New Brunswick needs a clean electricity strategy

Presentation to Standing Committee on
Climate Change and Environmental Stewardship

Louise Comeau | Moe Qureshi
Conservation Council of New Brunswick
Feb. 15, 2023

Conservation Council *of* New Brunswick
Conseil de conservation *du* Nouveau-Brunswick

Overview

- Summary
- Introduction
- Context
- Risks
- Clean electricity plan
- Recommendations

Summary

- We need a clean electricity strategy as promised in 2022-2027 N.B. Climate Action Plan
- Cheapest, sustainable, and most reliable energy sources should be prioritized
- We need a portfolio approach to drive the energy strategy, not one-off decisions about small modular reactors (SMRs), hydrogen, biomass, or renewables
- The Standing Committee on Climate Change and Environmental Stewardship has a role to play in launching province's clean electricity strategy process

Context:

Electricity: safety, convenience, quality of life

- Feb. 4, 2023:
  - -40°C and no power in Louise's neighbourhood for 15 hours; Others affected even longer, NB Power reports 29,000+ customers without power
  - Louise house temp fell to 9°C/48°F
  - No water saved
  - Wood stove, but not capable of keeping whole house warm
- We need an electricity system capable of keeping us safe in extreme events and that doesn't generate the pollution causing the problem or make other pollution problems worse

Introduction

Section 68 (a, b, i, ii, iii) and (c) of the *Electricity Act*, it is declared to be the policy of the Government of New Brunswick:

(a) that the rates charged by the Corporation for sales of electricity within the Province

- (i) should be established on the basis of annually forecasted costs for the supply, transmission and distribution of the electricity, and
- (ii) should provide sufficient revenue to the Corporation to permit it to earn a just and reasonable return, in the context of the Corporation's objective to earn sufficient income to achieve a capital structure of at least 20% equity

Introduction

(b) that all the Corporation's sources and facilities for the supply, transmission and distribution of electricity within the Province should be managed and operated in a manner that is consistent with **reliable, safe and economically-sustainable service** and that will:

- (i) result in the most efficient supply, transmission and distribution of electricity,
- (ii) result in consumers in the Province having equitable access to a secure supply of electricity, and
- (iii) result in the lowest cost of service to consumers in the Province, and

(c) that, consistent with the policy objectives set out in paragraphs (a) and (b) and to the extent practicable, rates charged by the Corporation for sales of electricity within the Province shall be maintained as low as possible and changes in rates shall be stable and predictable from year to year.

We need solutions *now*

- Where are we on provincial climate plan commitments?
  - Clean electricity strategy based on guiding principles that support clean, reliable, efficient, and affordable electricity by 2025
  - Expert Advisory Body to develop a Net Zero Blueprint by 2025
  - Five-year interim greenhouse gas emissions reduction goals

- We need to prepare for federal climate plan commitments affecting provinces:
  - Clean Electricity Regulation: zero by 2035
  - Coal phase out by 2030
  - SMR/Hydrogen/Critical minerals strategies, strategic investment like Atlantic Loop

