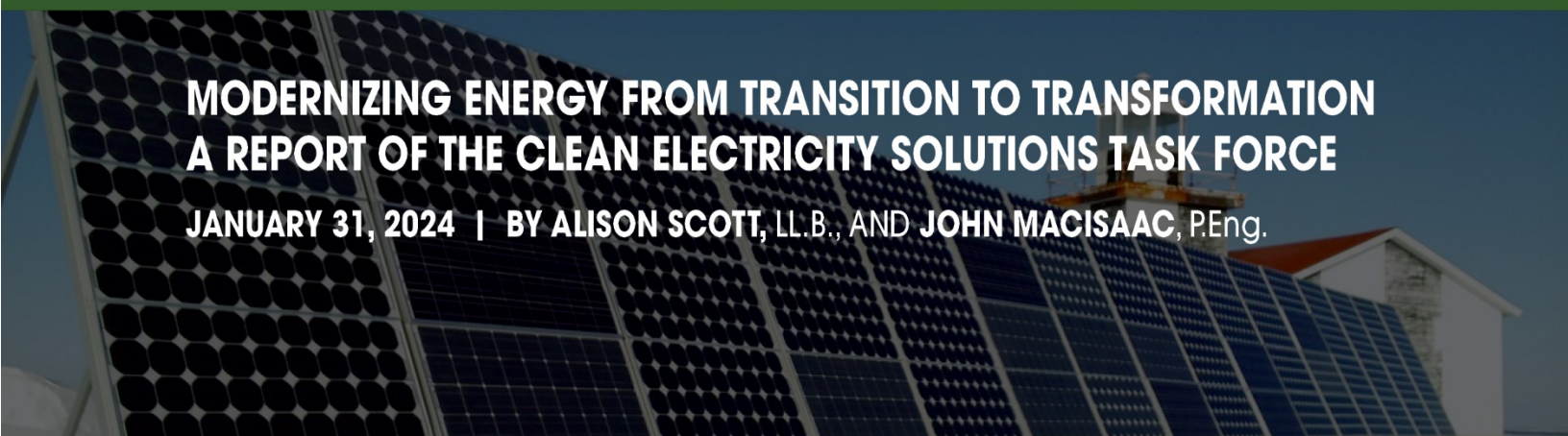
NOVA SCOTIA
CLEAN ELECTRICITY SOLUTIONS TASK FORCE



MODERNIZING ENERGY FROM TRANSITION TO TRANSFORMATION
A REPORT OF THE CLEAN ELECTRICITY SOLUTIONS TASK FORCE

JANUARY 31, 2024 | BY ALISON SCOTT, LL.B., AND **JOHN MACISAAC,** P.Eng.

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January 31, 2024

Honourable Tim Houston
Premier of Nova Scotia

Honourable Tory Rushton
Minister of Natural Resources and Renewables

Dear Premier and Minister:

Please find herewith the final report of the Clean Electricity Solutions Task Force, as well as supporting documents from our technical advisors.

Thank you for the opportunity to consider and make recommendations on many of the important questions related to electricity and the transformation of the energy sector faced by our province.

Sincerely,

Alison Scott, LL.B
Chair

John MacIsaac, P.Eng.
Member

1 Mandate and Methodology

The Clean Electricity Solutions Task Force was announced by Premier Tim Houston and Natural Resources and Renewables Minister Tory Rushton on April 20, 2023.

Charged with exploring ways to modernize Nova Scotia's electricity infrastructure and regulatory environment, the Task Force was asked to:

- Examine current transmission grid capacity, as well as any planned upgrades, and recommend any necessary changes and upgrades to ensure Nova Scotia's energy targets are met;
- Determine the level of increased grid capacity that's required, including transmission route tie-ins, along with evaluating alternatives;
- Assess electricity storage capacity;
- Examine electricity infrastructure reliability and connectivity with other essential services, such as telecommunications;
- With respect to electricity transmission, generation and power rates, review the *Nova Scotia Utility and Review Board Act*, the extent of the board's jurisdiction, its powers and enforcement capacity;
- Engage with Nova Scotians, including subject matter specialists, on the best path forward; and
- Meaningful consultation with Indigenous people, consistent with the definition of Netukulimk.

The Task Force spent most of the first two months of its work conducting in-depth technical research of source documents and information from the Nova Scotia Department of Natural Resources and Renewables (DNR&R), Nova Scotia Power (NSP) and the Nova Scotia Utility and Review Board (UARB). A stakeholder engagement plan was developed for implementation through the summer and fall of 2023.

A Mi'kmaq engagement framework was also developed, in consultation with DNR&R and the Nova Scotia Office of L'nu Affairs. This resulted in one session between the Task Force and Kwilmul Maw-klusuagn (KMK), consistent with the definition of Netukulimk:

"*defined by the Mi'kmaq as the use of the natural bounty provided by the Creator for the self-support and well-being of the individual and the community by achieving adequate*

standards of community, nutrition, and economic well-being without jeopardizing the integrity, diversity, or productivity of the environment."

A website was developed and launched in late July/early August 2023 (www.cetaskforce.ca).

A public call for submissions was issued by the Task Force on August 21, 2023, by way of news release, posting to the website and direct email to all 55 MLAs. Follow up advertisements highlighting the call for submissions were issued in print and online in September and October 2023.

A number of technical experts were also engaged to support the work of the Task Force.

In May 2023, Stantec was commissioned by the Task Force to conduct an independent transmission review, as a comparable independent exercise had not been undertaken since the former Nova Scotia Department of Energy initiated a broader system operator review in 2009. As part of this exercise, Stantec also created a forward-facing tool to enable ongoing analysis of renewable resource integration into the grid.

In June 2023, Harbourview Public Affairs was engaged to provide communications, stakeholder, and corporate relations support for the Task Force.

Furthermore, through the fall of 2023, McInnes Cooper provided policy and legislative advice in support of the recommendations.

The Task Force met directly with more than 20 individuals and organizations representing a broad spectrum of energy, environmental and electricity consumer voices (see Appendix A). The call for public submissions also resulted in an additional 25 submissions (see Appendix B).

The Task Force met with more than 20 individuals and organizations representing a broad spectrum of energy, environmental and electricity consumer voices.

In some cases, participants requested anonymity to provide as frank a perspective as possible, but the Task Force strove to identify source material, with participant approval, wherever possible. The Task Force, and expert consultants as appropriate, agreed to a confidential undertaking with Nova Scotia Power to have access to their confidential marketplace information.

2 Introduction

This report has been prepared and written through the lens of an independent "cold eyes review" that reflects the input of many subject matter specialists.

The approach taken by the Task Force is:

- Customer focused, prioritizing reliability and affordability;
- Anchored in the practical and achievable;
- Constructive and solution focused;
- Building on progress to date; and
- Forward facing and highlights key success factors for achieving goals and objectives for 2030, 2035 and 2050.

The primary questions the Nova Scotia government asked the Task Force to investigate are:

- What is the state of our electricity transmission infrastructure in terms of reliability, hosting capacity and storage to meet Nova Scotia's climate change goals and what changes should be made?
- Is our utility infrastructure that is shared with essential services such as telecommunications adequate and what can reasonably be done under provincial jurisdiction to ensure its adequacy?
- What measures should be taken to support the ability of Nova Scotians to afford the price of electricity as we undertake an energy transition resulting from climate change and other factors?
- Are there changes to the Nova Scotia's regulatory model and supporting legislation such as the *Public Utilities Act* and the *Utility and Review Board Act* that should be made to enable transition?

The Task Force is recommending a series of changes to support the modernization and greening of Nova Scotia's electricity grid.

To answer the questions the government has directed to the Task Force, the report is recommending a series of changes to modernize Nova Scotia's energy system.

These proposed changes are intended to support the modernization and greening of Nova Scotia's electricity grid that concurrently drives customer reliability and affordability, within the long-term goal of a net zero economy by 2050.

Nova Scotia has a strong electricity system that satisfies in numerous ways industry standard best practices. The Task Force nonetheless has identified opportunities though gap analysis as we look towards modernization.

As established in existing legislation and policy, it is clear that Nova Scotia's sights are set on a cleaner, greener grid.

This means reducing and ultimately eliminating coal-fired electricity generation. To achieve this, the execution of a transition strategy to sustainable/renewables/greener generation resources involving government, the utility and the regulator, is required.

The work of the Task Force and its recommendations are therefore grounded in this context.

Nova Scotia continues to build on significant progress to date, having achieved 36% reduction in greenhouse gas emissions since 2005, or 25% since 1990.

The following targets, set by either the Government of Nova Scotia and/or the Government of Canada, include:

- Nova Scotia's legislated commitment to eliminate coal-fired electricity by 2030;
- Canada's proposed Clean Electricity Regulations to have net zero electricity generation by 2035; and
- Nova Scotia's legislated commitment to be net zero by 2050.

Most of the Task Force's recommendations may be implemented by the Government of Nova Scotia through the adoption of a proposed *Energy Modernization Act*, which includes a series of consequential amendments to existing statutes. This legislation has been drafted for the consideration of government.

3 Recommendations

Modernization by Legislation - System Operator & Regulator

Recommendation #1

The Nova Scotia government enact the proposed *Energy Modernization Act* that will:

1.1 Establish the following purpose of energy regulation in Nova Scotia:

1.1.1 Modernize and focus the regulatory regime providing oversight to energy and efficiency utilities in the province;

1.1.2 Increase competition and innovation in the province's energy sector;

1.1.3 Ensure the provision of economical, secure and reliable energy supply in the province;

1.1.4 Ensure a transparent, efficient and co-ordinated approach to provincial energy supply planning;

1.1.5 Provide for robust competitive procurement practices for new energy system resources; and

1.1.6 Support the sustainable development, sustainable prosperity, energy efficiency and greenhouse gas reduction goals of the province articulated in the *Environmental Goals and Climate Change Reduction Act*.

1.2 Create the Nova Scotia Independent Energy System Operator (NSIESO), based on the not-for-profit Efficiency One model.

1.3 Include amendments to the *Public Utilities Act* and the *Electricity Act* that encourage a wholistic systems approach to the management of electricity generation, transmission, and end use; and enable transparent competition for new generation.

1.4 Create a standalone energy regulator, called the Nova Scotia Energy Board, responsible for electricity, natural gas, pipelines, enforcement and retail gasoline, separate and distinct from the Utility and Review Board (UARB), to be renamed the Nova Scotia Regulatory and Appeals Board.

1.5 Include provisions to adequately equip the Nova Scotia Energy Board with a complete suite of tools to ensure lowest cost for utility customers in dealing with the financial consequences of the early retirement of Nova Scotia Power's coal fired facilities.

1.6 Establish Board member term limits of up to seven years, with an option to renew for five additional years. Any existing members transferred from the UARB to the new Energy Board will continue to serve under the terms of their original appointment.

1.7 Establish timely decision making as part of the Energy Board's duties.

1.8 Ensure greater transparency and accountability by requiring annual reporting, financial disclosure and a review process for the Consumer Advocate and Small Business Advocate.

Recommendation #2

The Nova Scotia government provide an expanded budget for the Nova Scotia Energy Board to hire and retain the appropriate expertise in staffing to fulfill the new Board's expanded scope of responsibilities.

Recommendation #3

The compensation framework for Nova Scotia Energy Board staff be adjusted to better reflect market realities to attract and retain technical expertise needed to meet the Energy Board's broader mandate.

Recommendation #4

The Chair and Vice Chair of the Nova Scotia Energy Board determine whether an in-house legal counsel should be retained.

Infrastructure

Recommendation #5

The Grid Hosting Capacity Analysis developed by Stantec be provided by the Department of Natural Resources and Renewables to the System Operator with the expectation that it be reviewed and updated annually.

Recommendation #6

Through open competition, additional infrastructure and upgrades to existing infrastructure should be made to address identified grid hosting capacity requirements.

Recommendation #7

The NSIESO will oversee open competition for procurement of all new infrastructure, including for generation, transmission, distribution, and storage. Nova Scotia Power should not be excluded in the bidding in any competitive process overseen by the NSIESO.

Reliability

Recommendation #8

Nova Scotia Power be required to formally submit an annual asset management plan for approval by the regulator.

Recommendation #9

The regulator shall establish an annual review process of the asset management plan to measure NSPI's performance against ISO 55001: 2014 standard.

Recommendation #10

Consistent with the asset management plan, Nova Scotia Power develop and file with its regulator a dedicated annual report for wood pole management as it relates to transmission and distribution infrastructure reliability.

Recommendation #11

Consistent with the asset management plan, Nova Scotia Power develop and file with its regulator a dedicated annual report for vegetation management as it relates to transmission and distribution infrastructure reliability.

Affordability

Recommendation #12

The Nova Scotia government should evaluate the Ontario subsidy programs, as highlighted by the Affordable Energy Coalition, and other programs to determine the best way to deliver a "Made in Nova Scotia" suite of programs to help with residential electricity costs.

4 Overview

Electricity Today in Nova Scotia - Who Does What and Why?

Today's electricity sector generally comprises:

- A utility regulator which sets rules, ensures compliance and protects consumers;
- A utility company that provides for all three, or a subset:
  - Generation – a production of electricity
  - Transmission – long distance, high voltage transport of electricity
  - Distribution – delivery of electricity over shorter distances at lower voltages
- Independent Power Producers (IPPs);
- A system operator that ensures electricity gets to where it is needed and when it is needed through the fulfillment of two key responsibilities:

- 24 hours a day / 7 days a week real-time coordination of all market participants to balance supply and demand
- Long-term planning of a province's electrical grid

Where does government fit in?

At the federal level, the Canadian Energy Regulator (CER) is responsible for administration of interprovincial and transborder energy transmission. This role is defined under the *Canadian Energy Regulator Act*.

Nova Scotia government departments that affect energy policy and regulation include the departments of Natural Resources and Renewables, Environment and Climate Change and Labour, Skills and Immigration. These departments have an important role in overseeing social, economic, and environmental responsibilities. At a high level, the provincial government's policy responsibilities include the availability of electricity at a competitive rate for existing and future economic purposes; ensuring, based on a diversity of fuel sources, that there is security of supply; and enabling the introduction of technology, environmental improvements, and new electricity sources (such as wind and hydrogen) for provincial industries.

The Regulator

At the provincial level, the Nova Scotia Utility and Review Board (UARB) is responsible for regulating the province's electricity sector. The UARB operates under a series of provincial laws, including the *Utility and Review Board Act*, and is responsible for ensuring customers across the province have access to reliable, safe and affordable electricity.

A large part of the regulator's role is the economic regulation of the electricity market. This means that the regulator is responsible for approving all rates charged to customers for electricity generation, transmission, and distribution. The UARB is also responsible for approving NSPI's capital spending – decisions they make based on the proposed assets' fit within the existing grid to ensure reliability and affordability for customers.

The UARB also approves Nova Scotia Power's capital structure and allowable range of return on equity. The regulator monitors the relationship between the unregulated parent company Emera and regulated affiliate NSPI. Its mandate as a regulator is to ensure that NSPI fulfills its "obligation to supply" electricity to residents and businesses in a reliable manner and at regulated prices.

The Electrical Utility

Nova Scotia Power Incorporated (NSPI) is a wholly owned subsidiary of Emera, whose head office is also based in Halifax. Emera was created following the privatization of Nova Scotia Power in 1992 and today, in addition to NSPI, owns assets in Canada, the

United States and three Caribbean countries. Nova Scotia Power delivers 95% of the generation, transmission, and distribution of electrical power to approximately 540,000 residential, commercial and industrial customers.

Nova Scotia Power generates most of Nova Scotia's electricity, with 2,400 megawatts of capacity. The majority of this amount is from coal-fired generation, although the percentage has decreased over the last 20 years.

Nova Scotia Power operates 33 hydroelectric plants on 17 hydro river systems across Nova Scotia, totaling 400 megawatts of generation capacity. Nova Scotia Power also operates a 60-megawatt biomass plant in Port Hawkesbury that provides as much as 3% of the province's electricity.

Nova Scotia Power's coal and coke generating stations include:

- Lingan (620 megawatts);
- Trenton (304 megawatts);
- Point Aconi (171 megawatts); and
- Point Tupper (154 megawatts)

There are now more than 300 commercial wind turbines generating electricity in Noova Scotia. Most wind facilities are owned by independent power producers.

As a result of Nova Scotia Power's interconnection to the larger North American grid, NSPI has broader obligations anchored in reliability standards. The North American Electric Reliability Corporation (NERC) is responsible for the development of reliability standards for the electricity grid in North America. The intent of the development and enforcement of these standards is to minimize, if not eliminate, the chances of a widespread electrical blackout. The Northeast Power Coordinating Council, Inc. (NPCC) is the organization that audits NSPI for compliance with the NERC standards adopted by the UARB. The Federal Energy Regulatory Commission (FERC) is a US-based independent agency that regulates the interstate transmission of electricity, natural gas and oil. FERC's responsibilities include regulating the transmission and wholesale sale of electricity across the United States.

A Memorandum of Understanding (MOU) dated December 22, 2006, between the UARB and NERC, outlined a process by which the Standards would be made mandatory and enforced. The MOU further recognized that once the Board approves a Standard, compliance with the Standard is mandatory in Nova Scotia.

A subsequent MOU dated May 9, 2010, between NSPI, NPCC and NERC, defines the methodology to approve and implement the mandatory Standards and Criteria in Nova Scotia.

This 2010 MOU states:

"In accordance with NSPI's designation as a Registered Entity, NSPI agrees to comply with NERC Reliability Standards and NPCC Regional Reliability Criteria. Upon approval by the NSUARB, the NERC Reliability Standards and NPCC Regional Reliability Criteria become mandatory in Nova Scotia."

It is worth noting at this point that while the UARB has the authority to establish reliability standards applicable to NSPI, it has a limited role in the implementation and oversight of those standards.

