricity Governance – Ontario

Electricity policy in Ontario is driven by the provincial government. The Premier, the Minister of Energy and the associated Ministry take the lead in establishing the legal and policy framework for the province's power system. This influence is exercised in a variety of ways, including direct means like pieces of legislation and individual directives and indirect means like programme funding and support more generally.

Following the structure laid out in the section above, the players involved in the generation, transmission and distribution of electricity are identified. This will be followed by those key players that are involved in the system as a whole.

The majority of power stations in Ontario are owned and operated by Ontario Power Generation (OPG), a public company that is one of the five 'successor' companies created by the break-up of Ontario Hydro in 1999. Responsible for approximately 70% of capacity in the province, OPG operates a fleet of nuclear, hydroelectric and fossil fuel stations. The other 30% of capacity is from the private sector, with Bruce Power – a partnership of Borealis Infrastructure (itself owned by the Ontario Municipal Employees Retirement System), Cameco Corporation (the world's largest uranium producer), the Power Workers'

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[6] All data in this section taken from http://oee.nrcan.gc.ca/corporate/statistics/neud/dpa/comprehensive_tables/list.cfm?attr=0. Additional data from http://www.iemo.com/imoweb/media/md_demand.asp used to estimate disaggregated industries' electricity consumption.

[7] 'The winter peak for electricity demand set on December 20, 2004 was 24,979 MW. The summer peak for electricity demand set on August 1, 2006 was 27,005 MW.' (http://www.iemo.com/imoweb/media/md_demand.asp).

[8] http://www.iemo.com/imoweb/media/md_demand.asp

[9] http://www.iemo.com/imoweb/media/md_peaks.asp

Union, the Society of Energy Professionals and TransCanada Corporation (a company that owns gas storage facilities and power plants).

Turning to transmission and distribution, the predominant transmission company in the province is Hydro One, another of the publicly-owned successor companies to the old Ontario Hydro. Distribution, meanwhile, is handled by approximately 80 local distribution companies based in urban areas across the province; distribution in rural areas is the responsibility of Hydro One. Most of the local distribution companies continue to be publicly owned, though some have been privatised.[10]

Responsibility for ensuring the ongoing reliability of the electricity system rests with the Independent Electricity System Operator (IESO). The IESO connects all participants in the province's electricity system - generators that produce electricity, transmitters that send it across the province, retailers that buy and sell it, industries and businesses that use it in large quantities and local utilities that deliver it to people's homes. Every five minutes, the IESO forecasts consumption throughout the province and collects the best offers from generators to provide the required amount of electricity (the real-time spot market). It is a not-for-profit corporate entity governed by an independent Board whose Chair and Directors are appointed by the Government of Ontario.

Approximately 55,000 large organisations in the province – more specifically, those that use more than 250,000 kWh of electricity a year -- are on what is called the 'wholesale market' for their electricity purchases. Collectively, this group constitutes just more than one-half of the province's electricity demand. These organisations may contract electricity supply for a fixed rate (with a commercial entity) or they may end up paying spot market prices (either directly, if they have an interval meter, or indirectly, if they do not have an interval meter, they are charged based on the consumption pattern of their local utility). In Ontario, the spot market price is referred to as the Hourly Ontario Energy Price, and it represents the results of the IESO's efforts to match electricity supply offers with electricity demand periods. All customers that pay market prices, or that have signed a contract for fixed-rate electricity, also pay for the Global Adjustment, which accounts for differences between the total payments made to certain contracted or regulated generators/demand management projects and market revenues. In recent months, the Global Adjustment has come to represent a significant share of the overall cost of electricity.

[10] Electricity Distributors Association, http://www.eda-on.ca/

All other customers – that is, smaller organisations and all residential customers – purchase their electricity through what is called the Regulated Price Plan (RPP), which is set by the Ontario Energy Board (and whose role is further elaborated below). Virtually all such customers now have interval meters (called "smart meters" in other jurisdictions like BC) and all are on – or soon will soon be migrated to – time-of-use pricing. This introduces different rates for on-peak, off-peak and mid-peak times of the day; rates are set twice a year (1 May and 1 November), to account for the two seasons in the time-of-use rate regime.

The Ontario Power Authority (OPA) is the agency responsible for ensuring an adequate, long-term supply of electricity in Ontario. A key objective of the OPA is to forecast electricity demand and the adequacy and reliability of electricity resources for Ontario for the medium and long-term. Much of the OPA's activity is determined by Ministerial Directive.

The province's electricity regulator is the Ontario Energy Board (OEB); the OEB also provides advice on energy matters referred to it by the Minister of Energy and the Minister of Natural Resources. The Board operates as an adjudicative tribunal and carries out its regulatory functions through public hearings that provide a forum for individuals or groups who may be affected by the Board's ruling to participate in its decision making processes. Increasingly, the Board is carrying out some of this work through other, more informal processes. The Board is also responsible for electricity market oversight and for ensuring that regulated natural gas and electricity monopoly utilities comply with Board decisions and orders.[11]

The Green Energy Shift in Ontario

As the 1990s drew to a close, the ruling Progressive Conservative party continued to rely upon market mechanisms to increase the share of renewable resources in the province's electricity generation profile. At the beginning of the 2000s, as parts of the electricity market were opened to increased competition, alternative providers could offer products to customers. Accordingly, the prevailing sentiment was: if people want renewable electricity, they can demand it, and providers will step up and offer it (Rowlands, 2007). Notwithstanding some apparent interest, as evidenced by survey responses, uptake was relatively modest (not least because these offerings were at a premium price). Indeed, more widely, most Ontario consumers stayed with their default electricity provider.

