

Atlantic Workshop

- One day event was held on November 12, 2019 in Fredericton.
- Hosted by EMI and UNB's Emera and NB Research Centre for Smart Grid Technologies.
- 59 participants registered in advance from six provinces, with another ~5-10 registered on day of workshop.
- Strong modelling participation from regional electric power utilities.
- Fewer policy people: issues with network or title of event?



Short Course on “Optimization Models for Island Power Systems with Renewable Sources”

- Hosted by UNB Power Centre,
- Held November 13, 2019. Had 32 registrants, mostly from regional utilities.
- November 14 & 15, 2019: Meetings with Barbados Light and Power and Emera on Decarbonization of Electric Power Systems in Barbados
- December 20, 2019: One day R&D workshop in Fredericton with NB Power & Siemens
- January 22, 2020: One day R&D workshop in Halifax with NB Power, NS Power & Siemens



Policy Maker & Utility Needs

1. Modelling inventory **platform** is needed for all parties to share results on achieving climate goals.
 - Federally collected data for New Brunswick did not capture the interconnections of NB with New England, Maine, Nova Scotia, PEI, Hydro Quebec. To overcome this problem, we need more cooperation from the utility companies for data sharing.
2. What are the **decarbonization pathways** that achieve national GHG reduction goals?
 - What are the **long lead time items** in decarbonization that need early investments? Should energy efficiency receive early investments?
3. What are the **costs** of energy system decarbonization?

Stakeholders Benefits / Value Propositions

Relationships are most important, e.g. among

- **utilities**, e.g. new **tools** and **data** for integrated resource plans required by boards and governments;
- **governments**, including federal, provincial, civic, indigenous, e.g. generally accepted **cost estimates** for intergovernmental transfers;
- **industries**, e.g. opportunities to collaborate in developing **transition plans** and investment decisions;
- **academia**, e.g. develop new models, train HQP, startups, multidisciplinary research;
- **others**, e.g. climate change networks.

What kinds of practical decisions can energy modelling address?

1. How can Canada set and meet energy system **climate change goals** and keep the lights on?
2. What new taxation policies are needed? If road maintenance is paid for by gasoline tax revenues, what happens with an EV transition?
3. What are benefits and costs of increasing regional (east-west line) **transmission capacity**?

What are the requirements for such an initiative to succeed?