Compliance audits are carried out by NPCC, the results of which are communicated directly to NSPI. The Board plays no role in audit oversight. NSPI is required to report instances of non-compliance to the Board. Corrective actions are described to the Board in a report from NSPI. NSPI may apply to the Board for exemptions from standards compliance. This limited role of the Nova Scotia regulator in the audit process is unique in Canada.

Nova Scotia Electricity Industry History and Profile
How did we get here?

Nova Scotia's electrical generation evolved since the late 1800s from providing small scale local service, to regional power distribution, to providing a common service available throughout the whole province.

Emera and Nova Scotia Power have a common history. Created in 1919 as the Nova Scotia Power Commission, the company was a Crown corporation mandated to complement the expansion of electricity services in the province that was being undertaken concurrently by a privately held company (later publicly traded) that became Nova Scotia Light and Power Company (NSLP).

By the mid-1960s, Nova Scotia Light and Power was the dominant utility in the province.

Following significant investments by both companies in new generation, transmission, and distribution in the 1950s and 1960s, there were two major public policy debates regarding the ownership of electricity generation, transmission and distribution.

In 1972, the Government of Nova Scotia nationalized NSLP and merged its assets into the Nova Scotia Power Commission, creating a single Crown corporation called Nova Scotia Power Corporation. This consolidation was designed to encourage the development of a transmission grid and enable the financing and construction of large coal-fired generation plants in Pictou County and Cape Breton.

In 1992, the Government of Nova Scotia privatized Nova Scotia Power, deciding that electricity generation, transmission, and distribution could be better managed in the private sector. This privatization represented at that time, the largest private equity transaction in Canadian history. As Nova Scotia Power Incorporated (NSPI), the company became a vertically integrated utility regulated by the Nova Scotia Utility and

Review Board – which itself came about through a merger of four different independent regulators:

- Board of Commissioners of Public Utilities;
- Nova Scotia Municipal Board;
- Expropriations Compensation Board; and
- Nova Scotia Tax Review Board.

In contrast with the controversies attached with the ownership changes of the early 1970s and 1990s, the Nova Scotia legislature unanimously approved an amendment to the *Nova Scotia Power Privatization Act* in 1998. This change resulted in the creation of a new holding company called Nova Scotia Power Holdings Incorporated. The company would operate independent of regulatory oversight by the UARB and pursue growth opportunities generally outside of Nova Scotia. Nova Scotia Power Holdings Incorporated was renamed Emera in 2000 and is publicly traded on the Toronto Stock Exchange.

In 2019, the Government of Nova Scotia sponsored legislative changes to remove the restriction on non-Canadians from owning more than 25% of the voting shares of Emera. The existing restriction that no outside entity can hold or control more than 15% of the company's voting shares was maintained in the legislation.

The changes also reinforced the commitment of Emera and Nova Scotia Power to maintain their head offices and principal executive officers in Nova Scotia.

A small share of the province's electricity sector is owned and operated by five municipal utilities or an equivalent commission: Antigonish, Berwick, Mahone Bay, Riverport and Lunenburg. the Towns of Antigonish, Berwick and Mahone Bay also merged their 100% municipally owned electric utilities to form Alternative Resource Energy Authority (AREA), which has pursued renewable energy opportunities in wind and solar.

In 2019, the UARB approved Nova Scotia Power's purchase of the Canso Electric Light Commission. With the Town of Canso losing its own municipal status, the successor municipal government did not have any interest in maintaining ownership of the commission.

Each municipal utility is subject to the jurisdiction of the UARB and has approved schedules of rates and regulations. The Board must approve all amendments to these schedules which generally requires a public hearing.

Nova Scotia's Move to Restructure the Electricity Market Through More Competition

In 2002, the Nova Scotia government committed to policies that would restructure the electricity market in Nova Scotia and introduce competition into the Nova Scotia

electricity sector. The changes were outlined in the province's Energy Strategy, *Seizing the Opportunity*, released in December 2001.

After accepting all the recommendations contained in *Seizing the Opportunity*, the provincial government proceeded with a very gradual and controlled transition in the restructuring of the Nova Scotia electricity market. This approach was recommended by stakeholders and drew upon the experiences in many jurisdictions.

It was thought that implementation of significant restructuring over a relatively short time interval would be imprudent. Deregulation of electricity marketplaces in other jurisdictions had unintended consequences, including significant price increases, volatility and unreliable power supplies in the State of California in the early 2000s, and was cited by many as an example to avoid.

As reflected in *Seizing the Opportunity*, stakeholders believed that Nova Scotia's ability to participate in the North American wholesale electricity market was relatively limited and that it was not necessary to embrace all elements of a FERC compliant open wholesale market, such as the need for an independent system operator (see also M09940, NSUARB).

To oversee the implementation process of the many choices to be made in restructuring, the Nova Scotia government created a multi-stakeholder Nova Scotia Electricity Marketplace Governance Committee (EMGC). The EMGC reported to the Minister of Energy with a mandate to ensure measured steps in opening Nova scotia's electricity market.

The EMGC was charged to consider the following:

- issues relating to the competitiveness of the Nova Scotia market;
- issues relating to transmission, (including tariffs and open access);
- cogeneration (including definitions, size, and rules that will encourage additional cogeneration);
- the future of the Nova Scotia system, the compatibility with interconnected systems;
- the potential risk for stranding of NSPI assets;
- defining "heritage" electricity assets in Nova Scotia to ensure protection of the province's competitive advantage in electricity prices;
- the terms of an independent power producer (IPP) voluntary green-power marketing program, to be followed by the determination of a longer-term renewable energy portfolio standard (RPS) for renewables; and
- defining "renewables" for policy purposes, introducing Wholesale Competition to Municipal Utilities.

When *Seizing the Opportunity* was released more than 20 years ago, the size and profitability of NSPI's export market was small - limited by a 300-megawatt interconnection with New Brunswick, a relatively high transmission tariff in New

Brunswick, limited surplus generating capacity (particularly during the winter months), and the fact that Nova Scotia did not currently satisfy FERC's reciprocity requirements (FERC Orders 888 and 889).

Prior to the adoption of NERC reliability standards and open access transmission tariff (OATT), Nova Scotia Power was restricted from making sales directly to customers in the United States, because of both geography and FERC policy. It could only buy from and sell to New Brunswick Power. The proposed phased restructuring was intended to lift barriers to trade and create wholesale opportunities for Nova Scotia produced power while maintaining a regulated cost-of-service utility with an obligation to serve Nova Scotia customers.

Open Access to Transmission and Unbundling

To participate in the wholesale bulk electricity markets, NSPI needed to meet FERC's reciprocity requirements for non-discriminatory, open transmission access. NSPI was therefore required by restructuring to separate accounting for its generation, transmission, and distribution divisions, including ancillary services. The economic advantage of retaining the economy of scale of a relatively small, vertically integrated utility like NSPI was considered at that time to be very important for Nova Scotia's residential and business sectors. The separation of key utility functions was to be accounted for but without the forced divestiture of any part of the utility's physical assets.

The transmission and distribution of electricity, apart from the six municipalities, was intended to continue to be a monopoly function owned and operated by NSPI. Prior to restructuring, there was no competition for new generation capacity in the NSPI transmission system. As a regulated cost-of-service utility with an obligation to serve all Nova Scotians, NSPI had sole responsibility for maintaining adequate supplies of electricity in the province.

The *Electricity Act* was enacted in 2004. Under the Act, for the first time in Nova Scotia, wholesale customers were permitted to purchase electricity from any competitive supplier. The Act also required Nova Scotia Power to develop and file with the UARB an open access transmission tariff, that enabled the purchase and sale of electricity on open and non-discriminatory access terms to wholesale customers. Nova Scotia Power was further required to develop and maintain a system to facilitate the import and export of electricity from the province.

Under section 4 of the Wholesale Market Rules Regulations made pursuant to the *Electricity Act*, the Minister of Energy (now Natural Resources and Renewables) was initially empowered to develop these market rules. After that, responsibility was essentially delegated to the Nova Scotia Power System Operator (NSPSO) to administer and enforce the rules, including providing instructions or directions and making decisions or orders (under section 15). This system operator's authority extends to making amendments to the rules themselves, subject to the authority

retained by the Nova Scotia Power in respect of, or associated with, future changes in eligibility for participation in the market (section 13 and section 4(3)).

The Wholesale Market Rules Regulations did not give the UARB the authority to approve the market rules, but allowed the Board to review them on application by any individual (under section 16).The Board may also hear appeals from a person who is subject to an order or decision made by the System Operator, after resorting to the dispute resolution mechanism under the market rules though remedial powers appear limited.

The Wholesale Market Rules are on Nova Scotia Power's OASIS site: https://www.nspower.ca/oasis/wholesale-market-documents. The process for amending the market rules is in section 2.4.2 of the rules and Market Procedure 5 (MP-05 Market Rule Amendment - Microsoft Word - NSPSO MP 05 Issue 2 2007 02 22.doc (nspower.ca)).

There is a right of appeal from an amendment to the Board under section 2.4.2.3 of the market rules and the UARB has some ability to intervene or direct amendments in certain circumstances set out in section 2.4.4 of the market rules. These matters are further addressed in section 3.4 of the Market Rule Amendment Procedure (MP-05). Similar procedures apply in respect of Standards, Codes or Market Procedures (section 4.6 of the Market Rule Amendment Procedure (MP-05)).

While the Electricity Market regulations did require that the Market Rules (set out above) establish a Market Rules Advisory Committee, section 15 effectively vested the administration, operation and the oversight of the market and the market rules in the NSPSO. The rules leave disputes between Market participants and NSPSO to be referred to the NSPSO for decision. Decisions from the NSPSO are reviewable by the UARB (see section 17 and 18 of the regulations).

While the Electricity Market regulations did require that the Market Rules establish a Market Rules Advisory Committee, section 15 effectively vested the administration, operation and the oversight of the market and the market rules in the NSPSO.

Under the resulting present-day arrangement, the Nova Scotia Power System Operator functions as part of the NSPI Customer Operations Division. NSPSO carries on its obligations following the standards of conduct approved by the UARB, ensuring that market sensitive information is not intentionally or inadvertently shared among other groups within NSPI, particularly the transmission and the wholesale merchant groups. (See M09940, NSUARB).

In *Seizing the Opportunity*, wind was recognized as the most likely source of cost-effective renewable electricity. One of the biggest impediments to the development of a large-scale wind energy industry in Nova Scotia was the regulated-monopoly structure

of the electricity industry and lack of access to the transmission system and customers. Despite this, there were entrepreneurs independent of NSPI who believed that wind presented an economic opportunity for our province.

Given an appropriate regulatory framework, the government accepted that wind held the potential to add a new dimension to our energy sector. And while not the imperative it is today, the Nova Scotia government of the day did support the prudence of increased competition within the electricity sector, with a view to future opportunities.

The provincial government undertook to develop a regulatory framework that encouraged the use of renewable energy to generate electricity. Independent power producers (IPPs) that generate power from renewable energy sources were for the first time going to be allowed to wheel power for a fair transmission charge and to sell directly to retail customers rather than indirectly through the existing utility.

In 2007, the Nova Scotia government announced its first Renewable Energy Standard (RES) as one of the actions required to reduce greenhouse gas emissions.

The initial Renewable Energy Standard Regulations required that by year 2010, 5% of total Nova Scotia electricity requirements must be supplied by post-2001 renewable energy sources, rising to 10% by 2013. The term “post-2001” referred to electricity generators constructed on or after December 31, 2001, or a plant constructed before this date but having increased its output or undergone a major rebuild in lieu of retirement since then.

In 2010, the Nova Scotia government announced a new Renewable Energy Plan that would set new requirements for renewable electricity use for 2016 and 2020 and revised provincial goals were set to at least 25 per cent renewable energy by 2015. The strategy also expressed optimism for the future and noted that it may be possible to exceed this goal to as much as 40 per cent by 2020, through a combination of domestic wind, biomass, and tidal and imported renewable energy.

Coal

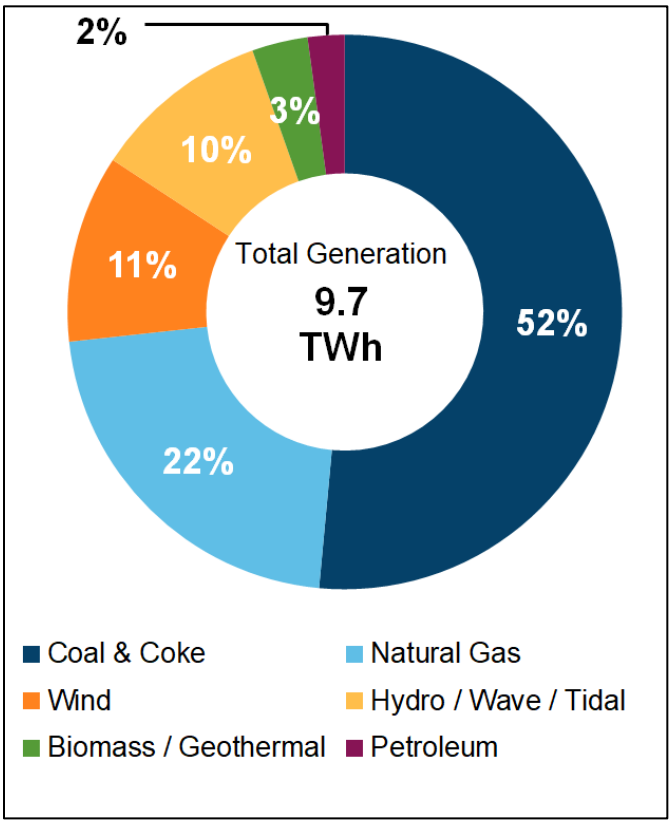
The story of Nova Scotia’s electricity system cannot be told without recognizing that the province’s transmission system was largely built to take advantage of domestic coal.

The story of Nova Scotia’s electricity system cannot be told without recognizing that the province’s transmission system was largely built to take advantage of domestic coal resources and to burn the least expensive fuel then available: coal.

As recently as 2000, 77.5 % of Nova Scotia’s Power’s electricity was produced from coal and 11.8 % from oil, primarily sourced from heavy oil products. (*Seizing the Opportunity*, December 2001, p 23).

Through government policy measures undertaken over the last 20 years, there has been a notable reduction in the use of coal. Today, coal accounts for approximately 50% of the province's total generation. Other sources of electricity generation include oil, natural gas, hydroelectricity, wind and biomass.

***Figure 1**:Nova Scotia Electricity Generation by Fuel Type (2019)*
(Source: Canada Energy Regulator)



This percentage of coal used in Nova Scotia continues to be among the highest in Canada, compared to other provinces.

Energy Transition Mandated by Government.

Governments at both the federal and provincial levels are aggressively pushing to reduce greenhouse gas emissions to fight global climate change.

In 2021, the Nova Scotia legislature unanimously approved the *Environmental Goals and Climate Change Reduction Act*.

This law, building on the previous landmark *Environmental Goals and Sustainable Prosperity Act* in 2007 and a series of government measures over the last 15 years, contains 28 goals focused on:

- reducing greenhouse gas emissions;
- growing the green and circular economies;
- improving the health and sustainability of Nova Scotia's environment; and
- moving Nova Scotia toward clean and renewable energy.

The *Environmental Goals and Climate Change Reduction Act* makes the phase-out of coal-fired electricity the law by 2030. It also sets ambitious greenhouse gas emissions reduction targets, namely:

- reducing greenhouse gas emissions by 53% below 2005 levels by 2030; and
- achieving net-zero greenhouse gas emissions by 2050.

In support of these targets, the Nova Scotia legislature amended the *Environment Act* in 2022 to create an output-based pricing system (OBPS) to put a price on greenhouse gas emissions. This system came into effect January 1, 2023. Most greenhouse gas emissions in Nova Scotia come from the use of fossil fuels for generating electricity, transporting people and goods, and heating homes and buildings.

At the federal level, Canada is committed to significant greenhouse gas emission reductions, building on its international commitment as a signatory to the 2015 Paris Accord, as well as accompanying measures:

- the 2016 Pan-Canadian Framework on Clean Growth and Climate Change;
- the 2020 Climate Plan, A Healthy Environment and a Healthy Economy; and
- the 2030 Emissions Reduction Plan (released in 2022).

Canada now has an enhanced Paris Agreement target to reduce emissions by 40-45% from 2005 levels by 2030.

The Government of Canada has also published draft Clean Electricity Regulations that commit Canada to have a net zero electricity system by 2035.

In October 2023, the Government of Nova Scotia announced additional detail around its plan to achieve its 2030 legislated target to phase out coal-fired generation.

Nova Scotia’s 2030 Clean Power Plan involves the following elements:

- Increased capacity for the Nova Scotia-New Brunswick Intertie, in particular a new 345 kilovolt line to New Brunswick to manage renewables, boost reliability and resiliency.;

- 100+ megawatts Coal to Gas conversion by 2027;
- 450 megawatts Coal to Oil extensions by 2030;
- 1000+ megawatts onshore wind by 2030, driven by a series of procurement calls every 18 months (with the capacity to include offshore wind after 2030);
- 100-200 megawatts net metering solar by 2030;
- 100+ megawatts Community Solar by 2030;
- 250+ megawatts Batteries by 2030;
- Renewable integration investments such as synchronous condensers;
- Peak management and efficiency measures to reduce peak;
- 300 megawatts H2 Capable Fast-Acting Generators by 2027; and
- 300-600 megawatts additional H2 Capable Generators by 2030

Successful implementation of the 2030 Clean Power Plan will depend on investment by the Government of Canada and co-operation and commitment by the affected utilities, including Nova Scotia Power.

Together, the projects described in the Clean Power Plan can accomplish the government's 2030 climate change targets. Additionally, they establish a foundation for the more comprehensive East Coast Energy Initiative, which had been the subject of extensive discussions between the Governments of Canada, Quebec, New Brunswick and Nova Scotia, as well as Hydro-Québec, New Brunswick Power and Nova Scotia Power.