[11] Ontario Energy Board, http://www.oeb.gov.on.ca/OEB/About+the+OEB

A confluence of events, however, served to change the government's position in 2003. Towards what turned out to be near the end of Premier Eves's term, the Progressive Conservatives came to support what can basically be considered a Renewable Portfolio Standard (RPS) – their terminology was 'Green Power Standard'. Announced in June 2003, this RPS never had the chance to be implemented, however, with the Liberal party emerging victorious at the polls in October 2003 (Rowlands, 2007).

The ruling Liberal party soon introduced their own variation of an RPS. Following a `Request for Proposals' approach, a series of calls served to generate significant responses and activity, particularly in terms of wind power: contracts for 1,370 MW of capacity were signed during 2004 and 2005 (Rowlands, 2007). Soon into their first term of office, however, a confluence of events caused the Liberal government to rethink its strategy for promoting renewable electricity and thus open the door for an alternative policy in Ontario.

More specifically, when one of the government's key supporters was reported to benefitting from the tendering process for large-scale renewable electricity systems, a threat of corruption emerged. For this reason, a political opening for a new approach appeared. And this was taken advantage of by an entrepreneurial activist – Paul Gipe – who marshalled a broad coalition of support, framing 'feed-in tariffs' as a means of local economic development. This fell on fertile ground, and on 21 March 2006, Premier McGuinty announced North America's first feed-in tariff programme – the so-called Renewable Energy Standard Offer Programme or RESOP (Rowlands, 2007).

The RESOP acted like a 'feed-in tariff programme', though its rates were more modest than some other such programmes in place around the world at that time. Nevertheless, its introduction is noteworthy for at least two reasons. First, for North America it was innovative and widened the debate beyond RPS (which dominated the continent's renewable electricity policy discussions at that time). And, second, its eventual demise (which is elaborated in the next paragraph) provided valuable learning in terms of policy development in the renewable electricity space.

The RESOP was suspended in May 2008; given subsequent events, this can be basically considered its termination date. Holburn (2012, 660) argues that the RESOP programme 'largely failed to attract its target audience of small developers, instead attracting large scale commercial developers who divided up large projects into smaller sub-components to qualify for the contracts. Unanticipated transmission constraints had also emerged in some regions.' (See, also Nishimira, 2012; and Mabee et al, 2012, 482.) There were also other flaws in programme design: problematically, projects could be submitted without commitments; chaos in transmission system planning resulted, and contributed to calls for a reconsideration of the approach.

From the ashes of the RESOP, however, rose a potentially more-significant programme – what became known as Ontario's FIT and microFIT programmes. Emerging in mid-2009 as part of the Green Energy and Green Economy Act, three key factors catalysed its development. First, building upon experiences from the RESOP, like-minded groups came together to educate and to lobby. 'In the summer of 2008, the Environmental Defense Canada, the Ontario Sustainable Energy Association (OSEA), and 313 other organizations, including businesses and political organizations, established the Green Energy Act Alliance (GEAA) and launched a campaign calling for legislation modeled on German laws that would make Ontario a green leader in North America.' (Nishimura, 2012, 13) Second, there was an individual who was advancing the case. George Smitherman, perhaps the most powerful, dynamic and charismatic member of Premier McGuinty's cabinet at the time, became Minister of Energy and Infrastructure on 19 June 2008. Two months after taking office, he toured Europe and quickly became a champion for a range of progressive renewable electricity policies (e.g., Nishimura, 2012). And third, the provincial government was trying to deal with a declining manufacturing base – particularly a shrinking automobile industry – in the province, and dearly wanted an industrial revival. It felt – and continues to feel – that 'green collar jobs' could be at the foundation of that revival and that energy could be central to that.

Thus, a variety of factors led the Government to introduce the Green Energy and Green Economy Act. It passed into law on May 14, 2009. Most significant for a discussion of renewable electricity provision in Ontario is consideration of the feed-in tariff programmes contained therein.

The FIT programme was intended for projects larger than 10 kW, while the microFIT programme was intended for project that were 10kW or less. Qualifying resources were bioenergy, waterpower, solar photovoltaic and wind resources that were new and that were located in the province of Ontario. Prices ranged from 10.3 Canadian cents per kWh for larger landfill gas projects to 80.2 Canadian cents per kWh for smaller, rooftop solar photovoltaic (PV) projects. These prices were set so as to be able to 'cover development costs plus a reasonable rate of return for Projects meeting certain assumptions relating to cost and efficiency'. They were indexed to inflation (with a 20% escalation factor, except for all PV projects, which has no adjustment for inflation), and there was a guarantee that, should there be deflation, there will not be a reduction in the contract price paid. Contracts were 20 years in length (though 40 years for waterpower projects). Full details of the FIT and microFIT programmes are available elsewhere.

The FIT programs attracted an overwhelming response. As of the end of October 2011 (the time at which a review of the programme was – as scheduled – initiated), 107 FIT contracts had been executed and projects were in commercial operation, constituting 26 MW of capacity. Additionally, 24,603 microFIT projects had conditional offers, constituting 223 MW. While these numbers themselves are remarkable, is also noteworthy is the number of applications in the pipeline at this time: close to 10,000 FIT applications and more than 43,000 microFIT applications had been submitted.[12]

For reasons elaborated in the next section, however, the FIT programs attracted considerable debate during the formal review period between October 2011 and March 2012. As the government of Ontario develops what it is terming 'FIT 2.0', debate about these issues continue. Key points of contention are identified not only in the next section of this article, but also at the end of this article.