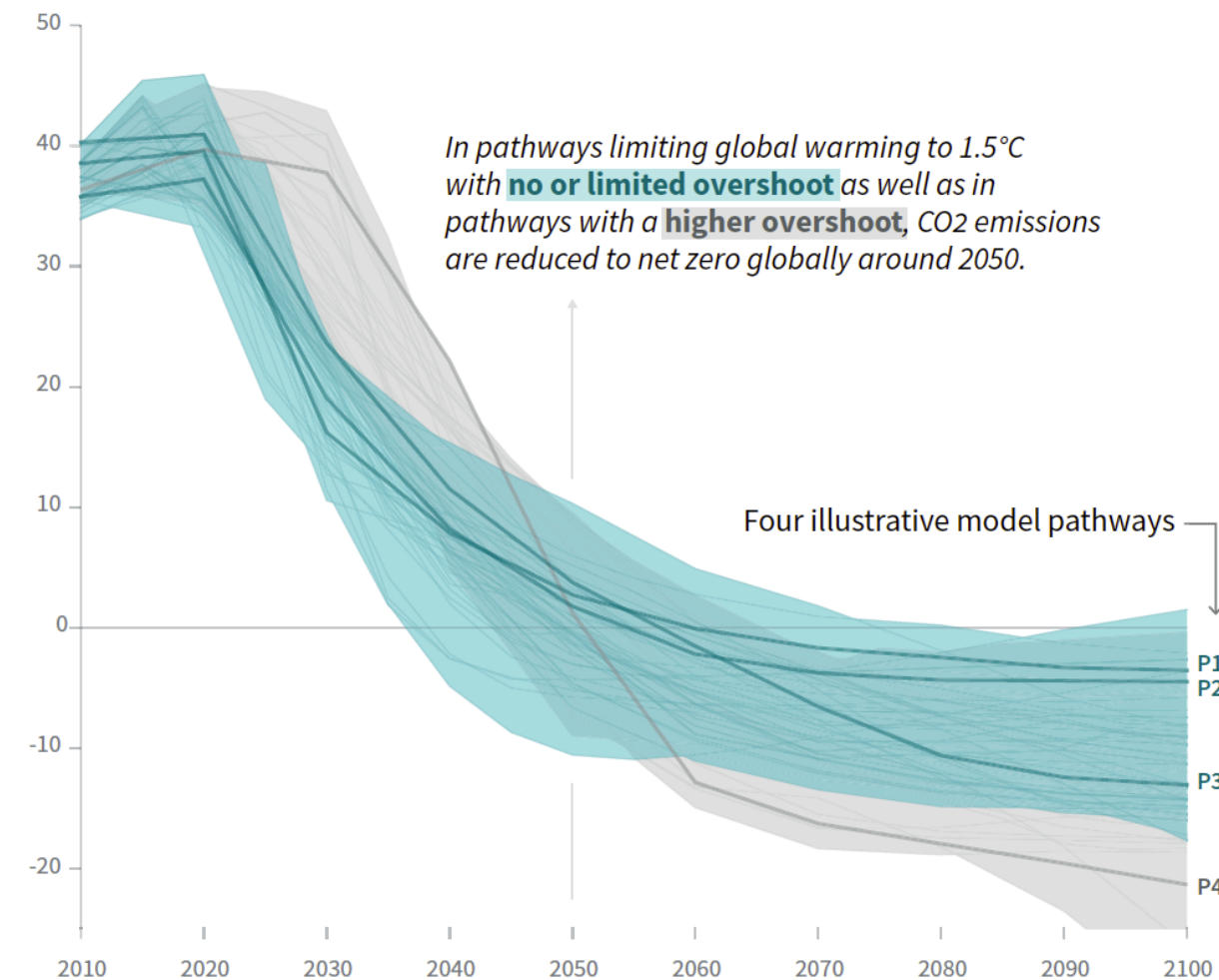
1. **Broad definition of “model”**: electronic power system transmission, distribution, asset management, cost, GHG emission, etc.
2. Need to communicate models to **different communities**, e.g. power system engineers, non-technical civil servants and politicians, public, etc.
3. **Shared platform** terms and conditions on: (i) parties to platform, (ii) contents of platform, (iii) rights and obligations of parties...6-12 months to draft...longer?
4. What are the **goals** for **deep decarbonization**, e.g. dates for GHG reductions?

Pathways Limiting Global Warming to 1.5°C

- In pathways limiting global warming to 1.5°C with no or limited overshoot, global CO₂ emissions are reduced to
 - about **1 to 2 tonnes per person by 2030**, and
 - **net zero around 2050**.