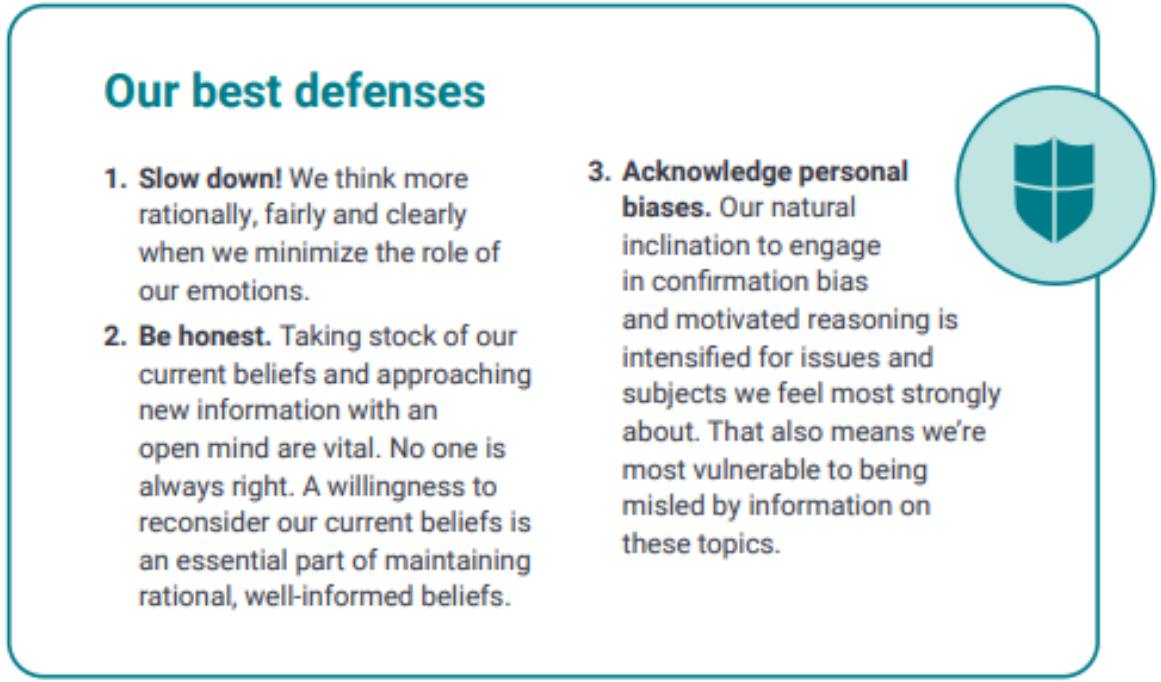
Risks:

N.B. decision-makers: confirmation bias, motivated reasoning

Source: https://newslit.org/wp-content/uploads/2022/07/InBrief-ConfirmationBiasMotivatedReasoning-FINAL.pdf

Risks:

N.B. decision-makers: confirmation bias, motivated reasoning



Our best defenses

1. **Slow down!** We think more rationally, fairly and clearly when we minimize the role of our emotions.
2. **Be honest.** Taking stock of our current beliefs and approaching new information with an open mind are vital. No one is always right. A willingness to reconsider our current beliefs is an essential part of maintaining rational, well-informed beliefs.
3. **Acknowledge personal biases.** Our natural inclination to engage in confirmation bias and motivated reasoning is intensified for issues and subjects we feel most strongly about. That also means we're most vulnerable to being misled by information on these topics.

Source: https://newslit.org/wp-content/uploads/2022/07/InBrief-ConfirmationBiasMotivatedReasoning-FINAL.pdf

Risks:

N.B. decision-makers: the dangers of hype and buzz

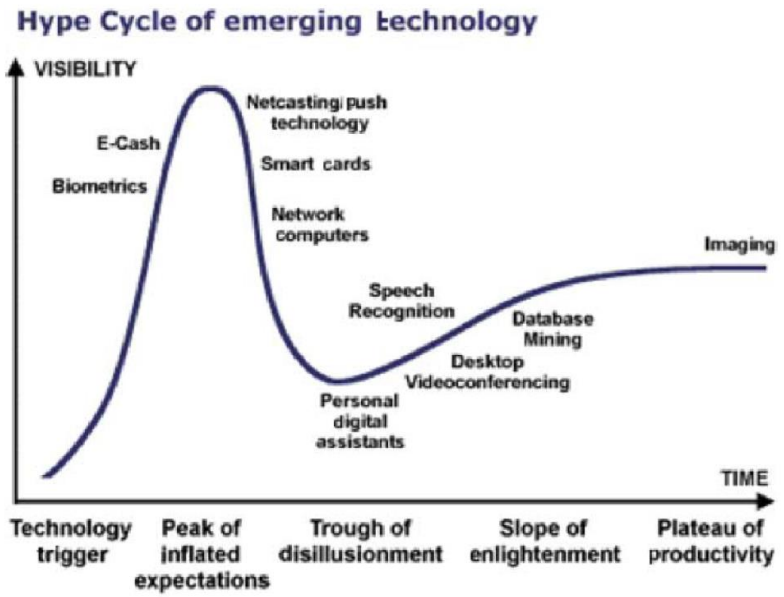


Figure 1. Outwitting the hype cycle.
Source: www.gartner.com.