It remains, however, that the Liberal government still appears to be committed to renewable electricity. In its Long-Term Energy Plan – the key guiding document for discussion in this sector – renewables continue to have a role, indeed a growing role. Collectively, the capacity of wind, solar-PV and bioenergy is expected to be 10,700 MW in 2030, supplying almost 13% of the province's electrical energy. Individually, 16.5 TWh is to be generated by wind turbines, 2.5 TWh by solar-PV panels and 2.1 TWh emerging from bioenergy sources.[13]

Implementation Challenges, Political Resistance and Reform

In this section, some of the implementation difficulties and political resistance that has a rise in as a result of the recent renewable electricity strategy will be investigated. More specifically, the discussion is undertaken around three themes: renewable electricity as economic strategy; the cost of the FIT programmes; and local empowerment impacts.

Though often referred to – mistakenly – as 'the Green Energy Act', the full name of the pathbreaking 2009 legislation was, as already noted, actually 'the Green Energy and Green Economy Act'. Again, as

[12] http://fit.powerauthority.on.ca/sites/default/files/Bi-Weekly%20FIT%20and%20microFIT%20Report%20October%2028%2C%202011.pdf
[13] http://www.energy.gov.on.ca/docs/en/MEI_LTEP_en.pdf#page=10

already noted, the tie-in between renewable electricity and new manufacturing jobs was purposeful and explicit. This has generated at least two points of contention.

First, soon after the Act's introduction, the Government of Ontario announced that it had reached an agreement with a South Korean consortium consisting of Samsung and the Korea Electric Power Corporation. Signed in January 2010, the deal promised particular concessions in return for the construction of four new factories creating 1,440 manufacturing jobs. These factories would lead to the deployment of wind turbines and solar panels that would produce 2,000 MW and 500 MW, respectively.

Two of the concessions are worth noting. First, an 'economic development adder' was part of the deal – amounting to $437 million, this was an incentive above and beyond the feed-in tariff levels already present in the province; it is estimated to represent a 4 percent premium. And second, a part of the transmission network was reserved so that the company would not have to be subject to the aforementioned access tests.

Criticisms about the deal were forthcoming. The preferences given to one company – in the absence of public tendering for renewable energy – were highlighted by some sceptics as a worrying trend regarding the lack of transparency. And the cost to power users – above the already-existing criticisms about the feed-in tariff (more about this below) – was also highlighted as problematic.

In response, though, others launched a vigorous defence, arguing that if the consortium had, for instance, reached a deal with the neighbouring state of Michigan (which is also pitching itself as a Green Energy hub), the Premier would have been extensively criticised. Indeed, there were not significant opposition when the Premier reached a deal with Toyota to build an automobile plant in the province. Many argued that this is, in fact, the 21st century equivalent of the same.

And second, note that the FIT had domestic content requirements. Wind projects with a capacity greater than 10 kW and all solar PV projects had to achieve a minimum required domestic content level – between 25% and 60%, growing over time. This has led to a number of challenges, launched against Canada, in the World Trade Organisation (WTO): Japan, initially, and subsequently the European Union, have challenged the obligation to procure renewable electricity equipment locally. The Japanese case could not be resolved through informal mechanisms, and other good offices offered by the WTO, and so it is now a formal case within the WTO's Dispute Settlement Mechanism procedure. A Panel has been struck, and its decision is scheduled to be forthcoming in September. (See, generally, Lee (2011) and Wilke (2011).)

The cost of FIT programmes has also attracted considerable attention. Dachis and Carr (2011), for one, argue that the average cost per household will be $310 annually. They also suggest that this is expensive as a greenhouse gas emission reduction strategy: assuming that all renewables replace natural gas (what would otherwise be the generation capacity in their assumptions), they arrive at a cost of $177 per tonne of carbon dioxide equivalent reduced. Finally, Dachis and Carr (2011) estimate the costs in terms of job creation and arrive at a figure of $179,000 per job produced (taking their own cost figures and the government's job creation numbers).

Gallant and Fox use Ontario's Long –Term Energy Plan (released, as noted above, in 2010) as their baseline, comparing their estimated costs of increased renewable electricity deployment to those contained within this report. They argue that they are conservative, not including – for instance – the 'economic adders' that will be forthcoming to community groups, Aboriginal groups and businesses like Samsung that negotiated particular 'deals' with the government. Nevertheless, they find additional costs that add up to $60.94 per MWh, with the result being that power bills for Ontario consumers would be 40% above the government's forecast.

Pirnia et al (2011) develop an optimisation model to examine the impact of two policy alternatives involving FIT policies upon both producers' welfare and consumers' welfare, as compared to a baseline that does not include any FIT policy. The two alternatives are what can be basically called an 'unrestrained FIT policy', with widespread uptake of the policy, and then a 'restrained FIT policy', which includes what is widely called a 'cap' upon FIT uptake. Perhaps not surprising, they find a transfer of benefits from consumers to producers in either FIT policy, with higher numbers in the unrestrained alternative. Overall – in terms of what they phrase 'social welfare' – they find a substantial impact upon households' electricity costs in either FIT scenario: cost increases of between $117 and $1,215 per year, depending upon the policy selected and depending upon assumptions made about the extent to which higher commercial, instittuioanl and industrial costs are passed through to consumers (p. 25). They do acknowledge, however, that environmental improvements may create benefits that are not captured by their analysis.[14]

