

ENERGY DATA IN CANADA

WHAT OPTIONS TO IMPROVE DATA ACCESS AND AVAILABILITY
TO SUPPORT THE ENERGY TRANSITION?

Summary of a workshop held on September 28, 29 and 30, 2021

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NOTE

The observations and conclusions put forward by the authors of this report are based on the highlights of discussions among participants during roundtables and do not necessarily reflect the opinions of Quebec's Ministère de l'Énergie et des Ressources naturelles or Statistics Canada.

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Executive summary

Achieving the target of net zero emissions by 2050 requires profound changes to energy systems—from production to consumption (e.g., transport, buildings, industries and agriculture). Identifying and implementing actions to achieve this goal requires various actors to have objective, detailed and transparent information on these systems. However, it is difficult to access some of the data required to carry out analyses that support decision-making, particularly for provincial governments, whose jurisdiction includes energy. This lack of access to data is a barrier to innovation and effective coordination of actions to accelerate the energy transition. As a result, there is an urgent need to review the approach to energy data in Canada.

This report summarizes the main findings and courses of action from the workshop *Energy Data in Canada: What are the options to improve data access and availability to support the energy transition?* Held on September 28, 29 and 30, 2021. The event was organized by the Chair of Energy Sector Management at HEC Montréal in collaboration with Quebec's Ministère de l'Énergie et des Ressources naturelles and Statistics Canada. Its purpose was to initiate a dialogue on actions to undertake to improve the Canadian approach to accessing energy data with a view to improving information-sharing and decision-making on the energy transition and decarbonization of the economy.

The workshop, which brought together about 40 experts from various sectors and decision-making levels (see list in Appendix 1), was an opportunity to develop a range of potential actions to (1) address the issues behind the levels of dissatisfaction with the supply of energy data in Canada; (2) identify the key energy data needs in the context of the energy transition; (3) propose priority actions to limit data suppression and facilitate disclosure; and (4) propose options for improving cooperation and involvement of stakeholders in a reform process, with views expressed about the Canadian Centre for Energy Information (CCEI).

Energy data at the provincial level collected by Statistics Canada are not disclosed for confidentiality reasons. This is often to protect information that may be sensitive from a competition standpoint for responding industries and in the absence of written consent from a data provider waiving its right to confidentiality under the *Statistics Act*.¹ To protect the confidentiality of the information, Statistics Canada developed rules to suppress data deemed sensitive. When these rules are applied, various provincial data on petroleum products end up being suppressed. These rules can change without warning and follow a methodology that itself is confidential. This suppression limits monitoring of the sector, understanding of the market and, therefore, the ability to make informed decisions on the measures, regulations, investments and research projects in order to accelerate the deployment of the energy transition.

For the purposes of the workshop, we considered two main challenges related to the supply of energy data in Canada: (1) **data availability**, which refers to data being readily available, as well as information on the procedures and tools for managing, updating and making these data available; and (2) **limited access to data**, which refers to a user's ability to access data to conduct useful analyses. Much of the data at the provincial level collected by Statistics Canada and other public agencies are suppressed for confidentiality reasons, which limits public access and the ability to conduct transparent, informed analyses related to the implementation of the energy transition.

¹ *Statistics Act*, R.S.C. 1985, c. S-19 (as of May 19, 2022), Government of Canada, <https://laws.justice.gc.ca/eng/acts/s-19/FullText.html>

The main findings and courses of action presented below reflect the issues, reforms, obstacles and opportunities raised in the four virtual round tables held.

Importance of data to accelerate the energy transition

More than 90% of participants placed “high” importance on access to reliable, transparent and relevant energy data at the provincial and sectoral levels to accelerate the implementation of actions and improve decision-making on the energy transition. There were four main findings:

- 1. Broader access to data is essential to develop an overview of the energy system** to assess the potential, effectiveness and monitoring of measures and policies to achieve the objectives related to the energy transition and decarbonizing the economy.
- 2. Access to data is needed to expedite innovation in the development of markets and to advances science** through the transfer of knowledge based on the analyses of reliable, credible and transparent data.
- 3. The availability of disaggregated data is necessary to accelerate the energy transition,** as it fosters informed decision-making and ensures consistent actions by the various sectors and governments.
- 4. Social acceptability and mobilization of public opinion in favour of the energy transition depend on the availability and transparency of data,** as they ensure the credibility of policies and measures with the public.

Satisfaction with the state of energy data in Canada

Most participants expressed low-level or no satisfaction with the current state of energy data at the Canadian and provincial levels. Three main findings emerged from the discussions:

- 5. The suppression of energy data at the provincial level is recognized as the main source of dissatisfaction** with the current state of energy data in Canada.
- 6. The current level of granularity of energy information is inadequate,** as it is insufficient to understand provincial energy flows, and therefore insufficient for transparent, informed and justifiable decision-making at that geographic level.
- 7. Many inconsistencies affect the quality of energy data,** such as differences in the level of standardization of information between different official sources (e.g., Statistics Canada, NRCan, Canada Energy Regulator, provincial databases) and data availability by energy sources (e.g., oil, electricity) and their end uses (e.g., industry, transportation). These obstacles limit a common, integrated understanding of provincial energy systems.

Priority in energy data needs in Canada

Participants identified gaps in Canadian energy data that need to be filled urgently to support the energy transition and decarbonization of the economy. Summary tables (see tables 1 and 2) offer a starting point for identifying priority in data requirements. However, formal consultation mechanisms should be put in place by the Government of Canada to build a more complete list of data to collect. From the discussions, two priority courses of action were identified:

- 8. Collect more data on transportation, industries and buildings** at the provincial level, as well as the different energy sources.
- 9. Ensure data are available at a sufficient level of disaggregation (regional, temporal and by subsector)**, including on energy sources, so that various actors (e.g., businesses, researchers, citizens) and markets align their decisions and actions with the energy transition.

Priority actions to limit data suppression and promote data disclosure

With respect to Statistics Canada's objectives, participants proposed actions that the federal government could take to limit data suppression and promote their disclosure to accelerate the energy transition. The discussions focused on four types of reforms: 1) legislative, by modernizing legislation, including the *Statistics Act*; 2) normative, by adopting a standardized approach to data suppression and disclosure; 3) administrative, by optimizing data management; and 4) educational, through better communication and awareness among decision-makers about data needs for a successful transition. Two main courses of actions were identified:

- 10. Review the concept of "confidentiality" and modernize the legal framework of the *Statistics Act* that accounts for a balance focused on the public interest in the context of the climate crisis and the energy transition** and to limit the extent of potential competitive harm.
- 11. Plan normative actions** (adopting a standardized approach to data suppression and disclosure), **administrative actions** (optimizing data management) and **educational actions** (improving communication and awareness among decision-makers about data gaps and requirements).

Options for improving stakeholder cooperation and engagement

In terms of stakeholder cooperation to improve the supply of energy data in Canada, many participants stated that processes should be more inclusive, transparent and structured to factor in the different expertise and requirements, from both data providers and users. Two main courses of actions were identified:

- 12. Make existing processes more transparent and inclusive by creating sector-based tables or committees** that would include stakeholders from the academic, private, government and community sectors.
- 13. Hold periodic consultations to provide an update on the situation and needs for energy data in the context of the energy transition.** To do this, the government could legislate a mandatory review and stakeholder consultation cycle in the process of developing and updating surveys.

Perspectives on the Canadian Centre for Energy Information (CCEI)

With the Canadian Centre for Energy Information (CCEI), the government is working to improve access to and the quality of energy data in Canada. Overall, few workshop participants were familiar with the CCEI. Of those who were, few had used it in their work. The CCEI is mostly seen as a catalogue portal of hyperlinks to existing resources at different government agencies. The CCEI has a potential for improvement but may be limited by a lack of resources (financial and human) and by the legal, organizational and administrative framework in which it must operate. Many agreed that the decision-making process at the CCEI is not very transparent and inclusive, despite the creation of an External Advisory Committee. To ensure ongoing improvement, it was proposed that the federal government establish a transparent evaluation process independent of Statistics Canada.

One finding and two courses of action were identified:

- 14. There is a lack of public knowledge about the CCEI and it's perceived as having little added value** for improving energy data availability and quality.
- 15. The Federal Government should rely on Canada's climate commitments to strengthen the scope of the CCEI** and improve data quality.
- 16. There is a need to improve the transparency of the CCEI's decision-making process.**

These findings and actions on energy data in Canada are the most significant, in our opinion. Nuances and clarifications are provided in the rest of the report.