5 Modernization By Legislation

As the Task Force assessed what it would recommend to the Nova Scotia government, it became clear that many of these recommendations would require legislation. Indeed, the Task Force identified at least 30 Nova Scotia statutes that would require amending to implement the Task Force recommendations.

The Task Force is therefore recommending to government that it table an *Energy Modernization Act (EMA)* for adoption by the Nova Scotia legislature.

5.1 Modernizing The System Operator

The Nova Scotia Power System Operator (NSPSO) is responsible for ensuring planning. dispatch and operation within the province and the application of the market rules. Because the system operator operates as a division of Nova Scotia Power, questions have been raised by some customers as to whether NSPSO decisions are truly made in the public interest, as opposed to the commercial interest of Nova Scotia Power and its parent company Emera.

Given the magnitude in scope and scale of planned capital expenditures to procure infrastructure, it Is important that every effort is made to contain costs as is practical in the interests of customers, and that decisions made are clearly in the best interests of Nova Scotians.

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The government has identified in its 2030 Clean Power Plan that it intends to compete the supply of renewable generation. While procurement has been outsourced to an independent third party, separate from government and NSPI, Nova Scotians still need be confident that the competitions are the most robust possible to ensure cost containment. This can only happen if there is a level playing field for all potential investors and that there is confidence in the operation of the electrical grid.

For example, the timing, resources and standards for interconnections for new renewable projects to the grid are now completely within the control of Nova Scotia Power System Operator. The Task Force believes an open transparent arm's-length systems approach to be critical to ensuring that new renewable energy and storage projects can be connected to the grid in time for 2030. The projects included in the Clean Power Plan alone represent more than $100 million each year in annual investments by IPPs and others over the next several years. Delays can frustrate projects and potentially cause them to fail, creating significant risk to electricity ratepayers, lost savings and missed greenhouse gas reduction opportunities.

In some cases, the current interconnection process has caused months of delays to both government and industry initiatives, including wind and solar projects. For example, Dalhousie University's Idea Building Interconnection Request 653 required over a year to interconnect, with no explanation provided by Nova Scotia Power for the delays. Other projects, in particular from Independent Power Producers, have also faced similar frustrations.

Customers have also expressed concern that Nova Scotia Power's Integrated Resource Planning (IRP) process, while improved and more collaborative, still does not strike the appropriate balance between the commercial interests of Nova Scotia Power and its parent company with the overall public interest of Nova Scotia and all other incumbent and potentially new players in the electricity marketplace.

Large industrial customers – where continuity of service and communication with the system operator is critical to maintaining reliable business operations – expressed concerns around real or perceived lack of independence by system operator staff. As one noted in a July 2023 meeting with the Task Force:

"When we're looking to speak with the system operator, there really isn't any independence, because they are all employees of Nova Scotia Power."

In 2009, the Nova Scotia Department of Energy commissioned an independent report entitled *Transmission and System Operator Options for Nova Scotia*. The report considered four options:

- Status quo (what the report described as "current functionally unbundled NSPSO);
- Independent Nova Scotia System Operator;
- Nova Scotia/New Brunswick Independent System Operator; and
- Regional Independent System Operator.

The report spoke to the importance of the system operator functioning independently:

"The system operator, in its role as provider of non-discriminatory transmission access to third parties, must act independently of any interest of generators, distributors or marketers….

*"…Independence of the market operator becomes indispensable when it comes to the functions of administration and enforcement of the market rules and running of the different markets (day ahead, real time, reserves, transmission rights, etc.) in a transparent and non-discriminatory fashion. Also, as the System Operator is required by the market rules to perform system planning functions for the generation and transmission systems**, its independence from generation companies** is an important consideration in the evaluation of the options. (Emphasis added)*

"Independence is not an absolute but is rather a matter of degree. For that reason, there is no right or wrong level of independence, but clearly the greater the degree of independence, the less likely it is to be called into question.

> *"A prerequisite to exercise this leadership is the indifference of the system/market operator to the commercial outcomes of the market."*
>
> Transmission and System Operator Options for Nova Scotia, 2009

"… Although general policy about market structure, market design, mitigation of market power, renewables and others is the responsibility of governments, the system operator (in its capacity of market facilitator/operator) needs to play a leading role in drafting, amending and enforcing the market rules, monitoring the behavior of participants and, in general, making sure that the competitive market is functioning properly. In some cases, the regulator can also be an important market champion, but it will always need to be supported by the system-specific know-how and information provided by the system operator. The market operator must also be "visible" to the stakeholders and to the public in general by maintaining a well-structured web-based market information platform, holding periodic

information and training sessions, and being present at major industry conferences and policy discussions at the local, regional and international level. A prerequisite to exercise this leadership is the indifference of the system/market operator to the commercial outcomes of the market." [page 92, Transmission and System Operator Options for Nova Scotia]

While the 2009 report ultimately recommended that additional studies should be conducted "before committing to any change to the system operator arrangements for Nova Scotia" it also noted the following:

*"**The independence of the System Operator becomes more important as the regional market becomes more accessible to Nova Scotia and because an independent system operator will have objectives which are unconditioned by corporate ownership**, it could champion regional market changes on behalf of Nova Scotia…*

"Provincial interests can only be unambiguously represented by a system operator that is independent of all market participants and has a mandate and governance structure that reflects the public interest.

"As new players invest in renewable generation in Nova Scotia, the system planning functions (generation and transmission) currently performed by the NSPSO may need to be reviewed, to ensure a level playing [field] and that provincial interests are met." [page 91, Transmission and System Operator Options for Nova Scotia]

Since that report was issued in 2009, the New Brunswick System Operator and NSPSO have explored options to collaborate, but nothing substantive was realized. Government-owned New Brunswick Power has also assumed a larger role in overseeing and operating the New Brunswick System Operator.

A review of changes to the *Electricity Act* and the *Public Utilities Act* over the last 20 years could lead one to conclude that successive governments have felt the need to intervene legislatively to change the sphere of responsibility of the NSPSO, or to conduct due diligence checks on various responsibilities of the NSPSO.

Among the notable changes:

- Stripping the demand side management and energy efficiency programming from NSPI and creating an arm's length agency (Efficiency Nova Scotia) to carry out that program in 2008-2009;
- Requiring the UARB to hold hearings to address cost saving opportunities in 2014;
- Mandating system reliability standards in 2016;
- Mandating further performance standards and a review of the NSPI's customer interconnection process in 2022 and establishing a government-led electricity

generation procurement process resulting in required power purchase agreements between successful proponents and NSPI.

While government legislative interventions were doubtless all intended to ensure customer protection, there is obvious benefit to eliminating the need for government interventions altogether.

In examining the questions around infrastructure, the Task Force decided to review, as noted in the afore-mentioned 2009 Nova Scotia Department of Energy report, whether the provincial interest is “unambiguously represented” with the current system operator model.

In doing so, it is important to consider the context and challenges faced by the electrical system in Nova Scotia today.

NSPI is the overwhelming dominant party in the electrical system today. It is a private integrated utility with transmission, distribution, and generation facilities with which it supplies about 98.5% of Nova Scotia electricity load. There is a limited operating Wholesale Market supported by NSPI’s Open Access Transmission Tariff (OATT) through which certain municipal utilities supply about 1.5% of Nova Scotia load. There is also a Renewable to Retail Market with no participation at present. The OATT is also used for some deliveries of energy through Nova Scotia.

The Nova Scotia energy system is at an important inflection point with several impending issues that must be resolved within the near future:

- NSPI’s 1200-megawatt base load coal-fired generation needs to be replaced by 2030;
- Fossil fuel generation from oil and natural gas will likely only be available for limited use under the federal Clean Electricity Regulations;
- Nova Scotia’s commitment is to achieve 80% renewable supply by 2030, together with the coal phase out;
- Nova Scotia’s target for greenhouse gas reductions is to be net zero carbon emissions by 2050;
- Renewable energy supply will drive a demand for the addition of storage in the electrical system and the need for additional less carbon intense auxiliary services (gas) to support the grid when inverter-based generation is insufficient to meet system needs;
- Loads are forecast to increase with population growth, and increased electrification of transportation sector, heating systems and the industrial sector;
- Extended transmission (a second intertie with New Brunswick) from Onslow to Salisbury to Point Lepreau is being pursued;
- Demand-side management (DSM) will be critical for management of peak demand and longer-term management of load demand. DSM needs to be optimal to avoid costs in the short term and for prudent system cost management in the future;

- Along with the above, there will be a need for large quantities of zero-emission resources to support new generation within the province and new imports;
- The genuine potential with new renewable resources such as offshore wind and hydrogen for the export of electricity from Nova Scotia; and
- The provincial government's recently announced Clean Power Plan makes it clear that a significant proportion of renewable energy will be provided to the grid as a result of competition for generation supply and necessitate increased reliance on independent power producers.

Discussions between stakeholders and the Task Force regarding the above issues and the appropriate role of the system operator in Nova Scotia focused on one pivotal concern: the inherent tension of system operator functions residing in a for profit corporation that has not only the legislative duty to provide safe reliable service to customers at just and reasonable rates, but a fiduciary duty to its shareholders to maximize the earning potential of the company. These are, simply put, competing interests.

In carrying out this review, the Task Force was not mandated to determine whether this tension has resulted in decisions made by NSPI being weighted in favour of its shareholders. Indeed, the Task Force has benefited from willing and forthright co-operation from Nova Scotia Power and could not have completed our work in any meaningful way without the assistance of key Nova Scotia Power personnel.

Irrespective of the good faith shown by Nova Scotia Power personnel, the Task Force concluded that most stakeholders interviewed believe that bias in favour of NSPI is real and affects decisions taken by NSPSO.

As one Independent Power Producer noted in a discussion with the Task Force:

"How do you negotiate with someone who has no incentive to negotiate?"

The concerns relayed to the Task Force in the interviews are long standing, as is evident from past submissions from IPPs and other stakeholders recounted in the previously referenced 2009 Transmission and System Operator Options for Nova Scotia report prepared for the Nova Scotia Department of Energy.

Similarly, in the recent interconnection hearing before the UARB [M10905], Synapse Energy Economics, September 2023, (pages 5 & 23,) recorded stakeholder concerns about bias in NSPSO interconnection and OATT administration. Synapse was not able to confirm whether bias existed in favour of Nova Scotia Power by the NSPSO because of the opaque nature of available data.

The Task Force concluded that the longstanding perception of bias, whether real or perceived, will impair healthy competition for procurement for new infrastructure. It will also impair the province's ability to attract new infrastructure investment reliant on grid interconnection.

To enable the successful transition of our energy system, the Task Force believes it is necessary to eliminate the tension created by the competing interests NSPSO must balance: the interests of shareholders and the interests of customers.

The Task Force is therefore recommending that:

- Through the proposed *Energy Modernization Act*, the Government of Nova Scotia create a Nova Scotia Independent Energy System Operator (NSIESO), based on the not-for-profit Efficiency One model; and

- The *Energy Modernization Act* include amendments to the *Public Utilities Act* and the *Electricity Act* that encourage a wholistic systems approach to the management of electricity generation, transmission and end use; enabling transparent competition.

The Nova Scotia Independent Energy System Operator (NSIESO) would replace the Nova Scotia Power System Operator (NSPSO), assuming all systems operations functions now provided by the NSPSO.

The goal of the NSIESO is to provide enhanced focus on the significant near- and long-term energy requirements, and to establish the transparency required to provide support for an efficient electricity market, while ensuring customer confidence that decisions made are in the best interest of Nova Scotians. The Task Force believes that consumer confidence in Nova Scotia Power would be enhanced as a result of placing electricity systems decisions in the expert hands of an independent system operator, at arm's length from the corporate interest of NSPI. A NSIESO would also be better equipped to be nimble to adjust the system in the best interests of the system, without the need for legislative or regulatory intervention by government.

The NSIESO would be responsible for all aspects of system planning, oversight, the operation of the OATT, system reliability and ensuring competitive resource procurement.

The independent energy system operator will take a whole-system approach to coordinating and planning electrical generation to optimally integrate renewable resources on the provincial grid, including onshore wind and solar, the need for auxiliary services to support the grid (when the wind doesn't blow and/or the sun doesn't shine), with a view to emerging markets such as hydrogen, and offshore wind, as well as energy usage, demand side management, energy storage and customer costs.

By taking a long-term view of planning, the NSIESO will work with energy suppliers to impartially balance the electricity system and ensure continued energy resilience and security of supply for households and businesses.

The NSIESO will also provide strategic oversight of the procurement and facilitate competition. The NSEISO will permit Nova Scotia's energy sector to evolve and innovate as new technologies are developed and encourage participants in the energy sector to adopt new technologies and approaches with the confidence that decisions are made in the best interests of Nova Scotians.

The benefits of the system operator functions being removed from Nova Scotia Power and placed with NSIESO are as follows:

- Independent, not for profit operator better placed than Nova Scotia Power to spur competition between energy suppliers;
- Greater transparency and accountability; and
- Complete reset to place customer interests (especially affordability and system reliability) clearly ahead of shareholder value.

The structure of the new NSIESO would include the following major functions:

- Integrated energy system planning
  - Energy load forecasting
  - Resource planning (including DSM, all renewables & gas)
  - Transmission system planning
  - System impact & facility studies
- Grid operations
  - Hourly demand forecasting
  - Resource scheduling & commitment
  - Hourly dispatch
  - Reliability compliance
- Market administration
  - Open Access Tariff Transmission (OATT) Administrators – supported by a Market Advisory Committee
- Competitive procurement
  - Procurement administration – planning & execution

As noted above, NSIESO would assume responsibility for the IRP process to ensure that all energy players, from the largest in Nova Scotia, to longstanding customers and newer and emerging players, are participating on a level playing field.

Operations would assume the existing System Operator role with particular emphasis on reliability standards, intertie maintenance, peak management, customer service and renewable expansion and integration.

Among the other features of the NSIESO:

- Independence of the system operator from Nova Scotia Power with enhanced transparency and accountability to Nova Scotians and energy market participants;

- Independent, not-for-profit model allows electricity from Independent Power Producers (IPPs) to be in direct competition with Nova Scotia Power sourced electricity in an open and transparent manner;
- Ends any appearance of inherent/potential conflict of interest between Nova Scotia Power's financial interests and the best interests of IPPs regarding interconnection and curtailment by placing those decisions with an independent not-for-profit operator;
- Opportunity for better reliability through strengthened integrated energy system planning; and
- Provides for reliability standards oversight consistent with NERC/FERC rules and any other standards imposed by law or by the regulator.

The NSIESO would be led by a CEO reporting to a board of directors (similar to the Efficiency One model) held accountable to Nova Scotians by the new Nova Scotia Energy Board. The costs of NSIESO will continue to be included in the rate base (as is currently done as part of Nova Scotia Power)

The proposed structure would allow NSIESO to create a small number of new employee positions not represented in the existing Nova Scotia Power System Operator to address areas of growing demands such as cybersecurity and market procurement.

Assuming the *Energy Modernization Act* is approved by the Nova Scotia legislature in the spring of 2024, a comprehensive implementation plan has been developed by the Task Force for the consideration of the Nova Scotia government to have the NSIESO in place by the spring or fall of 2025.

For clarity, below is a simplified list of what the NSIESO will do and what NSPI and IPPs (where appropriate) will continue to do after the NSIESO is established:

<u>In Scope for NSIESO</u>

Monthly, Weekly, Daily and Real Time operation

- Administer the competitive electricity market - the UARB approved open access transmission tariff, to oversee bilateral contracts that require transmission and ancillary services to be available to all transmission entities on a non-discriminatory basis at the approved rates.
- Direct and maintain the reliable operation of the NSIESO-controlled grid, subject to agreements with transmitters and external system operators, and subject to compliance with Board approved reliability standards.
- Develop an Efficient Reliable Integrated Electricity System for Nova Scotia.
- Establish market rules, based on the advice of the Market Advisory Committee, that govern the relationship between the NSIESO, market participants to manage the operation of the integrated electricity system and a competitive electricity market.

- Participate with any standards authority (NPCC/NERC) in the development of standards and criteria relating to the reliability of power systems.
- Undertake and coordinate power system planning and development responsibilities to ensure the adequacy and reliability of the integrated electricity system for present and future needs, while ensuring the cost-effective operation of a competitive market.
- Conduct competitive procurements for energy and transmission resources that have been identified as prudent through coordinated power system planning.

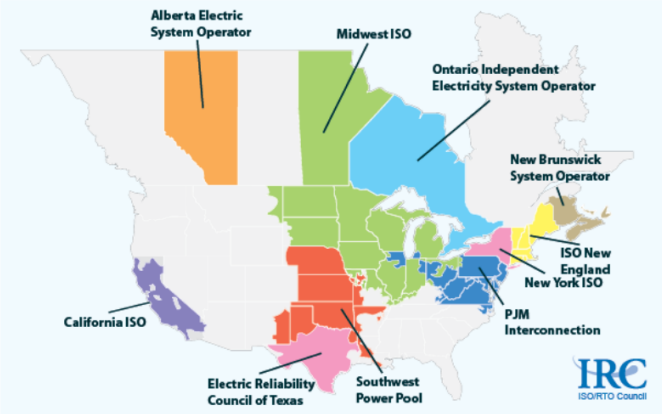
Out of Scope for NSIESO

The following functions remain with Nova Scotia Power/Independent Power Producers:

- Ownership and construction of generation or transmission resources.
- Maintenance and operation of generation resources owned by transmitters.
- Maintenance of transmission resources owned by transmitters.
- Scheduling of bilateral contracts between competitive suppliers and their customer loads.
- Initial dispatch of generation resources within the hourly schedule of a bilateral contract.
- Procurement of capacity and/or energy at any time except in emergency situations.

Independent energy system operators exist within Canada and across North America. It is noteworthy that larger Canadian jurisdictions with private sector utilities (Alberta and Ontario) generally operate with the system operator function residing entirely within an independent system operator. Canadian jurisdictions with public sector utilities tend to have the system operator function within the utility, reflecting that government-owned organizations are intended to operate in the public interest.

