PEMBINA institute

Improving energy data and analysis in Canada

Recommendations to the Standing Committee on Natural Resources

Nichole Dusyk and Benjamin Israël | June 15, 2018

On May 8th, 2018 the Pembina Institute appeared before the Standing Committee on Natural Resources to provide our assessment of the current state of energy data and to provide recommendations for drastically improving energy data and analysis in Canada. As part of our recommendations, we advocated for the creation of an independent energy information agency as well as increased data collection and harmonization responsibilities at Statistics Canada. This submission is in response to the Committee's request for follow-up information highlighting steps that could be taken immediately to improve practices and begin the necessary institutional reform.

Global energy systems have entered into a fast-paced transition. The imperative to reduce carbon emissions, downward shifts in the cost of renewables, new and disruptive technologies such as electric vehicles, changing demographics and consumption patterns are all introducing new dynamics into our energy systems. Responding to the rapid pace of change in energy markets and technologies requires accurate, timely, and independent energy data and analysis. Robust, reliable and accessible energy information enables industry, the public, non-governmental organizations, researchers, governments and regulators to make informed decisions and policy – and advance the new economy. Moreover, open data approaches provide economic, social, and performance benefits that can support sound decision-making, create efficiences, and catalize economic development.[1]

There is agreement that state of energy and energy-related[2] data in Canada is sub-optimal. Energy data is scattered between the National Energy Board (NEB), Natural Resources Canada (NRCan), Statistics Canada, Environment and Climate Change Canada (ECCC), Transport Canada, the Transportation Safety Board, and many provincial agencies. This further exacerbates issues with the completeness, consistency, and usability of data. Datasets are not harmonized in terms of content (timing, assumptions, granularity, definitions) and format (units, file type), and significant discrepancies can often be found within or across datasets.

[1] The European Data Portal. The Economic Benefits of Open Data (2018) (https://www.europeandataportal.eu/en/highlights/economic-benefits-open-data)

[2] In this document 'energy-related data' refers to data that goes beyond energy supply and demand information such as data relative to energy transportation (e.g., pipelines) and energy combustion (e.g., associated greenhouse gas and criteria air contaminants emissions).

There are also significant gaps in key data sets, and many energy reports take too long to be published.

Our research on the NEB has also highlighted the pitfalls of data and analysis that is not sufficiently independent.[3] The NEB is responsible for modelling supply and demand energy forecasts through its publication, Canada's Energy Future, with the modelling relying on Energy 2020, a non-transparent tool developed by a U.S. company. The fact that the responsibility for energy data and modelling is housed within the regulator leads to perceptions of bias among some stakeholders. The expert panel on NEB modernization noted this problem and called for better and more accessible information about energy to inform policy-makers, industry, and other stakeholders (including on energy production, use, trends, and challenges), as well as the production of new energy market analyses that consider domestic and international action on climate change.[4]

There is an urgent need to establish a single portal for reliable public energy data in Canada. Creating a separate agency with a mandate solely focused on energy information can alleviate concerns about the integrity of data and analysis while also allowing the new agency to focus on emerging data and analysis needs in the context of transitioning energy systems and on pursuing a broader public education mandate. A new agency is also an opportunity to proactively create policies and protocols to ensure that world-leading standards for privacy and data security are maintained.

A new agency designed around seven principles

The new agency should be designed to reflect the following principles:

1. Independence: The agency should be independent of policy and regulatory functions and from industry influence. Independence should be mandated in legislation and considered in funding models.

2. Collaboration: The agency must form partnerships and work in collaboration with data providers and users to ensure that complete, relevant, granular data is available in a timely manner.

3. Transparency: Methodologies, assumptions, and definitions must be documented and easily accessible. Models should be open to allow peer review and analysis of the underlying data and assumptions.

[3] Pembina Institute, *Good governance in the era of low carbon*, 2017. http://www.pembina.org/pub/good-governance-era-of-low-carbon

[4] Expert Panel Report

4. Accessiblity: Data should be free of charge and available to all Canadians. Data sets should be granular and in formats that can be manipulated (e.g., spreadsheets). Key reports and statistics should be made available to the public in plain language with clear linkages to the underlying methodologies and data sets.

5. Rigour and continuous improvement: Statistical analysis and modeling must be of the highest caliber and the agency should adopt a model of continuous improvement. Coherence within and across datasets should be ensured through solid quality assurance and quality control.

6. Privacy and Data Security: The agency should develop and adhere to world-leading standards to ensure privacy, data security, and the confidentiality of proprietary data is maintained.

7. Public Interest and Education: The agency should have a mandate to uphold the public interest and to proactively support energy literacy in Canada.

Considerations: designing the new energy agency

We recommend that the new energy information agency be housed within Natural Resources Canada. The independence of the agency should be established by specifying, in legislation, that the agency does not require review or approval of its statistics or forecasting by any government entity. The new energy information agency should have the mandate to:

- Report quarterly on energy supply, demand, sources and downstream consumption, including international and interprovincial energy import and export.
- Produce an annual scenario for energy supply and demand and greenhouse gas (GHG) emissions, including a Reference Case that assumes increasingly stringent domestic and international action on climate change to limit global warming in line with the Paris Agreement.
- Manage a portal/one-stop-shop platform to disseminate all energy data and analysis. The portal should serve as a central exchange and collaborative platform where users can input data and provide feedback on the quality and limitations of data. [5]
- Make all data, including that supporting the above reports, available to the public at no cost in easy-to-use formats (such as spreadsheets) and in a timely manner.
- Participate in project assessments, strategic and regional assessments, and regulatory impact analysis statements to advise on energy and GHG emissions modelling.
- Conduct proactive energy education geared toward a public, non-technical audience.

