

Ecological Modernization in a “Have-Not,” Coal-Powered, Energy-Insecure Province: Nova Scotia’s Promotion of Green Energy and Carbon Reduction

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Anders Hayden

Assistant Professor
Department of Political Science
Dalhousie University
6299 South St
Halifax NS B3H 4H6
Canada
e-mail: anders.hayden@dal.ca

Abstract

Nova Scotia has emerged as one of the Canadian provinces most committed to green energy and carbon reduction. Ecological modernization theory suggests that climate action offers “win-win” opportunities for new jobs, profits, and export opportunities. However, compared to other jurisdictions that have linked green-energy strategies to strengthening their well-developed manufacturing bases, Nova Scotia has less capacity to capture the industrial-expansion opportunities. As the province with the fourth highest per-capita carbon emissions and the second lowest per-capita income, Nova Scotia faces particular challenges in absorbing the upfront costs of shifting to green energy and improving energy efficiency. Given such obstacles, how does one explain Nova Scotia’s introduction of relatively strong climate and green-energy policy? This paper argues that the province’s energy insecurity—particularly its vulnerability to the rising costs of imported fossil energy—provides a powerful motivator that compensates for other difficulties in making the economic case for climate action. As such, Nova Scotia differs from many other provinces and more closely resembles some European states, where energy-security concerns have been a key force behind renewable-energy and efficiency policies. However, the province faces key obstacles in reconciling the economic, environmental, and energy-security goals of its green-energy policies, including the double-edged role of steadily rising power rates and the challenges of constructing a politically sustainable green-energy coalition.

Introduction

Nova Scotia has emerged as one of the Canadian provinces most committed to green-energy development and carbon reduction, generating headlines such as “Nova Scotia joins Canada’s green energy club” (Hamilton 2010) and “Small Canadian province flexes green energy muscle” (Reuters 2011). At the 2009 Copenhagen climate summit, it received an “Acts of Climate Leadership” award from Canadian environmental groups for being the first North American jurisdiction to establish an absolute cap on electricity-sector emissions (Environmental Defence 2009). In its analysis of provincial climate action, the David Suzuki Foundation has given Nova Scotia a steadily improving ranking, from “poor” in 2005 and 2006 to “fair” in 2008 and “good” in 2011 (Holmes 2012).¹

At first glance, Nova Scotia is not the most obvious candidate to be among Canada’s leaders in a low-carbon transition. Compared to other advanced green-energy jurisdictions, such as Germany and Ontario, which have linked renewable-power strategies to strengthening their well-developed manufacturing bases, Nova Scotia has less capacity to capture the industrial-expansion opportunities. As the province with the fourth highest per-capita carbon emissions, the most carbon-intensive power supply, and the second lowest per-capita income, Nova Scotia faces particular challenges in absorbing the upfront costs of shifting to green energy and improving energy efficiency. As the province’s 2009 Climate Change Action Plan acknowledged, “Because most of the energy we use comes from fossil fuels, we have an unusually long way to go in curbing the emissions that cause climate change” (Nova Scotia 2009b, p.3). Given such obstacles, how does one explain Nova Scotia’s introduction of relatively strong climate and green-energy policy? In addition, what key opportunities and obstacles is the province facing in achieving its objectives?

It will be argued that the province’s energy insecurity—particularly its vulnerability to the rising costs of imported fossil energy—provides a powerful motivator that compensates for other difficulties in making the economic case for climate action. In Canada, energy-security concerns have not typically driven stronger climate action—to the contrary, they have been used to support high-carbon fossil-fuel developments such as Alberta’s oil sands, which have been promoted as a solution to American energy-security concern. As such, Nova Scotia more closely resembles some European states, where energy-security concerns have been a key force behind renewable-energy and efficiency policies. However, the province faces key obstacles in reconciling the economic, environmental, and energy-security goals of its green-energy policies, including the double-edged role of steadily rising power rates and the challenges of constructing a politically sustainable coalition around green energy.

This draft is based on an analysis of publicly available documents (e.g. reports, position statements, press releases, fact sheets, op-eds) from actors involved in the provincial climate and energy debate, including government ministries, politicians and political parties, business, environmental groups, and journalists. A final version of the paper will also draw on semi-structured interviews with actors participating in these policy issues.

Ecological Modernization, Convergences, and Coalitions

In many countries that have moved beyond inaction and a business-as-usual approach to climate change, a mainstream consensus has emerged around an ecological modernization (EM) project, which aims to decouple economic growth from rising emissions through improved

¹ The David Suzuki Foundation identified three provinces with a “very good” record—Quebec, Ontario, and British Columbia—with Nova Scotia one step below that top tier (Holmes 2012).

efficiency and ecologically-sound technologies. The “win-win” discourse accompanying an EM project sees environmental management as “a positive-sum game: pollution prevention pays” (Hajer 1995; see also Murphy 2000, Revell 2005). Strong action to reduce greenhouse gases (GHGs) is seen to provide opportunities for “green growth”—with new jobs, profits, and tax revenues—in the domestic economy, as well as competitive advantage internationally, as those who move first to develop and deploy low-carbon technologies can capture the rapidly-expanding global market for emissions-reducing solutions (e.g. Jänicke & Jacob 2004; Paterson 2001). EM thus transcends, at least rhetorically, the idea of an environment-economy conflict, enabling cooperation among government policy-makers, business leaders, moderate environmentalists, and others.

