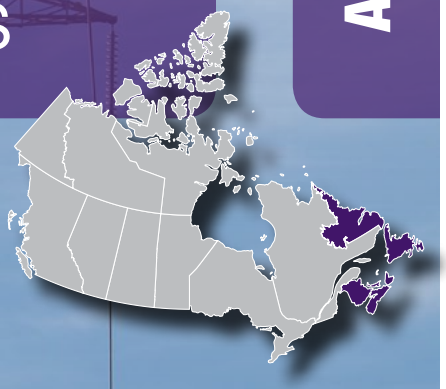
Regional Electricity Cooperation and Strategic Infrastructure (RECSI)

ATLANTIC REGION Summary FOR POLICY MAKERS

AR-SPM



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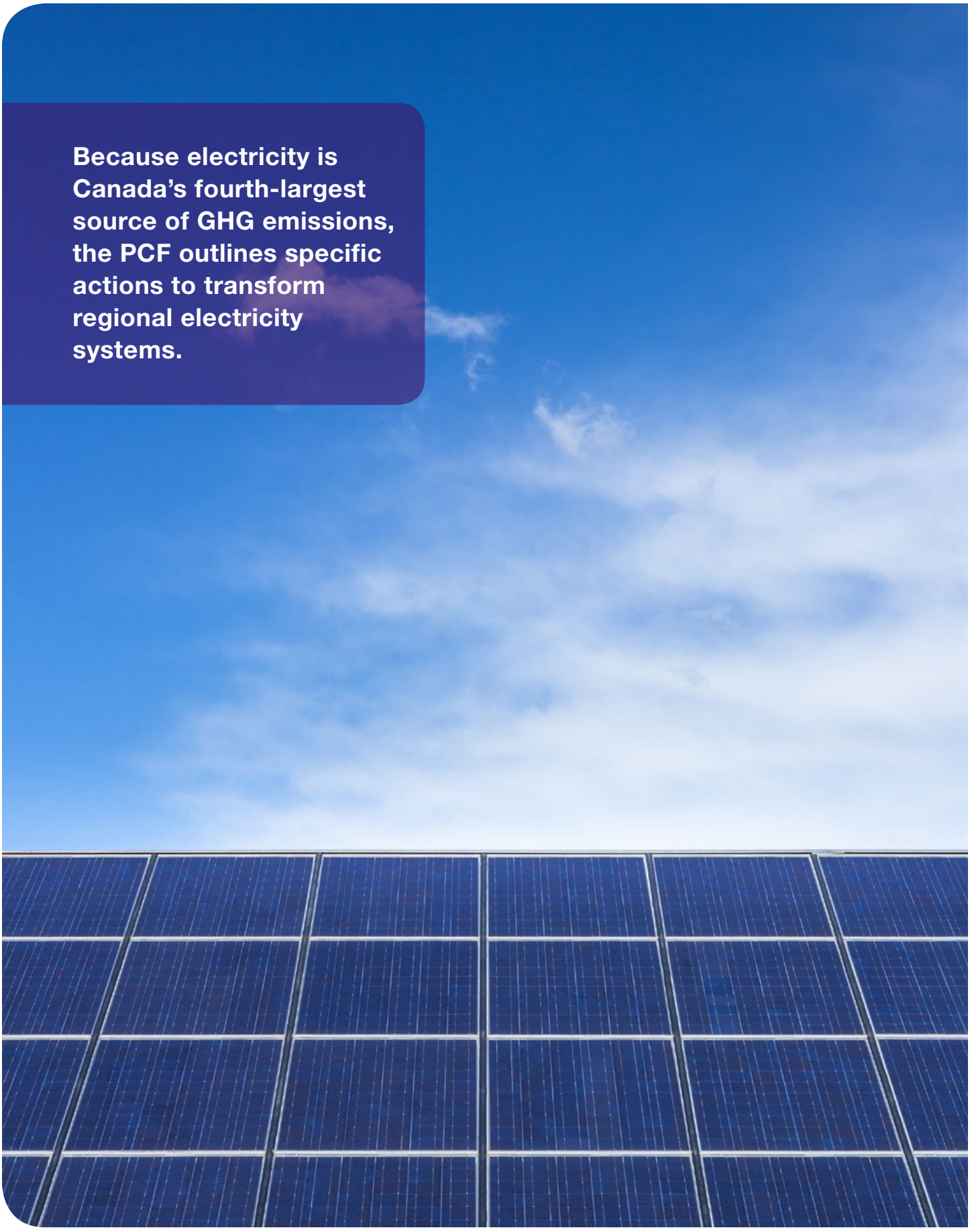


Because electricity is Canada's fourth-largest source of GHG emissions, the PCF outlines specific actions to transform regional electricity systems.

AR-SPM.1 Purpose and context

The Summary for Policy Makers (AR-SPM) of the Atlantic dialogue on Regional Electricity Cooperation and Strategic Infrastructure (RECSI) provides a summary of the findings from an economic modelling simulation study sponsored by Natural Resources Canada (NRCan) in collaboration with the Governments of New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland and Labrador and the Atlantic Canada Opportunities Agency. The respective provincial electricity system operators, NSPower, Emera, NBPower, Maritime Electric, Newfoundland & Labrador Hydro and Nalcor, contributed relevant knowledge, data and expertise to construct the economic simulation model.

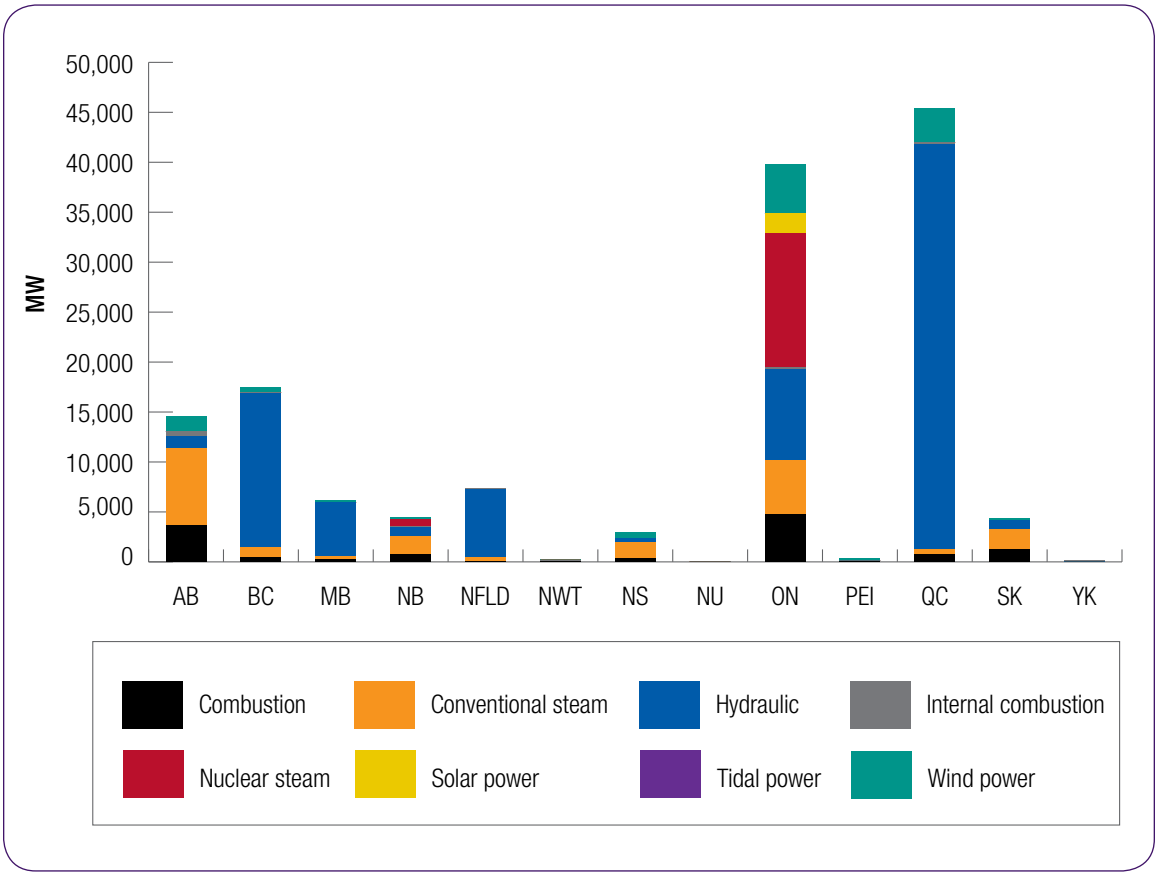
This report also provides insight into specific challenges faced by the Atlantic Provinces as they move to a future without coal-fired electricity generation in New Brunswick and Nova Scotia.