[5] See recommendations from the OECD, Government at a Glance (2017) (https://read.oecd-ilibrary.org/governance/government-at-a-glance-2017_gov_glance-2017-en#page194).

- Advise government ministries and agencies on energy matters upon request.

Rationale for a Reference Case reflecting our climate commitment

- Data currently produced by the NEB is widely used for energy policy development and planning across the country, and it should reflect global action to combat climate change.
- We believe there is reasonable certainty that domestic and global mid-century goals on climate will be achieved, and therefore that the Government of Canada has sufficient justification to include these scenarios in its modelling. Having Canada's supply and demand Reference Case out of step with this reality provides decision-makers with inaccurate predictions and is likely to lead to flawed decision-making.
- The NEB's existing forecasts do not consider scenarios in which Canada and the world take progressively more stringent action to limit GHG emissions, in alignment with the successful implementation of the Paris Agreement. While we recognize the NEB has taken steps to incorporate recent domestic climate policy commitments, more should be done to ensure its longer-term scenarios consider the implications of mid-century climate goals (for example, as articulated in Canada's Mid-Century Long-Term Low GHG Strategy) on domestic and global supply and demand for fossil fuels.

Considerations to enhance Statistics Canada's role

We envision the new Canadian energy information agency relying on Statistics Canada for the collection and harmonization of energy data. This is consistent with the mandate of Statistics Canada and makes use of its already existing data collection capacity, expertise, and relationships with provincial governments. Statistics Canada will require commensurate resources to:

- Collect energy-related information from all relevant agencies, government departments and industry, perform solid quality assurance and resolve inconsistencies including data on oil and gas, renewables, and electricity developments, as well as associated emissions.
- It is acceptable that government entities continue to collect and publish their own energy data, however, Statistics Canada should harmonize and aggregate that data into a coordinated interface (housed at the new agency). For instance:
    - ECCC should retain the responsibility for collecting GHG data as well as information pertaining to the release of other pollutants associated with energy activities (e.g., criteria air contaminants [CAC], heavy metals). Protocols on accounting and reporting such emissions are rigid, and the ministry with this responsibility should manage this data.

- The NEB (or the new Canadian Energy Regulator) should retain the responsibility for collecting pipeline safety and monitoring data for the pipelines it regulates, as it will continue to hold the mandate on pipeline safety and engineering.

Recommendations to initiate reform

1. Natural Resources Canada and Statistics Canada should initiate an independent expert working group to identify priorities and capabilities of a new online portal (housed with NRCan but with Statistics Canada as the primary source of data).
2. Working across federal departments and agencies, with the provinces and territories, with industry, and the research community, Statistics Canada should initiate the centralization and harmonization of data collection. This includes determining and securing the additional capacity and resources required to perform these duties.
3. Statistics Canada should undertake an assessment to determine pathways to improve quality assurance and to expand the range of energy data collected.
4. Natural Resources Canada should create a business case for establishing a new agency. Such a business case should articulate the value of reliable, complete and granular data sets to develop the new economy and quantify its positive impact on Canada's economy as a whole.

Conclusion

As a result of global actions to limit climate warming, energy systems around the world are in the midst of a rapid transition. Reforming Canada's energy data system is a crucial step toward ensuring that Canada keeps pace with and leads the new low-carbon economy. We are encouraged by the government's intention to seize this opportunity and look forward to the committee's recommendations.

This briefing note benefited from the review and the input from:

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Appendix: Energy data management: the U.S. case

Comparatively to Canada where the mandate for the NEB is housed under one body, in the United States it is spread across multiple agencies in:

- The Federal Energy Regulatory Commission (FERC) regulates the interstate transmission and sales of electricity, natural gas and oil and monitors and investigates energy markets.
- Notably, FERC "trial staff" participate in the administrative litigation process as an "impartial representative of the public interest," drawing on the commission's core competencies and knowledge.
- The Pipeline and Hazardous Material Safety Administration (PHMSA) regulates the safe transportation of materials by pipeline.
- The Energy Information Administration (EIA)[6] is an agency of the U.S. Federal Statistical System (a network of agencies that fulfill a mandate similar to that of Statistics Canada) which reports to the U.S. Department of Energy.
- The EIA is considered the "gold standard" for energy data centres globally and could serve as a reference point in the design of the new agency.
- The EIA collects and publishes comprehensive energy data relating to energy sources, end uses and energy flows. It produces long- and short-term energy outlooks (the latter of which are updated monthly) in line with existing legislation. It also produces energy information geared toward a non-technical audience.
- The EIA also collects and publishes comprehensive energy data on downstream consumption, for example: electricity sales, revenue and prices; energy use in buildings; grid reliability.
- The U.S. Public Law 95-91, which establishes the Department of Energy, also establishes the EIA under Section 205.[7] This law ensures the independence of the EIA by clarifying that the EIA does not need the review or approval of its statistics or forecasting by any other government entity. This law could be consulted in the design of an energy agency in Canada.

[6] U.S. Energy Information Administration, Homepage. https://www.eia.gov/

[7] United States Government, Public Law 95-91 – Aug. 4, 1977. https://www.gpo.gov/fdsys/pkg/STATUTE-91/pdf/STATUTE-91-Pg565.pdf