Finally, questions of local empowerment have arisen. Of course, in Canada, generally, the Westminster model of governances means that the ruling government of the day – particularly if it is in a majority position – has substantial decision-making powers. Turning to electricity in Canada, it has traditionally – given the Constitutional division of powers – been the provincial level of government that exercises significant influence, and that trend continues today. Narrowing this focus to electricity in the province of Ontario, it is noteworthy that although the restructuring of the power industry would appear to dilute governmental influence (through, as noted above, the creation of new agencies), ministerial influence seems to be just as strong as ever. Holburn (2011, 659) notes, for instance, that the Minister of Energy 'is able to exert a considerable degree of control over the OPA's decision-making through (i) initiating policy directives, (ii) controlling budgets and senior staff appointments, as well as by (iii) initiating new legislative proposals.' Indeed, the Green Energy and Green Economy Act even augmented this considerable continuing influence: not only were the Minister's Directive power enhanced, but limits were placed upon the Ontario Energy Board's abilities to be an independent authority in the regulation of the province's electricity system. Watson et al (2012, 784), for instance, note that the Renewable Energy Approvals process, introduced by the Green Energy and Green Economy Act, 'streamlines the approvals process for wind energy and removes municipal powers to regulate wind turbine siting'.[15] From another perspective, Teelucksingh and Poland (2011, 195) similarly question the justice impacts: 'Our preliminary analysis of components of the GEA suggests that prioritizing economic growth in the GEA will result in social and environmental inequities as businesses, developers, and investors who have the benefit of access to upfront startup capital, time, expertise, and the knowledge to navigate the bureaucracy are privileged.'

Renewable electricity continues to be a contentious topic in Ontario. The debates surrounding issues of energy policy vis-à-vis economic policy, the cost of the FIT programmes, and questions of local empowerment have continued – indeed, they, and electricity policy issues more widely, were perhaps

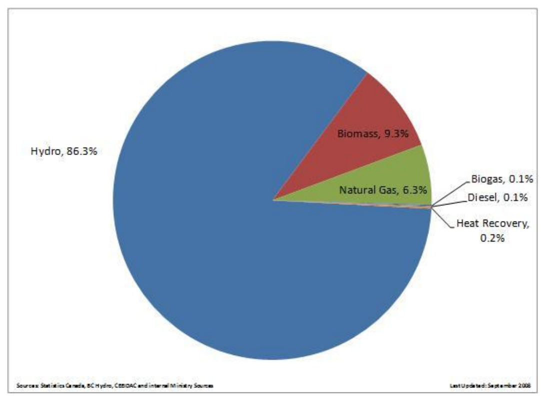
[14] There are, of course, alternative positions – namely, those that suggest that the Ontario government's strategy is 'on track' (e.g., contributions to www.bluegreencanada.ca) – but the purpose of this section is to highlight discord.

[15] Local resistance to wind turbine siting in Ontario has mushroomed over the past couple of years, with a number of 'anti-wind' groups emerging – see, for instance, http://ontario-wind-resistance.org/

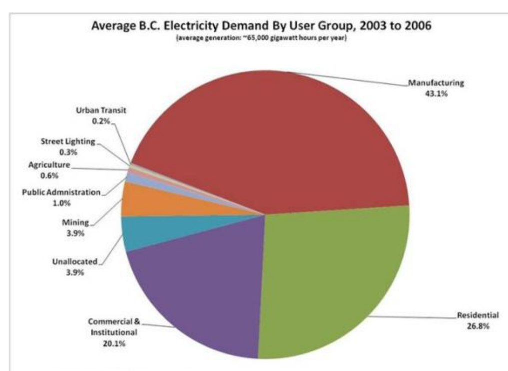
the key issues in the October 2011 provincial election in Ontario. The results of the election – with a Liberal minority government – did little to resolve the debates

Moving forward, it is unclear how the Liberal minority government will navigate the uncertain political terrain. The opposition Progressive Conservative party is adamantly opposed to many of the main pillars of the Liberal energy strategy – it would do away with support for renewable electricity, for instance. Alternatively, the New Democratic Party, which presently holds the balance of power in the Ontario Legislature, appears to be pursuing the issue on a case-by-case basis. Some parts of the Liberal's energy strategy are instinctively attractive – for example, the requirement for local procurement – but others, particularly anything that would serve to increase rates for lower income Ontarians, could well meet with resistance. The ways in which the OPA responds to stakeholder submissions regarding FIT 2.0 may be indicative of the future direction to be taken.

The Electricity System – British Columbia



BC's electricity system is dominated by hydroelectricity from big dams. As BC Figure 1 shows, 86% of the province's electricity is supplied by hydroelectricity, the overwhelming majority of which is produced by a series of large dams built over several decades beginning in the 1960s. Biomass, virtually all of which is self-generation in pulp mills, provides approximately 9%. The only significant sources of fossil fuels used for electricity generation in the province are five several natural gas plants in the province, providing 6% of the provinces supply (BC Ministry of Energy and Mines n.d.). Renewables other than hydro and wood fibre have yet to make any significant penetration into the supply mix, although several wind farms are now in operation (more detail below).



BC electricity demand is shown in BC Figure 2. The biggest share goes to manufacturing, as BC's economy is dominated by electricity intensive mines and forest produces mills. Residential use makes up a bit over a quarter and commercial-institutional about one-fifth (BC Ministry of Energy and Mines n.d.).