AR-SPM.1.1 Pan-Canadian Framework on Clean Growth and Climate Change

The Pan-Canadian Framework on Clean Growth and Climate Change (PCF) presents a collective plan to grow the economy while reducing emissions and adapt to a changing climate. In December 2016, the PCF, published the outline of a collaborative action plan to meet or exceed Canada's 2030 target of a 30 percent reduction below 2005 levels of greenhouse gas (GHG) emissions. Achieving, or exceeding, the target reduction in GHG emissions will require changes to the production and use of energy, including electricity.

Electricity generation in Canada is predominantly from non-emitting sources. Eighty-one percent of electricity is generated from non-emitting sources, with some regional variation due to provincial natural endowments (see Figure 1). As electricity is Canada's fourth-largest source of GHG emissions, the PCF outlines specific actions to transform regional electricity systems. These actions include: (1) increasing the amount of electricity generated from renewable and low-emitting sources; (2) connecting clean power with places that need it; (3) modernizing electricity systems; and, (4) reducing reliance on diesel working with Indigenous Peoples and northern and remote communities.

Figure 1. Installed generating capacity



Source: Statistics Canada, CANSIM Table 127-0009 adjusted to MW

Connecting clean power with places that need it required a regional electricity perspective. Electricity generation and transmission is a provincial responsibility. In order to determine the potential for inter-provincial electricity collaboration, the federal government sponsored regional dialogues to identify promising electricity infrastructure projects that can connect clean power with places that need it.

AR-SPM.1.2 Investing in Canada Plan

The federal government has committed to investing in infrastructure. The federal government is investing more than $180 billion over 12 years in five priority infrastructure streams: public transit, green, social, trade and transportation, and rural and northern communities. Funding will come through a number of national programs, negotiated agreements with provinces and through the Canada Infrastructure Bank.

The Green Infrastructure stream will support projects that protect communities and support Canada's ongoing transition to a clean growth economy. The Green Infrastructure stream, through Integrated Bilateral Agreements, (IBA) allocates $347 million[1] to New Brunswick; $382 million[2] to Nova Scotia; $228 million[3] to Prince Edward Island; and $302 million[4] to Newfoundland and Labrador. A minimum of 45% of a province's IBA Green Infrastructure stream allocation should support greenhouse gas emission mitigation projects, such as new renewable electricity and transmission projects. Infrastructure Canada will work with provinces and territories to prioritize Pan-Canadian Framework projects in this stream.

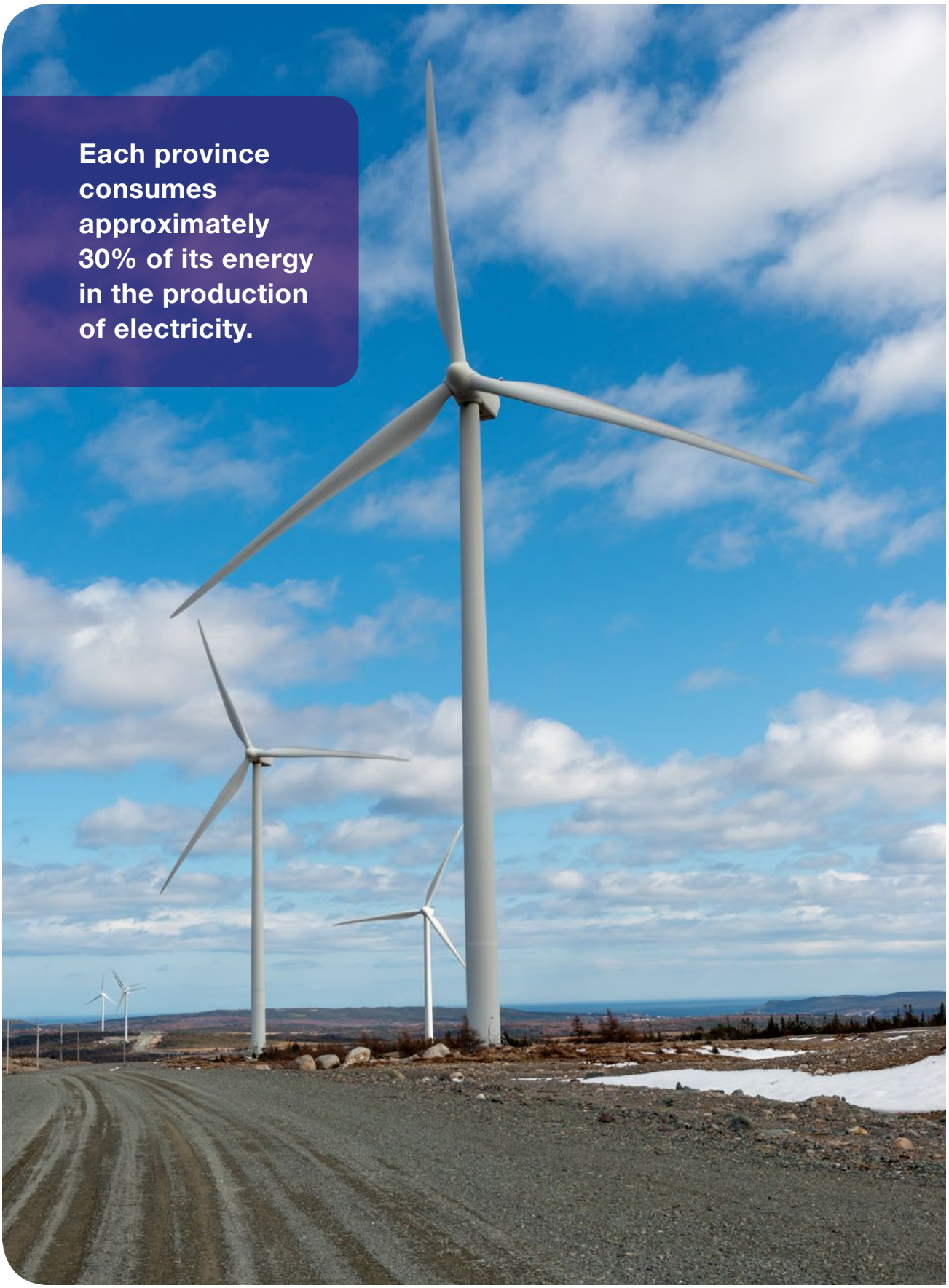
The Canada Infrastructure Bank (CIB) seeks to mobilize private capital to support federal policy goals. The Bank is a federal Crown corporation that will use federal support to attract private sector and institutional investment to new revenue-generating infrastructure projects that are in the public interest. Operating like a merchant or investment bank, the CIB will structure appropriate financial support for projects as a business model with its partners.

AR-SPM.1.3 A regional perspective could identify promising infrastructure projects

A regional study was conducted to identify promising electricity infrastructure projects in Atlantic Canada. As part of Green Infrastructure Phase I spending, the federal government allocated $2.5 million to advance regional electricity cooperation by funding studies and dialogues to identify promising electricity infrastructure projects with the potential to achieve significant greenhouse gas reductions. The governments, and their respective electric utilities, of Nova Scotia, New Brunswick, Prince Edward Island, Newfoundland & Labrador and the Atlantic Canada Opportunities Agency collaborated on a regional economic dispatch simulation model to examine promising electricity infrastructure projects to meet a set of carbon-constrained future scenarios.

Broader costs and benefits to change to a new generation mix were beyond the scope of this study. The report only examined the impact on the electric system. The impact on the broader economy of the region and clean air benefits were not examined.