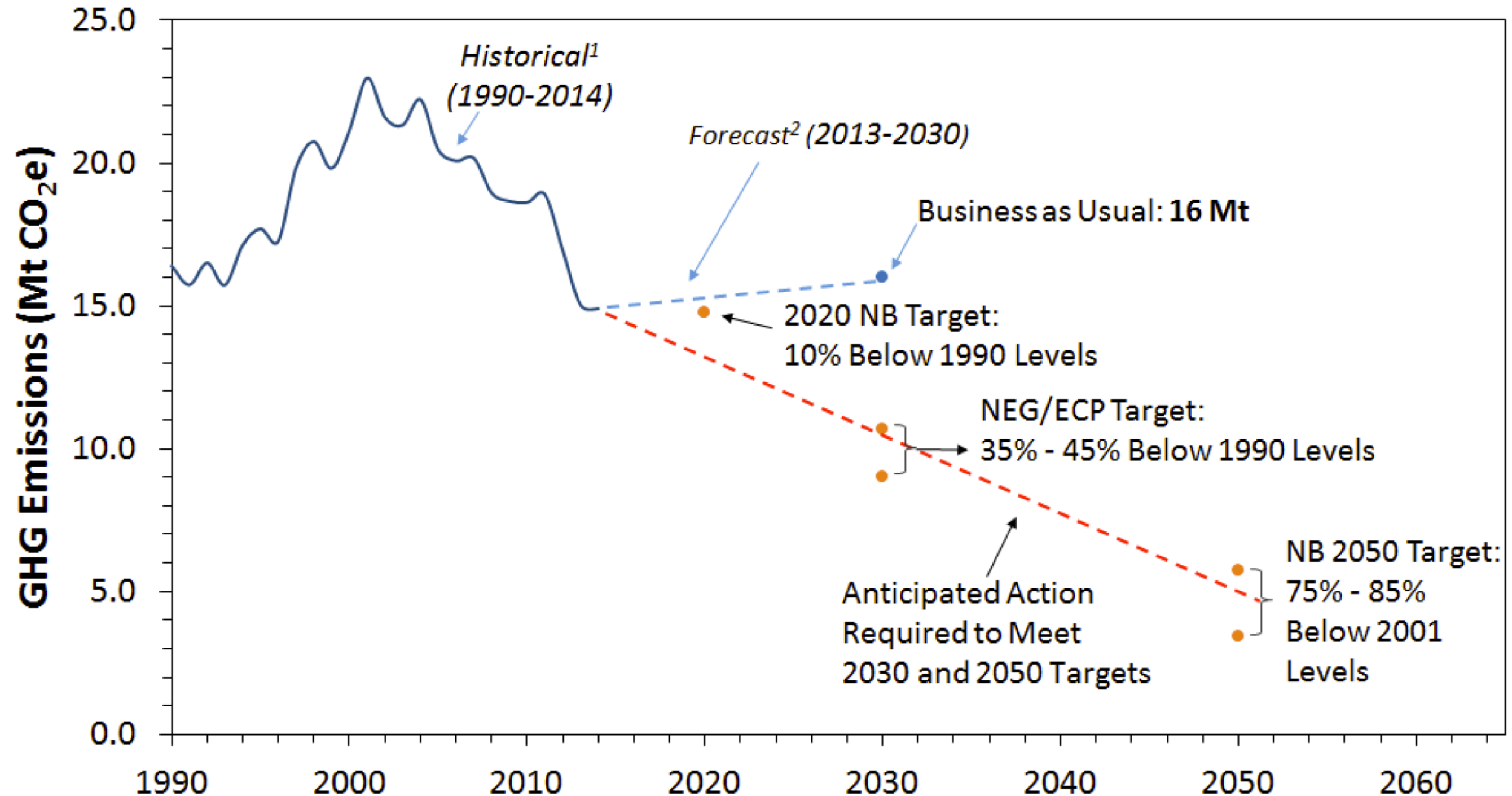
Global total net CO₂ emissions

Billion tonnes of CO₂/yr



IPCC, 2018: Summary for Policymakers. In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Pan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. In Press.