Table of contents

Contents

- Executive summary 1
- Introduction..... 1
- Scoping Conference 4
 - Part 1 | Overview of energy data 4
 - Part 2 | Benchmarking of energy data access and availability practices..... 7
- Outcomes of the round tables 11
 - Importance of energy data 11
 - Satisfaction with the state of energy data 12
 - Priority energy data needs 14
 - Priority actions to limit data suppression..... 17
 - Options for improving stakeholder cooperation and engagement 20
 - Perspectives on the Canadian Centre for Energy Information 21
- Conclusion..... 22
- Appendix 1 | List of round table participants 23

Introduction

A workshop entitled *Energy Data in Canada: What options to improve data access and availability to support the energy transition?* was held on September 28, 29 and 30, 2021. It was organized by HEC Montréal's Chair in Energy Sector Management, in collaboration with Quebec's Ministère de l'Énergie et des Ressources naturelles and Statistics Canada.² The event aimed to initiate a dialogue on actions needed to improve transparency, accessibility and availability of energy data in Canada.

These issues were analyzed from the perspectives of various actors, including both data providers and users, to identify courses of action to modernize Canada's approach to energy data to improve decision-making to accelerate the energy transition and the decarbonization of the economy. More specifically, the workshop sought to (1) identify the importance and satisfaction with the state of data energy in the context of the energy transition; (2) identify priority data energy needs in Canada; (3) identify the key actions to overcome the challenges; and (4) propose options to improve collaboration between stakeholders, with opinions on the usefulness of the Canadian Centre for Energy Information.

This workshop aligns with the efforts underway at Statistics Canada to review its approach to energy data, primarily through the Canadian Centre for Energy Information (CCEI),³ a one-stop web platform for energy data disseminated across various federal agencies. More recently, at a conference on February 23 and 24, 2022,⁴ the federal agency began a broader dialogue on the valuation and interpretation of data in all sectors to "serve Canadians." The event was not open to the public; it was exclusively for federal public service employees.

The workshop is also part of Québec's *Energy Transition, Innovation and Efficiency Master Plan*, which recognizes that adopting a more transparent, collaborative and open approach to accessing energy data is essential to achieving the government targets outlined in the *2030 Plan for a Green Economy*,⁵ including a 40% reduction in the consumption of petroleum products, a 15% improvement in energy efficiency and a 50% increase in bioenergy production by 2030⁶ compared with 2013 levels. By 2030, the vision of the Master Plan is to ensure that knowledge and data sharing "guide the government's priorities and actions to meet its targets," emphasize citizen participation and foster market innovation.⁷

The *Constitution Act, 1982* gives the provinces sole jurisdiction over the management of energy resources,⁸ while the *Statistics Act* gives Statistics Canada and other federal bodies (e.g., Natural Resources Canada and its Office of Energy Efficiency) sole responsibility for the collection and compilation of energy data.⁹ The data suppression rules applied by Statistics Canada, which are meant to preserve the confidentiality of responding industries due to competitive sensitivities, are designed at the federal level. These rules can change without warning and

² See the workshop program: <https://energie.hec.ca/events/28sept2021/>

³ Statistics Canada, 2022. Canadian Centre for Energy Information, website consulted on May 18, 2022, <https://energy-information.canada.ca/en>

⁴ Statistics Canada, 2022. Data Conference 2022 – Driving data value and insights for all Canadians, https://wiki.gccollab.ca/Data_Conference_2022_Agenda#Artificial_Intelligence-driven_service_delivery_for_Canadians.

⁵ Government of Quebec, 2020. *2030 Plan for a Green Economy – Electrification and climate change policy framework*, <https://www.quebec.ca/en/government/policies-orientations/plan-green-economy>

⁶ Government of Quebec, 2022. *Plan directeur en transition, innovation et efficacité énergétique – mise à niveau 2026*, <https://transitionenergetique.gouv.qc.ca/fileadmin/medias/pdf/plan-directeur/MERN-Mise-niveau-2026-plan-directeur-transition-energetique.pdf>

⁷ Energy Transition Quebec, 2018. *Joining Forces For a Sustainable Energy Future – 2018–2023 Energy Transition, Innovation and Efficiency Master Plan*, p. 140–142, <https://transitionenergetique.gouv.qc.ca/en/energy-transition-master-plan>

⁸ *The Constitution Acts, 1867 to 1982*, <https://laws-lois.justice.gc.ca/eng/const/page-12.html>

⁹ Statistics Act, R.S.C. 1985, c. S-19 (as of May 19, 2022), Government of Canada, <https://laws.justice.gc.ca/eng/acts/s-19/FullText.html>

follow a methodology that is, itself, confidential. In the context of the transition, they primarily affect petroleum products and energy consumption data in industrial subsectors. Data are also lacking for some strategic sectors or systems for a successful energy transition.

In other words, the provinces have the legal authority to adapt the energy transition to their context but do not have the authority to obtain all the data needed to carry out analyses to support informed decision-making.

In Quebec, over 70% of GHG emissions come from energy sources. The energy transition essentially consists of reducing our use of hydrocarbons through energy efficiency and lowcarbon energy substitutes. Suppression and the lack of data limit sector monitoring, market understanding and, therefore, the ability of provincial actors to make informed decisions on the measures, regulations, investments and research projects to carry out for the deployment of the energy transition to achieve climate targets.

Data suppression is an important topic that cannot be easily resolved. In a meeting in 2021, the CCEI's External Advisory Committee (EAC) recognized the "need to revise the *Statistics Act* to better reflect the needs of the digital age and to ensure critical information is available to inform on pressing issues."¹⁰ According to the minutes, the Canadian Statistics Advisory Council (CSAC) informed the EAC that CSAC is "looking at the *Statistics Act* to identify specific limitations on what can currently be done within the legal bound of the Act, and will be making recommendations to the Chief Statistician." No new minutes or responses from the CSAC have been published since then.¹¹

However, some energy information deemed to be confidential is essential for understanding the provinces' energy systems. In the context of the climate crisis, it is relevant to question the balance between the interpretation of confidentiality and the lack of some energy data, on the one hand, and Statistics Canada's mandate of on the other, which is to provide statistical information and analyses to (1) develop and evaluate public policies and programs and (2) improve public and private decision-making for the benefit of all Canadians.¹² For the purposes of the workshop, two main energy data challenges were therefore discussed:

- 1. Availability:** The purpose of data availability is to ensure that the data are available to end users for applications when and where they need them.¹³ It defines the extent to which data are easily usable, as well as the necessary procedures and computer tools to manage and update these data and make them available. In Canada, some energy data exist, but they are dispersed or difficult to use. Availability issues affect both the scope of the variables covered by the data and their temporal and geographic granularity. For example, some energy sectors are covered little or not at all, such as biomass, renewable energy and hydrogen. Many data available are only available on an annual or monthly basis, which can be problematic in some contexts (e.g., gas sales, electrical capacity). These data are usually only available nationally or provincially. More frequent and detailed data at the municipal or regional level are often requested.
- 2. Limited access and suppression:** Data access refers to a user's ability to access or find data in a database or other structured format to retrieve and manipulate them for analyses.¹⁴ Some data, collected by Statistics Canada and other government agencies, are suppressed for confidentiality reasons. This often has to do with the competitive sensitivities of the responding industries, or the absence of a confidentiality waiver obtained from a data provider under the *Statistics Act*. This suppression limits monitoring of the sector, understanding of markets, and thereby the ability to make informed decisions for the implementation of the energy transition.¹⁵

¹⁰ Statistics Canada, 2021. Summary of the Canadian Centre for Energy Information external stakeholder meeting – May 12, 2021, <https://www.statcan.gc.ca/en/about/relevant/ccei/meeting/2021-05-12>

¹¹ Statistics Canada, 2021. Canadian Statistics Advisory Council, website consulted on August 1, 2022, <https://www.statcan.gc.ca/en/about/relevant/CSAC>

¹² Statistics Canada, 2021. *Mandate and objectives*, website consulted on July 10, 2021, <https://www.statcan.gc.ca/en/about/mandate>

¹³ Techopedia, 2022. *Data Availability*, website, www.techopedia.com/definition/14678/data-availability

¹⁴ Techopedia, 2022. *Data Access*, website, www.techopedia.com/definition/26929/data-access

¹⁵ Statistics Canada may establish data sharing agreements with provincial departments and agencies, as long as the data shared remain confidential.