1 http://www.infrastructure.gc.ca/plan/letters-lettres/pt-nb-eng.html
2 http://www.infrastructure.gc.ca/plan/letters-lettres/pt-ns-eng.html
3 http://www.infrastructure.gc.ca/plan/letters-lettres/pt-pe-eng.html
4 http://www.infrastructure.gc.ca/plan/letters-lettres/pt-nl-eng.html

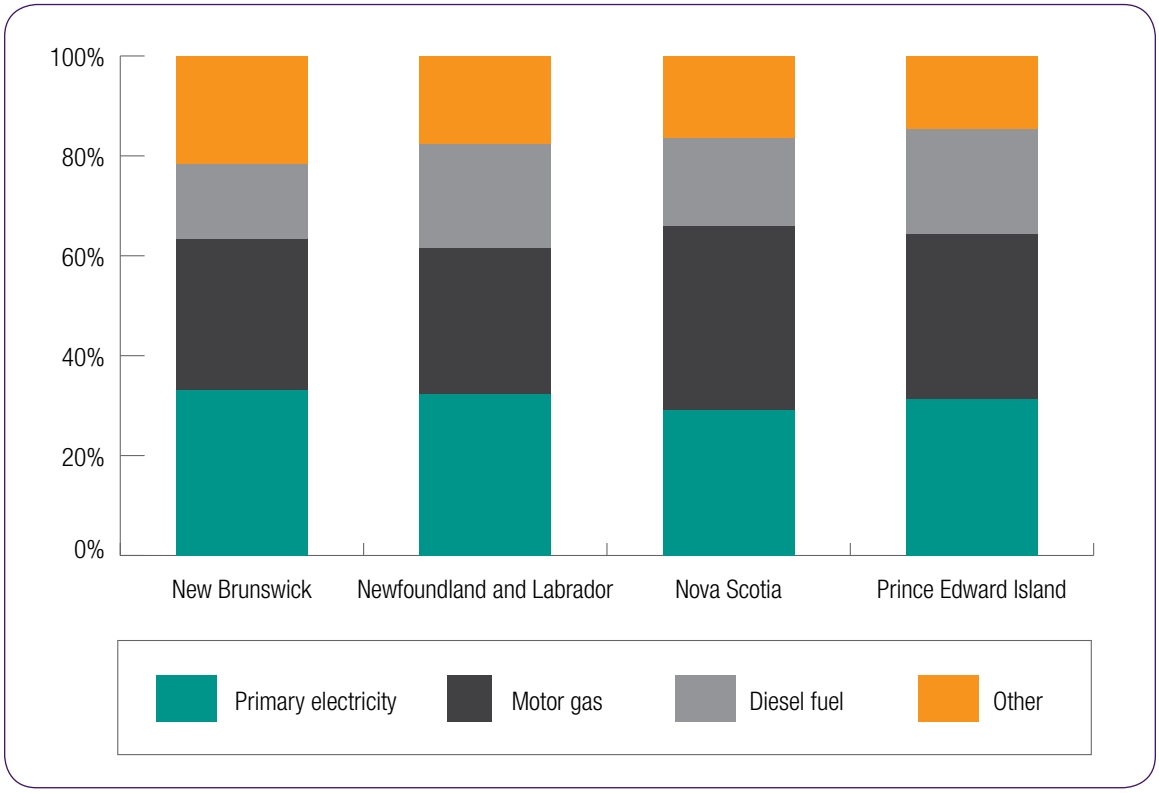

Each province consumes approximately 30% of its energy in the production of electricity.

AR-SPM.2 Atlantic regional electricity and energy context

AR-SPM.2.1 Current energy demand

Regional energy demand is highest in the electricity and transportation sectors. As illustrated in the following chart, electricity and transportation consume the largest portion of energy in the Atlantic Provinces (Fig. 2). Each province consumes approximately 30% of its energy in the production of electricity.

Figure 2. Energy use

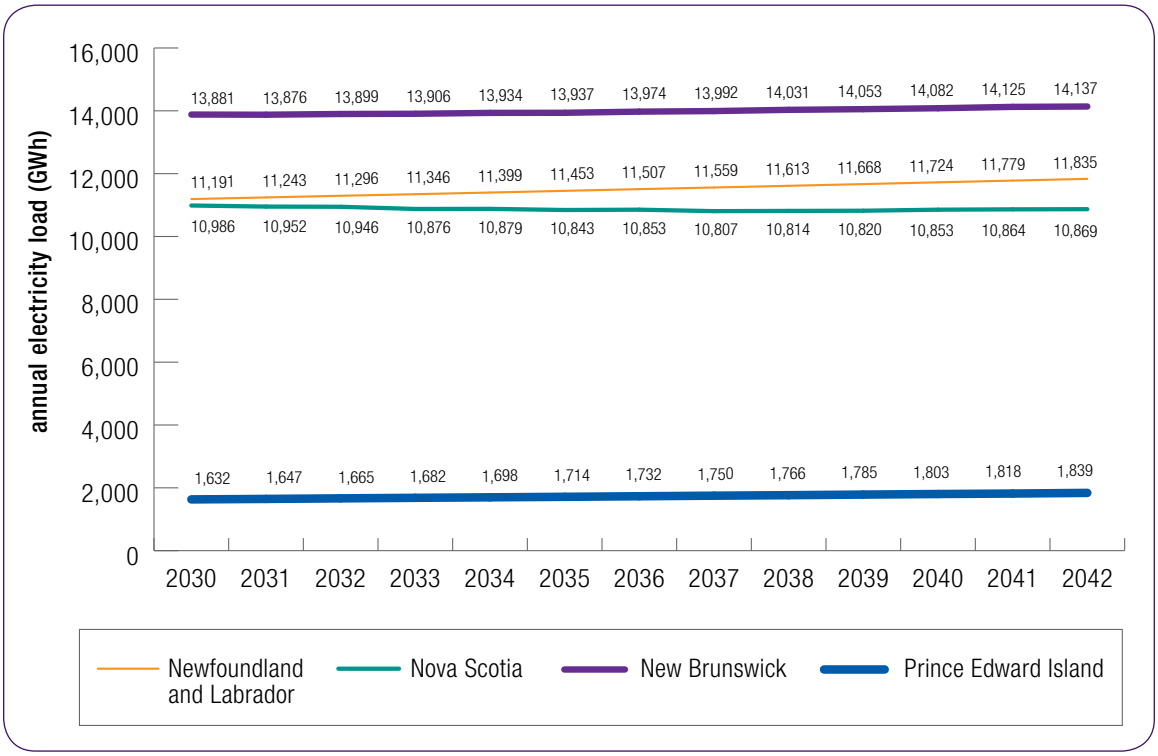


Source: Statistics Canada, CANSIM Table 128-0016

AR-SPM.2.2 Future electricity demand

Demand for electricity is projected to increase in the future. Provincial forecasts, based on utility expectations for future use from their respective load area, indicate an overall increase in regional electricity demand, although this varies by province.

Figure 3. Electric load forecast



Source: HATCH Atlantic RECSI technical report

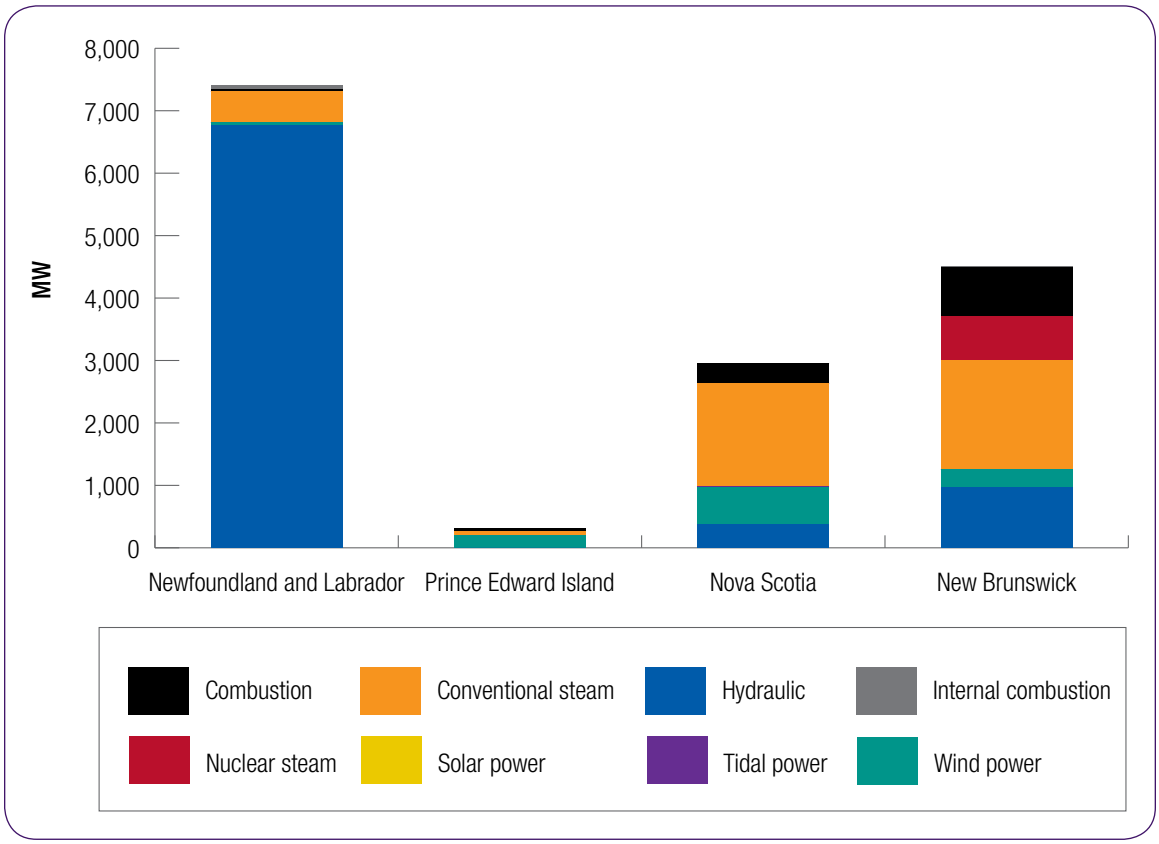
Demand side management actions in the region are reducing energy use. Over the next three years, New Brunswick is targeting a reduction in in-province energy of 259 GWh and a reduction in annual peak hour demand of 72 MW. This will result in 129,000 tonnes of greenhouse gas reductions over the life of the measures. In addition, New Brunswick has received over $50 million over the next 4 years for energy efficiency programs from the Low Carbon Economy Fund that will enhance programs and further reduce energy, demand and greenhouse gases.