***Figure 2**:North American Independent System Operators April 4. 2011*



Source: ISO/RTO Council
Published By: U.S. Energy Information Administration

The United Kingdom is also in the process of making a similar change through a comprehensive UK Energy Security Bill:

"All of our energy ambitions - whether on net zero, energy independence, or cost of living - require new technical roles and a body with the remit and expertise to fulfil them. These roles are needed to help plan and shape the electricity and gas systems, drive competition and innovation, and ensure… decisions are based on robust technical advice.

"We are therefore legislating to establish a Future System Operator (FSO) with the objectives, duties and powers that meet this critical need."
UK Energy Security Bill fact sheet, June 2023

How the Independent Energy System Operator Supports Greening the Grid

As indicated in the introduction, since Nova Scotia energy markets were first opened in 2005 following the passage of the *Electricity Act*, successive governments have struggled to address the tension between corporate interests and customer interests. In 2005, the decision was taken to open the markets slightly but not to take the step of creating an independent system operator. Instead, the approach adopted was to unbundle the accounting matters related to the NSPSO and create codes of conduct to prevent sharing of commercially sensitive information.

After the initial energy market opening in 2005, the Nova Scotia government undertook its 2009 review of transmission and system operator options to determine how much inverter-based generation could be integrated into the Nova Scotia grid and to review the functions of the system operator in 2009.

Circumstances were different in 2009. But for the one inter-tie with New Brunswick, Nova Scotia was essentially an electricity energy island. Though it was largely coal-fired, generation capacity was essentially right sized for load demand in the province. Other than modest government mandated renewable energy standards, grid capacity to integrate more renewables may have been considered adequate for the near term. Large scale changes to infrastructure were not anticipated to meet greenhouse gas emission reductions on the scale now required.

Today, the energy landscape is considerably different. In 2009, coal was less than half the cost per megawatt than wind. Now, the reverse is true. The price of renewable generation is significantly less than in 2009, and remarkably less expensive than coal-fired generation. The provincial government has mandated the closure of coal-fired generation by 2030 and will require 80% of electricity to be produced from renewable sources by 2030. The Maritime Link now connects our electricity system with Newfoundland and Labrador. The proposed second intertie to New Brunswick also solidifies our connection to the North American electricity market creating wholesale bulk electricity sales opportunities unavailable in 2009.

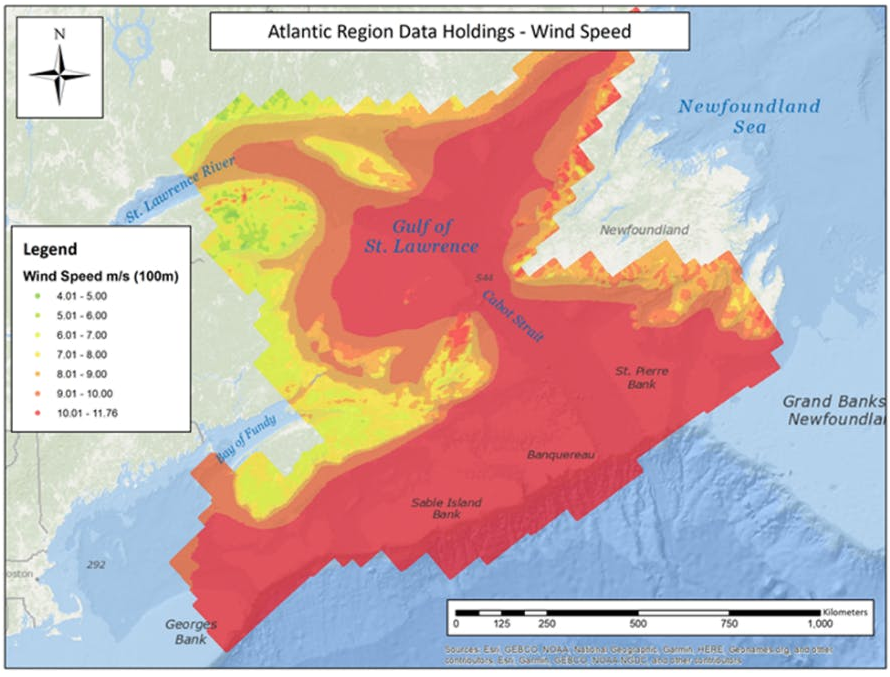
The shift in our electricity generation from coal to renewables will require very significant investments in new energy generation.

In turn, to drive affordable energy pricing, the Nova Scotia government has made it clear it intends to replace coal-fired generation with renewable resources supplied from open market competition. Investors responding to infrastructure competition need confidence in the transparency and impartiality of energy system planning, operations and oversight to provide the best pricing for that supply.

In addition, regional markets are already more accessible to Nova Scotia. The Maritime Link improved our regional connections for supply compared to 2009. The recently announced second inter-tie to New Brunswick will further expand opportunities for Nova Scotia to both import and export electricity.

The market demand for clean green energy has never been greater in our region and on the eastern seaboard of the US. Nova Scotia has untapped nearshore and offshore wind regimes, capable of supplying not only our provincial needs but also very significant potential for exports.

***Figure 3**: Atlantic Canada Wind Speed*
(Source: Offshore Magazine)



In April 2022, the Governments of Canada and Nova Scotia committed to the development of a regulatory regime necessary to develop wind projects in offshore Nova Scotia. As noted by Alisdair MacLean, Executive Director of NetZero Atlantic:

"There are significant opportunities ahead for Nova Scotia as we move toward a carbon-neutral future. Recent research shows that both offshore wind and clean hydrogen hold significant potential for the province and could become important new sources of renewable energy as well as economic engines, creating jobs and influencing growth." [News Release, Natural Resources Canada, April 11, 2022]

Confidence in having a level playing field has therefore never been more important in our energy system.

In the context of new sources of clean green energy, recently announced hydrogen projects hold the potential for increased load demand from clean energy sources. There is also the opportunity for the supply of green hydrogen generation to the Nova Scotia grid, and potential for export of additional clean energy resources.

As identified elsewhere in the report, the Task Force undertook with Stantec a review of system reliability, ability to adequately integrate inverter-based generation to the Nova Scotia grid. Additionally, the Task Force also reviewed the expert opinions of many consultants that addressed questions of reliability and integration of renewable resources in proceedings before the UARB for the past 15 years or more, including reports filed from participants in M11307 currently underway, the NSP Evergreen Integrated Resource Plan Hearing Review and the submissions of stakeholders therein. The gaps and mitigation measures identified by Stantec provide a roadmap to ensure that the infrastructure is upgraded to enable ongoing integration of renewable resources.

The government has already committed to source additional wind generation and some identified battery supply through competition. Only through competitive processes conducted by an independent system operator can investors in the future be confident of a commercial level playing field, and Nova Scotians assured that provincial interests in sustainability, reliability and affordability are given full consideration.

The Task Force is recommending that:

- Through open competition, additional infrastructure and upgrades to existing infrastructure are made to address identified grid hosting capacity requirements.

Once the NSEISO is responsible for system planning and procurement, any real or perceived conflict between NSPI's corporate interests and the interests of other bidders will no longer exist. There will be no reason to exclude NSPI from any future bidding processes.

The Task Force is recommending that:

- The NSIESO will oversee open competition for procurement of all new infrastructure, including for generation, transmission, distribution and storage. Nova Scotia Power should not be excluded from the bidding in any competitive process overseen by the NSIESO.

5.2 Modernizing the Regulator

Through its mandate, the Task Force was asked to consider the following:

"With respect to electricity transmission, generation and power rates, review the Nova Scotia Utility and Review Board Act, the extent of the board's jurisdiction, its powers and enforcement capacity"

In addressing this question, the Task Force is making recommendations under three regulatory categories:

- Structure;
- Alignment with Government Policy; and
- Resources.

As noted in the reliability and transmission analysis set out elsewhere in this report, our electrical grid is not currently equipped, without upgrades, to meet the challenges being imposed as result of the energy transition.

Regulatory Structure
Since NSPI is a private, publicly traded company, not a Crown corporation, government's most reliable and powerful tools are legislative and regulatory, overseen by the Nova Scotia Utility and Review Board (UARB).

The Task Force invited Nova Scotians to share their perspectives on whether the UARB is legislatively equipped to enable the energy transition necessary in Nova Scotia's electricity system to accomplish the clean energy targets set out by the Governments of Nova Scotia and Canada.

Consistent themes from these discussions and written submissions emerged.

Most stakeholders interviewed were concerned about a disconnect between the provincial government's legislated clean energy targets and UARB decisions. Stakeholders complained decisions were not necessarily consistent with government policy, enshrined in legislation, on climate change and sustainability.

In reviewing decisions made by the UARB, and in follow up discussions with the UARB, it was clear to the Task Force that the UARB maintains its decisions and its authority to make those decisions are constrained by its foundational statutes, in particular the *Electricity Act*, the *Public Utilities Act* and the *Utility and Review Board Act*.

The Board's view of this lack of latitude was clearly articulated in the following statement:

"The Board does not have jurisdiction to establish public policy. That is the role of elected officials who are accountable to the public for this function… In the Board's view, this is a social and public policy question which falls under the purview of the Legislature, rather than the Board." [In the matter of the Public Utilities Board Act and an Application by Dalhousie Legal Aid Services, NSUARB 2005, page 27, paragraph 256, subsequently affirmed by the Nova Scotia Court of Appea See 245 NSR (2d) 206 (NSCA);
As a quasi-judicial adjudicative board, the UARB does not believe it has broad powers to interpret its jurisdiction beyond what is set out in its foundational statutes. This interpretation by the UARB of its limited authority is reflective of accepted Canadian administrative law.

The stakeholders interviewed for this report are not alone in their perception of a disconnect between the government's climate/clean energy policy and the responsiveness of regulators to that policy. A review of regulatory law practices and statutory legislative jurisdictional scans published recently reveals gaps between the climate/clean energy policies and aspirations of governments and the law regulating public utilities supplying electricity.

Utility regulators in Canada are predominately considered "economic regulators" generally based on principles first set out by American economist James C. Bonbright in his 1961 publication, *Principles of Utility Rates*. These so-called "Bonbright principles" are summarized by:

- Setting the overall revenue amount that's required to be collected from customers by a utility;
- Fairly apportioning the costs of running a utility among the different kinds of customers the utility serves; and
- Designing rates for customers that drive the efficient operation of the utility.

These principles were reinforced and expanded upon in a May 2023 report commissioned by Electricity Canada called *Back to Bonbright*, which noted:

"The Bonbright Principles are underpinned by a wealth of common law across Canada, the United States and elsewhere, but are also complemented by a series of tactical principles, framework elements, and approaches commonly utilized by regulators ("Regulatory Constructs")... Some of these Regulatory Constructs are a matter of common law, while others have been codified as sound regulatory practice through their frequent use across numerous jurisdictions. Taken together, this constellation of commonly accepted guidance forms the basis of ***economic energy*** *regulation across Canada and beyond." [page 5, Back to Bonbright]*

Considering this approach to regulation, Back to Bonbright went on to ask whether electric utilities operate within governance and regulatory structures capable of that support achieving net zero?

The Back to Bonbright report concluded:

"...there is room for improvement in commonly accepted Regulatory Constructs to ensure that the governance structures and regulatory practices employed in Canada's jurisdictions are best set up to facilitate the achievement of net zero. Further, the incremental nature of change required does not reduce the urgency to act quickly to evolve regulatory governance and approaches to facilitate the timely achievement of net zero." [page 3, Back to Bonbright]

To accomplish the energy transition required to meet the climate/energy goals set out by governments, the report went on to determine that it is necessary for elected governments to:

"...set clear, outcome-based policy to provide regulators and utilities a common understanding of required objectives and outcomes and that independent regulators be sufficiently resourced and empowered to review, reject, modify, or approve an increased number of novel proposals." [page 5, Back to Bonbright]

The findings of Back to Bonbright were timely to this part of the Task Force's work.

To determine whether there is sufficient clarity in legislation to enable Nova Scotia to accomplish the objectives and outcomes set by the Nova Scotia government, the Task Force reviewed the UARB Act and other legislation that establishes the UARB's mandate. The review included a cross-Canada jurisdictional scan provided by the UARB, as well as one conducted by Karen Taylor in 2019. The Task Force also considered a multi-jurisdictional analysis of regulators in Canada and New England completed by East Coast Environmental Law in 2021.

The first and most obvious notable difference between the UARB in Nova Scotia and regulators in other Canadian jurisdictions is the breadth and scope of matters assigned to the Nova Scotia UARB. There are 40 Nova Scotia statutes that assign regulatory responsibility to the UARB, including:

1. Assessment Act, RSNS 1989, c.23 as amended
2. Apprenticeship and Trades Qualification Act, SNS 2003, c.1 as amended
3. Consumer Protection Act, RSNS 1989, c.92 as amended
4. Education (CSAP) Act, SNS 1995-96, c.1 as amended [Loi sur l'éducation (CSAP) 1995-96, ch.1 modifié]
5. Efficiency Nova Scotia Corporation Act, SNS 2009, c.3 as amended
6. Electrical Installation & Inspection Act, RSNS1989, c. 141 as amended
7. Electricity Act, SNS 2004, c. 25 as amended
8. Electricity Efficiency and Conservation Restructuring (2014) Act, SNS 2014, c.5
9. Electricity Plan Implementation (2015) Act, SNS 2015, c.31 as amended
10. Endangered Species Act, SNS 1998, c.11 as amended
11. Energy and Mineral Resources Conservation Act, RSNS 1989, c.147 as amended

12. Expropriation Act, RSNS 1989, c.156 as amended
13. Fire Safety Act, SNS 2002, c. 6
14. Gaming Control Act, SNS 1994-95, c.4 as amended
15. Gas Distribution Act, SNS 1997, c. 4 as amended
16. Halifax-Dartmouth Bridge Commission Act, RSNS 1989, c.192 as amended
17. Halifax Regional Municipality Charter, SNS 2008, c.39 as amended
18. Halifax Regional Water Commission Act, Acts of 2007, c. 55 as amended
19. Heritage Property Act, RSNS 1989, c.199 as amended
20. Insurance Act, RSNS 1989, c. 231 as amended
21. Liquor Control Act, RSNS 1989, c. 260 as amended
22. Marine Renewable-energy Act, SNS 2015, c. 32 as amended
23. Maritime Link Act, SNS 2012, c. 9 as amended
24. Mineral Resources Act, SNS 2016, c. 3 as amended
25. Motor Carrier Act, RSNS 1989, c.292 as amended
26. Motor Vehicle Transport Act of Canada, 1987 as amended (Federal)
27. Municipal Government Act, SNS 1998, c.18 as amended
28. Nova Scotia Power Finance Corporation Act, RSNS 1989, c.351 as amended
29. Nova Scotia Power Privatization Act, SNS 1992, c.8
30. Petroleum Products Pricing Act, SNS 2005, c. 11
31. Petroleum Resources Removal Permit Act, SNS 1999, c.7 as amended
32. Pipeline Act, SNS 1980, c. 13 as amended
33. Public Utilities Act, RSNS 1989, c.380 as amended
34. Railways Act, SNS 1993, c.11 as amended
35. Revenue Act, SNS 1995-96, c.17 as amended
36. Technical Safety Act, SNS 2008, c. 10[10]
37. Theatres and Amusements Act, RSNS 1989, c. 466 as amended
38. Underground Hydrocarbons Storage Act, SNS 2001, c.37
39. Utility and Review Board Act, SNS 1992 as amended
40. Victims' Rights and Services Act, RSNS 1989, c.14 as amended

In contrast, Alberta, Ontario and Quebec have independent energy regulators, although in the case of Alberta, its energy regulator deals exclusively with petroleum matters, while electricity falls within the purview of the Alberta Utilities Commission. In provinces where public utilities have assigned electricity and other utilities regulatory oversight obligations, such as in Manitoba and New Brunswick, few if any other non-utility regulation functions are assigned to those boards.

This expansive subject matter jurisdiction of the UARB may be what has led many to question whether the board is sufficiently focused on the clean energy transition to accomplish government's climate/energy goals. Those stakeholders also asked whether, considering the UARB's broad scope of subject matter jurisdiction, it had sufficient specialized skilled engineering, economic and financial professionals to assist the Board in analysis of the many electricity matters before it that are complex and highly technical nature.

While most of those that engaged with the Task Force did not have a strong opinion on whether or not to change the current regulatory model, those that did suggested either:

- Creating an entirely distinct Energy Board, completely distinct from top to bottom of the UARB; or
- Maintaining the status quo, as they were of the view the Board's ability was exemplary from an administrative law process perspective, comparing it favourably to other jurisdictions in Canada.

The Task Force was also mindful to not create new redundancies by recommending any changes that would duplicate administrative functions, ranging from staff to physical plant issues, such as office space and hearing rooms.

As part of the proposed *Energy Modernization Act*, the Task Force is recommending:

- The creation of a Nova Scotia Energy Board, responsible for electricity, natural gas, efficiency, pipelines, enforcement, and retail gasoline.

A Nova Scotia Regulatory and Appeals Board would continue to be responsible for the non-energy responsibilities currently with the UARB.

To ensure administrative efficiency, the Task Force is recommending:

- A common chair for both the Nova Scotia Energy Board and Nova Scotia Regulatory and Appeals Board; and
- A common back-office function (clerk, executive director, staff and legal counsel).

Each board would have a separate vice-chair and four commissioners.

While this would be a decision of the government, the Task Force sees no reason why the current Chair of the UARB could not continue as Chair of both boards. Existing UARB members could populate either Board, which would leave two vacancies on the new Energy Board and a vacancy as vice-chair of the Energy Board.

Nova Scotia is one of the few jurisdictions in Canada without term limits on its regulatory board. Currently, under section 5 of the *Utility and Review Board Act*, appointments to the UARB are limited by "good behavior" considerations, or until the member reaches the age of 70. The jurisdictional scan of utility regulators in other provinces, including federal regulators, led the Task Force to conclude that Nova Scotia is out of step.