Although conceptually distinct, EM as a *political project* and *discourse* have an affinity with ecological modernization *theory*, which highlights positive environmental improvements and seeks to account for the processes behind them (e.g. Mol et al. 2009; Mol 2011). EM theory maintains that modern societies are increasingly influenced by ecological rationality, which is transforming key institutions including the state, business and the market, science, and technology. It is thus optimistic about reconciling economic growth and environmental sustainability, and rejects the idea that capitalism’s basic dynamics conflict with ecological limits.

Similar to EM’s emphasis on linking environmental and economic agendas, Giddens (2009) has highlighted the importance in climate politics of “political and economic convergence,” i.e. linking climate action to the achievement of other political and economic goals. He writes that “by far the most important area of political and economic convergence is the overlap between climate change and energy security” (p. 9). According to the International Energy Agency, “Energy security refers to the uninterrupted availability of energy sources at an affordable price” (IEA 2013). Giddens (2009) points out that many of the early successes in reducing GHGs were actually the product of efforts to enhance energy security in countries without abundant domestic fossil fuels, such as France’s large-scale investments in nuclear power, Sweden’s introduction of energy-conservation policies, and Denmark’s promotion of renewable energy, notably wind power (pp. 37-38). As discussed below, such energy-security concerns are also relevant to Nova Scotia.

One key challenge in pushing forward an EM agenda is the construction of political alliances and coalitions capable of leading a low-carbon transformation. In their analysis of the “climate capitalism” that has emerged around carbon markets in the UK and Europe, Newell and Paterson (2010), highlight the importance of integrating powerful financial-sector interests and other businesses into the coalition backing strong carbon-reduction policies. However, the centrality of the finance sector and of carbon trading more generally has been deeply controversial; academics and activists have criticized the enrichment of financial interests through policies that impose costs on less powerful individuals and communities, notably in the global South (e.g. Böhm & Dabhi 2009; Gilbertson & Reyes 2009). Again, there are parallels to issues that have arisen within Nova Scotia, as criticisms have emerged about politically unpopular actors at the core of its green-energy coalition.

Policy Initiatives and the Emergence of an Ecological-Modernization Agenda

Nova Scotia’s status as a relative leader on climate change and green energy is quite recent. Like other provinces, with the exception of Quebec and Manitoba, it opposed Kyoto Protocol ratification in 2002. Nevertheless, the emergence of ecological-modernization ideas was

evident in Nova Scotia in the 1990s, encouraged by the growth of environmental firms (predominantly in environmental services rather than advanced green technologies), a greening of attitudes toward eco-industrial development among major economic interests (e.g. Irving), cooperation between environmental groups and business, and the institutionalization within government of EM objectives² (Konstadakopoulos 2007). Indeed, the province emerged as a world leader in recycling and composting. That said, the province's overall EM efforts were constrained by factors including the fact that its "indigenous technological capability ... is rather limited," an economy "still oriented towards excessive natural resource and energy consumption," and "concerns regarding the economic costs of policy intervention" to promote ecological modernization (Konstadakopoulos 2007, pp.203–4).

Further steps toward linking environmental and economic agendas took place under Rodney Macdonald's minority Progressive Conservative government. An important turning point was the 2007 Environmental Goals and Sustainable Prosperity Act (EGSPA). Championed by Environment and Labour Minister Mark Parent, and unanimously supported in the House of Assembly, EGSPA's ecological-modernization vision was apparent in its title. The text of the Act emphasized that the "health of the economy, the health of the environment and the health of the people of the Province are interconnected," stated that the province's long-term goal is "to fully integrate environmental sustainability and economic prosperity," and promised to build on the province's "leading-edge innovation in environmentally sustainable technologies" (Nova Scotia 2007). EGSPA set out 21 goals addressing a range of environmental issues, including obtaining 18.5 percent of electricity from renewable sources by 2013, adopting California-style emissions standards for vehicles by 2010 (a goal that was not met), and reducing GHG emissions by at least 10 percent below 1990 levels by 2020 in line with a target set by the New England Governors and Eastern Canadian Premiers. To meet the GHG target, Nova Scotia's (2009b, p.1) Climate Plan stated that the "greatest single reduction" would come from imposing caps on emissions from Nova Scotia Power (NSP), the province's privately-owned power monopoly and then-source of 46 percent of its GHGs.

After taking office in June 2009, the New Democratic Party government of Darrell Dexter built on these initial steps. In August, it enacted the previously proposed limit on electricity-sector GHG emissions, setting a gradually declining cap falling to 7.5 Mt by 2020, equal to a 25 percent reduction (Nova Scotia 2009a). The April 2010 *Renewable Electricity Plan* increased the ambitions for green power, with goals of 25 percent renewable electricity by 2015 and 40 percent by 2020 (Nova Scotia 2010). The plan foresaw most new renewable electricity coming from industrial-scale projects, produced in roughly equal parts by NSP and independent power producers—the latter responding to requests for proposals (RFPs) through competitive bidding. Like Germany, Ontario, and a number of other green-energy leaders, Nova Scotia introduced a system of premium payments to renewable-energy producers; however, it limited its Community-Based Feed-In Tariff (COMFIT) to small-scale, local projects by municipalities, First Nations, co-operatives, universities, and non-profit groups. COMFITs apply to wind, biomass, and tidal projects, but for the time being do not include solar power due to a desire to limit costs (Blackwell 2012). In the long run, considerable potential exists for tidal power and the province, with federal support, is promoting the development of technology capable of better

² For example, the Environment Act of 1994-95 designated the Department of Environment as "the lead agency of Government to promote the development and use of sustainable environmental industries, innovations and technologies" (Nova Scotia 1995; see also Konstadakopoulos 2007, pp.198–9).

capturing—and withstanding—the massive power of the Bay of Fundy. However, the expansion of wind power is the main focus of efforts to create in-province renewable electricity.