To discuss these two issues, about 40 stakeholders from various decision-making levels from the academic, government, private and non-for-profit sectors gathered for an online workshop (see the list in Appendix 1). The workshop was divided into three steps:

- i. Sharing of a discussion paper.** To prepare for the workshop, a summary of the rules of law and the issues related to the suppression and confidentiality of energy data in Canada was prepared for the participants.
- ii. A scoping conference** on September 28, 2021, by webinar, to prepare participants for their contribution to one of the four round tables.
- iii. Virtual round tables** held on September 29 and 30, 2021. During these round tables, participants had three hours to answer six questions prepared by the research team. Each round table included about ten participants.

In opening the scoping conference, **Mathieu Payeur, Director, Energy Strategies, MERN's Energy Transition and Innovation Sector**, noted the importance of transparency and access to energy data to improve decision-making and ensure a convergence of markets with the ambitious federal and provincial government targets. He also raised the need to modernize the approach to data to address the challenges of the energy transition in a complex context that seeks a balance between confidentiality and the public interest.

This document summarizes the highlights from the round tables and the presentations given during the scoping lecture. To facilitate the practical use of the recommendations from this report, the main courses of action from the round tables have been structured to further highlight the areas in which the group agreed or disagreed.

Since energy data is a broad theme, the authors recognize that the courses of action are not comprehensive and reflect the expertise of the round table participants. The points raised, particularly in the review of the *Statistics Act*, will require further, more targeted consultations and expertise. It is therefore an exploratory study of the topic.

Scoping Conference

The purpose of the scoping conference was to provide all participants with an overview of the issues related to the supply of data needed for energy transition analysis and decision-making, from the perspectives of data providers and users from government, academia and industry. This information sharing enabled participants to be better prepared for the round table discussions.

The scoping conference was broadcast via videoconference. Seven lectures were presented to participants on September 28, 2021. The lectures were divided into two parts, the first being an overview of energy data in Canada and the provinces, with a focus on the confidentiality issues for industry, and the second benchmarking practices related to energy data access and availability, with a presentation on the approach used in the United States. The following section presents a summary of the ideas presented by the speakers. The presentations and recordings from these panels are available online.¹⁶

Part I | Overview of energy data

In the first presentation, **Carolyn Cahill, Director of the Energy and Environment Statistics Division, and Angelo Elias, Chief, Portal at the Canadian Centre for Energy Information (CCEI) at Statistics Canada**, gave an overview of the CCEI and Statistics Canada's Energy Statistics Program, and of the agency's approach to data suppression. In 2019, the federal budget announced \$15.2 million over five years and \$3.4 million per year thereafter for the creation of the CCEI, a single point of access for all energy information in Canada. The goal of the Centre is to harmonize the supply of energy data across Canada to reduce duplication and inconsistencies between multiple sources. It also seeks to provide new analytical tools and products that will support projection modelling to inform decision-making and research.

The speakers noted the legal obligation under the *Statistics Act* to protect the confidentiality of data collected by the agency to maintain the trust of respondents, but recognized that that presents a challenge, particularly due to the high concentration in certain industries (small number of companies), for several provinces. The suppression rules take several constraints into account, including the number of potential respondents, the proportion of each respondent's contribution for each cell and the disclosure agreements received. Recent methodological improvements have helped reduce the suppression of certain data – most often nationally. However, Statistics Canada recognizes the issues created by the suppression of data, including the need for a minimum amount of data to support the development and evaluation of provincial policies, and the inconsistencies between the results of the models and simulations that use similar hypotheses, as the methods for estimating missing values differ between users. To deal with these issues, courses of action will be explored, including evaluating the sensitivity of data and the risks of disclosure, the identification of key data needed at the provincial level in the context of the energy transition, and the exploration of new methodological approaches, such as data disruption, to allow for their publication.

Ismaël Cissé, Economist at Quebec's *ministère de l'Énergie et des Ressources naturelles*, presented a provincial overview of the issues related to energy data. Given the provinces' responsibility for carrying out the energy transition, it is essential that governments have current data to develop policies, programs and action plans based on consultation documents that engage various stakeholders. These data are also useful for monitoring the market, trends, and economic impacts, and for assessing the impact of measures aimed at reaching targets.

¹⁶ HEC Montréal, 2021. *Données sur l'énergie au Canada / Energy Data in Canada*, web page, <https://energie.hec.ca/events/28sept2021/>

The provincial governments face many data issues, including the limited capacity for dissemination and availability due to official energy data disclosure practices.

Like the federal government, Mr. Cissé noted that the provinces also face legal constraints related to confidentiality and access to data between departments and agencies and are limited in their ability to share information due to their protection and privacy obligations. However, the energy transition requires access to and monitoring of statistics and indicators to transform practices, stimulate innovation and develop markets, such as emerging energy sources (e.g., hydrogen, bioenergy, solar). Urgent data needs include energy consumption by industrial subsector, the transportation of goods and regional data. Initiatives have been launched in Quebec to improve data collection and modelling capabilities. He concluded that we need to collectively reflect on a new approach to reconcile the sharing of information and the protection of confidentiality in an energy transition context, and that provincial authority need to be extended to collect key data. The pooling of efforts and work through partnerships will also be required, as well as better collaboration and improved flexibility in the requirements of data-sharing agreements with various actors and by type of use.

The last panel offered perspectives on data sharing and confidentiality issues for industry. **Christophe Bélanger, Strategic Advisor with the Client Intelligence Directorate at HydroQuébec**, argued that the validation and sharing of data externally are already included in the corporate guidelines to facilitate access to data, highlight the attributes of Quebec electricity and contribute to innovation in the business and research communities. These data include service outages and interruptions, demand for electricity and historical data on electricity generation and consumption data in Quebec. In the coming years, Hydro-Québec plans to share more information on GHG emissions and electricity consumption, and to actively contribute to energy efficiency and the decarbonization of the economy.

To achieve these objectives, the company must overcome two issues. The first, which is structural in nature, is to implement processes that ensure a balance between access to information and privacy, compliance with set standards (e.g., the North American Electric Reliability Corporation/NERC, or the Federal Energy Regulatory Commission/FERC) and maintaining the security of data to minimize risks. The second, economic in nature, is to assess the balance between the financial and societal benefits related to open data, without compromising the competitiveness and commercial strategy of the Crown corporation and its major clients. For example, disclosing strategic information related to the quasi-real-time publication of generation data can have an impact on commercial strategies or the social acceptability of major projects. In closing, Mr. Bélanger suggested as a solution a three-pronged approach based on mobilization, collaboration and validation. The first is designed to raise awareness among various actors of the importance of democratizing data access to innovate as a society. The second consists of accompanying data openness based on risks and needs to achieve the ambitious targets set by Quebec for the energy transition. Finally, the third consists of demonstrating the positive impacts of open data in achieving targets, innovation and knowledge transfer.

To close the session, **Ann Hagedorn, Coordinator at Petrinex**, presented the industrial data management approach in the oil sector. Petrinex is a joint organization between governments (federal, Alberta, British Columbia, Saskatchewan, Manitoba) and industry (CAPP, EPAC) that promotes standardized, secure and accurate management of information critical to royalty management, regulations and commercial needs in the oil sector. The industry uses Petrinex as a single window for sharing and receiving information about the oil and gas sector from various administrations (e.g., data on wells and facilities, operators, production, invoices, reimbursement claims and reductions to Crown royalties). The availability of data is subject to reporting deadlines, but public access is limited due to competitive sensitivities. The industry is particularly concerned about who has access to its volumetric data and felt that two types of data should not be disclosed: (1) confidential information and information about new technologies used to increase production; and (2) strategic commercial information, including the identification of clients and competition between lucrative facilities, such as terminals and upgrading facilities.

Due to these concerns, Ms. Hagedorn explained that the level of access varies by the type of user. The public can access volumetric data and infrastructure data in some provinces that are deemed non-sensitive, but many volumetric data related to facilities (terminals, refineries, pipelines, exploitable oilsands) are not accessible. Participating provincial governments have access to data for their province, but not from other provinces. Statistics Canada receives data extracted from datasets, but does not have access to information requests or reports from Petrinex online. Industry access to volumetric data is also limited based on the status of the commercial partner, for instance, whether or not they are the operator of the facility.