BC is extensively involved in electricity trade within the Western Electric Coordinating Council of Western North America. BC's large dams provide the province with a distinctive capacity to store electricity. BC sells electricity into the market when it can get a good price, and buys it back when it is less expensive. These transactions have both a daily and seasonal cycle. On a daily basis, traders take advantage of fluctuations in load during the day, and BC benefits because unlike many other large baseload power plants like coal or nuclear, hydroelectric dams can easily be turned on or off. The province also takes advantage of seasonal differences in load. Because of its relatively cold weather, BC is a winter-peaking system. In contrast, one of its largest trading partners, California, is a summer peaking system because of the high air conditioning load (Hoberg and Sopinka 2011).

Electricity Governance – British Columbia

Electric policy in Canada is controlled by the provinces. In BC, electricity policy is established by statute, regulations and cabinet directives, as well as more informal policies of the government of the day. The electricity system is dominated by one large actor, BC Hydro, a Crown Corporation that is responsible for electricity generation and distribution for about 90% of the province. The southwest corner of the province has a private, investor owned utility called Fortis BC. BC Hydro also dominates electricity generation in the province, although there has been some decline in its share as government policy shifted towards reliance on private "independent power producers" for new sources of generation. As of May 2012, these private power projects produced 14,242 GWh of electricity, and an additional 8,720 has been approved and is under development.[16] There has been some fluidity in the governance of transmission. In 2002 that was separated from BC Hydro as the government created a new government-owned BC Transmission Corporation that was separated from BC Hydro, but in 2010 BCTS was eliminated and brought back within BC Hydro.

The BC Utilities Commission is an independent regulatory agency with authority over some aspects of electricity policy, but the balance of authority between the BCUC and the cabinet has vacillated considerably over time. During the 2000s, it had authority both over rates and approving BC Hydro's long term electricity plan, but, as described below, the authority of long term planning (and many other projects) has been removed by the government. The statutory basis for BCUC authority is the *Utilities*

[16] http://www.bchydro.com/energy_in_bc/acquiring_power/meeting_energy_needs/how_power_is_acquired.html

Commission Act, and more recently the *Clean Energy Act* of 2010. Policy direction and analytical support is provided by the Ministry of Energy and Mines. The changing balance of authority between the BC Utilities Commission and the government is an important part of the story of the evolution of electricity policy over the past decade.

BC Shift #1: Privatizing New Electricity Generation (2002)

BC's electricity system has been dominated by government ownership since the government purchased BC Electric in 1961. For the most part BC has resisted the privatization initiatives that swept many jurisdictions, including Ontario, in the 1980s and 1990s (Doern and Gattinger 2003). Part of the explanation is no doubt that the New Democratic Party was in power from 1991-2001, but even when the more free-market oriented BC Liberals were elected in 2001, their aspirations for privatization were limited. Their 2001 election platform pledged to "Protect BC Hydro and all of its core assets, including dams, reservoirs, and power lines under public ownership" (BC Liberal Party 2001).

The one exception to this broader pattern maintaining public control over electricity is with new sources of electricity generation. Before being ousted by the BC NDP in 1991, the Socred government made some tentative movement toward privatizing new sources of power, but the trend stalled once the NDP came into government. When the BC Liberals were elected in 2001, these efforts were renewed. Their electoral platform signaled the coming shift: "Encourage job creation from viable, independent power production projects that will increase benefits to consumers through greater competition" (BC Liberal Party 2001). The policy change was announced in the 2002 Energy Plan released in November 2002. The plan was centred around four themes:

1. low electricity rates and public ownership of BC Hydro;
2. secure, reliable supply;
3. more private sector opportunities; and
4. environmental responsibility and no nuclear power sources (Hoberg 2010).

The most significant and controversial changes involved the structure of BC Hydro. First, the Plan declared that new sources of electricity generation (other than improvement to existing dams and Site C) would be developed by private "independent power producers" (IPPs). While most new generation was to be done by the private sector, the transmissions function would be kept in the public sector but a new public corporation, BC Transmission Corporation (BCTC), was carved out of BC Hydro on the belief that it was needed to facilitate fair access to the grid for generators of all ownership classes. These changes, especially the decision to rely on the private for new power, created a new flashpoint for environmental controversy in the province (Cohen 2007)..

BC Hydro pursued this new policy with a “clean power call” to solicit proposals from developers. For the 2006 call, BC Hydro issue 38 Electricity Purchase Certificates capable of generating 7,125 GWh, about 14% of the province’s electricity.

Environmental groups combined with the union representing BC Hydro workers (COPE 378) to create an alliance push for a moratorium on private power projects (Hoberg 2010). These groups were concerned both about the loss of public control of natural resources and energy assets as well as the degradation of wild rivers treasured for the recreation values, fish habitat, or both. For example, the Wilderness Committee denounced private power projects as “the biggest heist of public resources in Canadian history and an enormous threat to the future of British Columbia’s environment, economy and society” (Simpson 2008a). Several academics joined in the criticism, echoing environmental group concerns about environmental protection and privatization, and supplementing them with concerns that the costs of the new projects was unjustifiably high (Griffin Cohen 2003 ; Calvert 2007; Shaffer 2007).

The most controversial project was on Ashlu Creek, a waterway prized by whitewater kayakers near Squamish, BC. Proposed in 2003, public concerns about the proposal encouraged the Squamish-Lillooet Regional District (SLRD) to conduct extensive hearings and actually vote to reject the project. The Campbell government responded by quickly amending the Utilities Commission Act to remove the right of local governments to block energy project. The government claimed the change was necessary to “bring certainty.” With the local government out of the way, the project went forward and began operation in late 2009.