To address the problem of wind power's intermittency, and provide additional renewable power at a manageable cost, Nova Scotia joined forces with Newfoundland and Labrador, and the provinces' respective utilities (NSP and Nalcor), in the controversial \$7.7 billion Muskrat Falls hydro-electric development on the Lower Churchill River. The project includes the Maritime Link, a sub-sea cable to bring a portion of the power to Nova Scotia, as well as a transmission link between Labrador and the island of Newfoundland. The project will provide some 8 to 10 percent of Nova Scotia's electricity needs—possibly more, depending on whether surplus power sold at market prices is ultimately consumed in New England, Nova Scotia, or other Atlantic provinces. Meanwhile, in 2011, the NDP government established Efficiency Nova Scotia, an agency with a mandate to promote efficiency and conservation by businesses and households, financed by a charge on electricity bills. At the municipal level, a key initiative is Halifax's Solar City Program, launched in 2012, to help homeowners finance the up-front costs of installing solar water heating systems.

Such initiatives have been accompanied by an EM discourse celebrating win-win opportunities for environmental and economic gains. For example, upon signing the deal to build the Muskrat Falls project, Premier Dexter proclaimed, "Through this partnership, Nova Scotia is taking a major step forward as an international leader in renewable energy. Today's agreement will create thousands of new jobs; it will stabilize energy prices for Nova Scotia families and businesses well into the future . . ." (Newfoundland & Labrador et al. 2010). Even Joe Oliver, the federal natural resources minister better known for promoting oil-sands development, turned to an EM discourse to explain the federal loan guarantee for the Muskrat Falls project, which, in his words, "will not only help create jobs and economic growth for people in Atlantic Canada but will also provide a cheap, stable and sustainable source of clean energy for the region" (Alberstat 2013b). Meanwhile, Halifax Regional Municipality (HRM 2013) explains that its "Solar City initiative also aligns with HRM's economic development strategy," pointing to the "local, labour intensive" nature of solar hot-water technology and the fact that "participating residents will divert some of their energy expenditures into the local economy which in turn supports our local, quickly expanding 'green industry'." As discussed in more detail below, however, such an EM vision is only part of the story of the motivations behind Nova Scotia's push for green power.

Drivers of Nova Scotia Green-Power Initiatives

The above-mentioned promise of win-win environmental and economic benefits certainly has been one contributing factor to Nova Scotia's green-energy agenda and has helped create a degree of common ground among environmentalists, segments of the business community, and the provincial government. The Halifax-based Ecology Action Centre has long been a voice pointing to strategic opportunities to achieve "sustainable prosperity" and "green competitiveness" through energy efficiency, an expansion of renewable energy, and investment in ecologically-sound transport (e.g. Haley & Sodero 2007). In addition, some Nova Scotia-based businesses are well positioned to profit from the drive for green energy and efficiency. Among them are: Seaforth Energy, a wind turbine maker; Thermo Dynamics, a producer of solar water-heating systems; DSME Trenton Ltd., a joint venture of Korea's Daewoo Shipbuilding and the Nova Scotia government that produces wind towers and blades; Shear Wind and Scotian WindFields, wind-energy developers; and LED Roadway Lighting, a maker of energy-efficient light emitting diode technology. In addition, opportunities exist for firms in more conventional

sectors, such as Dartmouth-based Lockheed Martin Canada and Halifax-based Irving Shipbuilding, who are involved in the development of new tidal-power equipment (Mellor 2013). By far the most significant corporate player is Nova Scotia Power and its parent firm, Emera, whose CEO Chris Huskison has spoken of the “phenomenal opportunity” to sell renewable energy to New England once the Maritime Link is completed, adding that, “We can be a conduit for a tremendous amount of energy” (Ware 2013a).

Although opportunities exist for Nova-Scotia based firms, they are not powerhouses in the global renewable-energy business. Indeed, most of the equipment used in new wind-power projects has been imported from earlier movers and bigger players. Nova Scotia Power’s (NSP 2013b) wind-turbine directory indicates that the equipment for the province’s large-scale wind projects has been provided by the following firms: Turbowinds (Belgium), Vestas (Denmark), Enercon (Germany), Vensys (Germany), General Electric (USA), and Americas Wind Energy (a Toronto-based “virtual manufacturer” that sub-contracts production of components for its Dutch-designed turbines). Meanwhile, the Amherst wind farm completed in 2012, developed by Toronto-based Sprott Power (2012), uses equipment from Suzlon (India), the world’s fifth largest turbine supplier.