Presentations

Angelo Elias and Carolyn Cahill. *Approach to Data Suppression and Data Sharing*, https://energie.hec.ca/wp-content/uploads/2021/09/1-CAHILL_PPT-EN.pdf

Ismaël Cissé. *Energy Data in Canada: Perspectives and Issues in Quebec*, https://energie.hec.ca/wp-content/uploads/2021/09/2-CISSE_PPT-En.pdf

Christophe Bélanger. *Hydro-Québec's open data initiative*, https://energie.hec.ca/wp-content/uploads/2021/09/3-BELANGER_PPT_ENG.pdf

Ann Hagedorn. *Petrinex – Data on the oil and gas sector*, https://energie.hec.ca/wp-content/uploads/2021/09/4-HAGEDORN_PPT-EN.pdf

Recording of the conference (part 1): www.youtube.com/watch?v=214Dujp0Ni0

Part 2 | Benchmarking of energy data access and availability practices

The objective of the second session of the conference was to present the perspectives of data users and the implications of current practices related to data access.

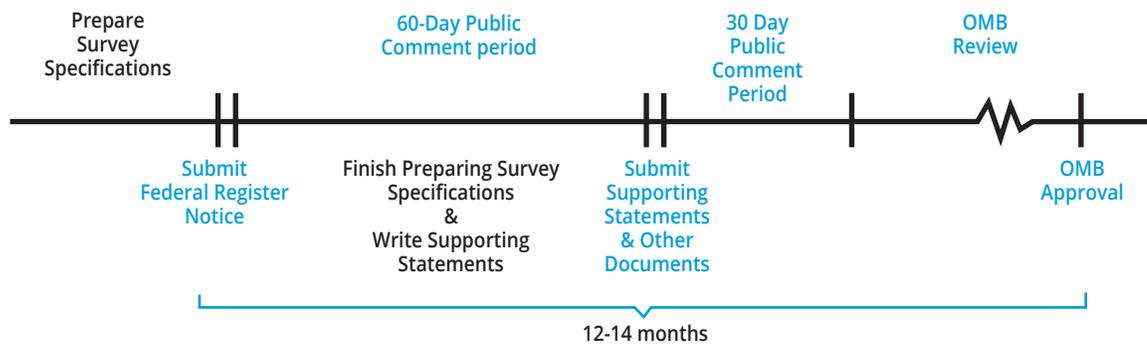
The energy transition that is needed to avoid worse impacts from climate change requires an in-depth transformation of our energy systems, according to **Pierre-Olivier Pineau, Professor and Chairholder, Research Chair in Energy Sector Management at HEC Montréal**. Production must focus on renewable and carbon-free energy, and consumption must be minimized. However, Canada lacks a lot of detailed information about the energy system: it is not possible to know the monthly consumption of petroleum products by province, and there are few details about the deployment and consumption of certain renewable energies, such as geothermal, solar or biomass. Mr. Pineau presented international benchmarking (including the United States, France, the United Kingdom and Australia) and showed that Canada is systematically last in the physical and temporal granularity of energy data for all variables studied (electricity consumption, oil production, etc.). Worse still, Canada is the country that takes the longest to make this information public. Many data are also hidden and deemed to be “confidential,” while they are accessible in other countries, including the United States, even for small states.

In closing, Mr. Pineau noted that greater access to energy data is essential to plan and manage the energy transition. If other countries comparable to Canada can make these data public, so can Canada.

Thomas Leckey, Assistant Administrator for Energy Statistics at the U.S. Energy Information Administration (EIA), presented the American statistical system’s structure of and approach to energy data, and the principles and rules for balance in data suppression and access. The American statistical system is operationally decentralized. It comprises 190 agencies, 14 of which are considered key agencies. The EIA, one of these agencies, reports to the Office of the Secretary of the Department of Energy, but its administrator is appointed by the President of the United States. To ensure independence and limit political interference or any other undue intervention, the law that created the EIA in 1977 gives the Administrator in Chief absolute authority over the publication and disclosure of energy data.

The role of the EIA is to provide an impartial and transparent view of energy markets to foster public understanding of important issues for the sector. The EIA’s programs are based on data collection powers that are both mandatory and negotiated with data providers. The objective is to maximize public access to data while maintaining confidentiality. However, surveys must go through an independent approval process established by the Office of Management and Budget (OMB), which includes a 60-day public consultation period (see Chart 1). The consultations validate various survey parameters, including the data to be collected, the methodology, and costs. This process ensures that the surveys are transparent and relevant. Surveys must be reviewed every three years. In closing, Mr. Leckey reviewed the methodological approach to data suppression used by the EIA. He noted that, while there is interest in maintaining data suppression for competition reasons, the business community is the biggest energy data user (62%).

CHART 1. OFFICE OF MANAGEMENT AND BUDGET (OMB) APPROVAL PROCESS FOR A SURVEY PROPOSED BY THE EIA – NORMAL TIMELINE



Source: Leckey, T. 2021

Alexia Argiolas, a doctoral student in Law at the Université de Montréal, followed with the presentation of a comparative legal analysis of the American and Canadian statistical systems and their approach to suppressing energy data.¹⁷ The study also examined whether Statistics Canada’s interpretation of confidentiality, in the context of energy data, is consistent with its mandate, which includes providing information to develop and evaluate public policies and programs in order to improve decision-making for the benefit of all Canadians.

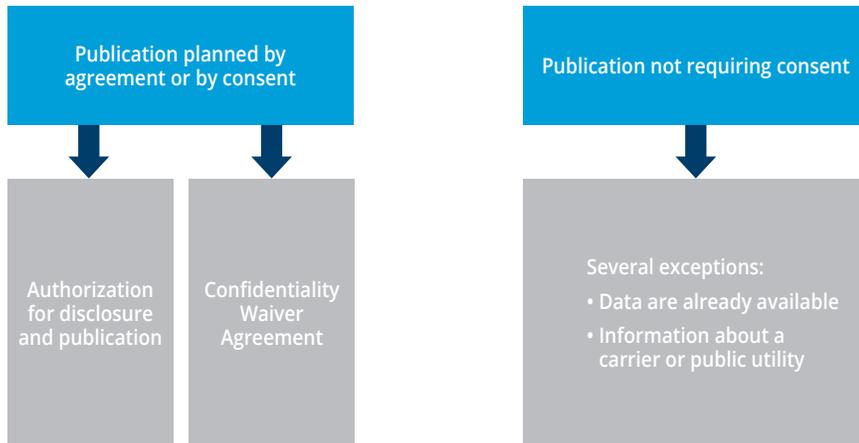
Much of the provincial energy data collected by Statistics Canada are not published for confidentiality reasons. However, this information is essential for decision-making and understanding provincial energy systems. It can be shared with provincial governments when there are agreements in place, but it remains confidential and not transparent.

She noted five differences between the American and Canadian approaches, three of which are significant. Unlike the United States, the Canadian statistical system is centralized and does not include an agency specializing in energy statistics. Similarly, the American system has an agency that is independent of the EIA (the OMB; see Chart 1) to establish standards for its censuses and surveys. In Canada, these standards are established by Statistics Canada, which is also an independent agency. The Chief Statistician has the authority to determine whether requests for information are mandatory, with some exceptions; this gives him much flexibility concerning data, including energy data, to determine whether the information published represents a real statistical need and whether publishing it is necessary for the public good.

Statistics Canada uses different suppression methodologies but does not make them public, unlike the EIA approach, which is based on a consultative process. There are two exceptions to confidentiality in Canada: (1) by consent, via a confidentiality waiver agreement by the respondent or exemption; and (2) by consent when the data is already published elsewhere or when they are from private businesses whose services are deemed by the Crown to be essential to the public (see Chart 2). The Chief Statistician’s discretion allows him to determine whether the information published represents a real statistical need and whether it is needed for the public good. In reaching his decision, he can rely on the context, but must respect the requirements of his mandate. There is no official definition of what is necessary for the “public good”– much less in the context of the climate emergency. He must therefore decide on a case-by-case basis. That decision can be challenged.