Nova Scotia has operated significant energy efficiency programming in the electricity sector that has ramped up over the past decade. Since 2008, over $300M of spending on efficiency programming in Nova Scotia had produced an estimated cumulative energy savings 1.2 TWh. This has flattened the electricity sales growth in the province; however system demand continues to trend upward over the same period.

AR-SPM.2.3 Current and future energy supply

The Atlantic region has a diverse electric generating supply. The Atlantic Provinces, through legacy provincial and federal policies, have a diverse supply of electric generation. Guided by their respective electric regulatory requirements, each province has secured sources of electricity through generation builds and import/export agreements.

Figure 4. Electric generating capacity



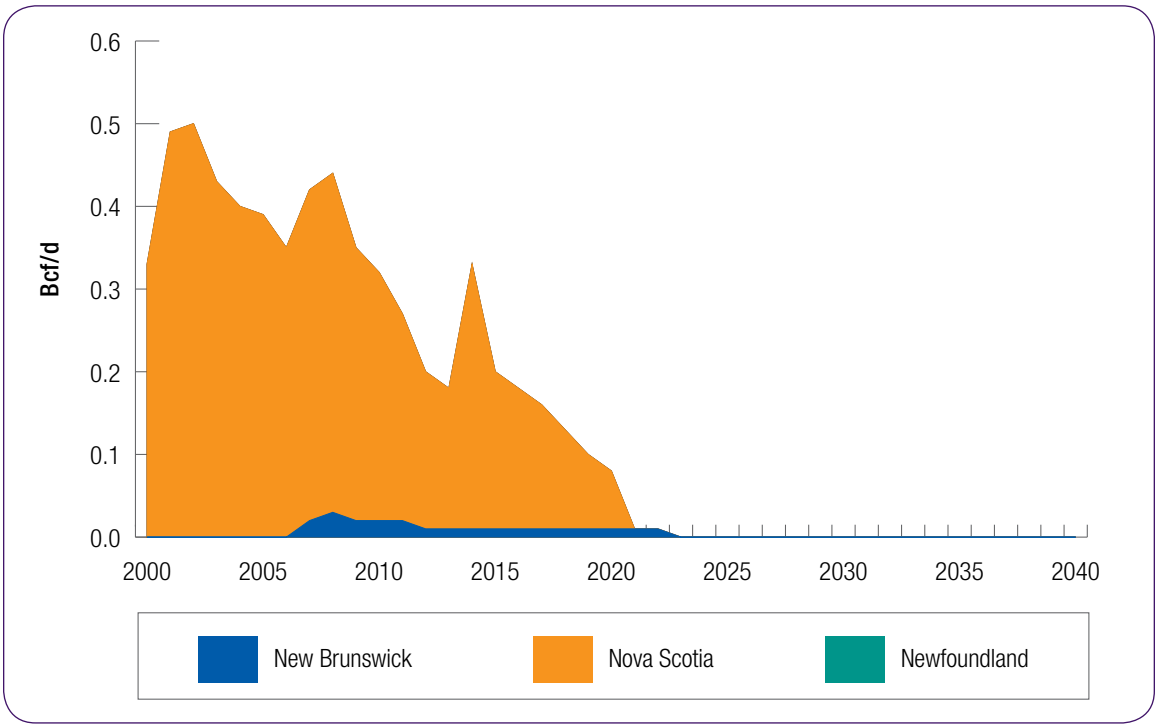
Source: Statistics Canada, Table 127-0009

For the Atlantic region, using natural gas as the main transition fuel would be a challenge. Atlantic Canada expects to see a decline in local natural gas production as the Deep Panuke and Sable projects are closed[5], as illustrated in Figure 5. The Maritimes and Northeast Pipeline system could help alleviate this challenge as it could allow for greater imports from the Marcellus shale formation[6]. This will require additional pipeline capacity through parts of New England to the Maritimes and Northeast Pipeline system. In addition, access to natural gas distribution is presently limited in the region to only Southern New Brunswick and parts of Nova Scotia.

5 Canada's Energy Future 2017 Supplement: Natural Gas Production
6 Natural gas supply and demand report New Brunswick and Nova Scotia 2015-2025, Atlantica Centre for Energy.

While the current gas infrastructure and supply pose a challenge to region, Newfoundland and Labrador has an estimated 12.6 trillion cubic feet of gas discovered offshore of the province, which remains to be developed[7].

Figure 5. Natural gas forecast



Source: National Energy Board Reference Case for Canadian marketable natural gas production

Natural gas prices in New Brunswick and Nova Scotia are higher and more volatile than other parts of Canada, especially in the winter[8]. This is largely due to distinct regional gas market dynamics, which includes parts of New England. Gas prices and constraints are exacerbated by the region peaking in the winter[9], having limited storage capabilities and due to the need to financially support relatively new natural gas distribution assets by a small population.

The Newfoundland and Labrador Muskrat Falls Project, including its associated transmission projects, will address a portion of the regional energy needs starting 2020. Completion of the estimated $12.7 billion project will make Newfoundland and Labrador's electricity generation 98% renewable. The project will also provide Nova Scotia with 20 percent of the energy and capacity from the Muskrat Falls generating station.

New Brunswick Power has operated Point Lepreau Nuclear Generating Station since 1983. The 660 MW unit was originally commissioned in 1983, recommissioned after refurbishment in 2012 and is currently licensed to 2022 with life expectancy to 2040.

7 Advance 2030 A Plan for Growth in the Newfoundland and Labrador Oil and Gas Industry http://www.nr.gov.nl.ca/nr/advance30/pdf/Oil_Gas_Sector_FINAL_online.pdf.
8 National Energy Board, Market Snapshot: Continuing High Prices in the Maritimes' District Natural Gas Market.
9 Regional load patterns, HATCH RECSI Technical Report.

The site has a permit that allows for future reactors. New Brunswick Power is currently exploring the possible use of Small Modular Reactors at this site. This will be informed by the outcomes of the Federal Small Modular Reactor roadmap. As part of the roadmap exercise, the Canadian Nuclear Laboratories expects to have a demonstration unit commissioned at one of their sites by 2026.

Electricity from Churchill Falls could be available to the Atlantic region after a long-term power purchase agreement (PPA) with Hydro-Quebec expires August 31, 2041. Churchill Falls is a 5,428 MW hydro generating station operated in Labrador which is jointly owned by the Government of Newfoundland and Labrador and the Government of Quebec. The majority of the energy is sold to Hydro-Quebec via a long-term contract that expires in 2041. For the energy to be sold to the Atlantic region, transmission reinforcements would be required along the route from Quebec to New Brunswick or over a similar path as the energy from Muskrat Falls takes. The current transmission capacity from Muskrat Falls to Nova Scotia, or between New Brunswick and Quebec, would not be sufficient for the surplus energy from Churchill Falls. The Government of Newfoundland and Labrador also see the 2,250 MW Gull Island renewable energy project on the lower Churchill River as a potential future development opportunity.