To understand Nova Scotia’s willingness to pursue a green-energy strategy, despite its up-front costs and the fact many of the spin-off benefits go to firms based elsewhere, one needs to consider a factor often absent from debate in the rest of Canada: concerns over domestic energy security, including vulnerability to the rising cost of fossil-fuel imports. Indeed, in a country with “energy superpower” ambitions, Nova Scotia stands out for being “particularly energy insecure” (Hughes 2007, p.5). Some 80 to 85 percent of its energy consumption is imported (Hughes 2010a). Until 1999, Nova Scotia power plants were fired with domestic coal (NSP 2013c), but they now depend mostly on coal with less sulphur and mercury from Colombia, Venezuela, and the United States (Hughes 2007, p.27; Nova Scotia 2013c). The price of coal imports has risen significantly in recent years, contributing to the rise of electricity rates. Indeed Halifax had the highest power rates among major Canadian cities in 2012 at 15 cents per kilowatt hour (Hydro-Quebec 2012)—although a number of American cities face even higher rates, while Denmark, a green-energy pioneer, has rates roughly four times higher (Nova Scotia 2010, p.26). Foreign oil is even more important than imported coal—and not only for transportation fuels. Some 60 percent of Nova Scotians depend on oil for home heating, while oil is also burned for a small share of electricity production. Indeed, crude oil products meet almost 64 percent of Nova Scotia’s total energy needs, compared to less than 39 percent in the rest of Canada (Hughes 2012). Newfoundland and Labrador provide about 20 percent of Atlantic Canada’s oil, but most comes from foreign sources such as Norway, Venezuela, Nigeria, Iraq, and Saudi Arabia, which are either in decline, politically unstable, or both (Hughes 2011b). As for natural gas, offshore production from the Sable gas fields is in sharp decline, with the lion’s share having been exported to New England, while there have been lengthy delays in bringing the smaller Deep Panuke project online. Gas has played a growing role in the province’s electricity production—increasing from 3 percent of total output in 2006 to 21 percent in 2012 (NSP 2013c)—as coal use has declined, but Nova Scotia now finds itself looking to the US to ensure that it has adequate gas supplies (Atlantica Centre for Energy 2012). A limited distribution network also means that most residents cannot turn to gas to heat their homes and must rely on costly heating oil or fossil-fuel-based electricity. Another vulnerability is the fact that Nova Scotia has only one connection to the transmission grid outside the province (through New Brunswick).

The combination of environmental, economic, and energy-security motivations is noteworthy in government statements about its green-energy and climate initiatives. “Our reliance on fossil fuels ... makes us vulnerable to price spikes, as affordable supplies dwindle and markets swing,” according to the climate action plan of the previous PC government. It added that “getting off fossil fuels isn’t just the right thing to do, it’s the smart thing to do. Establishing Nova Scotia as one of the cleanest and most sustainable environments in the world by 2020 is our best ticket to a prosperous economy” (Nova Scotia 2009b, p.3). Darrell Dexter’s NDP government expressed similar themes in its *Renewable Electricity Plan*, whose secondary title was “A path to good jobs, stable prices, and a cleaner environment.” The document explained to residents, “Every time you turn on a light switch, money flows from your pocket out of the country to places where the coal we burn originates. Not only does this drain wealth from the province, it puts Nova Scotians at the mercy of political turmoil and natural disasters in faraway lands” (Nova Scotia 2010, pp.3–4).

The same themes are prominent in recent government communications about Muskrat Falls and the Maritime Link. A fact sheet on the project begins with the words “Securing our clean energy future,” before it outlines the negative impacts of coal dependence on electricity prices and the environment. As for shifting from imported coal to cleaner energy, “The pay-offs are significant: reduced emissions, price stability, energy dollars staying in our regional economy, and many new jobs” (Nova Scotia 2013c). In addition to providing “cleaner and more secure power,” the government emphasizes the related theme of enhancing reliability through a more diverse mix of local, renewable sources and an additional connection to the North American electricity grid: “The province’s energy plan will ensure Nova Scotians have access to a reliable electricity system. . . . A reliable system enhances the quality of life for Nova Scotians and it is necessary for a growing and thriving economy” (Nova Scotia 2013a). (An additional key theme has been that the province’s energy plan will provide the lowest-cost option—discussed in more detail below.)

The prominence of energy-security concerns is also evident among those in the business community who support the controversial Maritime Link project. “[W]e are of the opinion this project will help make electricity prices more stable for many years to come,” said Digby and Area Board of Trade President Peter MacLellan in a submission to the province’s Utility and Review Board. “Accessing clean hydroelectricity from Newfoundland and Labrador undeniably helps create regional energy security.” Mayor Bill Joe MacLean of Port Hawkesbury, a Cape Breton town that is home to a struggling paper mill threatened by rising power rates, expressed very similar views. “This project will help ensure electricity prices are more stable for many years to come,” the mayor stated. “Importing clean hydroelectricity from Newfoundland and Labrador also helps create regional energy security” (Alberstat 2013a).