¹⁷ Argiolas, A., 2021. *Aperçu et enjeux des règles de droit pour la suppression et la confidentialité des données en énergie au Canada*, Document de travail préparé dans le cadre de l’atelier sur les données en énergie au Canada, first edition, Chair in Energy Sector Management, HEC Montréal, <https://energie.hec.ca/confidentialite-donnees-en-energie-au-canada/>

CHART 2. EXAMPLES OF CONFIDENTIALITY EXCEPTIONS IN THE STATISTICS ACT THAT ALLOW FOR DATA PUBLICATION



Sources: Argiolas, 2021; Statistics Canada, 2021.

In closing, Ms. Argiolas noted that there is little jurisprudence controlling a refusal by the Chief Statistician to invoke an exemption to confidentiality. She closed with thoughts on the importance of expanding the interpretation of confidentiality so that the definition of private businesses, whose services are deemed to be essential to the public, can include petroleum products and the relevance of making the data suppression methodology public, as in the United States, to ensure greater transparency and social acceptability.

The last speaker, **Bradford Griffin, Executive Director of Simon Fraser University's Canadian Energy and Emissions Data Centre**, presented an overview of the availability of data for the industry, current initiatives, and data challenges in Canada in the context of research. To assess the potential for decarbonization and the effectiveness of government measures, data is needed on energy supply, transformation and demand, and on costs and prices. However, conducting these analyses at the provincial level is often problematic for various reasons, including the suppression of data on industrial consumption, differences in values between various sources and the lack of transparency in the definitions of terms and energy conversion factors. The researcher noted that provincial data should be publicly accessible, as they are needed for modelling and for a comparative analysis of regional policies. However, he recognized that most users only need representative data.

According to Mr. Griffin, a single window is needed to harmonize the supply of energy data between governments. The CCEI is in the early stages of this and needs to go further. It should ensure greater consistency between data providers and allow industry to report to a single body with a uniform methodology. Data providers must agree on what is collected, what is public, and what methods to use. The other options for improvement include data on the performance of prospective technologies for decarbonizing the economy and the impact of energy costs on end users, such as retail and wholesale businesses.

Les présentations des conférenciers

Pierre-Olivier Pineau. *Availability of Energy Data: Requirements and Benchmarking*,
https://energie.hec.ca/wp-content/uploads/2021/09/5-PINEAU_PPT-EN.pdf

Thomas Leckey. *Balancing Statistical Principles—the U.S. System*,
https://energie.hec.ca/wp-content/uploads/2021/09/6-LECKEY_PPT-EN.pdf

Alexia Agriolas. *Overview and Issues with the Rules of Law for Energy Data Suppression and Confidentiality in Canada*, https://energie.hec.ca/wp-content/uploads/2021/10/7-ARGIOLAS_PPT-EN.pdf
• Report : <https://energie.hec.ca/confidentialite-donnees-en-energie-au-canada/> [French only]

Bradford Griffin. 2021. *Industrial Energy Data: perspectives and issues for research*,
https://energie.hec.ca/wp-content/uploads/2021/09/8-GRIFFIN_PPT-EN.pdf

Recording of the conference (Part 2): www.youtube.com/watch?v=KStsGwFiLNM

Outcomes of the round tables

The purpose of the round tables was to collect information on five themes: (1) the importance of energy data for a successful energy transition; (2) satisfaction with the state of energy data in Canada; (3) priority data needs; (4) the reforms to consider promoting data disclosure; and (5) possibilities for improving stakeholder engagement and data sharing. Participants were also invited to share their perspectives on the Canadian Centre for Energy Information (CCEI).

There was a total of four virtual round tables, each with a dozen people (see Appendix 1). Two were held in French, one in English and the last one in both languages. The research team facilitated the round tables and took notes (see Appendix 2). Based on those notes, the authors identified findings and options shared by the participants at a round table, as well as ideas that were common to the responses from the different groups.

To ensure that the makeup of the different round tables met the criteria of representativeness and diversity of profiles and organizations, the steering committee made sure that many different sensitivities, points of view and preferences in relation to the various aspects of assessing energy data were represented. Each table therefore included people from various institutional backgrounds (e.g., academic, government, private and associations) and decision-making levels. To ensure the consistency of points of view shared in this final report, a preliminary copy was forwarded to participants for comment.

Importance of energy data

Over 90% of participants attributed a “high” level of importance on access to reliable, transparent, and relevant energy data at the provincial and sectoral levels to accelerate the implementation of actions and improve decision-making related to energy transition.

There are several reasons for this. However, all agreed on the importance of **defining a reliable baseline of the energy system to assess the potential, effectiveness and monitoring of actions and policies to achieve transition and decarbonization goals**. Conducting a review was seen as the first step in establishing a baseline (time zero) from which the evolution of the impact of measures on trends relevant to the transition can be tracked, as well as their relative comparison between different sectors and jurisdictions. This would also help to **set priorities for data collection and funding measures that will maximize the GHG reduction outcome of every dollar invested in decarbonizing the economy**.

Several participants pointed out that data analysis in energy transition governmental actions is often done downstream of the decision-making process, to justify measures and policies, rather than upstream to support their development. However, for policies to be credible, structured and relevant, there was a consensus that they must be elaborated on an evidence-based decision process and benchmarking. In addition, **access to transparent data would contribute to “depoliticizing” (in the sense of making the energy transition less partisan and subject to change with the electoral cycles) through informed decision-making**.

Access to data for analyzing markets is important to stimulate innovation and advance science related to the energy transition. According to participants, when various actors have access to transparent information, they can make strategic decisions, particularly for investments, to ensure more coherent actions based on market dynamics and opportunities. **Transparency and data access ensure that businesses are accountable in assessing their exposure to climate risks**. Some believe that there is a culture of data

overprotection, even when the issue of competition is of lesser importance. Access and transparency are therefore important to ensure the social equity needed for the common good.

According to the perceptions from the round tables, data access is key to **developing reliable, credible and transparent hypotheses in projection models and scenarios**, and for the evaluation of the technical/ economic potential of decarbonization measures. Conducting prospective analyses based on precise and transparent data would help evaluate and better understand the uncertainties and limitations of the results.

Finally, participants recognized the **educational value of access to energy data to raise awareness and engage the public** in the energy transition. Data access and transparency would foster the acceptability and credibility of actions. However, some noted that data must not be seen as an end for taking action.

KEY FINDINGS

- 1. Broader access to data is essential to develop an overview of the energy system** to assess the potential, effectiveness and monitoring of measures and policies to achieve the objectives related to the energy transition and decarbonizing the economy.
- 2. Access to data is needed to expedite innovation in the development of markets and to advances science** through the transfer of knowledge based on the analyses of reliable, credible and transparent data.
- 3. The availability of disaggregated data is necessary to accelerate the energy transition**, as it fosters informed decision-making and ensures consistent actions by the various sectors and governments.
- 4. Social acceptability and mobilization of public opinion in favour of the energy transition depend on the availability and transparency of data**, as they ensure the credibility of policies and measures with the public.

Satisfaction with the state of energy data

Except for some participants, most expressed little or no satisfaction with the current state of energy data at the Canadian and provincial levels. Satisfaction varied by stakeholder, namely, whether they were data users or providers, or stakeholders inside or outside the public service. Government employees who can more readily access data had a more favourable opinion.

More widespread dissatisfaction stemmed from a perceived **lack of transparency concerning the suppression of energy data, and a lack of consistency in availability and between data sources**. Some acknowledged an improvement in availability at the national level but noted numerous problems at the provincial and municipal levels, particularly concerning hydrocarbon data. Participants also noted a discrepancy in the accuracy of data between federal sources (e.g., Statistics Canada, NRCan, Canada Energy Regulator) and between federal and provincial sources. Those discrepancies make it harder to have a common understanding and integrated vision of the energy picture. In reaction to these gaps, several needs were expressed, including the harmonization and standardization of data and the **improvement of coverage and disaggregation of data at the provincial and regional levels, by energy stream** (e.g., bioenergy, hydrogen, renewable natural gas, wind) **and by consumption subsector** (e.g., industrial subsectors, commercial transportation, commercial and institutional buildings). The desire to shift to a “smart” digital economy that optimizes resources would also require more detailed data in real time.

Several noted an **asymmetry in the availability and quality between international and interprovincial data on exports and imports of petroleum products**. Data users found it hard to understand interprovincial energy flows, as the information is often confidential. In their opinion, the aggregate data would be incompatible with the level of analysis needed for provincial decision-making.