GHG Emission Trend for New Brunswick



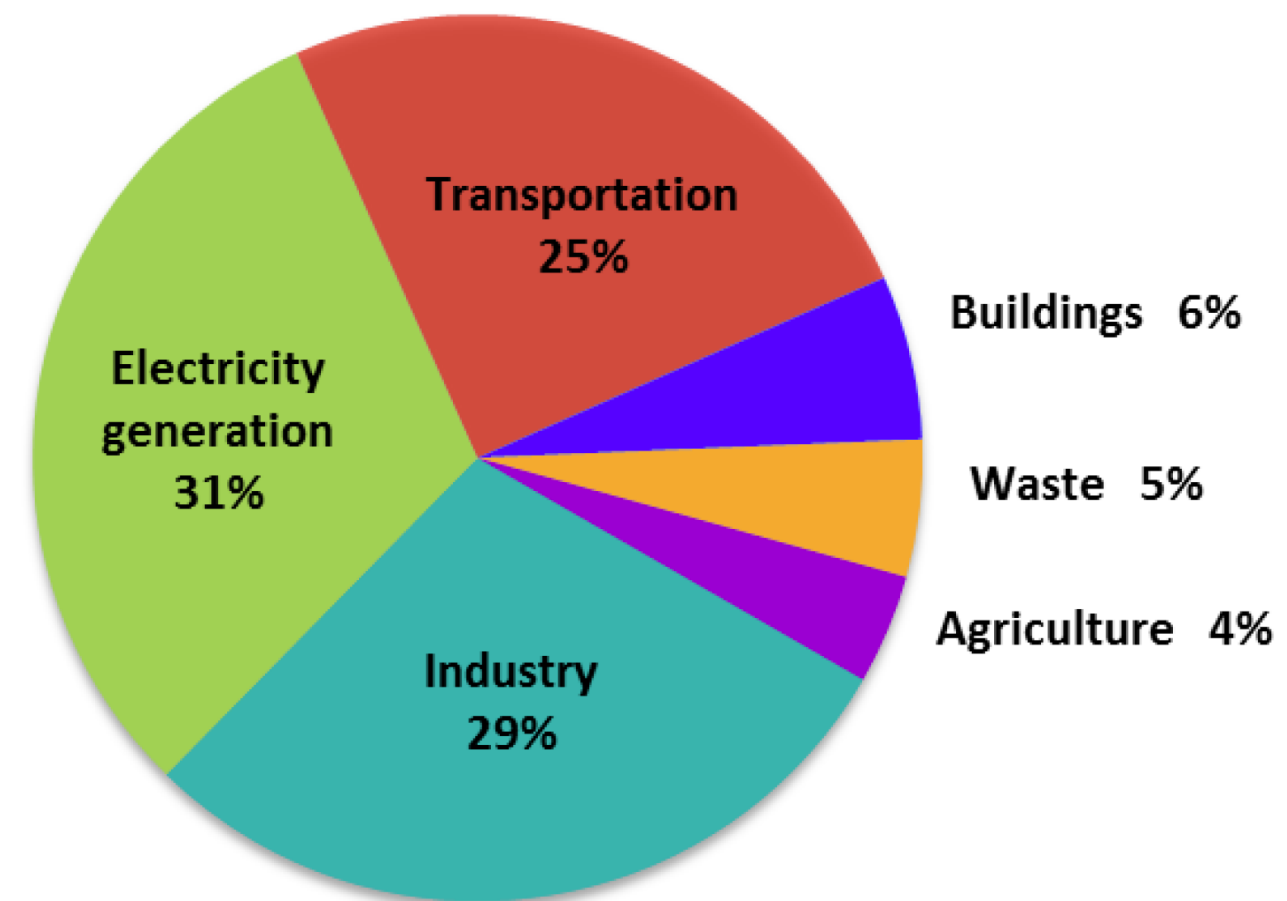
Source: Final Report of the Select Committee on Climate Change

Policy and Modelling Assumptions

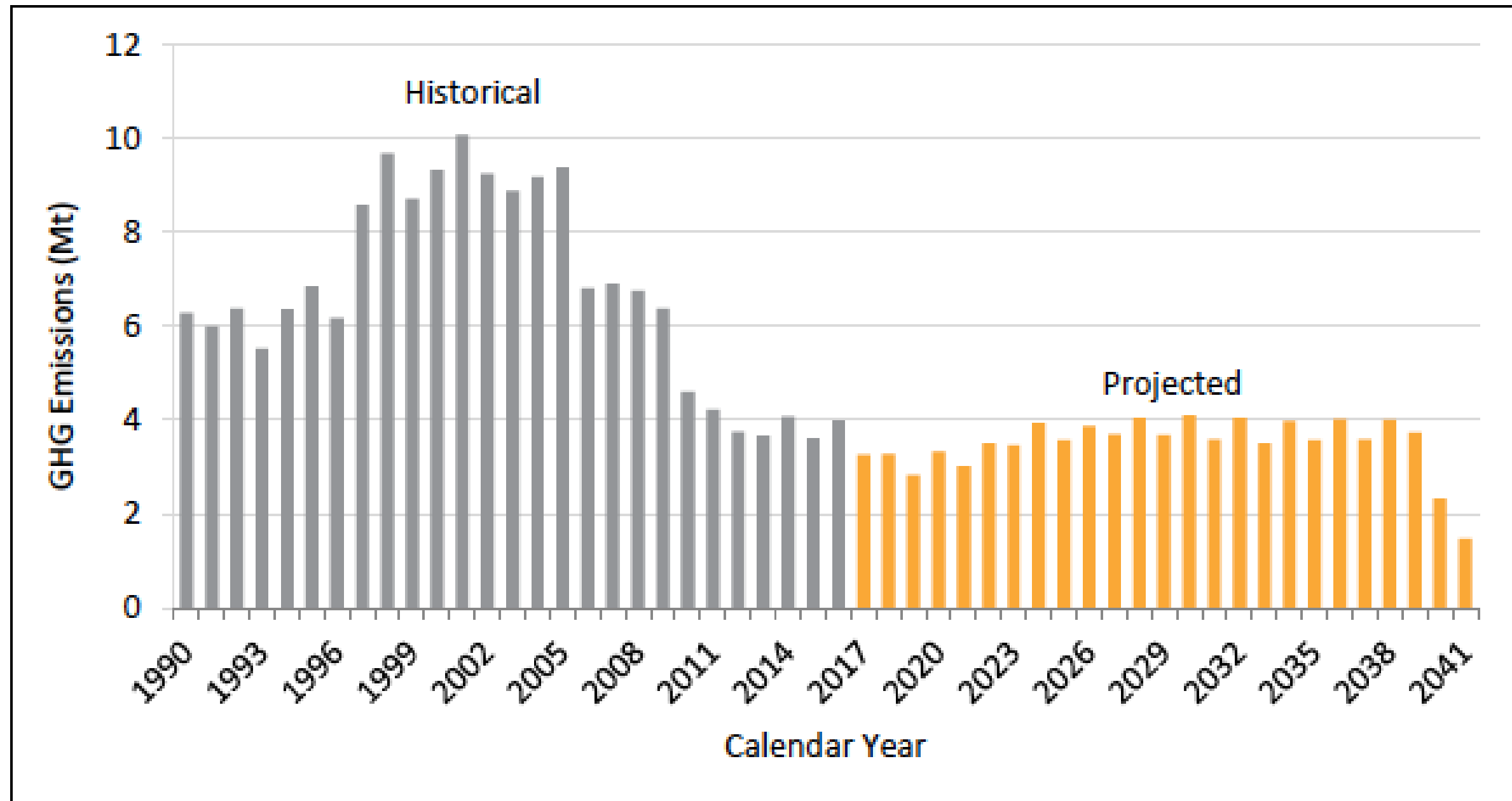
For the modelling exercise, presume New Brunswick has GHG emission reduction objectives of:

- 40% zero-emission personal automobile usage by 2040 and 80% by 2050;
- 80% net-zero energy buildings by 2050;
- 40% reduction in GHG emissions in waste, agricultural and industry sectors by 2030 and 80% reduction by 2050; and
- 80% reduction of GHG emissions in electricity generation by 2050.

**2014 New Brunswick
GHG Emissions**



NB Power In-Province GHG Emissions from the Integrated Plan



Source: NB Power's 2017 Integrated Resource Plan

Workshop Outcomes 2: Scope of the Proposed Initiative and the Modellers' Perspective

Present workshops outcomes concerning these questions:

1. What are the benefits, opportunities, challenges and prospects of the proposed EMI for modellers?
2. What components/requirements should be included in a shared platform for energy systems modelling in Canada?
3. How can a shared platform lead to synergies and encourage collaboration?
4. What should the relationship/fit between the shared platform and proposed initiative look like?

What are the prospects for modellers?

1. How should the results of modelling be presented for public presentation?
 - They should be presented through regular workshops, with participants from different sectors.
 - Teamwork amongst all levels of government and the utility companies is crucial.
2. What processes of consultation should modellers undertake to prepare reports for political decision making?
 - Modellers should build simple and user-friendly models to ease communication for policymakers.
 - They should use a common language that all stakeholders can understand.
 - They must determine each of the sector's specific outputs.
 - They need to use transparent and trustable data.

What should be included in a shared platform?

1. Modelling more **east-west transmission systems** should be a priority.
2. Modellers need to be incorporated by **federal and provincial governments**. Continuous cooperation between the policymakers and the modellers is crucial.
3. Modelling and policies need to be **industry specific**.

How can a shared platform lead to collaboration?

1. **Who are the parties to the platform?** Electric power, utilities, academia and consultants to start? What is there legal relationship? Is there a **Network Agreement** to create the shared platform?
2. **What does the platform contain?** What are the needs of policy makers? What are the corresponding needs of modellers for data? What are electric power utilities and others willing share?
3. **What are the rights and obligations of the parties to the platform?** What are the obligations to contribute data to the shared platform? What are the obligations for access and use of data? Is it open to all members, subject to sharing of results? Or must a modeller first have a project approved before getting access to data?

What is the relationship between the platform and initiative?

- Initiative **manages the network**, including the shared platform?
- How do policy makers and modellers decide on **calls for proposals and projects** to fund? Annual meetings for priority-setting and work-plans? Committees, by region, by industry, by topic (interconnections), other?
- New models should be developed by **working groups** comprising stakeholders from all sectors (electricity, transportation, processing and industrial), government, municipals, policymakers, and modellers.