The Task Force is recommending that:

- New Energy Board appointees would have term limits of up to seven years, with an option to renew for five additional years;

- Term limits apply to new appointees only, with any existing members transferred from the UARB to the new Energy Board continuing under the terms of their original appointments.

This would strike the balance the Task Force observed in other jurisdictions in terms of building expertise and independence, while allowing measured turnover to bring new and diverse perspectives to the Board.

Other features of the new Energy Board include:

- Stronger and expanded Board authority to drive increased accountability and enforce compliance with legislation, regulations, government policy and Board orders;
- Providing the Board with audit tools, including oversight of NERC compliance, in support of NSIESO's planning and reliability oversight functions and Board enforcement powers;
- Allowing government to request the Board to provide recommendations on a specific question or issue to help in policy development;
- Allowing government the flexibility and authority to identify specific policies to be considered by the Board in its decisions;
- Removing the longstanding exemption for the approval of capital projects related to Point Aconi;
- Ending the restriction for nuclear energy generating facilities;
- Eliminating the requirement to have at least five persons or corporations before a complaint can be filed with the Board

Many of these proposed changes – such as Point Aconi, nuclear energy and complaint filings – came about through dialogue with the UARB.

While the *Energy Modernization Act* is setting out a Nova Scotia Energy Board with a strong leadership role, broader mandate and more enforcement and audit tools, what won't change is its independence in decision-making. To be successful, regulators must operate independently, in accordance with their legislated mandate.

In bifurcating decision-making into two Boards, without duplicating the administrative functions and personnel, the Task Force believes the process expertise of the UARB will be maintained. In turn, the new Energy Board will be able to apply additional subject matter expertise to growing demands for the energy transition.

One other fundamental issue must be addressed in any discussion of the governance of the Nova Scotia energy regulator. This issue was raised by numerous stakeholders the Task Force interviewed and addressed in some written submissions filed by members of the public.

It is a well-established principle of administrative law that regulatory tribunals must operate at arm's length from government, free to make determinations in accordance

with the law on the facts in front of them. In October 2022, the government introduced and passed Bill 212. The Bill was intended to reduce the rate increase the utility had requested, by removing certain expenditures from the regulator's scope of consideration. While no doubt well motivated by customer concerns, Bill 212 had consequences beyond a rate cap. It was seen by bond rating agencies as a threat to the independence of the regulator and was described as follows:

"We viewed the enactment of Bill 212 as political interference because it undermined the NSUARB's regulatory construct, materially weakened the jurisdiction's regulatory predictability, and increased the uncertainty for its utilities and stakeholders. We view the political interference as breaching the regulator's independence because it limits the NSUARB's ability to protect the credit quality of its utilities. We view regulatory independence as one of the key attributes that underpins the credit quality of the utility industry. In general, we expect that utilities operate under a regulatory construct that is sufficiently insulated from political intervention to protect their credit risk profiles, even during periods of economic stress." (S&P -Global Rating Analysts Report, Feb 13, 2023)

Regardless of the accuracy of this statement, the reaction to Bill 212 by bond rating agencies underscores the importance of regulatory tribunal independence. It also points to the importance of a comprehensive regulatory process that allows government policy objectives to be considered in regulatory decisions, while preserving to the regulator its independent judgment to make decisions as it considers appropriate. In the proposed *Energy Modernization Act*, the Task Force has aligned the work of the regulatory with government's clean energy and affordability policy objectives and clarified the regulator's authority to implement those objectives according to its own assessment of the facts of each case.

Regulatory Alignment with Government Policy

Establishing subject matter focus within the Energy Board is an important initiative in accomplishing clarity of jurisdiction and confidence in the regulatory process. This alone, however, will not ensure that our energy regulator is appropriately empowered to support government's energy transition policy objectives.

It is useful to consider that utility regulators are considered economic regulators in Canadian law and have been since at least the 1929 Supreme Court of Canada decision (Reference re Waters and Water-Powers).

The cornerstone of the economic nature of the UARB's oversight of electric utilities is contained in the following section of the *Public Utilities Act*:

"Amount utility entitled to earn annually

"45 (1) Every public utility shall be entitled to earn annually such return as the Board deems just and reasonable on the rate base as fixed and determined by the Board for each type or kind of service furnished, rendered or supplied by such public utility,…

Correspondingly, the duty of every public utility is established as follows:

"Duty to furnish safe and adequate service

52 Every public utility is required to furnish service and facilities reasonably safe and adequate and, in all respects, just and reasonable. R.S., c. 380, s. 52."

The approach outlined in these two sections are generally considered to be the essence of the regulatory compact in Canada. It was described in a 2015 decision by the Supreme Court of Canada:

"A key principle in Canadian regulatory law is that a regulated utility must have the opportunity to recover its operating and capital costs through rates. This requirement is reflected in… statutes refer to a reasonable opportunity to recover costs and expenses so long as they are prudent. The Commission must therefore determine whether a utility's costs warrant recovery on the basis of their reasonableness …, Where costs are determined to be prudent, the Commission must allow the opportunity to recover them through rates."
(*ATCO Gas and Pipelines Ltd. v. Alberta (Utilities Commission*), 2015 SCC 45 (CanLII), [2015] 3 SCR 219, @ *para 61)*

Courts have been strict in holding utility regulators to the confines of this principle, limiting what regulators may consider as "just and reasonable," to economic considerations. In a June 2006 decision, the Nova Scotia Court of Appeal supported the UARB's position in this regard.

In some jurisdictions, legislatures appear to have attempted to clarify the role of regulators and to permit the consideration of government's climate change policies in their regulatory decision making. Legislatures have done so by describing the purpose of legislation in establishing the authority of regulators over utilities.

Below are examples of purpose statements in other jurisdictions. In Alberta's *Electric Utilities Act,* section 5 describes the government's policies regarding Alberta's competitive electricity market.

"The purposes of this Act are:

"(a) to provide an efficient Alberta electric industry structure including independent, separate corporations to carry out the responsibilities of the Independent System Operator and the Balancing Pool, and to set out the powers and duties of those corporations;

"(b) to provide for a competitive power pool so that an efficient electricity market based on fair and open competition can develop, where all persons wishing to exchange electric energy through the power pool may do so on non-discriminatory terms and may make financial arrangements to manage financial risk associated with the pool price;

"(c) to provide for rules so that an efficient electricity market based on fair and open competition can develop in which neither the market nor the structure of the Alberta electric industry is distorted by unfair advantages of government-owned participants or any other participant;

"(d) to continue a flexible framework so that decisions of the electric industry about the need for and investment in generation of electricity are guided by competitive market forces;

"(e) to enable customers to choose from a range of services in the Alberta electric industry developed by a competitive electricity market, and to receive satisfactory service;

"(f) to continue the sharing, among all customers of electricity in Alberta, of the benefits and costs associated with the Balancing Pool;

"(g) to continue the framework established for power purchase arrangements;

"(h) to provide for a framework so that the Alberta electric industry can, where necessary, be effectively regulated in a manner that minimizes the cost of regulation and provides incentives for efficiency."

In keeping with the purposes identified above, section 6(1) of Alberta's Act states:

"Electricity market participants are to conduct themselves in the electricity market in a manner that supports the fair, efficient, and openly competitive operation of the electricity market."

In addition, it is worth noting that section 17 (1) of the *Alberta Utilities Commission Act* states:

"Where the Commission conducts a hearing or other proceeding on an application to construct or operate a hydro development, power plant or transmission line under the Hydro and Electric Energy Act or a gas utility pipeline under the Gas Utilities Act, it shall, in addition to any other matters it may or must consider in conducting the hearing or other proceeding, give consideration to whether construction or operation of the proposed hydro development, power plant, transmission line or gas utility pipeline is in the public interest, having regard to the social and economic effects of the development, the plant, line or pipeline and the effects of the development, plant, line or pipeline on the environment." (*emphasis added*)

The British Columbia government also prescribes much of its energy policy objectives in legislation, in particular the *BC Clean Energy Act*.

The governments of Ontario, Quebec and Newfoundland and Labrador also set out the objectives of their respective provincial energy policies in legislation.

As noted by the previously referenced reports by Karen Taylor and East Coast Environmental Law, Nova Scotia does not.

To achieve clarity in regulatory objectives and alignment with Nova Scotia's climate change goals, the Task Force recommends that:

- Through the proposed *Energy Modernization Act*, the *Electricity Act* and the *Public Utilities Act* be amended to account for the *Environmental Goals and Climate Change Reduction Act*.

Given the long-established legal tradition in Canada of limiting the authority of utility regulators to solely economic considerations, clarity of government's energy policy objectives in legislation may not be enough to empower the regulator to take into account even clear statements of intent without more.

As noted in *Back to Bonbright*:

"Governments must utilize right-sized policy mechanisms, be they Mandate Letters, Regulation, or Legislation, to communicate timely, clear, and specific outcomes, which utilities and regulators are expected to facilitate without dictating how utilities achieve such outcomes or how regulators assess applications to achieve such outcomes."

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Back to Bonbright, 2023

The Task Force examined various provisions of Nova Scotia's *Electricity Act*, *Public Utilities Act* and other laws with a view to understanding what consequential amendments are necessary to allow the regulator to address the desired outcomes described in the purpose section of the proposed *Energy Modernization Act*.

To that end, the Task Force is proposing definitions in the *Energy Modernization Act* that will provide clarity as to the Energy Board's powers in matters before it. Notably, the definition of "alternative form of regulation" would expand the meaning of what may be considered "just and reasonable rates." Performance-based regulations would also be permitted under the new *Energy Modernization Act.*

The proposed *Energy Modernization Act* will likewise provide the Energy Board the flexibility it needs to accommodate approaches in rate setting, appropriate to implement government's policy objectives. These changes will, in keeping with the advice of *Back to Bonbright*, "…facilitate without dictating … how regulators assess applications to achieve such outcome."

The Task Force is recommending that:

- the following objectives are set out in the proposed *Energy Modernization Act*, to accomplish clarity of purpose in energy regulation in Nova Scotia:

  "The purpose of this Act is to:

  "(a) modernize and focus the regulatory regime providing oversight to energy and efficiency utilities in the Province;

  "(b) increase competition and innovation in the Province's energy sector;

  "(c) ensure the provision of economical, secure and reliable energy supply in the Province;

  "(d) ensure a transparent, efficient and co-ordinated approach to Provincial energy supply planning;

  "(e) provide for robust competitive procurement practices for new energy system resources; and

  "(f) support the sustainable development, sustainable prosperity, energy efficiency and greenhouse gas reduction goals of the Province articulated in the Environmental Goals and Climate Change Reduction Act."

Clear statements of government's policy objectives to be considered by the Energy Board in its decisions are an important step in providing the Board with the scope and flexibility it needs to facilitate the energy transition required in our province. But this alone is not enough.

The Energy Board will require clear legislative authority for decisions that need to be made to implement government policies and to encourage innovation. In addition, it will require a clear line of sight on the activities of electric utilities to ensure that costs can be driven from rate base wherever possible. As such, it must have strengthened powers to oversee/direct audits, ensuring proper due diligence in asset management and reliability; and it must have improved ability to enforce compliance with its decisions. As noted previously in this chapter, the proposed *Energy Modernization Act* is providing the new Energy Board with additional powers not currently deployed by the UARB.

The proposed *Energy Modernization Act* will empower the Minister of Natural Resources and Renewables to issue directives regarding policy objectives to be pursued or implemented by the Nova Scotia Energy Board. The proposed amendment requires that policy directives be published in the Royal Gazette in the interests of transparency and public accountability. The Task Force believes this is an appropriate balance between the elected government with its need to respond to an ever-evolving policy dynamic within our country and province, while maintaining the regulator's independence to assess applications. Moreover, the new *Energy Modernization Act* will also allow the Minister to seek advice from the regulator when considering changes to energy law, regulation and policy directions.

It's important to underscore the proposed *Energy Modernization Act* does not give the Minister the authority to prescribe the outcomes of any matter before the regulator. These legislative changes will facilitate policy implementation without dictating the result in individual cases, preserving to the regulator the critically important independence in its decisions.

Regulatory Resources

Regardless of the anticipated increase in matters before the UARB resulting from the energy transition, it should be noted, most stakeholders interviewed by the Task Force, (including NSPI and the UARB) agreed there is an existing need for additional specialized professional staff (engineers, financial analysts and economists) to facilitate the regulators in its current work. The Task Force accepts this as a valid concern.

Along with additional members for the new Nova Scotia Energy Board, as recommended elsewhere in this chapter, additional staff resources are also important to the delivery of prompt regulatory decisions. With a global transition away from fossil fuels underway, the competition for affordable green technology and supply chain issues make it difficult to maintain project pricing for any length of time. Delays in regulatory decisions seriously risk increased costs to procure materials because of market factors, inflationary pressures and sensitivity to government policy and programming.

To attract skilled professionals to work for the energy regulator, the question of competitive compensation also needs to be addressed. The Task Force noted that the UARB is already starting to experience difficulties in recruiting experience energy advisors, particularly with expertise in electrical engineering. Current pay scales with the UARB, as set by the Government of Nova Scotia under its *Personal Services Contract Regulations*, appear to be lagging market-based compensation.

Consideration may also be given to funding a dedicated in-house counsel position with the Nova Scotia Energy Board. The UARB's longstanding practice has been to have external legal counsel act on its behalf. On the question of an in-house counsel for the regulator, the Task Force received one submission recommending the creation of this position. The Task Force noted it is not an uncommon feature of very active regulatory boards to have one or more such positions. There are some obvious benefits to those

arrangements including potential cost savings and a dedicated, consistent expert resource. The Task Force ultimately did not reach a strong conclusion in this regard.

Another process and procedural matter raised in discussions and interviews with the Task Force is the role of the Consumer Advocate and the Small Business Advocate in hearings before the UARB, as set out under sections 91, 92 and 93 of the *Public Utilities Act*. Fees and expenses incurred by the advocates are paid by the Board and ultimately Nova Scotia Power (or other utilities who have filed a revenue requirement with the Board).

The role of the Consumer Advocate was created in 2005 by amendments to the *Public Utilities Act*. Upon selection by the UARB, the Consumer Advocate is to:

"participate fully in the [UARB] hearing process to make sure that the board has all the information it needs to consider residential customers' fair and reasonable contribution to Nova Scotia Power's revenue. He or she will also be able to participate in any process to develop a settlement proposal, if there is one." [Government of Nova Scotia News Release, July 13, 2005]

Following advocacy by small business representatives, the Government of Nova Scotia amended the *Public Utilities Act* to create the role of Small Business Advocate who would operate distinctly from the Consumer Advocate whose role was and is to protect the interests of residential consumers.

In explaining the rationale for creating the Small Business Advocate, the Finance Minister at that time stated:

"Representation by an advocate at Nova Scotia Utility and Review Board hearings is one way government can support small businesses operators in our province. Unfortunately, the definition of small businesses in the Public Utilities Act prevented the advocate from functioning effectively." [Government of Nova Scotia News Release, November 1, 2010]

There was general support for both advocates and recognition for the valuable contributions made by both. Some questioned how the advocates decided the positions taken before the UARB. There was also criticism by some stakeholders of the cost of experts retained by the advocates.

The Task Force concluded that the *Public Utilities Act* establishes a bare minimum of accountability for expenditures and minimal oversight. Questions of affordability of electricity will be closely scrutinized as the energy transition unfolds. It is more important than ever that the interests of residential consumers and small business be presented to the regulator in its processes.

The Task Force nonetheless believes there must be stronger public accountability and transparency for the work of the advocates. To address these concerns, the advocates

should be required to submit annual reports to the regulator to detail the activities of the advocates and their expert consultants. Financial disclosure requirements for the advocates and their expert consultants should also be in place. The Board should also have the power to provide for a review process on the reports filed.

The Task Force acknowledges the many submissions requesting the appointment of a Sustainability Advocate, particularly from the Ecology Action Centre and East Coast Environmental Law. The Task Force recognizes that there are reasons to create a Sustainability Advocate to work alongside the other advocates before the UARB as currently constituted.

Because the Task Force is proposing an *Energy Modernization Act* that will drive sustainability considerations in all decisions by the Nova Scotia Energy Board, a new Sustainability Advocate is not required at this time. Rather than leaving the work of sustainability to a single office holder, all participants before the regulator will be required to consider sustainability and the province's legislated climate change goals, as mandated by the *Energy Modernization Act*.

The Task Force is recommending that:

- The Nova Scotia government provide an expanded budget for the Nova Scotia Energy Board to hire and retain the appropriate expertise in staffing to fulfill the new Board's expanded scope of responsibilities;
- The compensation framework for Nova Scotia Energy Board staff be adjusted to better reflect market realities to attract and retain technical expertise needed to meet the Energy Board's broader mandate.
- The new *Energy Modernization Act* includes timely decision making as part of the Energy Board's mandate;
- The Chair and Vice Chair of the Nova Scotia Energy Board determine whether an in-house legal counsel should be retained; and
- The new *Energy Modernization Act* ensures greater transparency and accountability by requiring annual reporting, financial disclosure and a review process for the Consumer Advocate and Small Business Advocate.

Regulatory Protection from the Costs of Replacing Coal

As noted elsewhere in this report, the energy transition from carbon intense fuels to green renewable sources of generation will result in the early retirement or conversion of a number of coal-fired facilities owned by Nova Scotia Power. In the ordinary course of utility law and practice, all costs of those facilities will immediately come into Nova Scotia Power's rate base, with a significant financial impact on the company's customers.

In 2023, NSPI made an application to the UARB (M11220) for the approval of a Decarbonization Account to deal with those costs.

In regulatory utility law, deferral accounts are used to permit utilities to recover the cost of previously approved investments even though the assets will be retired before the end of their expected useful life. A regulated utility can recover the undepreciated costs of the asset in a deferral account over time, if given permission by the regulator. Deferral accounts are used to avoid rate shock which would occur when the asset is prematurely retired. Without a deferral account, the undepreciated costs would be recovered by the utility from customers when the asset is retired. The undepreciated costs associated with the early retirements of coal fired facilities in Nova Scotia may be as much as $757 million (documents filed by Nova Scotia Power, M11220).