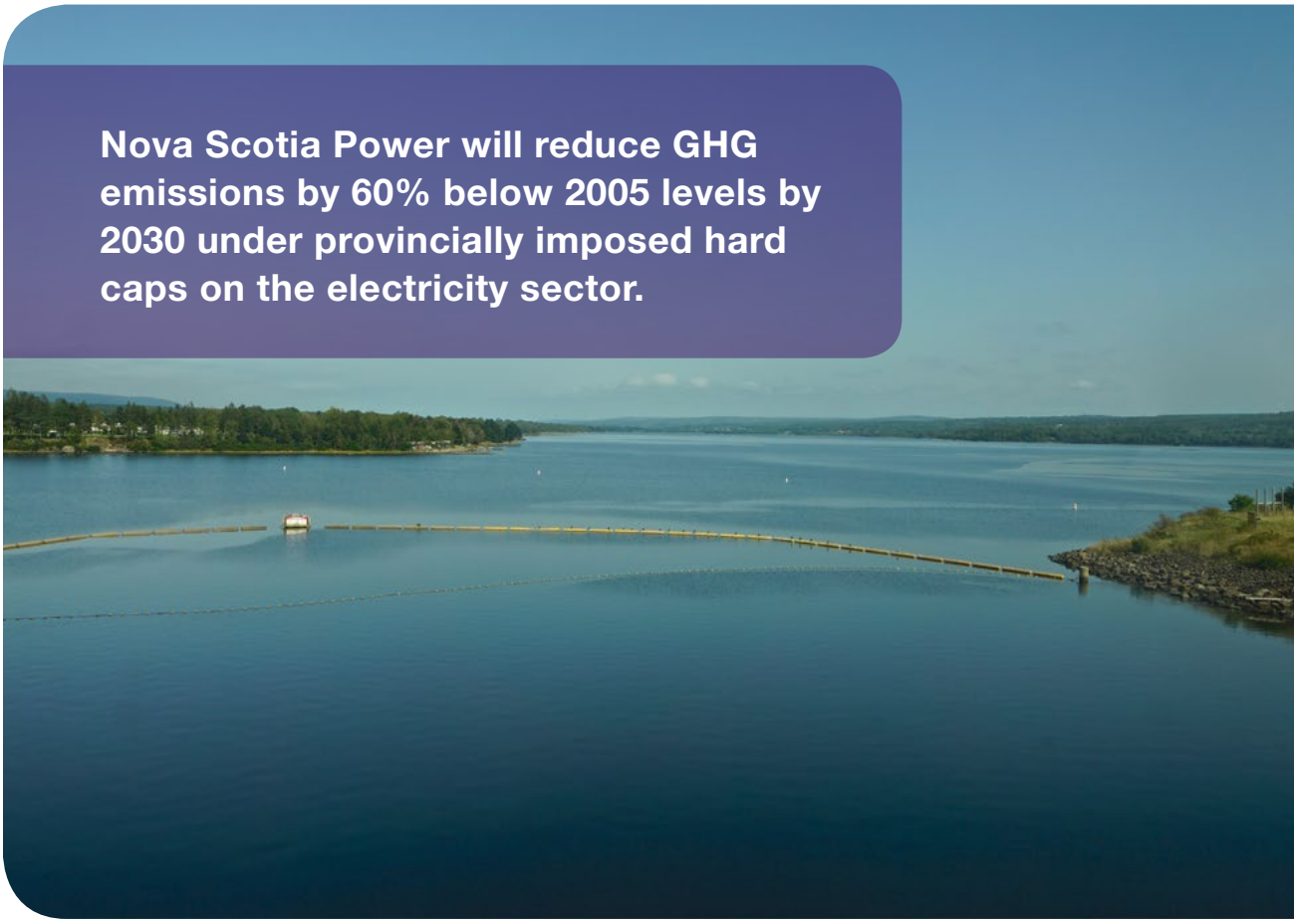
AR-SPM.2.4 Regional action to reduce GHG's to date

The Atlantic Region has made significant investments to reduce greenhouse gas emissions. New Brunswick and Nova Scotia presently lead Canada in GHG reductions, having reduced their greenhouse gas emissions by more than 30% below 2005 levels. The Atlantic region has seen reductions on the order of 24% below 2005 levels with further reductions expected from the Muskrat Falls project. Nova Scotia alone has made investments or contractual commitments of greater than $4 billion over the last decade in new renewable energy, energy efficiency and expanded transmission through the Maritime Link.

This has come at a cost to respective provincial electricity ratepayers. Electricity rates rose more than 70% from 2004 to 2014, leading to the Nova Scotia Rate Stability Act. This cost included paying for more expensive, new renewable generation to enable the retirement of fossil-fuel generation facilities[10]. The completion of the Muskrat Falls project will enable Newfoundland and Labrador to eliminate baseload generation from its oil-fueled Holyrood thermal generation station and make the province's generation 98% renewable, but at a substantial cost to the province. Nalcor Energy's Muskrat Falls Project update in 2017 estimated that total project costs would be $12.7 billion and cause average Island residential rates to increase from 11.7 cents per kWh in 2017 to 22.9 cents in 2021, although the provincial government has committed to take action to help mitigate the increase.

10 Canadian Environmental Sustainability Indicators Greenhouse Gas Emissions, pg. 24 https://www.canada.ca/content/dam/eccc/migration/main/indicateurs-indicators/18f3bb9c-43a1-491e-9835-76c8db9ddfa3/ghgemissions_en.pdf

Nova Scotia and New Brunswick are on track to meet their respective greenhouse gas emission target for 2020 and 2030. A collaborative report from federal and provincial Auditors General recently summarized the state of climate change action in Canada[11]. The report identified only five provinces as having set GHG emissions reductions targets for 2020. Of the five, only Nova Scotia and New Brunswick were on track to meet their respective 2020 provincial GHG emissions targets. Both provinces are also on track to reduce their emissions by 30% below 2005 levels by 2030. Nova Scotia Power will reduce GHG emissions by 60% below 2005 levels by 2030 under provincially imposed hard caps on the electricity sector. While Newfoundland and Labrador does not expect to meet its 2020 greenhouse gas reduction target, the Province has committed to close its emissions target gap. The Government has taken key steps and is committed to doing more to close the gap to the set target.



11 Perspectives on Climate Change Action in Canada: A Collaborative Report from Auditors General http://www.oag-bvg.gc.ca/internet/English/parl_otp_201803_e_42883.html

AR-SPM.3 Federal policies will change the regional electricity system

AR-SPM.3.1 Accelerating the retirement of coal-fired generation of electricity

Coal-fired electricity generation regulations are changing to accelerate their retirement. The proposed amendment, *Regulations Amending the Reduction of Carbon Dioxide Emissions from Coal-fired Generation of Electricity Regulations*, will accelerate compliance of coal-fired units to a performance standard of 420 tonnes of carbon dioxide per gigawatt hour (CO_2/GWh) by 2030. Draft regulations were published for public comment in 2018; final regulations are expected to be published by late 2018. This new regulation will hasten a permanent shift to lower- or non-emitting types of generation, such as high-efficiency natural gas and renewable energy.

AR-SPM.3.2 Federal backstop to carbon pricing

The federal government intends to ensure provincial compliance on instituting a carbon price. To meet the commitment for pricing carbon emissions across the country by 2018, the federal government published a benchmark to ensure a broad set of emissions will be covered throughout Canada by 2018. The benchmark allows Provinces and Territories flexibility to implement their own carbon pricing systems, if they do not already have a carbon price in place. To ensure compliance, the federal government committed to implementing a federal backstop to provincial efforts to implement measures to price carbon emissions.

AR-SPM.3.3 Regulating natural gas-fired generation of electricity

The federal government is developing regulations to limit CO_2 emissions from new and modified natural gas-fired generation units. The proposed regulation seeks to limit carbon dioxide emissions from new and significantly modified natural gas-fired electricity generation units in Canada. Environment and Climate Change Canada (ECCC) published performance requirements that vary by technology type and size[12]. Draft regulations were published for public comment in 2018; final regulations are expected to be published by late 2018.

AR-SPM.3.4 Emissions equivalency agreements with provinces

The federal government could negotiate equivalency agreements with provinces related to emissions. Under section 10 of the Canadian Environmental Protection Act, 1999, the federal Minister may enter into an equivalency agreement with provinces and territories provided the provincial, or territorial, regulations deliver equivalent or better outcomes than federal regulations. For example, the *Order Declaring that the Reduction of Carbon Dioxide Emissions from Coal-fired Generation of Electricity Regulations Do Not Apply in Nova Scotia (SOR/2014-265)* demonstrates an alternate method to achieving equivalent carbon dioxide reductions[13].

Nova Scotia and Environment and Climate Change Canada have an Agreement in Principle with respect to equivalency on the amended coal-fired electricity regulations.

New Brunswick has committed to investigating an alternate source of fuel for the Belledune Generating Station. An equivalency agreement would be pursued should an economic alternate fuel not be identified[14].

12 For full criteria and performance requirements, review the full Canada Gazette notice Regulations Limiting Carbon Dioxide Emissions from Natural Gas-fired Generation of Electricity.