In addition to the core economic, environmental, and energy-security goals, two additional factors appear in the debate as contributors to action. One is Nova Scotia’s considerable vulnerability to climate change. As the province’s climate plan put it: “We’re at the northern end of the Atlantic hurricane track, where more storms similar to Hurricane Juan could hit us as the planet warms. . . . With 7600 km of coastline, we are exceptionally vulnerable to rising sea levels caused by climate change” (Nova Scotia 2009b, p.3; see also NS NDP Environment Committee 2012, pp.6, 10). More recently, the NDP government has emphasized that a “dramatic reduction in coal use is required to meet new 2030 federal coal reduction regulations” (Nova Scotia 2013c). The reference here is to federal regulations, announced in 2010 and released in final form in 2012, establishing a GHG emissions standard for any new

coal-fired power plants or those that have reached the end of their economic life (in most cases, 50 years). The standard in effect requires older power plants to either incorporate carbon capture and storage technology (which is still not proven to be commercially viable) or shut down. Fearing a costly, premature closure of coal plants, Nova Scotia (2012) reached an equivalency agreement with the federal government, under which it would achieve the same GHG reduction by 2030 using a less costly combination of keeping some coal plants in service while expanding renewable energy. Although recent federal action makes it more difficult for Nova Scotia to abandon its plans for electricity-sector transformation, this change began well before the federal regulations were in place and, indeed, the equivalency agreement is based on the province's already-existing actions.

Progress, Obstacles, and Limits

Visual signs of transformation are certainly evident in the province, from the giant wind towers that greet visitors on the highway from New Brunswick to the imported turbine equipment occasionally stacked up in the port of Halifax. There are also “win-win” stories of the COMFIT policy enabling communities to develop small-scale wind-energy projects with turbines built in the province (Gorman 2013), or of a biomass gasification plant in Cape Breton that will produce electricity, fertilizer, methane, and 15 jobs, while providing an additional income stream for wood producers (Macintyre 2013). Similarly, Halifax's solar water heating program has created opportunities for people to save on hot-water costs while cutting GHGs and creating local jobs, resulting in calls for adoption of the policy across the province (Ware 2013b).

Behind the surface impressions are significant changes in the sources of electricity and environmental impacts. The share of coal (including petcoke) in electricity production has fallen from 80 percent in 2006 to 68 percent in 2009 and 59 percent in 2012, while renewables accounted, respectively, for 11, 11, and 18 percent in those years. Natural gas has also increased significantly, from 13 percent of electricity production in 2009 to 21 percent in 2012 (Nova Scotia 2012; NSP 2013a). Nova Scotia Power reports that its GHG emissions fell 25 percent from 2007 to 2012 (Hanf 2013). The province as a whole has seen its GHGs fall from 24 Mt in 2005 to 20.4 Mt in 2011. Based on the province's existing policies, Environment Canada (2012, pp.32–33; 2013) projects that Nova Scotia's emissions will fall further to 17 Mt by 2020, which puts it on track to meet the provincial target of a 10 percent reduction below the 1990 level of 19.1 Mt. This stands in notable contrast to Canada as a whole, which is projected to see a 22 percent increase above 1990 levels by 2020, and is not currently on track to meet its Copenhagen accord commitments (Environment Canada 2012, p.4).³ Meanwhile, as spending on coal imports—currently some \$250 million per year (NSP 2012a)—declines, while local renewable energy expands, money⁴ previously flowing out of the province is circulating through the domestic economy.

Despite these changes and successes, it is far from certain that Nova Scotia is on the path to “sustainable prosperity.” With regard to environmental sustainability, Nova Scotia's GHG-reduction objectives, although much more ambitious than current federal goals, fall well short of estimates that jurisdictions in the affluent global North must reduce GHGs by 25 to 40 percent

³ Under the Copenhagen agreement, Canada set for itself a target of a 17 percent reduction below 2005 levels, which is equivalent to a 2.5 percent *increase* above 1990 levels. Given existing federal and provincial policies, Canada is on track to emit 720 Mt of GHGs by 2020 (Environment Canada 2012, p.4), which is well above its Copenhagen target of 607 Mt and 22 percent above 1990 emissions of 591 Mt.

⁴ [Find an estimated dollar value.*]

below 1990 levels by 2020. Such reductions are widely believed necessary to have a reasonable probability of keeping atmospheric GHG concentrations from exceeding 450 ppm CO₂e (Gupta et al. 2007, p.776), and thereby meet the goal established in global climate talks of avoiding a 2°C temperature increase. Indeed, the 2007 NS NDP Convention supported targets of 25 percent below 1990 levels by 2020 and 80 percent below 1990 levels by 2050 (NS NDP Environment Committee 2012, p.10), although these have not become government policy. Even more radical reductions would be needed if one accepts the position of some scientists that the safe level of atmospheric CO₂ concentrations is 350 ppm (Hansen et al. 2008; Rockström et al. 2009).

With respect to “prosperity,” as noted above, Nova Scotia has the second lowest per-capita incomes in Canada—approximately one half the level in Alberta.⁵ The province continues to face an above-average unemployment rate that has varied between 8 and 10 percent since 2009, and which rose from 8.4 to 9.5 percent between the first quarter of 2012 and the first quarter of 2013. While unemployment in Halifax (6.7 percent) is below the Canadian average of 7.2 percent, it is much higher in rural areas and, especially, in Cape Breton (18.6 percent) (HRSDC 2013). This gap is contributing to a continued rural-urban migration. Rural areas lost 6,000 people from 2006 to 2011, while the urban population rose by 15,000 (Statistics Canada 2011). There is also a steady outflow of people seeking opportunity in other provinces.