Deferral accounts are not the only tool that can be used to mitigate rate shock to keep rates affordable for customers.

In many US jurisdictions, including Colorado, Montana and New Mexico where utilities are also compelled by law to retire coal fired generation facilities prematurely, securitization is used.

The State of Florida's Public Service Commission (PSC), the electric utility regulator for that jurisdiction, provides the following definition of securitization:

"Securitization, a financing mechanism… was first used in Florida after the severe hurricane seasons in 2004 and 2005. The Florida Legislature created it so investor-owned utilities could petition the Florida Public Service Commission (PSC) for a financing order authorizing the utility to issue bonds for the express purpose of recovering costs related to those storms…

"If granted by the PSC, a financing order allows a utility to recover costs by issuing bonds with lower financing costs, thereby saving customers money. The bonds are issued by a third party, and their proceeds repay the utility for its investment. Utility customers pay off the bonds through a dedicated line item on their bill, over several years.

"That's the basic definition, but what does securitization really mean for customers? Securitized debt lowers carrying costs compared to conventional utility financing methods. The utility's investment is not added to rate base, so customers are not held responsible for paying the debt costs, return on equity, and income taxes the utility would have incurred. …

"The crucial consumer safeguard is that the PSC has to find that the utility's use of the financing mechanism will significantly mitigate rate impacts to customers when compared to traditional utility cost recovery methods. If the PSC approves a financing order—and bonds are issued—the electric utility will be required to true up costs at least twice a year through a PSC filing.

"What you need to remember is that securitization is security for utility customers. The PSC's financing order sets the recoverable costs and allowable financing costs to be

securitized and authorizes a special charge used solely to repay the securitized debt. Moreover, the PSC is responsible for biannual true-ups to ensure utility compliance. Securitization means lower costs to electric utility customers." [Source: https://www.floridapsc.com/pscfiles/website-files/pdf/Consumers/AskTheChairman/2015_07.pdf] (Emphasis added)

To ensure long-term affordability of rates for Nova Scotians, as Nova Scotia Power is faced with the financial impact of retiring coal fired facilities to meet federal and provincial climate change goals, the Task Force is recommending that:

- the proposed *Energy Modernization Act* include provisions to adequately equip the Nova Scotia Energy Board with a complete suite of tools to ensure lowest cost for utility customers in dealing with the financial consequences of the early retirement of NSPI's coal fired facilities.

6 Infrastructure

Infrastructure is the backbone of any electric or energy system. Changes to any well-established system, energy or otherwise, is seldom simple. As noted throughout the report, Nova Scotia's electric system is largely built on coal-fired generation. In this section, the Task Force will address factors necessary to inform necessary decisions to integrate variable generation from renewable resources into the grid to replace existing coal-fired generation.

The Task Force was asked to consider the following question as part of its mandate:

What is the state of our electricity transmission infrastructure in terms of reliability, hosting capacity and storage to meet Nova Scotia's climate change goals and what changes should be made?

In answering this question, the Task Force:

1. Examined the current capacity of the existing grid as well as required upgrades, recommend the necessary changes and energy system upgrades to ensure Nova Scotia is positioned to successfully achieve its net zero goals.

2. Determined the level of increased grid capacity required, including transmission route tie-ins (point of interconnection along with upgrade alternatives)

3. Examined electricity infrastructure reliability and connectivity (poles and wires), reliability/asset management, including interconnection services.

Parts 1 and 2 as outlined above will be addressed in this chapter on Infrastructure. Part 3 will be addressed in the Task Force chapter on Reliability.

Key to this work is assessing the provincial transmission system and determining required upgrades to reliably host increasing amounts of variable generation from renewable energy resources.

It is important that as we modernize the integrated provincial energy system, our approach remains firmly anchored in customer reliability, customer service and affordability.

The technical portions of the report have been prepared and written through the lens of an independent cold eyes review supported by subject matter specialists.

The Task Force has taken a stepped approach and where practical, leveraged recent/current work from a range of studies and analyses. This was done to be efficient and create a forward-facing tool for ongoing decision making for renewable resource integration.

To provide the technical expertise to the Task Force in conducting the Cold Eyes review, Stantec was engaged. Stantec was selected by the Task Force because of its specialized team of experts in transmission planning and power system analysis. Stantec's deep knowledge and experience includes micro grid system analysis to country-wide national / major power transmission systems planning over North America and Asia/Pacific.

Key personnel responsible for the Stantec report included:

- Ashikur Bhuiya, PhD – 31 years of experience, specializing in transmission/power system study modeling and analysis.

- Ashraf Hague, PhD – 21 years of experience, specializing in dynamic modeling transmission/power systems planning and analysis.

The Task Force thanks Nova Scotia Power for their comprehensive co-operation in sharing of relevant information with the Task Force and external experts from Stantec. Without their cooperation and access to NSPI data, the work undertaken by Stantec would not have been possible.

The Stantec Phase I and II reports provided valuable insights.

1. By examining the current capacity of the existing grid as well as required upgrades, recommend the necessary changes and energy system upgrades to ensure Nova Scotia is positioned to successfully achieve its net zero goals.

The transition from traditional coal fired generation resources (synchronous generators) to renewable resources (invertor based nonsynchronous resources) presents material technical challenges and incremental technical complexity to achieving and maintaining system resilience and operational reliability.

In June 2023, Manitoba Hydro International (MHI) delivered a draft report to NSPI entitled Large Scale Integration of Inverter-based Resources. (this report has subsequently been finalized and is publicly available in NSPI UARB IRP)

The modeling and analysis undertaken by MHI to prepare the report complements the modeling and analysis performed for the Task Force by Stantec.

The MHI report supports and informs:

- The required system strengthening must do (new capital expenditures/grid strengthening upgrades);
- The operational/system operations additional methods/procedures/metrics and dashboards in support (new tools and metrics); and
- The necessity to update models and operational dashboards as each additional tranche of inverter-based renewable resources are interconnected and integrated into the generation load of resources.

The Stantec report identified through gap analysis where the integration of new renewable inverter-based generation resources will present constraints and potential reliability problems for the grid,

The Stantec report also identified constraint mitigations that will ensure reliability and resilience as we add more inverter-based generation from renewable resources.

The Stantec report noted a series of transmission system upgrades necessary to ensure the required reliability and resilience in our grid infrastructure to satisfy compliance to planning criteria and industry standard best practice.

As Nova Scotia's electricity/energy system is transformed on its journey to net zero, Stantec underscored the critical need for holistic system thinking, pro-active mitigation of identified gaps, the critical role of change management, and the need for ongoing study and regression analysis.

Stantec submitted the following findings in its report to the Task Force:

"Stantec conducted a peer review of a wide range of documents and analysis models as outlined in this report with a focus on determining if the present and future electric grid capacities in Nova Scotia are sufficient to achieve Nova Scotia's renewable energy goals. In particular, whether the transmission system would be capable of supporting the planned integration of renewable energy and provide the necessary capacity, reliability and voltage stability.

"Many of the documents reviewed are associated with the Integrated Resource Plan (IRP) developed by Nova Scotia Power, which forms the cornerstone of a plan to

support provincial decarbonization and provide a clean, reliable energy system while focusing on customer affordability in both the near and long term…

"Overall, Stantec observed that the methodology, analysis, and recommendations established in the 2020 IRP and the 2023 Evergreen IRP to be consistent with processes found in other jurisdictions throughout North America…

"… while the 2020 IRP and 2023 Evergreen IRP outlined development scenarios which included the retirement of coal fired generation, addition of new renewable generation and interregional transmission, as of the time of review, there was no associated transmission plan prepared outlining required transmission developments within the province that may be needed to support the implementation of the IRP. It was initially expected that a specific transmission plan was developed based upon the IRP findings and recommendations… The studies required to meet these objectives, however, have not yet been performed…

"The Manitoba Hydro International Study Report on the Large-Scale Integration of Inverter Based Resources (IBRs) in Nova Scotia as well as the Power Advisory document regarding Nova Scotia Ancillary Service Provision by Variable Output Renewable Energy Resources, both touched on transmission system challenges that would be faced by Nova Scotia under large scale penetration of renewable generation as contemplated in the IRP…

"While several documents included in the scope of review referenced various transmission developments that may come about or be required as a result of implementing the IRP, as noted previously, no full transmission planning study or assessment of the existing system was conducted that could be used to determine if the existing or planned transmission system would be capable of supporting the planned integration of renewable energy and provide the necessary capacity, reliability and voltage stability."

Because of this planning and assessment gap cited by Stantec, the Task Force directed Stantec to proceed to Phase Two, the next steps in the review, including the an updated capacity hosting analysis tool and PSE modelingof a of the Nova Scotia transmission system.

2. Determine the level of increased grid capacity required, including transmission route tie-ins (point of interconnection along with upgrade alternatives)

Stantec was asked to consider the ability of the electrical grid to host the new energy resources reflected in the IRP. This is called a Hosting Capacity Analysis.

The Hosting Capacity Analysis was conducted for the climate change milestone years of 2030, 2035 and 2050. The analysis helped inform the required upgrades in getting to net zero identified that will guide decisions in the creation of an infrastructure roadmap.

The analysis provides a clear line of sight to provincial transmission system constraints by zone across the province, identifying practical mitigations per constraint, supported by industry standard cost estimates.

The hosting capacirty tool and PSE model was constructed assuming 14 points of grid interconnection (some new and some existing) across the province. Stantec followed utility standard planning criteria in carrying out their analysis.

Stantec concluded:

"…the existing transmission system is not capable of meeting planning criteria for the 2030 IRP scenario as was modelled without upgrading the limiting elements." [6.22, Stantec's Hosting Capacity Analysis]

"…the existing transmission system is not capable of meeting planning criteria for the 2030 IRP scenario as was modelled without upgrading the limiting elements."

Stantec Grid Hosting Capacity Analysis Report 2023

The approach used for 2030 was then repeated for 2035 for hosting capacity, with wind dispatched at 65% and 75% of total capacity.

The generation assumptions used by Stantec are consistent with the Evergreen IRP and Stantec's modeling allowed for inclusion of all the resources identified in the IRP, including wind projects presently in the queue.

Stantec's model also assumed that the additional system 345 kilovolt system intertie between New Brunswick and Nova Scotia identified in the IRP has been constructed.

As can be anticipated, with the addition of increased inverter based variable renewable resources, the model predicted a number of transmission system planning violations.

The system limitations were documented, mitigations and solutions were identified, and were evaluated in the model for effectiveness.

In addition to a precise summary of system constraints, and scoped solutions, Stantec also provided costing estimates for upgrades required by zone across the province as the renewable projects advance between 2024 and beyond. Proactively addressing the identified transmission limiting elements across the province is a key enabler for continued success in integrating more renewable resources.

The associated cost estimates of the transmission infrastructure upgrades are reflected in detail in the Stantec Grid Hosting Capacity Analysis Report. To achieve our 2030, 2035 and 2050 targets, the order of magnitude of the estimates by region are material. In Central and Eastern Nova Scotia infrastructure investments will cost approximately $270 million and in Western Nova Scotia, the cost will be $664 million.

With ongoing updates, the potential benefits from Stantec's work are:

- the enabling of forward-facing strategic planning for optimized renewable resource development across the province;
- timely, transparent and information decision-making by IPP proponents; and
- reducing queue times/delays for independent power producers.

The Task Force is recommending that:

- The Grid Hosting Capacity Analysis developed by Stantec be provided by the Department of Natural Resources and Renewables to the System Operator with the expectation that it be reviewed and updated annually.

Battery Energy Storage Systems as part of 2030 Clean Power Plan

The Task Force was asked to "assess electricity storage capacity." The Task Force limited this review to consideration of battery storage.

As Nova Scotia continues its journey towards phasing out of coal-fired generation and the transition to renewable resources, battery energy storage systems will play an important role.

Nova Scotia's 2030 Clean Power Plan calls for significant addition of grid scale storage systems. Multiple projects are planned for deployment across the province in strategic locations currently identified within NSPI's current planning.

There is a broad-based support for the current approach to battery energy storage systems in Nova Scotia as proposed by NSPI and others. Energy Storage Canada and the Nova Scotia Department of Natural Resources and Renewables (DNR&R) support this approach as reflected in the 2030 Clean Power Plan (M11017).

The initial phase of battery energy storage systems as proposed by NSPI ranges from 300 to 400 megawatts of battery energy storage. The interconnection of these projects will provide system wide benefits, including:

- fast response for system disturbance;
- short term reserves an energy time shifting; and
- ongoing support of system balancing.

It is the view of the Task Force that the battery storage plans are being appropriately developed to serve the interests of Nova Scotians. The establishment of the NSIESO will provide important continuing independent oversight of implementation of this emerging technology.

7 Reliability

The Task Force was asked to consider the following question:

"Examine electricity infrastructure reliability and connectivity (poles and wires), reliability/asset management, including interconnection services."

Many if not all stakeholders interviewed or who made submissions to the Task Force, also expressed concerns about our energy system's reliability.

The recommendation to create a NSIESO would strengthen system reliability by ensuring that solid holistic planning practices are in place.

As set out elsewhere in this report, the proposed *Energy Modernization Act* will strengthen the reliability audit oversight provided by the regulator, which will provide additional transparency and accountability for compliance with reliability standards.

Set against the backdrop of global climate change, weather events in Nova Scotia are increasing in frequency and severity:

- Hurricane Fiona, a severe hurricane that made landfall in the province on September 24, 2022, with peak gusts in Nova Scotia of 179 km/h;
- A polar vortex in February 2023 with extreme cold causing unprecedented peak loads;
- Historic wildfires in the province in in May/June 2023, primarily in Halifax Regional Municipality and Shelburne County; and
- Significant flooding in July 2023, causing extensive infrastructure damage and some loss of life in Halifax Regional Municipality, Hants County, Lunenburg County and Queens County.

The effects of accelerating weather events are a Nova Scotia reality that cannot be ignored when addressing questions of reliable electricity service.

Meanwhile, modernizing Nova Scotia's electricity grid is also a necessity that must be embraced by all partners in the energy sector to ensure reliability.

Many customers underscored to the Task Force concerns around the ability of Nova Scotia Power to consistently deliver electricity. Data provided to the Task Force by the Department of Natural Resources and Renewables validates these customer concerns.

In recent years, the Government of Nova Scotia has taken legislative action to address these concerns, including:

- Amendments in 2015 to require the Utility and Review Board to develop and set performance standards on reliability for Nova Scotia Power; and

- Amendments in 2022 and 2023 to put in place more stringent fines against Nova Scotia Power when the Utility and Review Board determines Nova Scotia Power has failed to meet its performance standards.

In a UARB report dated August 2023 on Nova Scotia Power's compliance with 2022 performance standards (M11052), the Utility and Review Board imposed more than $1.3 million in administrative penalties for Nova Scotia Power's failure to meet its 2019, 2020 and 2022 performance standards.

This decision reflects feedback from many customers of Nova Scotia Power, as well as data supplied on Nova Scotia Power's performance in this regard, as compiled by the Department of Natural Resources and Renewables and shared with the Task Force.

The August 2023 decision of the UARB, customer feedback to the Task Force and data from the Government of Nova Scotia collectively point to a company that is failing to meet the expectations of electricity service from Nova Scotians.

The Utility and Review Board sets two primary reliability standards:

- The System Average Interruption Frequency Index (SAIFI)
- The System Average Interruption Duration Index (SAIDI)

In both categories, the UARB sets standards for Nova Scotia that vary considerably from the North American industry average.

For SAIFI, the performance standard for Nova Scotia Power is set at 2.05 interruptions per year, excluding storm events.

For SAIDI, Nova Scotia Power's reliability performance standard at 4.29 hours of interruption per year, excluding storm events.

The North American industry average for both standards is 1.0, making Nova Scotia Power an outlier compared to other jurisdictions based on data provided by the US Energy Information Administration (EIA).

So what is Nova Scotia Power's record in both categories over the last 10 years?

On balance, Nova Scotia Power's performance has been getting worse in terms of frequency and duration, falling short of targets in the last three out of four years.

***Table 1**: Nova Scotia Power Reliability Indices*

Year	SAIFI (Target 2.05)	SAIDI (Target 4.29)
2013	2.43	4.26
2014	2.29	4.22
2015	2.25	4.24
2016	N/A	N/A
2017	1.73	3.40
2018	2.00	4.43
2019	2.58	5.99
2020	2.05	3.98
2021	2.27	5.23
2022	2.19	5.16

Nova Scotia Power has not consistently met the regulatory targets.

In the UARB's August 2023 decision (M11052) referred to above, the regulator noted the following comment from the Small Business Advocate:

"The SBA is very concerned that NSP has yet to have a year in which all the Performance Standards were met. The targets are set in coordination with NSP and are based on what is considered reasonable to achieve. A continuing inability to meet those targets raises significant concerns for the SBA, including for the SBA's rate classes that rely on safe and reliable energy for their businesses, and for the communities that rely on those businesses for their needs."

Nova Scotia Power maintains that these outages are driven by more frequent drastic weather events brought about climate change.

The UARB concluded, however, in its August 2023 report on Nova Scotia Power performance:

> *"If more frequent and damaging storms are becoming the "new normal", NS Power needs to ensure that its performance, not just its investment plans, keeps up with these changes."*
>
> UARB Report on Nova Scotia Performance, 2023

"…despite the changing climate, the need for a reliable electrical grid is at least as important (and likely more important) than ever. If more frequent and damaging storms are becoming the "new normal", NS Power needs to ensure that its performance, not just its investment plans, keeps up with these changes." [Emphasis added]

The Task Force supports this view by the UARB.

The Task Force also believes that the Utility and Review Board needs to better incorporate in its decisions, particularly those related to the reporting of annual performance standards, the cost that poor reliability imposes on Nova Scotians.