Not all environmental leaders were opposed to private power projects, however. Tzeporah Berman, one of Canada’s leading environmental activists, took a very strong position in favour of private power projects. Her view, which reflects a number of other environmentalists in BC and elsewhere, is that the urgency of climate change means that significant and rapid new development of non-carbon sources of energy is required. Her articulation of this position in 2009 created a deep rift within the BC environmental community between those who are concerned principally with local environmental impacts and those who see renewable energy development as necessary to address the climate challenge (Shaw 2012, Berman 2011, Chapter 14).

BC Shift #2: Climate Leadership and Self-Sufficiency (2007)

The 2002 Energy Plan was significant is its shift in governance, but five years later a new plan was introduced that was far more fundamental in its impact on electricity policy. 2007 Energy Plan contained five new initiatives that signaled BC's growing commitment to green energy.

1. New coal fired power plants would only be allowed if they used carbon capture and storage
2. New natural gas generation would only be allowed if its emissions were offset
3. 50% of new electricity demand had to be made through conservation (demand side measures)
4. Ensure self-sufficiency to meet electricity needs, including '"insurance"' by 2016
5. Ensure "clean or renewable electricity generation continues to account for at least 90 per cent of total generation." While there term is not used, this is essentially a renewable portfolio standard.

These initiatives were part of a broader set of initiatives of the Campbell government to position BC as a leader on climate change. The Campbell government enacted ambitious legislated greenhouse gas reductions targets to reduce emissions by 2020 emissions by 33% below 2007 emissions. The province introduced a path-breaking revenue neutral carbon tax, and committed to making the public sector carbon neutral by 2010. These initiatives reflect the personal transformation of the premier. Early in his term his government had opposed Canada's ratification of the Kyoto Accord, but Campbell himself became a strong champion of climate policy and wanted to demonstrate political leadership on the issue (Smith 2010).

The virtual ban on new fossil fuel power (the province had already banned nuclear power) required the acquisition to new clean energy to meet the province's supply needs, particularly given the stringent self-sufficiency policy adopted by the province. Articulated in a cabinet directive to the BC Utilities Commission, the policy requires that the province achieve sufficient in province energy and capacity to meet its own needs even in "critical water years," those consistent with the lowest water flow years in recent records, by 2016. This conservative definition was supplemented by a requirement for "insurance" by requiring BC Hydro to become capable of "exceeding, as soon as practicable but no later than 2026, the electricity supply obligations by at least 3,000 gigawatt hours per year and by the capacity required to integrate that energy in the most cost-effective manner" (Province of British Columbia 2007). Justified in the energy plan as needed to ensure energy security in the wake of power crises in California and the Midwest, the Campbell government also saw it as a sort of industrial policy to promote the clean energy industry.

The Utilities Commission Act requires BC Hydro to produce a long term plan for the province's electricity system, at this time referred to as the Long Term Acquisition Plan (LTAP). The plan is developed by BC Hydro and then subjected to an extensive regulatory review process by the BC Utilities Commission. After several years of analysis and consultation, BC Hydro completed its plan in 2008, but the Commission rejected the plan in 2009. The Commission's critiques of the plan were quite fundamental. The most important finding was that BC Hydro "has not adequately addressed the self-sufficiency obligation established" by the BC government by not planning effectively for how to meet the insurance requirement. BC Hydro claimed the date of the obligation (2026) was too far off to plan for at this point, and the Commission strongly disagreed. The Commission also rejected BC Hydro's very ambitious conservation program (targeted at meeting 72% of new demand with conservation rather than the 50% required by the BC Energy Plan) as insufficiently supported by analysis. The Commission also refused to endorse a specific target amount of electricity for the "2008 Clean Power Call" (BC Utilities Commission 2009).

These three criticisms were not in any way challenges to government policy, but were instead criticisms of BC Hydro for not providing sufficient justification for how it was complying with government policy. One key component of the Commission's decision did depart from government policy: it rejected BC Hydro's plan to reduce its reliance on energy from the natural gas fired Burrard Thermal unit for planning purposes (BC Utilities Commission 2009). The 2007 Energy Plan did say it wanted reliance on the plant reduced to address both regional air pollution issues but also to help meet the province's greenhouse gas reduction targets. But the government had not formalized the policy statement through any kind of legal instrument, and the Commission disagreed with it and took advantage of that loophole to require BC Hydro to continue to rely more on Burrard Thermal (Hoberg 2009).

This decision sent shockwaves through the clean energy sector and, needless to say, was not greeted warmly by the Campbell government. The government response came in two stages, the first swift and surgical, the second overwhelming and excessive. Almost immediately the government corrected the legal gap by formalizing the Energy Plan policy on Burrard Thermal, and issued a cabinet directive ordering the BC Utilities Commission to accept the new dictate. The second stage came two years later with the enactment of the Clean Energy Act of 2010.

BC Shift #3: Clean Energy Powerhouse and Export Promotion (2010)

The struggle over governance with the regulatory commission combined with yet another shift in BC government energy policy. Prior to the 2007 plan, the core objective of BC electricity policy had been to provide: "reliable, cost-effective electricity supply in an environmentally responsible manner" (BC Utilities Commission 2007). The 2007 plan shifted the core objective to self sufficiency with insurance. By the August 2009, however, the Campbell government grew bolder about the prospects of using clean energy policies for climate leadership and economic development. The shift in policy was signaled in the Fall 2009 Speech from the Throne, in which the government committed to "take every step necessary to become a clean energy powerhouse" by pursuing a "principled, economically-viable and environmentally-sustainable export development policy." The government created a Green Energy Advisory Task Force (Government of BC 2009) to help develop policies to promote this new objective of becoming a net exporter of electricity.