13 https://www.canada.ca/en/environment-climate-change/services/canadian-environmental-protection-act-registry/agreements/equivalency/canada-nova-scotia-greenhouse-gas-emissions.html

14 http://www2.gnb.ca/content/gnb/en/news/news_release.2017.12.1592.html

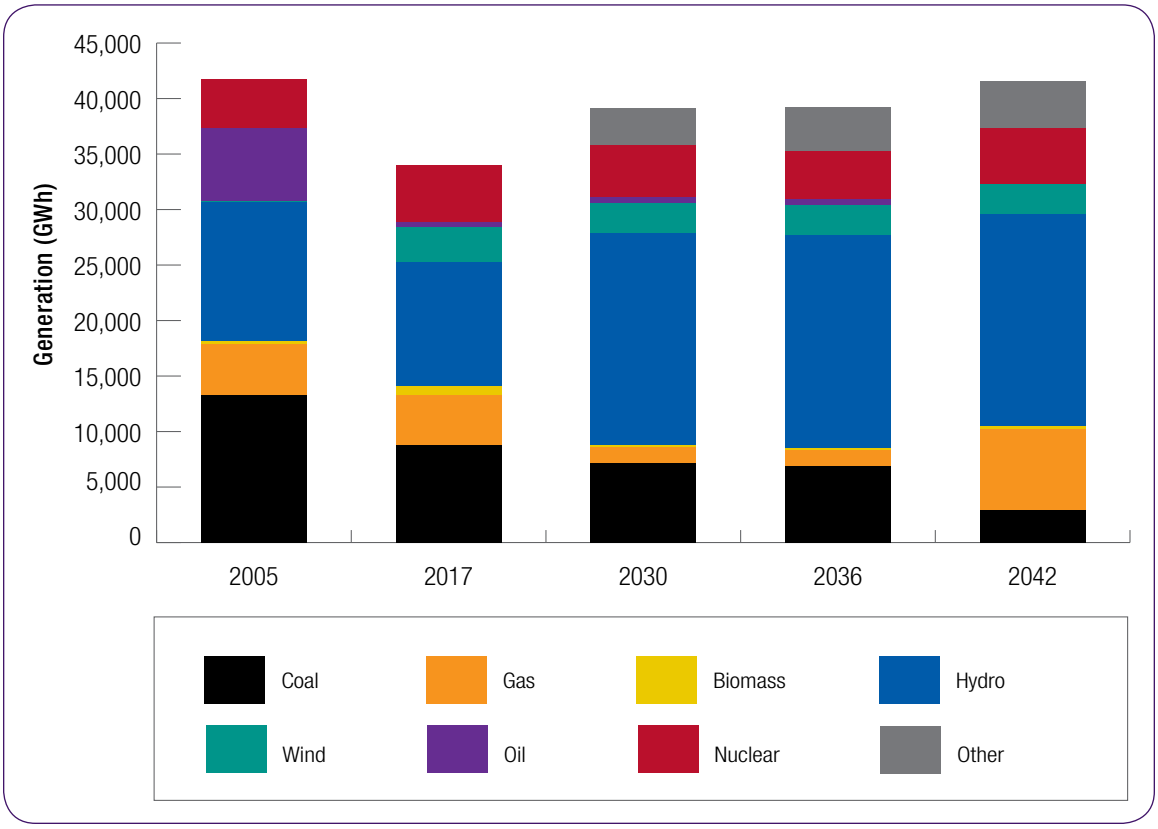
AR-SPM.4 Modelling potential futures for the regional electric system

An electricity system economic simulation model was used to identify the most cost-effective means to balance electricity supply and demand in Atlantic Canada. This analysis compared future scenarios with a reference case and quantified the costs and benefits of new infrastructure builds such as new transmission lines and/or new sources of generation to meet electricity demand.

AR-SPM.4.1 Regional Business-As-Usual (RBAU)

The RBAU is based on the latest planning documents from each respective system operator. This includes NB Power's 2017 Integrated Resource Plan (IRP) and 2017 planning analyses from NS Power and Newfoundland & Labrador Hydro. NB Power's IRP includes its supply and interaction with Prince Edward Island and Northern Maine. All planned generation retirements and additions for each province from 2018 to 2042 are included in the RBAU section of the technical report and can be found at their respective public domains. An overview of the expected regional energy generation is captured in figure 6.

Figure 6. RBAU Regional Energy Generations



Source: Hatch Technical Report

A number of carbon-constrained scenarios were then examined to inform decision-makers on potential future electric system needs. Given uncertainty on the specifics of the implementation of the amended coal-fired electricity regulations, the study examined a range of carbon-constrained scenarios:

a. A regional BAU scenario based on each electric utility's existing plans for the future;

b. A regional scenario with tightened provincial GHG emission caps;

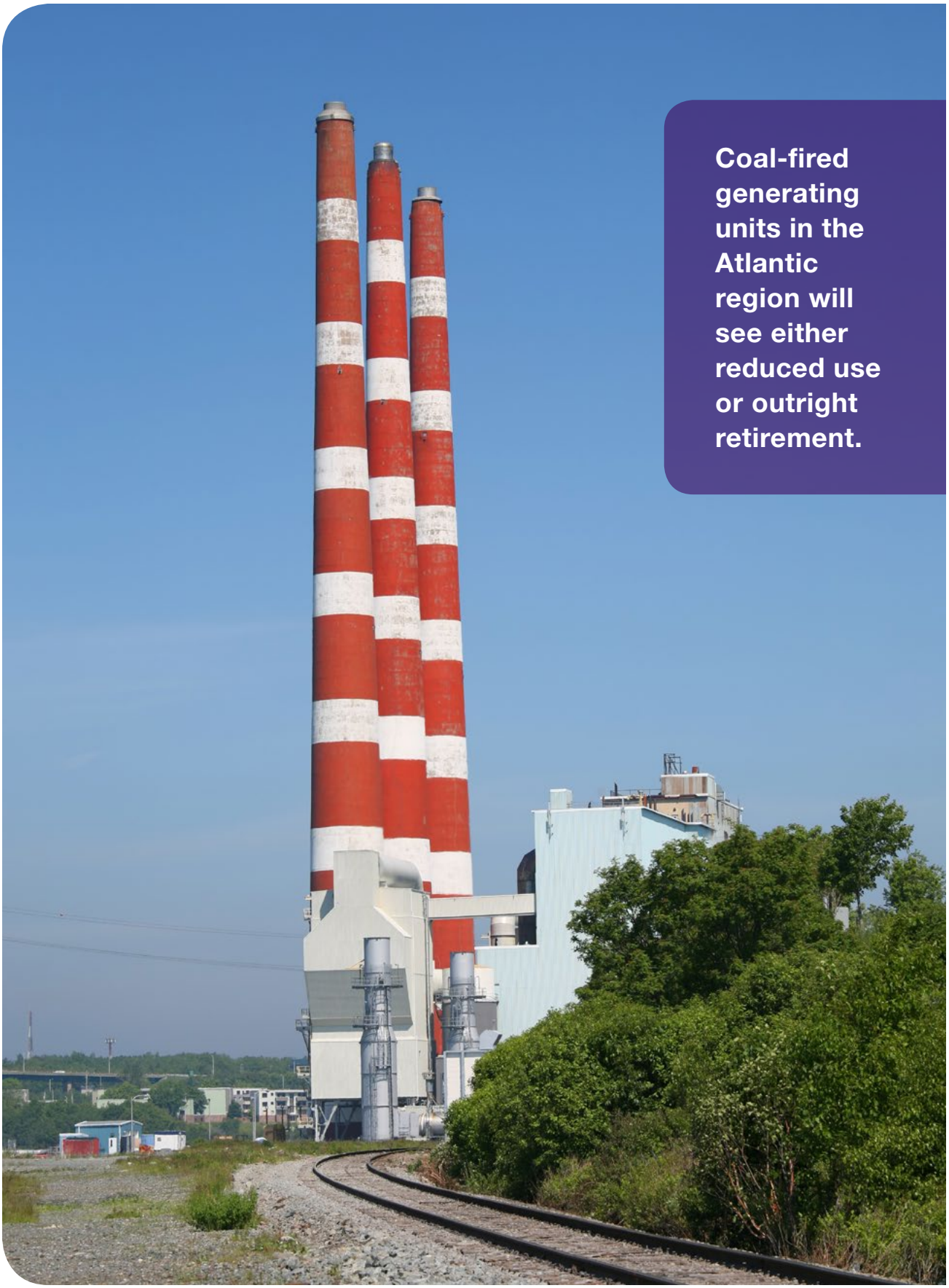
c. A regional scenario with all coal-fired generation capacity retired by late 2041; and,

d. To comply with the new federal coal regulations, a regional scenario with all coal-fired generation retired by late 2029. As this scenario assumes the retirement of coal-units, a series of capacity replacements were modelled, which is represented below as Scenarios 4a, 4b and 4c.