The Task Force noted that Nova Scotia Power's reliability is often geographically inconsistent. Many parts of urban Halifax Regional Municipality almost never experienced outages, compared to some rural service areas with customers experiencing a significantly higher number of interruptions. For example, one rural feeder line experienced an average of eight non-storm related interruptions per year for several consecutive years.

The August 2023 UARB decision detailed on page 8 a list of Nova Scotia Power's "problem circuits" from 2017 through 2022. These problem circuits were among the worst 5% in performance according to Nova Scotia Power and include the following rural communities and surrounding areas:

- Wreck Cove
- Port Hastings
- Whycocomagh
- Upper Musquodoboit
- Weymouth
- Parrsboro
- Upper Burlington
- Southwest Margaree
- Dickie Brook
- Ruth Falls
- St. Peters

Wreck Cove is by far the most chronically underperforming of Nova Scotia Power's circuits from 2017 through 2022.

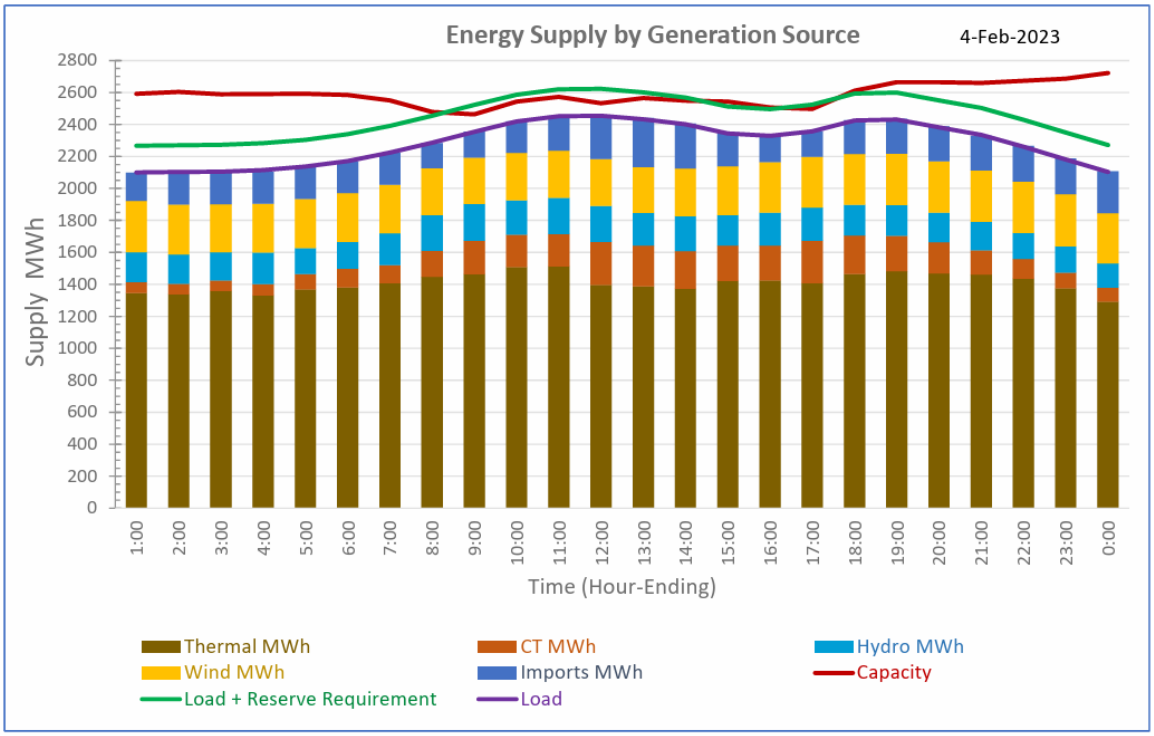
7.1 February 3-5, 2023 – A Perilous Close Call

On February 3 -5 of 2023, Nova Scotia was in the throes of a polar vortex accompanied by extreme wind conditions.

NSP came perilously close to being unable to serve system load and/or even possibly unprecedented system rotating blackouts during those dates. The event was not local but affected the entire northeast of Canada and the US. On these dates NSPI served a historical all time high peak load demand (2455 megawatts), exceeding its previous high peak demand in 2004 by almost 10 per cent. This also significantly exceeded their system forecast for their 10-year load planning.

In M10987 Exhibit N-3, a preliminary Outage Report filed with the UARB, NSP reported to the Board that the entire Maritime Region (New Brunswick, Nova Scotia and Prince Edward Island), set a new record high peak load demand within these dates of 6,300 megawatts.

***Figure 4**: Feb. 4, 2023, Energy Supply by Generation Source*
(Source: UARB M10987)



Under system normal conditions, members within the Maritime region can rely upon each other to support capacity and load demand when needed. The Task Force understands from its discussions with NSPI and the UARB that New Brunswick and Quebec were, because of their own unusually high peak demand, constrained in their ability to supply electricity to their neighbours.

During this cold weather event, NSP was able to avoid rotating service interruptions/blackouts because it was able to rely upon its own thermal generation fleet (gas and coal-fired generation), as well a material amount of wind generation within Nova Scotia, together with capacity and energy support provided the Maritime Link in Newfoundland and Labrador (NSPI report in M10987).

It is likely given current climate trends that the weather event of February 3-5 will occur again. After 2030, there will be restrictions in place on NSP's utilization of their traditional coal fired generation fleet, due to the federal government's Clean Energy Regulations. If we have replaced thermal generation primarily wind and solar (inverter-based resources) and nothing more, NSP is at significantly increased risk of being unable to service system load. It is also worth considering that wind energy is a variable resource that comes into the system differently depending on time of day and season.

This example serves to illustrate the vulnerability our electrical grid faces as we transition from coal fired generation. Similar challenges recently took place in January

2024 involving not only the Alberta electricity grid, but in British Columbia as well. For Nova Scotia, it underscores the critical need for significant investment in dispatchable generation and spinning reserves to support the integration of renewables.

Hardening of assets for severe weather events and strengthened system reliability are also essential enablers to energy system modernization.

7.2 The Importance of Asset Management, Wood Pole Management and Vegetation Management

In the Task Force's view, the success of energy system modernization must remain anchored in customer service levels and customer affordability.

There are multiple contributors to overall system resilience and reliability.

The suite of three programs that materially influence reliability and cost effectiveness of electrical transmission infrastructure are proactive:

- Asset management.
- Wood pole management.
- Vegetation management.

Individually each of the three elements are of material importance and fundamental to reliability and effective asset care. NSP does not, nor is it required by the regulator to, file a wood pole management plan.

7.2.1 Asset Management

In July 2023, the UARB initiated an inquiry pursuant to the *Public Utilities Act* (M11067) to the extent, condition and value of the property and assets of NSPI under section 30 (5)(a) of the Act. The UARB retained EA Technology to assist in its inquiry.

In its report to the UARB, EA Technology defined its work as follows:

"The purpose of the review is to provide a high-level view of the information on Nova Scotia Power's assets in regard to its extent, its condition and the value it provides. The review also determined whether the information on Nova Scotia Power's assets could be relied upon to ensure that effective asset management decisions are consistently being made." [page 3, Asset Management Review, EA Technology, September 2023]

EA Technology carried out a gap analysis reference to the ISO 55001: 2014. This standard is described in the EA Technology report as "not very onerous" and is consistently applied across the utility sector.

The Nova Scotia Power asset management program was evaluated for effectiveness, maturity, competence, and compliance across 27 distinct sections. The EA Technology report concluded that Nova Scotia Power achieved compliance level scoring for 12 of the 27 sections. NSPI failed to achieve compliance level scoring in the remaining 15 out of 27 sections.

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***Table 2** :Nova Scotia Power Asset Management Gaps (Source: EA Technology Asset Management Review)*

Clause	Gap	Gap	Reason
5.1	Whilst Nova Scotia Power has demonstrated leadership and commitment through having a draft asset management policy, developing, and implementing strategy documents and the existence of objectives, there is no clear alignment of these documents and objectives, plus some content expected by ISO55001:2014 is not in place (see Clause 4.1 and 5.2).	0.1	Asset management documentation
6.1	Whilst Nova Scotia Power asset management approach has an 'Analyze' step within the iterative cycle, no feedback to the questions asked, or documents supplied, identified how Nova Scotia Power review any of its actions resulting from risks and opportunities, to determine whether they have been effective.	0.17	Review
5.3	The gap indicated clause 5.3 reflects the lack of a clear strategic asset management plan rather than a lack of assigning responsibilities and authorities.	0.33	Asset management documentation
6.2.2	The asset management policy is in draft form, and it is not clear what represents the strategic asset management plan; therefore, alignment of the asset management plans to them is unclear.	0.38	Asset management documentation
	There is no evidence from the information responses, or the documents supplied regarding how or when Nova Scotia Power review their asset management plans.		Review
6.2.1	The identification of objectives within Nova Scotia Power's asset management documentation is unclear. The consistency between the asset management objectives and the asset management policy is also unclear.	0.63	Asset management documentation
4.3	Whilst there is evidence that Nova Scotia Power understands what assets are within scope through the deployment of dedicated reliability teams, there is no evidence that the asset portfolios are defined and documented within an asset management scope. ISO55002 provides guidance on the documentation of the scope of an asset management system, which states '*The boundaries and applicability of an organization's asset management system is captured in a statement of scope that is included as part of the documented information for the SAMP .*'	0.71	Asset management documentation
10.3	There is no evidence of processes to demonstrate the existence of management review or internal auditing that contributes to the continually improvement of the asset management system.	1	Review
7.3	Nova Scotia Power's asset management policy is currently in draft form; therefore, it is concluded that persons will not be aware of its existence.	1	Asset management documentation
7.6.1	The asset management policy is in draft form and does not contain all of the requirements specified within ISO55001:2014.	1	Asset management documentation

Clause	Gap	Gap	Reason
	There is some confusion around the existence/make-up of the strategic asset management plan document. The documentation and alignment of asset management objectives is also unclear and not available in a strategic asset management plan. The scope of Nova Scotia Power does not conform to the requirements of ISO55001:2014. • There is no evidence that the asset portfolios are defined and documented within an asset management scope. There is no documenting of boundaries (geographical, contractual, regulatory etc.)		
4.1	Nova Scotia Power's AMO Playbook [15] states that '*the manifestation of Nova Scotia Power Incorporated's Strategic Asset Management Plan is the 10-Year System Outlook, and for even longer windows the Integrated Resource Plan (IRP)*'. There is no evidence of asset management objectives within these documents nor is there any evidence of alignment with the organizational objectives.	1	Asset management
8.2	There does not appear to be a management of change procedure for transmission or distribution assets as the engineering controls for plant modifications document only refers to generation assets. There is no explicit reference within Nova Scotia Power's engineering controls for plant modifications document to assessing risks associated with any change, plus the flowchart in Appendix A does not include risk assessment.	1.5	Management of Change
5.2	Whilst there is content in the Nova Scotia Power asset management policy draft document that can be regarded as suitable for a policy, the document does not look or feel like a high-level document. ● There is no indication of top management commitment to this document as there is no top management signature to indicate approval and add gravitas to such a document. ● There is no indication of document control, such as: • Reference Number • Revision Number. • Authorized/Published date. The asset policy content does not explicitly state that Nova Scotia Power commits to satisfying applicable requirements.	1.64	Asset management documentation
4.4	Nova Scotia Power have not demonstrated the existence of a Strategic Asset Management Plan that aligns to the requirements of ISO55001:2014 and guidance supplied in ISO55002:2018: ● ISO55001:2014 requires an organization to develop a Strategic Asset Management Plan which includes documentation of the role of the asset management system in supporting achievement of the asset management objectives. ○ The AMO Playbook [15] goes some way to illustrate the constituent parts of the asset management system. ○ Neither the 10-Year System Outlook or the Integrated Resource Plan (IRP) include asset management objectives or organizational objectives. ● ISO55002:2018 states that a Strategic Asset Management Plan (SAMP) should fulfil a number of purposes, such as: ○ Detailing in documented information, the role of the assets, asset management and the asset management system in supporting achievement of the organizational objectives and	2	Asset Management Documentation

Clause	Gap	Gap	Reason
	to provide clarity and direction for everyone in the organization from top management to delivery teams. ○ Translation of organizational objectives into strategic asset management objectives and reconcile these with other strategic objectives which can have an impact on the assets and asset management. ○ Guiding the approach for developing the asset management plans and the asset management system, while applying the asset management policy to ensure alignment. ○ Documenting the decision-making criteria that enable the definition of value realization for the organization and its stakeholders and the coordinated approach for performance evaluation. ○ Presentation of a consolidated plan at the asset portfolio level for achieving the strategic asset management objectives and linking these to the organization's financial plans. Presentation of the plan for creating or improving the asset management system in order to ensure the required capabilities and resources are available to achieve the asset management objectives.		
9.3	Nova Scotia Power do not currently have a management review process that conforms to the requirements of ISO55001:2014.	2.2	Review
9.2	Nova Scotia Power do not currently have an internal audit process	3	Review

EA Technology noted NSPI's lack of rigor in establishing an asset management plan that is regularly reviewed by Nova Scotia Power:

"The asset management policy is in draft form, and it is not clear what represents the strategic asset management plan; therefore, alignment of the asset management plans to them is unclear.

"There is no evidence from the information responses, or the documents supplied regarding how or when Nova Scotia Power review their asset management plans." [page 5, Asset Management Review, EA Technology, September 2023]

Nova Scotia Power accepted the findings of the EA Technology report with respect to asset management in its filings with the UARB [M11067, Exhibit N7, page 16].

7.2.2 Wood Pole Management

The second fundamental element of the electrical transmission infrastructure is a robust and proactive wood pole management program. The benefits of proactive asset care from wood pole inspection and maintenance are well understood in industry.

Regardless of the jurisdiction, when it comes to existing transmission assets (poles and wires), it has been consistently demonstrated that proactive wood pole management programs consistently deliver the following benefits:

- Improved customer reliability;
- Shortened duration of customer outages;
- Reduced total cost of ownership;
- Reduced cost to customers;

In a recent article published by the International Association of Electrical Inspectors, subject matter specialist Trevor Bowmer, PhD, addressed the critical importance of proactive condition-based wood pole management programs. In his January 3, 2021, article, *Maintaining and Inspecting Wood Poles, the Big Picture and Practical Approaches*, Bowmer noted:

"The proper maintenance end inspection of wood poles that support power and communication systems illustrates how seemingly mundane matters also have far reaching consequences.

"In a digital age power outages and their duration have large negative impacts on people and the economy, proper inspection and maintenance can mitigate these impacts."

The Bowmer article used the following example to contrast the results in effectiveness between adjacent utilities' in their respective wood poles inspection and maintenance programs, identifying storm impacts, recovery costs and durations.

In the example provided, two neighboring utilities faced the same hurricane. One utility "diligently pursued an inspection and groundline maintenance program" – the other did not.

Effects of Pole Integrity on Network Resiliency

Neighboring Utilities Impacted by the Same Hurricane

	Utility "A"	Utility "B"	
Pole Inspection Reject Accuracy	98%	30%	
	Actual Numbers	Factored Numbers	
Wood poles replaced	152	2,790*	18x
Number of Peak Outages	95,000	487,984*	5x
Cost of Restoration	$20 M	$310 M*	16x
Time of Restoration	100% in 5 days	100% in 13 days	

* Factored for having 60% more poles

In addition to supporting improved customer reliability, pro-active wood pole management has the added benefit of driving cost out of rate base for interconnected customers.

This example clearly illustrates that ensuring the fundamentals of wood pole inspection and maintenance is a key enabler of increased customer reliability and effective extension of asset life. In addition to supporting improved customer reliability, pro-active wood pole management has the added benefit of driving cost out of rate base for interconnected customers. In other words, over the life of the assets (poles / wires) the difference could be as much as 16-fold cost differential in avoided costs through the proper proactive inspection, planning and maintenance of wood poles.

The Task Force sets out this example for the purpose of illustration and is not evaluating NSP's wood pole management program as comparable to either company A or B. The Task Force accepts that proactive inspection and maintenance ensures the right work on the right assets at the right time. This is broadly considered by most utilities as a standing best practice.

The Task Force noted that Tampa Electric Company (TECO), the largest subsidiary of Emera, files an annual wood pole inspection and annual reliability performance report with its regulator. In documents with the Florida Public Service Commission, TECO makes a direct connection between its wood pole inspection and maintenance program and its overall reliability performance and cost performance to customers. When asked by the Task Force about its wood pole management practices, NSPI outlined a number of programs it undertakes to facilitate asset life, including its wood pole inspection, maintenance and replacement practices.

7.2.3 Vegetation Management

The third fundamental element of the electrical transmission infrastructure is proactive vegetation management.

Nova Scotia Power contends that it has made significant and consistent investments in vegetation management.

The average annual spending by Nova Scotia Power from 2007 through 2017 was $12.9 million.

In 2018, Nova Scotia Power spending on vegetation management increased to $26.1 million.

In 2023, the company's vegetation management spending rose to more than $29.7 million. As part of what Nova Scotia Power describes as an "enhanced vegetation management program", the company's 2024 will rise to around $45 million.

That said, many customers commented that they are not seeing any appreciable improvements in customer reliability.

As noted by one small business customer to the Task Force in August 2023:

"Nova Scotia Power keeps saying we need to cut more trees…. They have been cutting a lot of trees and the power keeps going out."

Nova Scotia Power informed the Task Force that it accounts for asset management, wood pole management and vegetation management through its Annual Capital Expenditure (ACE) plan, subject to review and approval by the UARB. The Task Force believes that ACE is not a substitute for dedicated, specific and detailed annual plans and reporting for asset management, wood pole management and vegetation management, as is done by other utilities, including TECO. The focus of the ACE is not accountability for reliability results. The Task Force believes that better accountability will improve results. Accountability would also be better achieved through dedicated reporting that details planning reporting and oversight.