The 2010 Clean Energy Act embodied this shift in policy emphasis as well as some significant changes in governance to replace the authority of the independent regulatory commission with cabinet authority in many areas. The export objective was explicitly added to energy legislation, and the specific text of the objective is quite revealing about the combination of motivations behind the shift:

> "to be a net exporter of electricity from clean or renewable resources with the intention of benefiting all British Columbians and reducing greenhouse gas emissions in regions in which British Columbia trades electricity while protecting the interests of persons who receive or may receive service in British Columbia" (Section 2(n)).

In addition to this new objective, the Act made several other important policy changes to strengthen commitments included in the 2007 energy plan:

- Maintains self-sufficiency requirement, but moves the date for the insurance requirement up to 2020 from 2026
- Strengthens the clean and renewable requirements from 90 to 93%
- Strengthens the conservation requirement from 50% to two-thirds

While clean energy policies were strengthened, the authority of the BC Utilities Commission was severely curtailed. The long term planning process was replaced. The Act requires BC Hydro to develop an Integrated Resource Plan (instead of a Long Term Acquisition Plan), but shifts plan approval from the Commission to cabinet. In addition, Commission authority over a series of projects considered fundamental to the province's clean energy aspirations was removed, including:

- Export contracts development under the new policy
- The Site C dam in the Peace River region, currently under regulatory review
- The Northwest Transmission Line designed to connect new areas of mining development to the provincial grid
- The province's $1 billion smart meters program

This bold shift in energy policy and governance was made just as Premier Campbell's leadership crisis emerged over his handling of the Harmonized Sales Tax. Campbell announced his intention to resign in November 2010, and was replaced by Premier Christy Clark in March 2011. As a result, objectives of BC energy policy underwent another fundamental shift.

BC Shift #4: Return to Focus on Low-cost Reliability (2012)

While Premier Clark was still with the same BC Liberal Party as Gordon Campbell, she was quick to distinguish herself on energy policy. As part of her "families first" focus, she wanted to contain costs increases to families. When BC Hydro submitted its rate application to the BC Utilities Commission to increase rates 30% over three years, the utility ran into direct conflict with the new government's core mission. The new Premier enthusiastically challenged the utility, and she and her energy minister Rich Coleman began a campaign of discrediting BC Hydro's fiscal management. The utility, which the Campbell government had venerated as a partner with the BC government in a 2010 advertising campaign with the tagline "power of BC," was suddenly being demonized by the government. The government appointed several senior public servants to conduct a review of BC Hydro.

BC Hydro rates are extremely low in comparison to other jurisdictions, just slightly higher than those in two other hydro dominated provinces, Quebec and Manitoba, but less than half as much as those in Ontario. Nonetheless, the proposal to increase rates touched a political nerve. The government's attack on BC Hydro pricing fed right into the labour-environmental coalition that had been attacking private power projects as uneconomic from the start. Only a small fraction of cost pressures reflected in the rate application were the result of independent power projects – those increased costs would only appear further in the future. But in the public discourse the Campbell government's privatization initiatives were seen to be a principle driver of the proposed rate increased

The BC Hydro review was published in June 2011, and focused on cost savings through personnel cuts and more efficient management. The review did have a brief section on what is considered to be the largest driver of future cost increases for BC Hydro, the exceptionally conservative self-sufficiency policy. The review noted how circumstances had changed significantly since the policy was introduced in 2007, and recommended the government "evaluate alternative definitions and timelines for government's self-sufficiency policy that meet the needs of the province and ratepayers in a way that is sustainable for the long term" (Government of BC 2011, 93). While the government considered new policy direction in response to the review, the BC Utilities Commission put off the larger rate increase proposal and held the rate increase to 8% in the short term.

Meanwhile, the Auditor General was also looking at BC Hydro financing and rate structures, and issued a blunt report with the exact opposite implications from how the BC government was framing the problem. Rather than a runaway bureaucracy unnecessarily inflating costs, the Auditor General found that BC Hydro was struggling to invest appropriately in infrastructure to maintain reliable electricity services, and that the costs of these upgrades were being postponed into the future with suspect use of "deferral accounts." According to the report, "Expenses that would ordinarily be counted in calculating net income have been deferred to future years…it creates the appearance of profitability where none actually exists" (BC Auditor General 2011). These deferral accounts were being used to artificially increase the flow of revenues into the BC government budget, and shift the burden of payment to future ratepayers, or taxpayers. This practice was directed by the BC government and approved by the BC Utilities Commission. The implication of this finding is not that BC Hydro's 30% rate increase was excessive, but that much higher rate increases were justified to deal with past investments, and that even greater increases would be necessary to pay for the new power BC Hydro has committed to take from private power producers.

The Clark government responded to these developments with one significant change in policy and one significant change in governance. First, in February 2012, the BC government relaxed the definition of the self-sufficiency requirement. The original definition based on critical water years was replaced with average water years, and the requirement for additional insurance was removed. This change in definition reduces the amount of additional energy needed to meet the self sufficiency requirement by about 4,200 – 4,500 GWh a year, or 8-9% of the province's electricity (Government of BC 2012a).