Research Policy 50 (2021) 104262

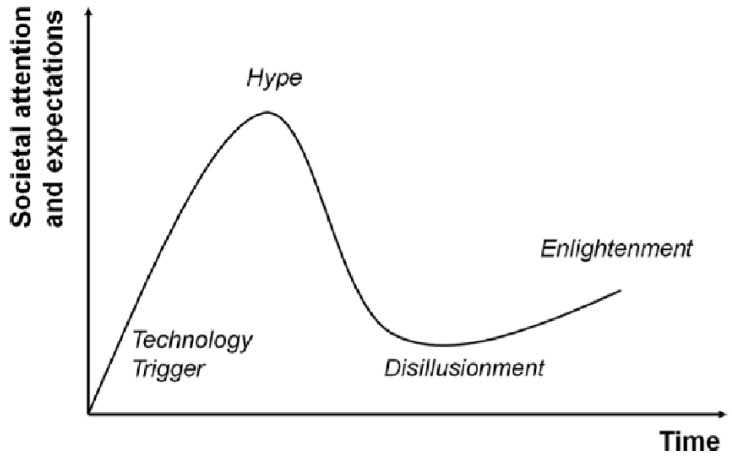


Fig. 1. The original notion of the hype cycle (developed by the Gartner consultancy group): Novel technologies tend to be overestimated when introduced, which leads to a high level of societal attention and inflated expectations (Hype). Because expectations do not translate into reality, a phase of disillusionment sets in. Over time, this disillusionment is overcome, and the technology reveals its true value and diffuses widely (Enlightenment).

Source: Harro van Lente (2012) Navigating foresight in a sea of expectations: lessons from the sociology of expectations, Technology Analysis & Strategic Management, 24:8, 769-782, DOI: 10.1080/09537325.2012.715478; Kriechbaum, M., Posch, A., Hauswiesner, A., (2021). Hype cycles during socio-technical transitions: The dynamics of collective expectations about renewable energy in Germany, *Research Policy*, Volume 50, Issue 9.

Risks:

Cost overruns are inevitable with SMRs

Nuclear consistently overruns on projects = **unreliable**

Institute for Energy Economics and Financial Analysis (IEEFA) in their February 2022 report said nuclear takes a **long time** to build, and SMRs will not be ready in time to help us reach our **critical 2030 deadlines.**