AR-SPM.4.2 Description of scenarios

Given an uncertain future, utilities investigated a series of possible energy generation scenarios. The scenarios listed below were compared against the Regional Business-as-Usual to determine the change impact.

1. **Scenario 2 – Equivalency Agreements:** outlines a scenario where NB Power and NS Power continue to operate their coal-fired units beyond December 31, 2029 in a manner that reduces their GHG emissions through more flexible operations.
2. **Scenario 3 – 2041 Retirement of Coal Fired Plants:** outlines a possible future where both NB Power and NS Power retire all coal units by December 31, 2041.
3. **Scenario 4a – New Brunswick Nuclear:** assumes all coal-fired units are retired by December 31, 2029. To meet this accelerated retirement, this scenario examines the potential for adding two new reactors and replacing the existing nuclear reactor at Point Lepreau in New Brunswick for the year 2030. The capital cost of the proposed 1200 MW (2 x 600MW) generating units is $9 billion with associated transmission costs of approximately $900 million.
4. **Scenario 4b – Gull Island in Newfoundland and Labrador:** assumes all coal-fired units are retired by December 31, 2029. To meet this accelerated retirement, this scenario examines a possible future with the construction of a 2,250 MW hydro generating station located at Gull Island in Newfoundland and Labrador with an estimated capital cost of $8.4 billion and associated transmission costs ranging from $4 to $7 billion; this was provided as a preliminary analysis by an external consultant. The associated transmission costs are dependent upon the chosen transmission route and would require further analysis.
5. **Scenario 4c – Regional Hybrid Portfolio:** assumes all coal-fired units are retired by December 31, 2029. To meet this accelerated retirement, this scenario examines a possible future with a set of diverse renewable generating sources backed up with natural gas-fired units. This scenario includes smaller hydro in New Brunswick, and Newfoundland and Labrador, wind in Nova Scotia, New Brunswick, Prince Edward Island, and Newfoundland and Labrador, tidal power in Nova Scotia, battery storage in Nova Scotia, combustion turbines in Nova Scotia, and energy and capacity imports in Nova Scotia. The resources in this scenario were identified by each respective utility. An optimization analysis could identify more promising generation options.



Coal-fired generating units in the Atlantic region will see either reduced use or outright retirement.

AR-SPM.5 Key findings

The Atlantic regional electric system will change to meet new coal-fired regulations. Coal-fired generating units in the Atlantic region will see either reduced use or outright retirement. This will change the relative use of existing generation units and require new generation capacity to compensate. Equivalency agreements with New Brunswick and Nova Scotia will affect the transition away from coal-fired units. The scale of new "dispatchable" sources of capacity will depend heavily on the speed of the coal-fired unit retirements.

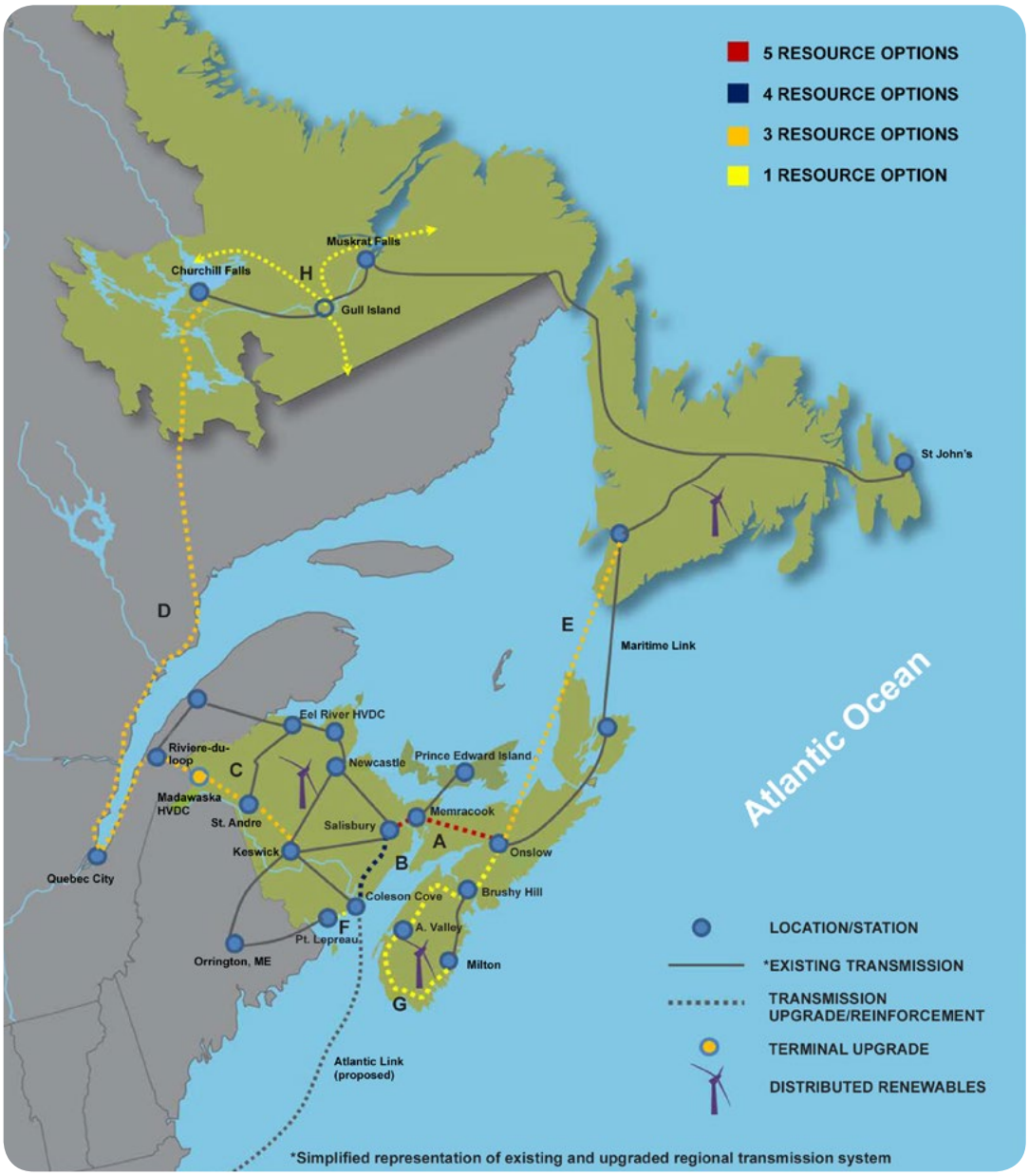
There are limited options to replace the retirement of coal-fired units. As indicated in Figure 6, coal-fired units provide 1,252 MW (52% of firm generating capacity) and 467 MW (11% of firm generating capacity) of generation in, respectively, NS and NB. Due to limited natural gas supply, either via local sources or through pipelines, the region faces significant challenges to replace coal-fired generation with economic fuel-efficient combined cycle gas turbines often used in other jurisdictions. To increase access to natural gas, the region could either expand the natural gas pipeline infrastructure and storage, source new supplies of natural gas in an already tight northeast market, or develop new non-emitting "dispatchable" resources that can provide firm capacity.

The implementation of coal regulations will determine the size, and timing, of new large electricity generation developed to serve Maritime load. The Gull Island hydro project and the expansion of Point Lepreau nuclear station are significant and complex projects with long development lead times. Developing such projects to serve the Maritime load must be justified by regional electricity needs and hinge significantly on coal retirement decisions made in New Brunswick and Nova Scotia. Further assessment of the merits of these large regional generation projects, including of optimal transmission pathways, would be informed by greater clarity with regard to coal plant retirement schedules.

Regional electricity transmission reinforcement could enable the introduction of more sources of renewable energy. Upon examining various regional generation solutions, utility planners collectively recognized the value of increased inter-provincial transmission to enable a future with more renewable sources of energy. A need for transmission reinforcement was also identified in the Pan-Canadian Wind Integration Study[15]. In particular, increasing the transmission interconnection between Nova Scotia and New Brunswick could enable greater renewable energy generation and use in the region (line segment in red on Figure 7).

15 Pan-Canadian Wind Integration Study, Transmission Reinforcements – https://canwea.ca/wp-content/uploads/2016/07/pcwis-section07-transmissionreinforcements.pdf

Figure 7. Regional transmission map



Source: HATCH Atlantic RECSI technical report

All energy solutions investigated will require significant investment, both from public and private sources. The cost of each solution scenario examined are significant, as options 4a, 4b and 4c show significant changes from the reference case "RBAU" (see "Relative change to RBAU" line in Table 1). While not exhaustive, the solution scenarios do provide a good representation of the challenge at hand. The higher costs are largely a consequence of the region having already exhausted lower cost GHG abatement opportunities in the electricity sector, as acknowledged in the Auditor General's report[16].