Second, the Clark government also further marginalized the BC Utilities Commission. When the Campbell government enacted the Clean Energy Act, it reduced the commission's authority to approve long term plans and pass judgment on several significant projects. But it had left the commission's rate setting powers intact. When BC Hydro submitted its amended application for a rate increase, the government tried to get the Commission and the parties to agree to a settlement for a restrained rate increase and the avoidance of a protracted and public hearing process. The Commission and a number of stakeholders balked, however, at cancelling the hearings. There was a widespread sense that an open forum on BC Hydro's finances would be beneficial, especially on the challenging issue of how to address the deferral accounts. The government responded by issuing a direct order to the Commission to adopt a modest rate increase (Government of BC 2012b; Palmer 2012). This governance shift was an ad hoc move, not a statutory change that altered the Commission's formal authority on rate increases. But it was a remarkably direct signal that the government did not value the independent judgment or role of the Commission.

As a result of these changes, the core policy objectives of the BC government on electricity policy seem to have come almost full circle. The 2000s began with a focus on cost-effective reliability. The Campbell government, driven by the premier himself, had ambitious visions of using clean energy development to foster a profitable new industrial sector and establish the province as a leader on climate action. They enacted stringent definitions of self-sufficiency policy and then a net export objective. But as the market for exports collapsed and the costs of building new renewable energy projects became more apparent, the Clark government partly reversed course and relaxed the self-sufficiency requirement. There will be less demand for new clean energy as a result (although new policies to promote LNG exports may provide enough new demand to compensate). The BC Liberals came into power in 2001 promising to restore the independence of the BC Utilities Commission, and then stripped the Commission of its authority when it chose to act with independence.

Conclusions

This analysis reveals some important similarities and differences between the two province's efforts to transform their electricity systems. Both provinces adopted significant new legislation with the dual objectives of reducing greenhouse gases while simultaneously promoting the development of a new clean energy industrial sector. In Ontario, the effort was inspired by the need to adjust to the decline in manufacturing, especially in the auto sector. In BC, it was the struggling forest sector that inspired the Campbell government to search of new sources of industrial growth.

In pursuit of these objectives, the provinces adopted different policy instruments: Ontario relied on the feed-in tariff, whereas BC relied on a request for proposals approach it called the “clean power call.” The explanation for this difference is not entirely clear, although one clear factor may be the presence of effective an FIT policy entrepreneur in Ontario whereas no one similar emerged in BC. Both instruments ran into serious political difficulty over increased costs and resulting upward pressure on electricity rates. These issues were more politically salient in Ontario because rates were already significantly higher, and the fluctuation in electricity prices far more dramatic. But even in BC they have resulted in major changes in policy and governance.

Privatization has gone much further in Ontario than in BC. While the fraction of generation done by the private sector in BC is increasing, it is still significantly lower than in Ontario. A substantial portion of Ontario’s electricity purchases are subject to market prices, whereas in BC all electricity purchases are controlled by regulated rates. This difference probably results from the timing of when utility privatization initiatives were influential in Canada and what party was in power at the time. In 1998, while Mike Harris was reshaping the Ontario electricity system with his privatization policies, the NDP was in power in BC and not interested in the privatization agenda. By the time the BC Liberals took over in 2001, enough bad experience had accumulated in electricity privatization that they balked at larger changes.

The governance of electricity is far more complex in Ontario than in BC. In BC, there is a governance triangle between the BC government, BC Hydro, and the BC Utilities Commission. While the roles of Ontario government and Ontario Energy Board are similar to their counterparts in BC, BC Hydro performs functions that are split among a variety of entities in Ontario. In Ontario, long term planning is done by the Ontario Power Authority, whereas BC Hydro has that function. System reliability, what is sometimes called “the aggregator”, in Ontario is done by IESO; BC Hydro also has that function. In Ontario, distribution in non-rural areas is distributed among a variety of local entities; in British Columbia, BC Hydro is responsible for distribution.

Ontario rates are twice what they are in BC, and the structure of rates is quite different. Consistent with its greater market ethos, Ontario uses time of use pricing. In BC, despite a billion dollar smart meter initiative, politicians continue to disavow the intention to introduce time of use pricing even though the government's own conservation objectives are unlikely to be achievable without them.

Both provinces have experienced similar governance changes regarding the relationship between the provincial government and other entities. In BC, after restoring the independence of the independent regulatory commission, the government set out systematically undercutting its authority when its independence was considered to be an obstacle to its clean energy or rate minimization objectives. In Ontario, the Green Energy and Green Economy Act reduced the power of the Ontario Energy Board, and the long term plan of the province has essentially been established by the cabinet rather than the legislated process of the Ontario Power Authority proposing and OEB deciding.

Local opposition, NIMBYism, has emerged in both provinces as the government has tried to rapidly develop clean energy resources. In BC, the opposition has been focused on run of the river power projects, in Ontario on wind projects. In both cases the government responded in the same way, by passing legislation removing the authority of lower level of government to block new projects. In electricity policy in Canada, the provincial is government is king (or queen); neither the federal government nor municipal governments play any meaningful role.

In both provinces, highly ambitious clean energy policies have experienced considerable implementation challenges and political resistance. Despite the adjustments that have been made to address these difficulties, the fundamentals of the policy shifts are still in place. Ontario is still on target to phase out the use of coal to generate electricity, and has witnessed a remarkable increase in renewable energy generation. BC's hydro endowment allowed it to begin from a more favourable position. But its 93% equivalent to the renewable portfolio standard and its commitment to meet two-thirds of new demand with conservation are undeniably impressive. While they are threatened by new energy development, BC ambitious greenhouse gas reduction targets are, for the time being, still in place. These cases reveal that when motivated, leader-centered parliamentary governments can create meaningful policy change to promote energy sustainability.

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