Renewable deliver on their promise = **reliable**

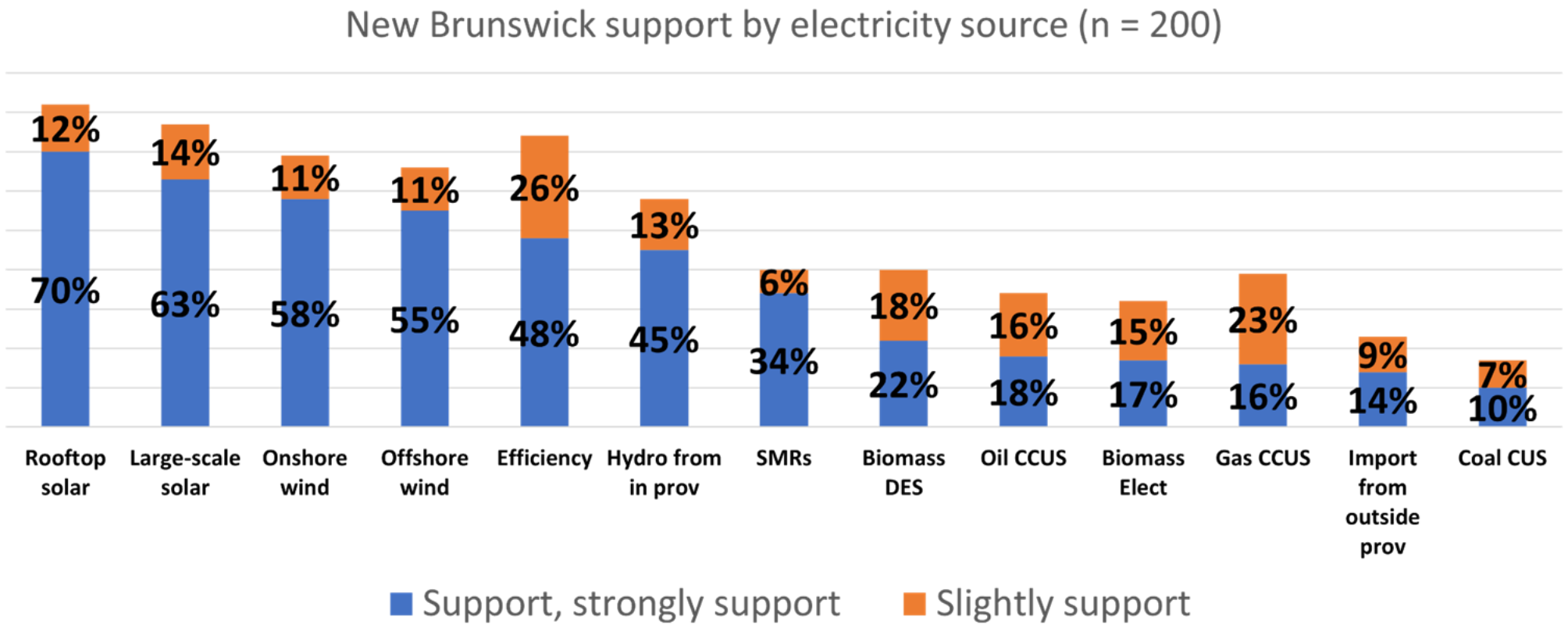
How Big Projects Performed

Source: Flyvbjerg Database

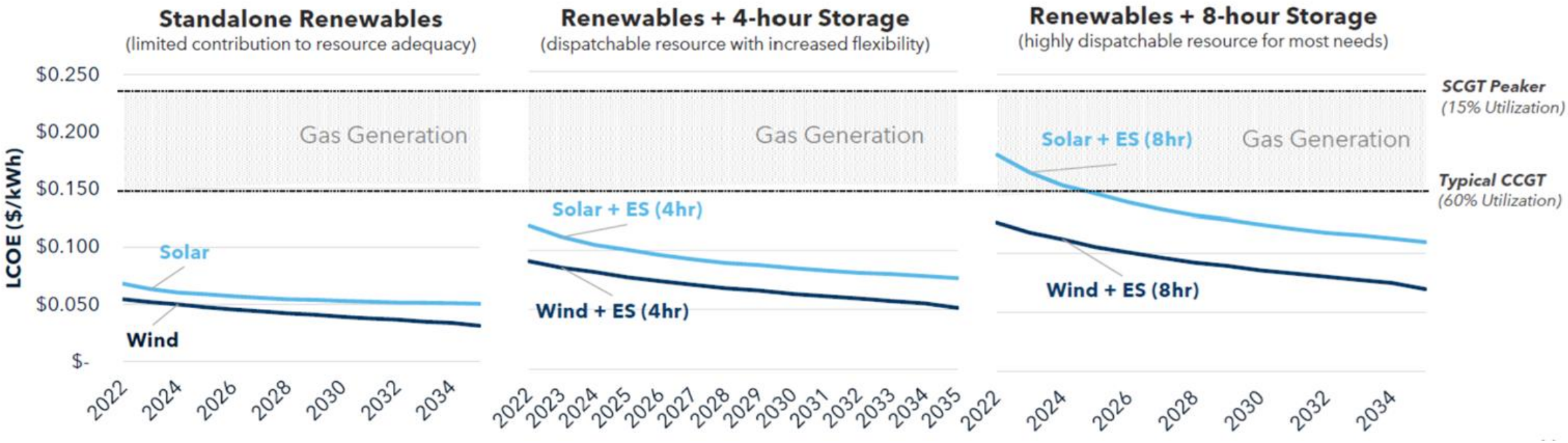
Project type	Mean cost overrun (%)	Projects (A) with ≥50% overruns (%)	Mean overruns of A projects (%)
Nuclear storage	238	48	427
Olympic Games	157	76	200
Nuclear power	120	55	204
Hydroelectric dams	75	37	186
IT	73	18	447
Nonhydroelectric dams	71	33	202
Oil and gas	34	19	121
Ports	32	17	183
Hospitals, health	29	13	167
Mining	27	17	129
Bridges	26	21	107
Water	20	13	124
Fossil thermal power	16	14	109
Roads	16	11	102
Pipelines	14	9	110
Wind power	13	7	97
Energy transmission	8	4	166
Solar power	1	2	50