A lot of time and effort is required on the part of users to fill the gap of suppressed data. **The lack of transparency hinders the effectiveness of their work due to the loss of time in correcting data and making it consistent**. The negative impacts of data suppression include lost time that will not be spent developing solutions and delays in implementing those solutions for meeting climate targets. The lack of transparency in the methodological approach used by Statistics Canada for data suppression limits public trust. There were also complaints concerning retroactive data suppression. **The methodology should be reviewed to prioritize the disclosure of data relevant to meeting climate targets and for the energy transition, while respecting competitive sensitivity**.

Some viewed the surveys conducted by Statistics Canada as being more focussed on energy production than consumption. The lack of available consumption data, and non-energy data related to energy (e.g., technical and socioeconomic) was a source of dissatisfaction for many, as it limits the understanding of agent behaviours and market dynamics on the evolution of the transition. The current state of data makes it hard to monitor the impact of actions and investments on the reduction of consumption, energy conversion and decarbonization.

Industries are concerned about competition-related issues and how energy data is used. According to them, it is important to put data in context so they are not a source of misinformation. This possible loss of control over the interpretation of data would contribute to the hesitancy of some businesses to make more information public.

Finally, some felt that the Government of Canada was not keeping up with international best practices related to the disclosure, transparency and access to energy data, particularly with respect to deliberative processes in the development of public policy (e.g., OECD principles of open government^{18,19}). Tension between the principles of data transparency and confidentiality is inevitable, but information sharing and transparency are seen as the foundation of modern democracies.

KEY FINDINGS

- 5. The suppression of energy data at the provincial level is recognized as the main source of dissatisfaction** with the current state of energy data in Canada.
- 6. The current level of granularity of energy information is inadequate**, as it is insufficient to understand provincial energy flows, and therefore insufficient for transparent, informed and justifiable decision-making at that geographic level.
- 7. Many inconsistencies affect the quality of energy data**, such as differences in the level of standardization of information between different official sources (e.g., Statistics Canada, NRCan, Canada Energy Regulator, provincial databases) and data availability by energy sources (e.g., oil, electricity) and their end uses (e.g., industry, transportation). These obstacles limit a common, integrated understanding of provincial energy systems.

¹⁸ OECD, 2022. *Recommendation of the Council on Open Government*, OECD/LEGAL/0438, <https://legalinstruments.oecd.org/public/doc/359/359.en.pdf>

¹⁹ OECD, 2020. *Good Practice Principles for Deliberative Processes for Public Decision Making*, <https://www.oecd.org/gov/open-government/good-practice-principles-for-deliberative-processes-for-public-decision-making.pdf>

Priority energy data needs

The third theme discussed during the round tables sought to identify priority needs for energy data – suppressed or not yet available – to support the energy transition and the decarbonization of the economy. Participants were invited to note their responses on a interactive digital whiteboard (Google Jamboard) that allowed them to share ideas in real time. The main points of convergence on the data needs were summarized in two tables (see tables 1 and 2). The first summarizes data needs related to the end use of energy (e.g., transportation, buildings, industry), while the second presents data needs related to production, transportation, distribution and economic issues.

These lists are not comprehensive. The input reflects the interests and expertise of participants. Other sectors, such as agriculture, are not covered. However, these tables provide a starting point for the identification of data gaps to be addressed to ensure informed decisionmaking in the deployment of the energy transition. Formal consultation mechanisms should be put in place by the Government of Canada to elaborate a more exhaustive list of data to be collected (see the section below on *Options for improving stakeholder cooperation and engagement*).

Some general findings emerge from the input provided. A common characteristic of most data identified is the need for greater disaggregation at the provincial, sectoral and temporal levels. Data by energy stream must also be more detailed if the goal of the transition is to move from fossil energy sources to decarbonized sources. In the case of petroleum products, provincial suppression must be reduced, while the government must publish data for emerging sources, including bioenergy (e.g., biomass, ethanol, biodiesel and renewable natural gas), the production and consumption of hydrogen and other renewable sources (e.g., wind, sun).

TABLE 1. PRIORITY DATA NEEDS FOR THE ENERGY TRANSITION IDENTIFIED BY PARTICIPANTS FOR THE ENERGY CONSUMPTION SECTORS

Data identified	Examples or comments
Transportation of freight	
More frequent origin and destination surveys and characterization of the heavy vehicle fleet by province	Distances travelled by vehicle segment (odometer readings), tonnage transported, speed profile of heavy carriers, intermodally
Restore the Canadian Vehicle Survey: Annual ²⁰	The annual survey, which provided provincial data, was abolished following the release of the 2009 edition.
Survey of commercial marine, air and rail transportation activities by province	There are problems with the reliability of the various energy sources in transportation at the provincial level (e.g., jet fuel, heavy fuel oil and marine diesel fuel).
Personal transportation	
Characterization of the automobile fleet by province	Fuel consumption, manufacturers, kilometres travelled, speed profile of drivers
More frequent surveys of personal mobility	The origin and destination survey for the Montréal area only takes place every five years.
Industry	
Mapping of the flow of energy through the value chain in industrial subsectors	US DOE Dynamic Manufacturing Energy Sankey Tool ²¹
Energy usages related to the various processes by industrial subsector (detailed NAICS ²²)	Consumption by energy sources, sites and GHG emissions; access to this data through a single window. Develop an aggregation method to protect business confidentiality.
Intensities of carbon and energy production by industrial subsector for programs for large GHG emitters	This would make it possible to track energy and carbon productivity.
Data on the tracking of the compliance of large GHG emitter programs	Comparison of total emissions and adjusted emissions subject to the obligation of compliance, by establishment and subsector
Range of variability in the efficiency of energy production equipment (heat/electricity) and profile of the equipment's loss of efficiency over time	
Measure of the actual efficiency of equipment by industrial subsector	Efficiency of combustion and process transfer (e.g., gas boilers)
Buildings	
Characterization of real estate stock by province and region. Review the energy variables collected on buildings through existing mechanisms (e.g., property valuations, building permit applications, energy audits).	Age, source and efficiency of heating and heat generation systems, other technical characteristics of buildings and their equipment.
Energy efficiency and profile of building loads	Building energy ratings
Annual installations of building heat pumps	
Disaggregate consumption by use and type of building	Heating, air conditioning, data on commercial space (by vocation) and residential space (by type of dwelling), energy source for heating, biomass consumption by household
Efficiency models for new and existing buildings adapted to the various climatic regions of Canada and applicable at the municipal level	

Source: Inputs provided by the round tables at the workshop (edited for clarity)

²⁰ Statistics Canada, 2022. *Table 53-223-X – Canadian Vehicle Survey: Annual – ARCHIVED*, web page consulted on July 6, 2022, <https://www150.statcan.gc.ca/n1/en/catalogue/53-223-X>

²¹ US DOE, 2022. *Dynamic Manufacturing Energy Sankey Tool (2010, UNITS: TRILLION BTU)*, website consulted on July 6, 2022, <https://www.energy.gov/eere/amo/dynamic-manufacturing-energy-sankey-tool-2010-units-trillion-btu-0>

²² Statistics Canada, 2022. *North American Industry Classification System (NAICS) Canada 2017 version 3.0*, website consulted on July 6, 2022, <https://www23.statcan.gc.ca/imdb/p3VD.pl?Function=getVD&TVD=1181553>