16 Perspectives on Climate Change Action in Canada: A Collaborative Report from Auditors General http://www.oag-bvg.gc.ca/internet/English/parl_otp_201803_e_42883.html

A federal Regulatory Impact Analysis Statement (RIAS) identified costs and benefits of complying with draft amendments to the GHG regulations for coal-fired generation of electricity [17]. The total cost for complying with the proposed amendments is estimated to be $2.2 billion, with more than three quarters of the costs attributable to compliance measures in Nova Scotia and New Brunswick. While these estimates will be refined prior to publication of final regulations in Canada Gazette, Part II, the RIAS reinforces the findings of this report that highlights the requirement for significant capital investment to meet the regulations.

Table 1 presents estimated costs associated to each solution scenario with associated GHG reductions.

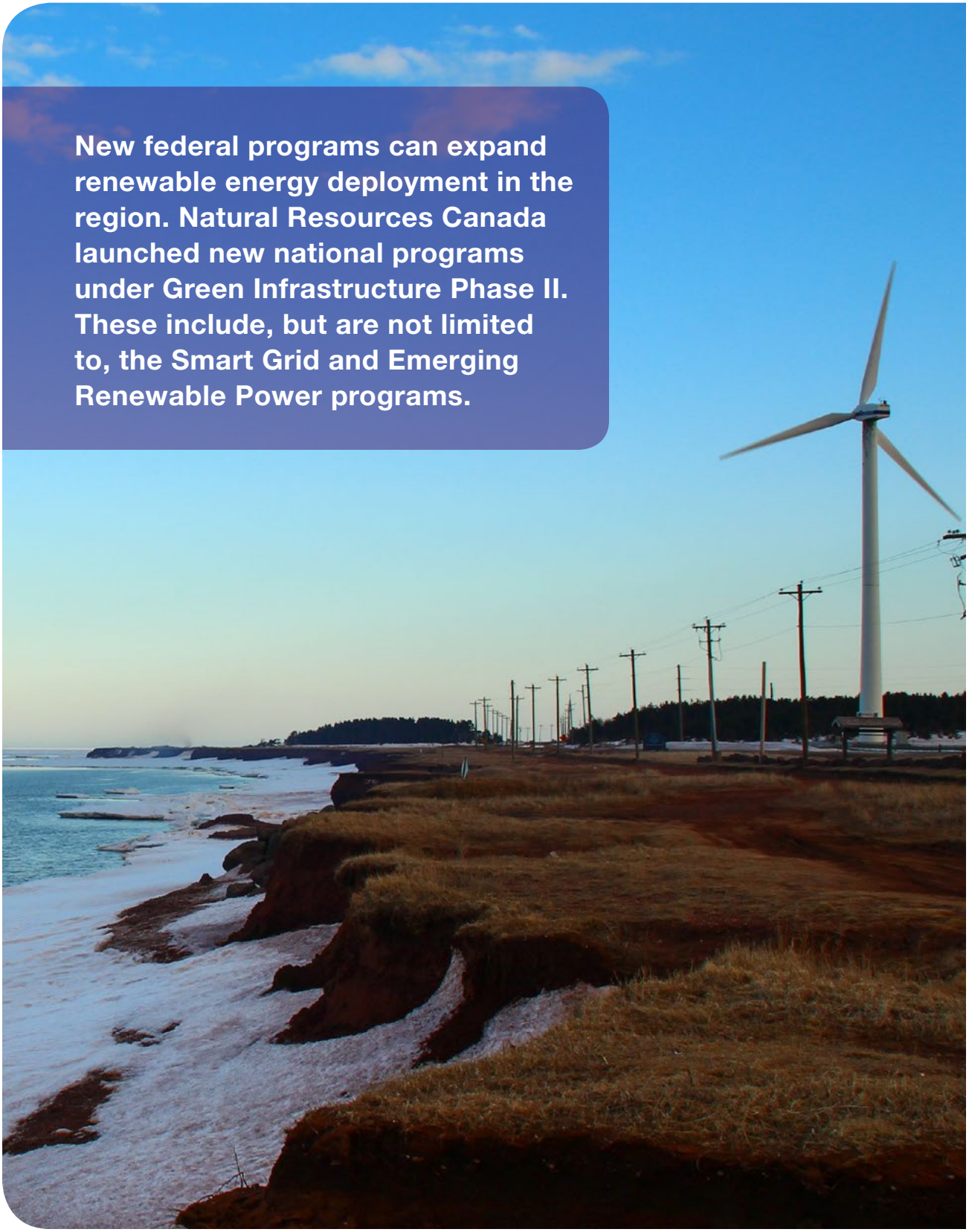
Table 1. Estimated costs for energy pathway scenarios

Scenarios for 2030					
	RBAU	Scenario 2 – Increased CO_2 caps	Scenario 4a – Point Lepreau 2 & 3	Scenario 4b – Gull Island with transmission	Scenario 4c – Regional Hybrid Portfolio with transmission
Capital costs for new generation ($M)			989	880	455
Capital costs for new transmission ($M)			67	543	335
Operating costs for all generation and transmission ($M)	1,158	1,183	1,073	857	1,497
Annual costs in 2030 ($M)	1,158	1,183	2,129	2,280	2,287
Relative change to RBAU ($M)		25	971	1,122	1,129
CO_2 emissions (MT)	8.208	7.235	1.539	1.623	2.535
CO_2 reduction from RBAU (MT)		0.973	6,669	6,585	5,673
Cost to reduce CO_2 ($/tonne) @ $0 carbon price		26	146	170	199

Source: HATCH RECSI Technical Report

Coordinated regional action can achieve deep GHG emissions reductions.
The scenarios that include new generation replacing coal-fired units result in significant reductions in GHG emissions. The two scenarios that include a large new generation asset (Scenarios 4a and 4b) lead to a reduction of regional GHG emissions of approximately 7 mega-tonnes (Mt) per annum. The scenario that includes a series of smaller distributed generation assets leads to a reduction of regional GHG emissions of approximately 6 Mt per annum.

17 http://www.gazette.gc.ca/rp-pr/p1/2018/2018-02-17/html/reg3-eng.html



New federal programs can expand renewable energy deployment in the region. Natural Resources Canada launched new national programs under Green Infrastructure Phase II. These include, but are not limited to, the Smart Grid and Emerging Renewable Power programs.

AR-SPM.6 Next steps

The implementation of the coal regulations, and any associated equivalency agreements, will directly affect decisions on future builds of generation and transmission. At time of publication, the specific details of the implementation of the coal regulations were not complete. With full details, any new modelling investigation will be tailored to meet capacity needs from any negotiated coal-fired retirement schedule.

The Scenario 4c – Regional Hybrid Portfolio will be further explored to identify optimal incremental changes to the regional system. Natural Resources Canada will work with the Atlantic Provinces to investigate an optimized incremental renewable resource development plan for the near and medium-term. This includes investigating an appropriate amount of dispatchable firm generation capacity, and/or storage and demand-side management systems, and transmission reinforcement to support more sources of variable renewable generation for further GHG reduction, or to replace incremental coal-fired capacity retirement.

New federal programs can expand renewable energy deployment in the region. Natural Resources Canada launched new national programs under Green Infrastructure Phase II. These include, but are not limited to, the Smart Grid and Emerging Renewable Power programs. Natural Resources Canada will work with the Atlantic Provinces to implement projects under these program streams.

Federal funding, such as through the Integrated Bilateral Agreements and the Canada Infrastructure Bank, could be leveraged to advance the deployment of renewable electricity generation and transmission projects to reduce GHG emissions and assist with the phase-out of coal-fired generating capacity. Natural Resources Canada will work with the Atlantic Provinces, Infrastructure Canada and the Canada Infrastructure Bank to advance relevant clean electricity generation (energy and capacity) and/or transmission projects.

The second transmission interconnection between Nova Scotia and New Brunswick warrants further investigation. A second 345 kV NS-NB intertie was identified as a high potential transmission element to facilitate the use of more renewable energy in the region. Natural Resources Canada will work with the provinces and their utilities to advance work on this infrastructure project by undertaking a cost-benefit allocation analysis. This analysis could inform how costs could be allocated between the provinces and how federal funding could advance the project.

The Federal government could work with appropriate organizations to further regional regulatory cooperation on regional projects. Respective provincial regulators acknowledged the existence of challenges in their respective current regulatory framework for multi-jurisdictional projects. Recognizing the importance of inter-jurisdictional transmission for achieving climate change objectives in the Atlantic region, the federal government could work with provincial regulators to improve multi-jurisdictional regulation.