Why can’t we give New Brunswickers what they want?

Utilities need to make decisions over the next few years about how to supply electricity to customers. Please indicate how strongly you support or oppose the following electricity supply options in your community or region.
https://www.conservationcouncil.ca/wp-content/uploads/2022/11/Electricity-Survey-Break-out-detail-CCNB-Nov-7.pdf



Solar and wind, coupled with battery storage, are already more profitable than electricity generated from gas—and are getting cheaper every year



Source: https://cleanenergycanada.org/wp-content/uploads/2023/01/RenewableCostForecasts_CleanEnergyCanada_Dunsky_2023_SlideDeck.pdf

Why pay more to generate less energy at a higher price?

The Pembina Institute published *Towards a Clean Atlantic Grid* (January 2022) where it analyzed and stated that clean energy technologies are reliable and affordable electricity generation in New Brunswick.

	Total cost ($ billion)	Capacity (MW)	Life Cycle cost of Energy ($/MWh)
Clean Energy Portfolio*	1.5	1,800	58
SMRs	2.4	300	120

*Clean Energy Portfolio includes: wind, solar, battery energy storage, demand response, energy efficiency

Point Lepreau: Overpromising and underperforming

- The Point Lepreau Nuclear Generating Station is a costly and unreliable source of electricity relative to NB Power's post-refurbishment expectations.
- The outcome is that NB Power has higher capital costs than budgeted, is burning more dirty and expensive fossil fuels than it should, paying more carbon tax than it needs to, and buying high-priced power on the open market to meet winter peak demands.
- We need to independently assess the non-nuclear and nuclear operations of Point Lepreau Generating Station based on actual experience, rather than NB Power capacity factor and outage projections.

Risks:

Rate increases higher than they should be

- NB Power proposed rate increase is 8.9% – significantly beyond expectations set out in the 2019 Ten-Year Plan of 1.75%
- NB Power attributes 47% of the proposed rate increase to increased fuel and purchased power costs
- Last year and this year present challenges. Despite global factors, the rate increase is at least partly due to NB Power being:
    - Over reliant on fossil fuels and unreliable nuclear increasing its carbon liability; and,
    - Under investing in renewable energy and energy efficiency.

Risks:

Rate increases worsen energy poverty

- NB Power's proposed rate increase constitutes a risk for low-to-moderate income households.
- A household is considered in energy poverty if after-tax income energy expenditures (household and transportation) are double the national average of 3% (e.g., 6%).
- Efficiency Nova Scotia's energy poverty tracking tool shows that for every one cent rate increase, the number of households experiencing energy poverty in that province increases 2-3%.
  - **The proposed 8.9% increase would mean an increase of energy poverty from 18-27%**
- Urgent need for reliable and affordable energy

Risks:

Rate increases worsen energy poverty

- The Canadian Urban Sustainability Practitioners (CUSP), an organization studying energy poverty, says there are 114,790 households in New Brunswick meeting the 6% energy expenditure threshold.
- Getting our electricity system decisions wrong puts our citizens at risk, especially if we don’t aggressively pursue energy efficiency
- Our job must be to minimize the social, environmental and cost impacts of our electricity decisions on those who can least afford it