The Task Force also believes that a more wholistic approach that brings together vegetation management with robust pro-active asset care / asset management and the reliability of infrastructure (poles and wires) would improve overall reliability of electricity service to customers.

The dual benefit of pro-active condition-based care of the transmission assets is increased reliability and reduced total costs of ownership over the asset life. It is also a foundational cornerstone and key to delivering:

- Reliable customer service levels
- Driving costs out of the rate base

In the last year, Nova Scotia Power struck a reliability team that's focused on implementing the company's reliability plan. The main focus of the team is to better understand and improve customer experience, while working to achieve performance-based standards. While establishing the Reliability Team is a good first step to effective wood pole and vegetation management, the Task Force believes that to achieve the reliability Nova Scotians are entitled to expect from their utility, regulatory oversight is necessary.

The Task Force therefore recommends that:

- Nova Scotia Power be required to formally submit an annual asset management plan for approval by its regulator,

- The regulator shall establish an annual review process of the asset management plan to measure NSPI's performance against ISO 55001: 2014 standard.
- Consistent with the asset management plan, Nova Scotia Power develop and file with its regulator a dedicated annual report for wood pole management as it relates to transmission infrastructure reliability.
- Consistent with the asset management plan, Nova Scotia Power develop and file with its regulator a dedicated annual report for vegetation management as it relates to transmission infrastructure reliability.

8 Telecommunications

The Task Force received a small number of submissions on this matter.

Because telecommunications companies are federally regulated industries generally under the supervision and oversight of the Canadian Radio-Television Telecommunications Commission (CRTC), there has not been much call for the UARB to intervene.

Nova Scotia Power and Bell Aliant have a longstanding relationship on the use of utility poles in the province. This relationship is governed through a Joint Use Agreement, dating back to 1993, for utility poles where Nova Scotia Power owns 60% and Bell Aliant owns 40%. The scope of the agreement includes ratio of ownership, space allotments and a variety of other responsibilities between the two companies for the ownership and use of the poles.

In 2022, a number of telecommunications carriers raised concerns with the CRTC (Telecom Notice of Consultation CRTC 2020-366) was the extent to which the CRTC can and should address involvement by Bell in access to poles owned by a utility company. An earlier application by Rogers to the CRTC concerning this issue had been rolled into the proceeding. In a February 2023 decision by the CRTC [Telecom Regulatory Policy CRTC 2023-31], the following measures were announced:

- expedited timelines set for large telephone companies to provide competitors with access to poles;
- clearer responsibilities for pole maintenance and the sharing of costs related to the installation of equipment;
- requiring large telephone companies to provide details for competitors and the CRTC on pole access requests to enhance transparency and accountability; encouraging provincial and territorial governments to coordinate with telecommunications service providers and other stakeholders to facilitate network deployment.

Since 2018, the CRTC and many telecommunication carriers have been seeking the federal government to amend the *Telecommunications Act* to bring all authority over

poles and towers under the CRTC. The federal government has not acted on these efforts.

Where there has been involvement of the UARB, the regulator maintains that with respect to telecommunications connections shared with utility infrastructure, its oversight over the pole attachment process is limited to the setting a pole attachment fee. This attachment fee is paid by telecommunications common carriers or Internet providers to Nova Scotia Power for access to the company's poles.

The pole attachment fee was last set in Nova Scotia Power's recent general rate application (M10431), resulting in a settlement agreement between NSPI and the telecommunication carriers (i.e., Eastlink, Rogers, and Xplore). The prior annual fee was previously set in 2002 at $14.15 per pole and there were no proceedings to review the rate until the recent rate application by Nova Scotia Power. NSPI initially requested an increase in the annual fee from $14.15 per pole to $37.71 per pole. With the approval of the UARB, The settlement agreement concluded at a rate of $22 per pole per year, with a 2% annual escalator.

Another issue that was discussed as part of NSPI's general rate application (M10431) came from telecommunication providers that outlined a variety of concerns about their access to Nova Scotia Power's poles, including wait times and "make ready" costs. Because of the settlement agreement reached on the pole attachment fee, these issues were not canvassed or resolved.

In August 2023, the Task Force met with officials from Build Nova Scotia, a provincial Crown corporation that was assigned responsibility for the provincial government's Internet for Nova Scotia Initiative.

As of early January 2024, Build Nova Scotia maintains that 92,100 homes and businesses have been connected because of the Internet for Nova Scotia Initiative or the Satellite Internet Service Rebate Program. This reflects 97.5% of Nova Scotians with access to internet connections, with close to 99.9% once satellite coverage is included.

On October 26, 2023, the Nova Scotia government announced it is contributing $47.3 million to begin a new Cellular for Nova Scotia Program "to expand telecommunications infrastructure and communications networks throughout the province." As with expanding internet coverage, Build Nova Scotia was charged by the Nova Scotia government to plan, design and manage the implementation of expanded cellular coverage throughout the province.

The goals of the program are as follows:

- 99% coverage for Basic Voice Call service;
- 95% coverage for Standard-Definition service (eg. emails, web browsing and social media); and

- 85% coverage for High-Definition service (eg. video conferencing, movie streaming, and other data intensive applications)

The increase in rural high-speed internet over the last five years, the Mass Casualty Commission and 2023 high impact emergency weather events have all called into question the reliability of emergency cell service.

Pro-active pole management is addressed by the Task Force elsewhere in this report.

While the Task Force does not have a strong recommendation to bring forward on this issue, the Nova Scotia government may wish to request the regulator to exercise its authority under the law to consider what additional measures could be brought to bear at the provincial level to increase cell service reliability as it relates to poles and pole lines.

9 Affordability

In its call for public submissions, the Task Force asked Nova Scotians to consider the following question on affordability:

"What measures should be taken to support the ability of Nova Scotians to afford the price of electricity as we undertake an energy transition resulting from climate change and other factors?"

Concerns about the price of electricity were advanced by many customers, regardless of class. A number of businesses and other stakeholders noted to the Task Force that Nova Scotia's electricity costs were so high in comparison with other jurisdictions, that Nova Scotia was losing out on investment opportunities.

Residential customers, especially as they face 30-40 year highs in housing costs (such as interest rates and rent) and overall inflation are also worried about the ability to pay increased electricity costs, more so today than in previous economic cycles.

This is against the backdrop of utility rates being set for economic reasons in Canada. As noted in *Back to Bonbright*, a May 2023 report by Utilis Consulting commissioned by Electricity Canada:

"Relative to Canada's taxation system, utility rates are intentionally regressive in alignment with Bonbright's principle of no undue discrimination in rates, focusing on the service provided instead of any particular societal end."

Starting in 2015, Nova Scotia Power and the Government of Nova Scotia, with the approval of the UARB, had in place a Rate Stability Plan to maintain affordable rates for residential, commercial and industrial customers.

The Plan did not apply to a Fuel Adjustment Mechanism (FAM) that Nova Scotia Power has used, subject to review and oversight by the UARB, since 2007. The FAM allows Nova Scotia Power to pass along variable fuel costs to its customers in addition to the rate base approved by the regulator.

As the Rate Stability Plan neared its completion in 2022, Nova Scotia Power filed an electricity rate application in early 2022. In November 2022, the Nova Scotia legislature passed Bill 212 to set non-FAM rate increases to 1.8%. Following the adoption of Bill 212, Nova Scotia Power incurred two credit rating downgrades, which Nova Scotia Power and its parent company Emera maintain have a material impact on the company's ability to finance its operations, provide affordable rates and invest in capital.

Nova Scotia Power subsequently reached a settlement agreement on rates, with the support of the Consumer Advocate and other energy customers, which was approved by the UARB in February 2023. Average electricity rate increases were therefore set for 6.9% in 2023 and 2024, not including any additional costs applied through the FAM.

Issues related to Nova Scotia Power's infrastructure and energy transition are addressed elsewhere in this report.

Some measures that pass along cost to Nova Scotia electricity consumers are within the control of the Nova Scotia government, the regulator, Nova Scotia Power and other energy partners.

Other measures that affect the price of electricity – such as federal climate change policy and global energy costs – are beyond the scope of the Task Force. The mandate of the Task Force does not include assessing the most effective climate change measures, although it respects the different views on federal climate change policy that were advanced.

Finding ways to offset or reduced cost pressures through stronger, independent regulatory oversight, better pro-active reliability efforts and more competition from a greater number of energy suppliers are addressed in previously in this report.

The Affordable Energy Coalition advanced several proposals to the Task Force that would, in their view, support the transition to a more sustainable electricity landscape for Nova Scotia that's affordable.

These proposals included:

- Enacting a Universal Service Program that would better link existing efficiency and cost-relief programs for low-income households and include measures to

support electricity bill affordability, management of arrears, crisis intervention assistance and energy efficiency programs targeted to low-income households;
- Repealing clause 67 of the *Public Utilities Act* that prevents the Nova Scotia government and the Utility and Review Board from pricing power rates differently; and
- Ensuring that low-income, marginalized or racialized communities aren't disproportionately burdened in any energy transition policy changes and that prior consultation is taken before any such changes are developed and implemented.

In its submission, the Affordable Energy Coalition identified Ontario as delivering a version of the Universal Service Program that is subsidized by Ontario taxpayers to help residents manage the impact of electricity costs. In the case of US versions of the Universal Service Program, the cost of these programs is covered by an additional fee levied on electricity bills.

Nova Scotia Power also agreed with the Affordable Energy Coalition that there was considerable merit in the programs to help electricity consumers offered by the Government of Ontario.

The Affordable Energy Coalition noted that the Ontario Electricity Support Program (OESP) has been in place for the better part of the last decade to provide low- to moderate-income residential ratepayers with monthly on-bill credits of between $35 and $113. The monthly credit is calculated according to several income levels under $70,000 a year and household sizes. The Affordable Energy Coalition noted that the Ontario approach "is simpler than the American model."

The OESP represents 2.5% of the Ontario government's overall spending on nine subsidy energy and electricity programs. Six of these nine programs, including the OESP, are credited directly on electricity bills.

In a 2022 report issued by the independent Financial Accountability Office of Ontario (FAO), it was determined that:

- After-tax electricity bills were reduced by 29 per cent in 2021 with the subsidy programs; and
- By 2025 electricity bills would be 12 per cent lower than what they would have been without the subsidy programs.

Of the Ontario subsidy programs, two account for nearly 80% of the program costs and are not paid out based on any income consideration. Other programs are geared towards rural, remote, Indigenous and low-income consumers.

The Task Force recognized the work of Efficiency Nova Scotia as a provincially mandated not-for-profit energy efficiency utility that is overseen by the UARB. Efficiency Nova Scotia has:

- Supported 400,000 Nova Scotians complete energy efficiency projects;
- Helped Nova Scotians save a forecasted $4 billion in lifetime energy costs, including $400 million in savings for low-income homeowners and renters;
- Avoided 10 megatonnes of carbon emissions since 2011; and
- Delivered the HomeWarming service to help low-income Nova Scotians with energy efficiency upgrades.

Since 2006, the Nova Scotia government has also rebated the provincial portion of the Harmonized Sales Tax on residential energy usage. In 2023-2024, this program, called Your Energy Rebate, is forecast to provide $131.2 million in savings to more than 400,000 Nova Scotia households.

Other assistance programs available to residential electricity customers in Nova Scotia include the Heating Assistance Rebate Program (HARP), that helps low-and moderate-income Nova Scotians with the cost of home heating. Rebates for are $600 for each eligible household. Along with Nova Scotia Power, the Nova Scotia government contributes to the Home Energy Assistance Top-up (HEAT) Fund. Administered by the Salvation Army, the HEAT Fund provides one-time support for eligible applications of up to $400.

Despite this progress over the last decade, the Task Force believes there is more that can and should be done to support electricity consumers, especially those living on a low- and moderate-income.

With respect to a low-income electricity rate, the Task Force believes that establishing a low-income rate would have consequences for other rate classes and would shift costs to those ratepayers.

Because federal and provincial policy decisions are driving a climate change energy transition, governments have the ultimate responsibility to help Nova Scotians with the increased costs resulting from this transition.

As noted in the *Back to Bonbright* report:

“Ratepayers should not be expected to bear the financial burden of net zero alone. If the net zero policies of elected government are driving utility costs, some form of government funding assistance is warranted, which will also leverage Canada’s progressive taxation system to mitigate impacts on vulnerable populations.”

- Back to Bonbright, Utilis Consulting, May 2023

Because of the size, scale and cost to taxpayers of the nine Ontario programs, as well as existing Nova Scotia programs like Your Energy Rebate and those offered by Efficiency Nova Scotia, the Task Force believes that the more pressing need in the short term is from residential consumers on low or moderate incomes.

The Task Force is making the following recommendation:

- The Nova Scotia government should evaluate the Ontario subsidy programs, as highlighted by the Affordable Energy Coalition, and other programs to determine the best way to deliver a “Made in Nova Scotia” suite of programs to help residential electricity costs.

10 Conclusion

The Task Force submits this report to answer the questions posed by the Premier and Minister some nine months ago.

The Task Force has taken a principled, fact-based approach to its analysis and recommendations, which are anchored in independent subject matter specialist reports. By being fact-based and solution-focused, the Task Force report is aimed to better inform and guide necessary decisions as Nova Scotia continues its journey from transition to the transformation of our energy system.

In reading this report, it is important to bear in mind the results of the transformation of Nova Scotia's energy system. Changes to our energy system may be driven by government targets, but transformation is worth pursuing for the benefit of all Nova Scotians, regardless of government mandates. The energy system proposed by the Task Force, will not only facilitate meeting government targets, it can also improve the lives of Nova Scotian. The new energy system will be built upon cleaner, renewable energy resources to the province that are home grown, inexhaustible and significantly less expensive. Nova Scotia’s domestic renewable energy resources will ultimately mitigate the cost of electricity, improve affordability, and create a competitive advantage for our communities, businesses and industries.

The transformation of Nova Scotia’s energy system will not be simple. There are no quick or easy or solutions. It will take time, careful planning, and considerable investment in energy infrastructure to replace coal-fired generation, strengthen our ability to integrate renewable resources, and establish needed transmission upgrades. The cost of transition to transformation has been at the forefront of the Task Force’s considerations. The recommendations proposed are intended to create efficient operation and regulation of the Nova Scotia energy system to ensure costs are avoided while ensuring a comprehensive system approach to solutions.

The Task Force wants to thank Premier Houston and Minister Rushton for the opportunity to offer views on this important phase of energy transformation in our province. The work could not have been accomplished without the support of the numerous participants in this process. Many shared or directed the Task Force to significant expert reports submitted in various proceedings before the UARB since 2003, when Nova Scotia began its energy transition. The Task Force also appreciates the candor of those who contributed to this process in interviews and in written submissions.

11 References

Please note that UARB reference documents may be located at https://nsuarb.novascotia.ca through the listed Matter numbers.

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Decision: In the Matter of the Establishment of Performance Standards for NSP, relating to Power System Reliability, Adverse Weather Response and Customer Service (M07387, NSUARB), 2016

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NSPI Outage Report for February 3-5, 2023, cold weather event filed with the UARB (Exhibit N-3, M10987, NSUARB)

In the Matter of An Inquiry About Nova Scotia Power's Property and Assets Pursuant to section 30(5)(a) of the *Public Utilities Act* M11067, EA Technology Report (M11067, NSUARB), 2023

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In the Matter of NSPI's 2023-2024 General Rate Application (M10431, NSUARB): NS Power Decarbonization Deferral Account Stakeholder Consultation Report and Application (M11220, NSUARB), June 30, 2023

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Decision by the Nova Scotia Court of Appeal in the matter of Dalhousie Legal Aid Service versus Nova Scotia Power Inc. (2006 NSCA 74), June 2006

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12 Appendices

Appendix A

Meetings (in-person and virtual)

Affordable Energy Coalition
Alternative Resource Energy Authority
Build Nova Scotia
CAMPUT (Canada's Energy and Utility Regulators)
Canadian Manufacturers and Exporters – Nova Scotia
CKF Incorporated
Consumer Advocate – Pink Larkin
Council for Clean and Reliable Energy – Karen Taylor
Eastward Energy
Ecology Action Centre
Efficiency One
Emera
Energy Storage Canada
Peter Gurnham, K.C.
Larry Hughes, PhD
Kwilmu'kw Maw-klusuaqn
Neal Livingstone
Michelin
NetZero Atlantic
Nova Scotia Office of L'nu Affairs
Nova Scotia Power
Nova Scotia Utility and Review Board
Nova Scotia Utility and Review Board – Counsel William Mahody, K.C.
Oxford Frozen Foods/Bragg Group
Port Hawkesbury Paper
Small Business Advocate – Blackburn English
Stewart McKelvey – on behalf of the Industrial Group

Appendix B

Written Submissions

Johanna Aucoin-Slaunwhite
Rick Blennerhassett, P.Eng.
Timothy Boudreau
Doug Campbell
Canadian Renewable Energy Association – Jean Habel
Capstone – Geoff Osborne
Mark Chin-Yee
Raymond Cote
Jack Duffy
East Coast Environmental Law – Kostantina (Tina) Northrup
Eastward Energy – Kristen Wilcott
Ecology Action Centre – Katharine Turner
Energy Storage Canada – Robert Tremblay
Steven Enman-Beech
Judith Fingard
Craig Hubley
Investment Property Owners Association of Nova Scotia – Peter Polley/Kevin Russell
Anna Labarias
Sara Lipson
Lachlan MacDonald
Joan MacGillivray
Malta – David Martin
Charlene Morton
Jim Roycroft
Graham Smith
Yarmouth Environmental Think Tank – Virginia Smith

Appendix C

Stantec I – Nova Scotia IRP Transmission Independent Cold Eyes Planning Peer Review Report – October 10, 2023 (see www.cetaskforce.ca)

Appendix D

Stantec II – Nova Scotia Grid Hosting Capacity Analysis – January 11, 2024 (see www.cetaskforce.ca)