In light of such economic and social challenges, electricity rates take on a particularly important role in Nova Scotia politics. Indeed, there is a long history of contention over such issues. In the words of one political blogger, “Power rates have been the third rail of Nova Scotia politics ever since they caused the defeat of Gerald Regan’s government in 1978” (Donham 2010; see also Haley 2010, p.3). Rising rates threaten low-income Nova Scotians with having to choose between paying for power, food, or rent, while burdening energy-intensive industries such as pulp and paper mills—who are major employers in struggling rural areas—with costs that could undermine their ability to survive and compete.

Rising power rates are double-edged with regard to green energy. While the high and rising costs of imported fossil fuels provide a powerful motivator to develop renewable alternatives that promise greater energy security and stable prices in the long run, they also create important political obstacles to following through on such initiatives, which require costly up-front investments. The government spelled out the crux of the problem in its *Renewable Electricity Plan* (Nova Scotia 2010, p.26):

The transition from imported fuels to renewable electricity and cleaner local fuels will increase power bills in the short term, but offer lower and more stable rates in the long run. *Not* making this transition would shackle ratepayers to the wild price swings and the relentless upward march of international energy markets.

. . . We can keep going down that path and doom consumers to an unsustainable future, or we can bite the bullet and make the necessary investments to have a secure, safe, affordable, and sustainable energy economy.

One early test of the NDP government’s willingness to “bite the bullet” came in 2010, when it decided to delay a tightening of mercury emission standards for the electricity sector—one of the Environmental Goals and Sustainable Prosperity Act commitments—due to concern

⁵ Calculations based on Statistics Canada (2012a; 2012b) figures for “Gross domestic product, expenditure-based, by province and territory” and population for 2011.

over power-rate increases. Reflecting on this episode, Haley (2010) writes that, “Nova Scotia’s particular brand of energy cost politics is the prime stumbling block” to a greener energy system. “Whenever Nova Scotia Power ... announces a new rate increase extensive media coverage and angry letters to the editor are sure to follow.” Although the plan to invest in renewable energy to free itself from coal’s rising cost and environmental impacts, and thereby stabilize electricity rates in the future, is a “rational approach,” Haley notes that “long-term rationality does not necessarily win out over short-term expediency” (pp. 3-4), while expressing concern over the government’s “willingness to capitulate in the face of rate increases” (p.8).

The immediacy of political pressures around power rates has once again become apparent. While there have been cases of local resistance to wind farms from those concerned about visual impacts, property values, and alleged health concerns (Canadian Press 2013; Delaney 2012), it is the issue of power rates that has become the key point of contention in the province’s energy plans. On top of public anger over past rate increases and the approval of further increases of three percent annually in 2013 and 2014, intense debate has emerged over the impact on rates of Muskrat Falls and the Maritime Link and whether they represent the lowest-cost option. As a report in Halifax’s *Chronicle Herald* put it, “In Nova Scotia, power rates will be THE issue” in the upcoming election (DeMont 2013, p.28).

Opposition politicians have seized on rising rates to attack the government. “The NDP are driving power rates higher to meet their unaffordable renewable energy targets,” according to Progressive Conservative Leader Jamie Baillie, who has promised a rate freeze while calling for “Nova Scotia Power to buy as much renewable energy as we can afford within the current rates” (PC Caucus 2012b). PC proposals also include “removing the guarantee on Nova Scotia Power’s profit, rewriting the NDP electricity plan to make it affordable, and creating a regional energy market to lower power bills for consumers” (PC Caucus 2013a). Challenging the government’s EM rhetoric of win-win opportunity, the PCs have blamed the NDP’s “bite-the-bullet” electricity plan for “forcing companies out of business,” driving people to leave the province, and “destroying the balance between environmental goals and sustainable prosperity” (PC Caucus 2013c; see also 2013a).

Meanwhile, the Liberals, the main challenger to form a new government, have promised to break up Nova Scotia Power’s monopoly by enabling independent renewable power producers to sell directly to consumers and to remove the charge on power bills that funds Efficiency Nova Scotia, arguing that NSP should fund such programs out of profits. In addition, they have sought more information on the alternative of buying hydro-electricity from Quebec (Jackson 2013b). While not taking issue with Muskrat Falls itself, the Liberals question the benefits of the deal to build the Maritime Link, given its uncertain impact on power prices and the fact that Nova Scotians will have to pay for the Link through their power bills, even though ownership will revert to Newfoundland’s Nalcor Energy after 35 years (NS Liberals 2013a; Younger 2012).

In response to claims that the government’s renewable-energy targets are the main factor behind recent power-rate increases, the NDP has reiterated the central importance of the increase in coal prices and the need for a more diversified portfolio of energy sources (Jackson 2013a; Nova Scotia 2013b). Nova Scotia Power likewise says that the “the ever-increasing cost of coal is actually the largest driver in the growth of electricity pricing” (NSP 2012c), and blames the latest rate hike primarily on the fact that the price it pays for coal has increased more than 70 percent from 2004 to 2012 (NSP 2012b). Nevertheless, renewable investments are one factor behind rate hikes. Both the NDP government and NSP estimate that the addition of new renewable sources in the province is adding 1 to 2 percent to power bills each year on a

cumulative basis (Nova Scotia 2010, p.26; NSP 2012c), while the Muskrat Falls and the Maritime Link will also lead to higher rates in the future. Meanwhile, the government's sensitivity to the power-rate issue is evident in its communications, which put a heavy emphasis on delivering "the lowest, fairest rates," including "tax-free"⁶ home electricity and efficiency measures to help people lower their bills (Nova Scotia 2013b).