TABLE 2. OTHER PRIORITY DATA NEEDS FOR THE ENERGY TRANSITION IDENTIFIED BY PARTICIPANTS

Data identified	Examples or comments
Energy sources	
Production and consumption of bioenergy by province and sector	Biomass, ethanol, biodiesel, renewable natural gas Disaggregate table 25-10-0029-01, "Supply and demand of primary and secondary energy" by province. ²³
Production and consumption of emerging energy sources by province and sector	Solar production capacity by market (residential, commercial, industrial); hydrogen by source (green, blue, grey, etc.)
Sources for the supply of various energies consumed at the provincial level	Domestic incoming crude oil at refineries, by province
Mapping of residual matter reserves for the production by bioenergy by RCM	Work with NREL to update their Biopower Atlas ²⁴ with Canadian data.
Technoeconomic data on decarbonization technologies by province	E.g., deployment rate, environmental performance, costs; carbon capture and storage; mapping of storage reservoirs; heavy transportation of hydrogen; geothermal systems in the residential CI sector
Performance capacity factors for intermittent renewable energy production systems	Wind and solar
Electricity generation at five minutes (shipping time) by source and grid for each plant (demand) by province	These data are not published in Quebec, but are in Alberta ²⁵
Annual chart of availability of flow of energy for each province	Modelled on the diagrams prepared by LLNL for each American state (US Energy Flow Charts) ²⁶
Mapping of geothermal reserves by province	Work with NREL to update their Geothermal Prospector map ²⁷ with Canadian data.
Energy transformation and transportation	
Interprovincial imports and exports by type of fossil energy and final products	These data are often suppressed provincially.
Actual routes (starting points, transit points and arrival points) of a province's energy supplies	
Saturation of the power grid by sector	Important data for achieving electrification objectives
Economy / Market	
Energy prices by end-user combustibles	Renewable fuels; propane in the residential and commercial sectors
Mapping and characterization of energy source supply chains by province	Makes it possible to assess the environmental, energy and economic impacts and benefits based on life cycle; availability of material resources (raw materials) to meet infrastructure needs
Capital investments in the various energy streams	
Technoeconomic data on decarbonization technologies	
Data on stranded assets related to the transition	E.g., pipelines, operating oil wells
Other	
National public utilities survey to obtain more comprehensive information	Data collection process by means of software, competencies in these services and the type of data collected
Hourly electricity consumption data	

Source: Inputs provided by the workshop round tables (edited for clarity).

²³ Statistics Canada, 2022. *Table: 25-10-0029-01 – Supply and demand of primary and secondary energy in terajoules, annual*, https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=2510002901&request_locale=en

²⁴ NREL, 2022. *Biopower Atlas*, website consulted on July 6, 2022, <https://maps.nrel.gov/biopower-atlas/>

²⁵ AESO, 2022. *Current Supply Demand Report*, website consulted on July 6, 2022, http://ets.aeso.ca/ets_web/ip/Market/Reports/CSDReportServlet

²⁶ LLNL, 2022. *Energy Flow Charts*, <https://flowcharts.llnl.gov/commodities/energy>

²⁷ NREL, 2022. *Geothermal Prospector*, website consulted on July 6, 2022, <https://maps.nrel.gov/geothermal-prospector>

COURSES OF ACTION

8. **Collect more data on transportation, industries and buildings** at the provincial level, as well as the different energy sources.
9. **Ensure data are available at a sufficient level of disaggregation (regional, temporal and by subsector)**, including on energy sources, so that various actors (e.g., businesses, researchers, citizens) and markets align their decisions and actions with the energy transition.

Priority actions to limit data suppression

In its *Quality Guidelines*, Statistics Canada recognizes that “statistical information is essential for any organized human society to function. A lack of quality data would seriously jeopardize decision-making processes, the allocation of resources and the ability of governments, businesses, institutions, and the public to understand the country’s social and economic reality”.

The federal agency has two main objectives:

- 1) Provide statistical information and analysis about Canada’s economic and social structure to develop and evaluate public policies and programs; and improve public and private decision-making for the benefit of all Canadians.
- 2) Promote sound statistical standards and practices.

With respect to Statistics Canada’s objectives and the issues and priorities identified in the previous sections, participants were asked to propose actions that the federal government could take to limit suppression and promote the disclosure of key data to accelerate the energy transition. Examples of best practices were also provided.

The courses of action suggested by the groups focused on four types of reforms:

- 1) **Legislative**, by reviewing and modernizing legislation, including the *Statistics Act*.
- 2) **Normative**, by adopting a standardized approach to suppression and disclosure.
- 3) **Administrative**, through optimization of data management.
- 4) **Educational**, through better communication and awareness among decision-makers about data needs for a successful transition.

The next section summarizes the notable responses based on those four reforms.

1. Legislative actions

Except for a few participants, there was a general consensus on the need to **review the *Statistics Act* to limit the suppression of data needed in the context of the climate crisis emergency**. The groups recognized the right of companies to protect their confidential data, but noted that the notion of “confidentiality” should be defined more on the basis of the public interest in the context of the energy transition. For many, the issue is when and under what circumstances action on the climate emergency takes precedence over certain confidentiality concerns. How does Statistics Canada define the criteria, in its decisions on energy data confidentiality? What weight does it give the public interest in the context of the climate crisis and the energy transition?

There is therefore an interest in the government to establish a commission or support bills to review legislative provisions related to data suppression and define the concepts of “public good” and confidentiality in the context of the climate crisis and the energy transition. This review would examine the assumptions behind data suppression to agree on a common definition that balances the needs and interests of the various parties in the context of accelerating the energy transition to mitigate the climate crisis.

For industry, the main issues are related to trade secrets and competitive harm. However, some agree that the issue of confidentiality has not always been about competitive sensitivity. It can reflect cultural barriers in the business community that fears the use of data and the public perception of the environmental impacts of their activities.²⁸ It was therefore suggested that a committee be set up to **review the notion of confidentiality, in the context of the climate crisis**, by building consensus among stakeholders with a view to better linking GHG emissions data with energy data. There was also discussion about reviewing the approach to **reverse the burden of proof**. Rather than being based on confidentiality to which disclosure would be an exception, it would be based on confidentiality being an exception.

To reverse the burden of proof, it was proposed that **weighting criteria be developed to better account for the environmental cost to society**. Currently, Statistics Canada seems to be prioritizing industry confidentiality over the public good when it comes to energy data (i.e., that the cost to industry takes precedence over the public interest). From that perspective, the industry's position seems, by default, to be the barometer for defining public interest and public good in the context of energy data. To better balance the situation, in interpreting suppression rules, a weighting criterion is needed for data related to fossil fuels that are of public interest in the context of the climate emergency.

Finally, consideration was given to including energy information under the authority of the *Canadian Environment Protection Act* to be able to track GHG emissions and their sources. GHG inventories could be conducted based on that new framework.

2. Normative actions

There was general agreement at the round tables on the need for **transparent standards and standardized tools for collecting and disclosing energy data**. To achieve that, it was recommended that independent and consultative mechanisms be put in place to ensure relevance and improve transparency of data collected by the surveys, as is done for the US Energy Information Administration. In the United States, statistics agencies are specialized (e.g., agriculture, energy) with an independent agency responsible for review confidentiality standards every three years (see Part 2, above). However, it was noted that data suppression in Canada may be more problematic due to a small number of industrial facilities resulting in a greater concentration of various sectors.

According to some, **the approach to energy data access and availability could be reviewed to bring Canada in line with best practice jurisdictions in the OECD**. Canada is lagging in terms of energy statistics. Detailed benchmarking that compares Canadian practices to other countries would help identify targets for improvement. In Switzerland, for example, there are two oil refineries, but data on energy and GHG emissions are publicly available. This is not the case in Quebec, which also has two refineries.

It was recommended that the federal government opt for **a harmonized approach to data governance based on the FAIR principles (Findable, Accessible, Interoperable and Reusable)**²⁹ recommended by the *Institut national de recherche pour l'agriculture, l'alimentation et l'environnement*, funded by the French government. The standardization and harmonization of energy data standards, directives and practices (e.g., definition, structure, interpretation) would help meet the needs and concerns of certain actors in relation to data usage.

²⁸ According to Statistics Canada (May 2021), “While some companies are not necessarily opposed to releasing information, they sometimes have competing priorities — members can support StatCan in this area by leveraging their networks and providing opportunities to discuss these challenges directly with the companies to facilitate obtaining waivers”; <https://www.statcan.gc.ca/en/about/relevant/ccei/meeting/2021-05-12/opening>

²⁹ INRAE, 2022. *Produire des données FAIR*, website consulted on July 7, 2022, <https://datapartage.inrae.fr/Produire-des-donnees-FAIR>

To limit the burden on industry, there was agreement on the need to consolidate the data collection approach and surveys between governments (provincial and federal). **The objective is to move toward a more open and transparent approach** that promotes innovation and the creation of value for society.³⁰

3. Administrative actions

Efforts by Statistics Canada to centralize the supply of energy data through the Canadian Centre for Energy Information (CCEI) were welcomed by participants, but the initiative was seen as insufficient to address the major gaps that remain (e.g., lack of access, availability and accuracy, inconsistency or dispersion of data among sources). To correct the situation, the following actions were recommended:

- Provide an overview of energy data availability to avoid requests to multiple government agencies.
- Adopt clear and uniform confidentiality rules to allow access to complete and disaggregated data sets by sector, province and usage.
- Define a data presentation format that includes useful information for achieving transition objectives and that will be constant over time.