We need a plan:

Elements of a comprehensive strategy

Clean electricity strategy that is:

- Comprehensive – covers all technologies, including renewable energy, storage, efficiency and interties
- Considers value of modern electricity system designed for flexibility and regional integration (e.g., in-province renewables and storage, linked to hydro batteries in Q.C., NFLD, and N.E.)
- Invests today to prepare for growth in electricity demand. In other words, does not pick one perceived winner and delays everything else on that risky bet (e.g., SMRs)

We need a plan:

Increasing energy efficiency

- Electrifying society means we will use more electricity. Power bills will rise, but as we move to EV transportation, household costs fall as people use less gasoline
- Supplying more electricity requires building more supply options. We need partnerships to ensure a fair share between taxpayer funded and ratepayer funded
- To keep families financially whole, energy efficiency can mute rate increases
- N.B. energy efficiency regulation requires an investment of 0.5% of retail sales for 2023/2024, rising to only 0.75% in 2029. Well below potential of at least 1.7% (Dunsky Energy Consulting, 2020).
- Dunsky said in 2020 that an $80-million annual investment could put N.B. on the path to achieving greater savings, which is a pathway to eliminating energy poverty

We need a plan:

Scenario modeling can map path forward

- The Ecology Action Centre, in collaboration with the Conservation Council, commissioned modeling by EnviroEconomics and Navius Research in 2022 to explore the implications of four net zero scenarios.
- The analysis shows that interties like the Atlantic Loop offer cost and pollution benefits, but that in-province supply is also competitive, and minimizes wealth transfer through imports.
- New Brunswick needs a portfolio approach:
    - In-province renewable energy supply and storage, as well as interties to enhance reliability and electricity trade.

Recommendations

- When it comes to energy security and affordability, we must pursue a portfolio approach:
  - Focus on cheaper, more scalable renewables such as wind and solar
  - Invest in battery storage to increase reliability

- A portfolio approach minimizes risks, challenges our confirmation bias and motivated reasoning

Recommendations

- We need energy democracy:
  - People should have a say in how they want their energy system to evolve
  - With growing demand, there is a need for, and opportunity to:
    - Include a mix of supply options covering utility-owned, industrial scale, but also community-owned, community scale, whether through municipal utilities, co-operatives

- Political interference with NB Power decision-making should be resisted:
  - Are SMRs in the public interest as per Section 68 of the *Electricity Act?*
  - We don't know if SMRs work, and the data shows it is a high-risk and low-reward investment compared to the other near-term options that are viable today

Recommendations

- We need less hype and buzz. Leave industrial strategy outside of NB Power.

- Need to invest in modernizing New Brunswick’s energy grid to a smart grid to save on emissions and boost the economy
  - 15 jobs are created for every $1-million investment, compared to only two jobs in the fossil fuel sector

Resources

- https://newslit.org/wp-content/uploads/2022/07/InBrief-ConfirmationBiasMotivatedReasoning-FINAL.pdf
- https://ieefa.org/resources/nuscales-small-modular-reactor
- https://www.enr.com/articles/55774-oxford-professors-latest-book-examines-roots-of-project-failure?s=03
- https://cleanenergycanada.org/wp-content/uploads/2023/01/RenewableCostForecasts_CleanEnergyCanada_Dunsky_2023_SlideDeck.pdf
- https://www.pembina.org/reports/towards-a-clean-atlantic-grid.pdf
- https://www.conservationcouncil.ca/smr
- https://www.conservationcouncil.ca/wp-content/uploads/2013/02/Conservation-Council-Climate-Action-Plan.Eng-CCNB-2016.pdf

Thank you

Contact us | Louise.Comeau@conservationcouncil.ca

Moe.Qureshi@conservationcouncil.ca

Conservation Council *of* New Brunswick
Conseil de conservation *du* Nouveau-Brunswick