An additional problem confronts the NDP government as it attempts to persuade the public of the merits of its approach to expanding renewable energy: the perception that it is too closely tied to Nova Scotia Power and its parent company, Emera. There is a palpable dislike among Nova Scotians for the company, which many associate not only with high and rising power rates, but also excessive executive salaries, slow responses to frequent storm-induced power outages, and a costly new (albeit LEED-platinum-certified) fortress-like headquarters on the Halifax waterfront.⁷ The juxtaposition of an NSP application for further rate increases with revelations that top NSP executives received pay increases of more than 20 percent on their seven-figure incomes undoubtedly did little to endear the company to residents (CBC 2012a), even if executive remuneration accounts for only a small part of power bills. NSP is, according to a *Chronicle Herald* report, "the most vilified company in the province" (DeMont 2013, p.30). Indeed, on the NSP website, Daniel S. from Port Hawkesbury asked, "Does Darth Vader's theme music play every time [NSP President] Rob Bennett walks into a room? It seems appropriate that it would."⁸

Aware of such sentiments, opposition parties have made much of the apparent close ties between the government and the company and their shared positions on key issues. The Progressive Conservatives have denounced the "NSP/NDP unholy alliance" (PC Caucus 2012a), while Liberal Leader Stephen McNeil told the House during a debate on the Maritime Link that "the NDP Government has become the official cheerleader for Nova Scotia Power and Emera. The NDP Government has been more focused on shareholders than they have been on ratepayers" (NS Legislature 2012). Media critics have likewise noted that "the Dexter government has aligned itself closely with Emera... and that seems to be based on a philosophy of what's good for Emera is good for Nova Scotia" (Taylor 2013). Others have alleged that Nova Scotia is "becoming a sort of an electro-state the same way that you can be a petro-state like Alberta where . . . very few interests really are the dominant players in the society" (Macdonald 2010).

Judging the accuracy of such claims is beyond the scope of this paper; however, they have become a real force in the political debate over Nova Scotia energy policy and an obstacle to sustaining public support for a green-energy agenda. The Dexter government was forced to respond to public anger toward NSP with a populist pledge to cap the ratepayer-funded portion of executive salaries at a level comparable with senior public-sector officials, with shareholders paying the difference (CBC 2012b). However, allegations that energy decisions are being pushed

⁶ The provincial portion of the HST on electricity and home heating was removed in 2009.

⁷ See, for example, a much-publicized YouTube video on the plight of Arlene MacIntyre, a disabled Sydney resident, struggling to stay warm as power rates rise while NSP and Emera "focus more and more on profits . . . while at the same time rewarding top executives with fat salaries and bonuses" (CivilFilmsNS2013 2013).

⁸ Nova Scotia Power responded: "Unfortunately, Rob doesn't have theme music. While electricity can be pretty powerful, as far as we've noticed, Rob hasn't yet mastered the way of the force. . . . We think you're onto something, though. . . . Maybe 'Power to the People' would be a good fit. It's a little revolutionary sounding, but the changes we're making to how electricity is made in Nova Scotia are significant and ultimately for the better – our electricity is getting cleaner, and more of our customers' money is staying in Nova Scotia's economy rather than going to foreign coal companies...." (NSP 2012d; see also Taber 2012).

through to benefit the few at the expense of the many have persisted as the Maritime Link debate has intensified. The government's imposition of a 180-day deadline for the Utility and Review Board to make a decision on the 35-year project by July 2013 has generated criticism from opposition parties, independent power producers, some business and environmental groups (e.g. Nova Scotia Chambers of Commerce, Sierra Club of Canada), and others. Critics maintain that there is not enough time for a full review of the impacts, the specific details of the deal between Emera and Newfoundland's Nalcor, and possible alternatives, such as importing hydro-power from Quebec or a greater role for domestic renewables in combination with natural gas or (see e.g. Alberstat 2013a; NS Liberals 2013b; PC Caucus 2013b; Taylor 2013). Indeed, the current low cost of natural gas as a result of the fracking-induced surge of US supplies has led some to question whether gas alone represents a better option, at least in economic terms, than the current emphasis on expanding renewable power.

At risk of being lost in the debate over power rates, executive pay, and the distribution of costs and benefits is the important role that access to hydro-electric base power can play in enabling a transition to a low-carbon electricity system. The ability to draw on hydro power when needed could open up opportunities for further integration of intermittent renewable sources, such as wind, solar, and tidal. "The real value proposition of Muskrat Falls is about the transition into a fossil-free energy future," according to Catherine Abreu of Halifax's Ecology Action Centre (Devet 2013). Abreu calls for longer-term objectives to be established to guide the debate, such as a 100 percent carbon-free, renewable electricity system by 2050. Although aware of adverse impacts on local systems and aboriginal people in Labrador, the EAC (n.d.) has outlined ways in which the Muskrat Falls project could play a key role in that vision of a sustainable energy future by, for example, linking it to a timeline for a complete phase-out of coal and "bold renewable energy targets that provide new opportunities for domestic green options and energy independence (e.g. wind, tidal, solar, energy efficiency)."