To identify energy data needs, it was recommended that the Government of Canada establish steering or expert committees based on the strategic priorities of the energy transition. This approach would help identify data and indicators needed to thoroughly track strategic priorities and address issues related to the availability and accessibility of information (e.g., a transportation electrification committee would raise awareness of specific data needs concerning electric vehicles and charging stations, and the systemic impact on the network).

There was discussion of the possibility of adopting **an incentive approach to encourage businesses to provide and disclose more energy data**, as they are not likely to do so on their own. One lever that was suggested to limit data suppression was the adoption of a “carrot and stick” approach. The stick is mandatory disclosure of priority data to meet targets and ensure tracking and deployment of energy transition and climate plans and investments. The carrot is the allocation of financial support for the energy transition in exchange for the disclosure of data.

4. Educational actions

Finally, some participants were of the view that **meeting energy transition targets would require greater awareness among decision-makers about the importance of access to data to accelerate its deployment.** Improved access, availability and disclosure of data are political issues. Ministers and senior civil servants have easier access to information and are therefore less likely to be aware of the challenges for actors, including provincial governments and researchers.

The federal government must be concerned about the benefit of transparency for Canadian society. In the context of energy data, it should inform respondents that disclosure is in the interests of society, as it fosters the social acceptability of measures and accelerates the energy transition and the achievement of objectives for fighting the climate crisis.

COURSES OF ACTION

- 10. Review the concept of “confidentiality” and modernize the legal framework of the *Statistics Act* that accounts for a balance focused on the public interest in the context of the climate crisis and the energy transition** and to limit the extent of potential competitive harm.

³⁰ INRAE, 2020. *Principes pour la gouvernance des données*, December 10, 2021, <https://datapartage.inrae.fr/content/download/3809/40459/version/1/file/20201210-INRAE+Gouvernance+des+donnees%CC%81es.pdf>

11. Plan normative actions (adopting a standardized approach to data suppression and disclosure), **administrative actions** (optimizing data management) and **educational actions** (improving communication and awareness among decision-makers about data gaps and requirements).

Options for improving stakeholder cooperation and engagement

In terms of stakeholder cooperation and engagement to improve the supply of energy data in Canada, many participants noted that processes should be more inclusive, transparent and structured to take into account various expert opinions and needs, from both data suppliers and users. In the short term, it was suggested that **transparency and the functioning of existing mechanisms be improved**, including external advisory and management committees at the CCEI. The CCEI could also create **sectoral working groups** (e.g., oil, cement, aluminum, manufacturing, agriculture) to find solutions to the suppression of energy data specific to the various sectors.

In developing and updating surveys, it was suggested that the government include a **period of public consultations** or use **expert committees** to ensure that they reflect provincial and regional needs related to the energy transition. These committees would include various stakeholders from the academic sector, the private sector, government and the community. This type of committee would have the advantage of making the process more transparent and of creating opportunities for exchanges to focus on finding solutions.

There was also agreement on the need to hold mandatory **periodic consultations** to update the state of the environment and energy data needs in the context of the transition. To do so, the government could include a review and public consultation cycle in the *Statistics Act*. Another possibility that was proposed was the launch of a *Dialogue on the energy transition* by Natural Resources Canada, including an energy data element.

Finally, some noted the need to create an **energy-environment-economy modelling community** (E3) based on the European experience in consultation and transparency (e.g., Grantham Research Institute on Climate Change and the Environment, Energy Modelling Forum (Stanford), UCL Energy Institute Models). The platform for data exchanges and interdepartmental modelling between Quebec's *Ministère des Finances and Ministère de l'Environnement et de la Lutte contre les changements* can also serve as an example to follow.

COURSES OF ACTION

12. Make existing processes more transparent and inclusive by creating sector-based tables or committees that would include stakeholders from the academic, private, government and community sectors.

13. Hold periodic consultations to provide an update on the situation and needs for energy data in the context of the energy transition. To do this, the government could legislate a mandatory review and stakeholder consultation cycle in the process of developing and updating surveys.

Perspectives on the Canadian Centre for Energy Information

With the Canadian Centre for Energy Information (CCEI), the government is trying to improve access to and the quality of energy data in Canada. To conclude the round tables, participants were asked to share their views on the contribution of CCEI towards meeting these goals and on possible improvements to the service. Some round tables lacked time to deal with the question in depth, but some findings and courses of action were identified.

Overall, **few participants were familiar with the CCEI**. Of those who were, mainly public service employees, few had used it in their work. The CCEI was seen primarily as a catalogue portal of hyperlinks to existing resources, divided among different government agencies (e.g., Statistics Canada, NRCan, Canada Energy Regulator). Emphasis was on the public, rather than advanced users or experts. Several were disappointed, as they had expected more (e.g., a portal similar to the website of the US Energy Information Administration). Although the information is centralized, the basic issues (e.g., quality, access, suppression of data) remain. Many hoped that the CCEI would announce a reform to the supply of data from the perspective of what is needed to implement the energy transition.

The CCEI offers a potential for improvement, but is thought to be limited by Statistics Canada's framework (legal, organizational and administrative) and a lack of resources (both financial and human). Many agreed that the decision-making process at the CCEI was still not very transparent and inclusive, despite the creation of an External Advisory Committee. To ensure continued improvement, it was recommended that the federal government establish a **transparent assessment process independent** from Statistics Canada's.

Many were of the view that the government should **build on the federal commitment to achieve net zero emissions by 2050, and the objectives of the 2030 Emissions Reduction Plan,³¹ to consolidate the capacities of the CCEI**. Indeed, with the adoption of the *Canadian Net-Zero Emissions Accountability Act* (2021), the government states that the "transition to a cleaner, prosperous economy needs to be both an immediate priority and a sustained effort over the years and decades ahead" and that "this goal will require support and engagement from all parts of society," including the provinces and territories.

According to participants, for provincial and territorial actors to be able to contribute to the 2030 and 2050 targets, the CCEI must go beyond its current scope. To do so, current resources (funding and expertise) must be increased and secured.

To improve the accessibility and quality of energy data in Canada, many recommended that the CCEI work to **reduce inconsistencies data availability between different government data sources**. For example, it was noted that there was a lack of information on emerging energy sources (e.g., biofuels, hydrogen, wind) on the CCEI site, compared to petroleum products. That asymmetry would undermine the CCEI's appearance of objectivity. The CCEI would also benefit from being more proactive with the public (e.g., surveys to assess user needs, active presence on social networks) to promote and improve its services.

KEY FINDINGS AND COURSES OF ACTION

- 14. There is a lack of public knowledge about the CCEI and it's perceived as having little added value** for improving energy data availability and quality.
- 15. The Federal Government should rely on Canada's climate commitments to strengthen the scope of the CCEI** and improve data quality.
- 16. There is a need to improve the transparency of the CCEI's decision-making process.**

³¹ Government of Canada, 2022. *Net-Zero Emissions by 2050*, website consulted on July 12, 2022, <https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/net-zero-emissions-2050.html>

Conclusion

Designing and implementing actions (e.g., policies, regulations, research, investments) to achieve decarbonization targets for 2030 and 2050 will require that the various actors have complete and detailed information about energy systems. However, current energy data in Canada are problematic in several respects: lack of availability and access problems are too common. The recent creation of the Canadian Centre for Energy Information (CCEI) did not significantly change the situation, insofar as the Centre has essentially become a centralized portal for existing information, but this has not necessarily increased the information or improved it at this time.

The last major review of the *Statistics Act* was over 30 years ago and, under the *Constitution Act, 1982*, energy is a provincial jurisdiction. To correct the current situation and allow Canadians to have access to the data needed for the energy transition, a review of the legal framework and practices must be considered to further engage the provinces and cover more aspects of energy systems. Modernizing the legal framework to reach a balance based on public interest and the notion of “confidentiality” in the context of the climate emergency could be a priority for elected officials.

Work to improve transparency and access to energy data to accelerate the energy transition will be difficult and sensitive, but necessary for all actors and markets in transformation to have the data needed—and sufficiently detailed, at the provincial and regional levels—to achieve their decarbonization targets. Succeeding is essential to ensure that society functions properly and for our common good.

Appendix 1 | List of round table participants

In alphabetical order

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