One other key limit to Nova Scotia's green-energy strategy needs to be noted. It is primarily an electricity strategy rather than a full energy strategy. Electricity accounts for only about 20 percent of Nova Scotia energy use. A more complete strategy to reduce GHGs and boost energy security would also have to address the current dependence on refined petroleum products for 80 percent of energy needs, notably for transportation and a large share of home heating (Hughes 2010b). Critics point to provincial government spending of over \$300 million per year on an extensive road building program, while there are no comparable efforts to improve public transit or rein in urban sprawl, as an indication of inaction in reducing dependence on imported, carbon-based motor fuels (Holmes 2012; Hughes 2011a).

Conclusions

Nova Scotia has earned recognition as one of the Canadian provinces that has gone furthest in promoting a transition from carbon-based to renewable energy. Although still limited in important ways, such as its level of ecological ambition and the lack of a full strategy to address all its energy consumption, the province's policies are delivering significant reductions in coal use and a greater share for renewable electricity. If sustained and expanded, this transformation could eventually lead to a fully decarbonized electricity system, which integrates a diverse range of renewable sources backed by hydro-electric base power and could, over time, provide climate-friendly power for electric vehicles and home heating.

In principle, making this transition offers the promise not only of environmental benefits but also economic ones, in line with ideas of ecological modernization. A win-win linkage of this

kind has also motivated green-energy leaders in other jurisdictions, including the European Union and several of its member states, California, South Korea, and the provinces of British Columbia, Quebec, and Ontario. However, Nova Scotia's capacity to capture the economic benefits of these changes is constrained by its limited, although not entirely absent, advanced manufacturing and technological capacities, resulting in a need to import much of the equipment for the current rapid expansion of wind power. Other motivating factors have also been necessary to drive the province forward, the most important of which is its energy insecurity, notably its vulnerability to the steadily rising cost of fossil-fuel imports. As such, Nova Scotia differs considerably from other Canadian provinces with abundant energy resources and more closely resembles some European states, where energy-security concerns have been a key force behind renewable-energy and efficiency policies (Buchan 2009; Giddens 2009; Hayden 2012).

Yet it remains far from certain that Nova Scotia can find a convergence among its economic, environmental, and energy-security objectives in a viable long-term strategy. Although further technical innovation will be valuable, e.g. in areas such as capturing tidal power, the key challenge is political. The outlines of a zero-carbon, renewable energy system can be seen on the horizon. However, increasing power rates are playing a contradictory role in driving forward the search for energy alternatives, while generating resistance to the upfront costs of investing in green energy and adding to cost burdens for many businesses. There is no easy answer to this problem, as reflected in the wording of the province's *Renewable Electricity Plan*, which acknowledged the need to "bite the bullet" (Nova Scotia 2010, p.26). This represents a notable divergence from a conventional EM discourse that focuses on upbeat, win-win possibilities and shies away from acknowledging the trade-offs involved and the need to build political acceptance for actions that impose significant costs, at least in the short term.⁹

Some important elements of a response to Nova Scotia's problem of higher up-front power prices have been suggested by Haley (2010), who calls for "a new way of thinking and a political culture focused less on energy price and more on energy costs or actual energy affordability" (p. 5). This new "social bargain" would include ensuring universal access to energy-efficiency opportunities,¹⁰ an "energy cost social safety net" by providing a credit on the bills of low-income earners so that they do not pay more than a certain percentage of their incomes on power, and wider access to renewable-energy generation opportunities (e.g. by expanding the COMFIT program). Pushing and supporting business to improve energy efficiency also becomes essential to enable it to cope with higher rates. Although such measures are important components of a move to a green-energy future, they do require confronting the difficult challenge of changing a political culture deeply resistant to higher rates and, as such, step beyond the easy win-win territory of much ecological modernization discourse.

Gaining acceptance for green-energy choices that impose short-term costs on the public is also hindered by the centrality in the province's EM coalition of Nova Scotia Power, seen by many as an arch-villain. Whether or not anti-NSP sentiment is fully justified, it takes on a political life of its own. It is hard to imagine the political sustainability of the green-energy agenda without efforts to displace this private monopoly from its central role and to widen the range of beneficiaries. Possibilities include, as mentioned, expanding the COMFIT policy to further expand the opportunities for struggling rural and coastal communities to earn an income stream from local renewable sources, efforts of local businesses and workers to seize a greater

⁹ Some EM theorists, however, have acknowledged that the transition to ecologically sustainable practices will create losses for some economic interests and result in difficult political conflicts (e.g. Jänicke 2008).

¹⁰ The establishment of Efficiency Nova Scotia represents a step toward this goal.

share of the spin-off benefits (and perhaps further policies to support this),¹¹ and re-nationalizing some NSP assets, most importantly the distribution grid, as Majka (2012) proposes. It would be a tragic outcome for proponents of green energy if the public came to see their vision as serving Darth Vader and the dark side of the force.

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¹¹ Ontario attempted to establish domestic content requirements for renewable-energy projects benefitting from feed-in-tariffs; however, after a challenge by Japan and the EU, the WTO ruled that the requirements contravene international trade rules.

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